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Table of Contents

PREFACE

Assalamualaikum wrt. wbt. and Salam Sejahtera.

International Conference on Active Learning (ICAL2012) received 97papers and after reviewing process, there are 64papers have been accepted to be included in this volume of proceedings with 6 parallel sessions.ICAL2012 has been held at Universiti Teknikal Malaysia Melaka on 18th – 20th September 2012. Some selected papers have been included in the Malaysian Journal of Educational Technology (M.Jet.) and Asean Journal of Teaching & Learning in Higher Education.

The organization of the ICAL2012 is strongly supported by Universiti Teknikal Malaysia Melaka, AKEPT, MIEPTA and Magnetic, all the relevant departments and organizations as well as the private sectors.

On behalf of the organizing committee, I would like to take this opportunity to express our gratitude to all reviewers who have been working hard to finish reviews on time and hence ensured the success of this event.

Thanks also to the Advisory Committee and last but not least to all the working committee including UTeM's Active Learning Team and the staff of Center for Teaching and Learning. Without their tireless effort, hard work and commitment, this event would not be possible.

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TRACK 1: PEDAGOGY LEARNING

Contributing Factors towards Ubiquitous Technology Use among Engineering Undergraduates

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Abstract—**Education and learning are no longer restricted to the traditional face-to-face classroom settings. This is because, due to the proliferation of technology, its' ubiquities and advancement over the years, technology has become available to students to obtain an education and support their learning. In addition, the ability to create conducive environment, facilitating conditions and supports are paramount important in ensuring an equitable provision of affordable services over ubiquitous infrastructure, especially in education. Having a conducive and supporting environment is not only the central factor that influences the use of ubiquitous technology. According to Laura (2001), personal attitude like willingness, readiness and competency can also affect learners in using technology. Therefore, this study aims to determine contributing factors that influence the usage of ubiquitous technology among engineering undergraduates either to be utilized for learning or leisure purposes. The following discussion will base on the Unified Theory of Acceptance and Use of Technology Model (UTAUT) by Venkatesh *et. al* (2003)**

The data of this study is gathered through a questionnaire, with the reliability of 0.922 for factors. The sample is undergraduates' studying at faculty of engineering and a statistical analysis of data collected is performed by SPSS 17. Result shows that the central factor that contribute to the ubiquitous technology use is performance expectancy (mean = 3.51, SD = 0.555), followed by effort expectancy (mean = 3.35, SD = 0.505), social influence (mean = 3.11, SD = 0.545) and finally the least influenced factor is facilitating factor (mean = 2.82, SD = 0.404).

Keywords-ubiquitous technology, engineering undergraduates, UTAUT, Malaysian Technical University Networks (MTUN)

I. BACKGROUND OF THE STUDY

The Information Communication technology (ICT) has been fully integrated into the education system; to create a paradigm shift in the way students are taught which has resulted in the explosion of ICT-relevant programs such as distance-learning and virtual universities which utilizing technology as their central mediator. Other than that, technology usage among educators and students are heralded to create a tremendous spectrum of learning opportunities in technology-based programs such as for engineering and technical field.

All engineering and technical graduates are considered to be ready for a direct fit with the requirements of the IT industry (Task Force on Meeting the Human Resource Challenge for IT and IT enabled Services, 2003, p. 15). The obtained skills while utilizing relevant technology in learning should be aligned with the core competencies developed in these disciplines and are considered to be sufficient. So, when they are entering a workforce, companies don't have to spend more by sending again these graduates for training in order to improve their ability, use and competency in using the latest innovation in engineering field, computer science and IT knowledge. On the other hand, Malaysia as a model nation has also leading the way in transforming its development blueprint into a knowledge-economy and often cited as front-runner in information technology implementation in the developing world (Kumar, 2008). At the vanguard of this transformation, is the Multimedia Super Corridor – a national undertaking to make Malaysia Asia's Premiere ICT Investment Hub.

According to Laura (2001) having a conducive and supporting environment is not only the central factor that influence the use of ubiquitous technology, personal attitude among users like willingness, readiness and competency can also affect them in using a technology. Other than that, to own a ubiquitous technology; like a smartphone; is a status symbol for users, and this has also contribute to users' inclination

(Tapscott, 2011). Nevertheless, according to the prior research, technology itself is important as it helps user to accomplish tasks faster, and effortlessly (Davis, 1992).

Past studies and research (Venkatesh *et al*. 2003; Garfield, 2005; John, 2006; Lei, 2010; Hawkes, 2010 & Shin, 2011) have found several factors influencing undergraduates acceptance and use of technology. The following factors are identified based on several studies that focused on technology use and acceptance.

In particular, performance expectancy or perceived usefulness, a degree which users see technology may help them in their job performance (Venkatesh *et al*. 2003), effort expectancy, or perceived ease of use, a degree which users find that handling the technology is easy, (Davis, 1986 & Venkatesh *et al*. 2003), social influence or image; the degree to which use of an innovation is perceived to enhance one's image or social status in one's social system (Vallerand, 2000, Rogers. 2003 & Venkatesh *et al*. 2003) and facilitating conditions or compatibility; the degree to which an innovation is perceived as being consistent with the existing values, needs and past experiences of potential adopters (Moore & Benbasat, 1991, Rogers, 2003 & Venkatesh *et al*. 2003) were found to influence to the use of technology. Therefore, these factors have been considered as central factors that influence the use of technology among undergraduates in higher learning.

All the example phenomenas have been supported by many researchers of technology acceptance and use, including Rogers (2003) in his diffusion of innovations' theory. He has identified several contributing factors that may influence the use of innovation or technology, such as a relative advantage; the degree to which an innovation is perceived as being better than its precursor, ease of use; a degree to which an innovation is peceived as easy and effortless to use by users, visibility; a degree to which one can see others using the system in the orgainzation and others.

Therefore, for this study researcher aims to determine contributing factors that influence the usage of ubiquitous technology; based on the UTAUT theory by Venkatesh et. al (2003), among engineering undergraduates in Malaysian Technical University Networks either for learning or leisure purposes.

The contributing factors that been identified by Venkatesh et. al (2003) are as followed;

i) Performance Expectancy (PE)

Conceptually, PE is defined as the degree to which an individual believes that using certain technology will assist them to attain gains in job performance (Venkatesh, 2003). Operationally, in this study this variable focuses on how undergraduates in MTUN perceived the usefulness of ubiquitous technology in helping students to attain gains in performing and completing an academic task (e.g. assignment, lab report) given by lecturers, as well as perceived the short and long effect in using the technology.

ii) Effort Expectancy (EE)

Conceptually, EE is defined as the degree of ease associated with the use of the technology (Venkatesh, 2003). Operationally, this variable measures the MTUN undergraduates' perception in how easy and effortless in handling the technology or using the ubiquitous technology either for learning and leisure purposes.

iii) Social Influence (SI)

Conceptually, SI is defined as the degree to which an individual perceives that important other believe he or she should use the technology (Venkatesh, 2003). Operationally, this variable focuses on how the undergraduates perceived the influence of important individual or their 'social network' (e.g. friends, family, lecturers and community) and environment's factors (e.g, influence of the mass media) in using ubiquitous technology.

iv) Facilitating Conditions (FC)

Conceptually, FC is defined as the degree to which an individual believes that ab organizational and technical infrastructure exists to support use of the system (Venkatesh et al, 2003). Operationally, this variable concentrates more on how the technical university undergraduates see the importance of getting support and help (e.g. from the university's administration, lecturer and friends) in order to resolve problems in using ubiquitous technology either for learning or leisure purposes and how it is able to contribute to the usage of ubiquitous technology.

II. PROBLEM STATEMENT

Explaining users' use on a new and sophisticated technology is described as one of the most mature research area in the contemporary information systems (IS) literature (Cotten, 2008) especially in higher learning field. In tandem with that, the presence of ubiquitous technology and its unprecedented evolution of these devices continue to generate great interest. These technologies are increasingly capable tools for learning either in the classroom or outside the classroom. The sheer power of these devices is what makes them interesting, and that power derives from their ubiquity, their portability, the wide range of things that can be done with them and their ability to access the internet nearly anywhere.

However, in Malaysia, a limited number of studies have been conducted in identifying others contributing factors towards the usage of ubiquitous technology either for learning or leisure purposes. Without this knowledge, it is difficult to develop strategies to promote the usage and diffusion of ubiquitous technology if the reasons for learners' inclination or disinclination to use these technologies are not understood. Therefore, this study aims to identify other factors that complement the sheer power of these technologies that contribute to the usage of ubiquitous technology, namely, mobile phone or smartphone, laptop and tablet among engineering and technical undergraduates in Malaysian

Technical University Networks (MTUN) and at the same time measure the influenced level of factors identified later.

As many focused-universities, where a technical university is one of them; is driven to establish a smart partnership with the industry where most of their engineering and technical-based educators have successfully produced abundant of research and developed new innovation for the betterment of a community as a whole. However, the researchers forget that, to study the acceptance and use of technology as a mediator in enhancing teaching and learning is also one of the vital innovation that is worthy of further investigation. Up to now, research findings on this particular topics done either to MTUN undergraduates or educators is still lacking.

Therefore, this study aims to bridge the gap by producing a finding that can be used for a technical university administration in encouraging educators and students to use ubiquitous technology as a mediator in harnessing teaching and learning. Nevertheless, hopefully by experience utilizing ubiquitous technology while studying in the university, will prepare the students with a reliable and essential technical skills that needed for their future endeavor.

Subsequently, for all the reasons, there is a need for a research to be done in order to determine the contributing factors that influence the usage of the ubiquitous technology among undergraduates in higher learning institutions in Malaysia. This is also to support an objective in transforming Malaysia to be a high-income country through the development of ICT in 2020 as well as to set a path for higher learning in maneuver on comprehensive reforms aim at improving the quality of teaching and learning in ubiquitous learning environment (Commission, 2010).

III. RESEARCH OBJECTIVES

The objectives of this study were to determine:

i. The influenced factors that contribute to the ubiquitous technology use.
ii. The most influenced factor that influence the use of ubiquitous technology.
iii. The least influenced factor that influence the use of ubiquitous technology.

IV. METHODOLOGY AND INSTRUMENT

A survey was carried out on total sample of 150 engineering undergraduates at one of MTUN. However, only 101 sets of questionnaires were being fully completed by the respondents. Respondents answered on a four-point likert-type scale (1=strongly disagree, 2=disagree, 3= agree, 4=strongly agree). The questionnaire was divided into three sections. The first section collected the student's demographic information such as gender, race, and technology ownership. The second section aimed to identify the students' frequency and competency in using ubiquitous technology and the last section aimed to determine the factors that influence them in using ubiquitous technology. However, in this paper the researcher will discuss on the analysis done on the last section only; which is the influenced factors that contributed to the use of ubiquitous technology.

V. DATA ANALYSIS

i) Reliability Test

For this study, the reliability of the items in the instrument was conducted as it increased the likelihood of success and also developed and test adequacy of research instruments (Edwin, 2001). The reliability test was conducted to 42 of the final year of engineering undergraduates in order to find the consistency of scores or answers provided by an instrument before embark to the real study. From the analysis, the instruments' reliability was r= 0.974 for section two and r= 0.98 for section three. Therefore, the overall reliability of the instrument was absolutely good.

ii) Demographic Profiles of the Students

The demographic profiles of the sampled students were based on 3 variables, which included gender, faculty and ownership of ubiquitous technology. In this research, 40 (39.6%) were male and 61 (60.4%) were female of 3rd year undergraduates from five selected engineering faculties. The selection of the targeted sample was done according to the list of students' matrix number obtained from the administration of the respective university.

On the technology ownership result, majority of the respondents own a laptop and a smartphone. Meanwhile, Tablet PCs was not a favorite technology among respondents as only few of them owned it; where only 18 out of 101 owned a Tablet PCs. However, this did not mean that they were not exposing to the use of latest technology, as the respondents might had another technology that complement their learning in the university.

Table 1 : Demographic Data

Item	**Frequency**	**Percentage (%)**
A. Gender		
Male	40	39.6%
Female	61	60.4%
B. Faculties		
Electronics & Computer Engineering	15	14.9%
Electrical Engineering	27	26.7%
Manufacturing Engineering	16	15.8%
Information & Communication Technology	30	29.7%
Mechanical Engineering	13	12.9%
C. Technology Ownership		
Laptop	97	96%
Smartphone	83	82.2%
Tablet PCs	18	17.8%

iii) The Contributing Factors

As been identified by Venkatesh et. al (2003), there were four paramount important factors in influencing people to use new innovation or technology namely and the factors were; performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC). Therefore, from the analysis, the most influenced factor that contributed to the use of ubiquitous technology was performance expectancy (mean = 3.51, SD = 0.555). This has shown that students agreed by using a ubiquitous technology will assist them to attain gains in job performance as well as assist them in completing an academic task (e.g. assignment, lab report) given by lecturers. Then, followed by effort expectancy factor (mean = 3.35, SD = 0.505). Here students perceived that to handle ubiquitous technology was easy and effortless either for learning and leisure purposes.

Meanwhile, the third factor that contributed to the utilization of ubiquitous technology was social influence factor (mean = 3.11, SD = 0.545). SI has defined as the degree to which an individual perceives that important others believe he or she should use the technology (Venkatesh, 2003). Operationally, in this study, the undergraduates seen the influence of important individual or their 'social network' (e.g. friends, family, lecturers and community) as well as, perceived that environment also contributed to their usage of ubiquitous technology.

Finally, the least contributing factor was facilitating conditions (mean = 2.82, SD = 0.464). The facilitating conditions referred to a support or assistance gave by the respective university in encouraging students to fully utilize ubiquitous technology in learning. These referred to the facilities provided such as the Internet access, rewards, helpdesk as well as workshop or trainingrelated to the betterment in usage ubiquitous technology.

Table 2: Contributing Factors

Contributing factors and items	**Mean**	**SD**
Performance Expectancy i) using ubiquitous technology in learning process is very helpful ii) using the available ubiquitous technology enables me to accomplish tasks more quickly. iii) using ubiquitous technology is compatible with all aspects of my studies iv) using ubiquitous technology in teaching and learning process made me more active and enthusiastic.	3.51	0.555
Effort Expectancy i) learning to operate the ubiquitous technology is easy. ii) the available ubiquitous technology is easy to use. iii) to bring ubiquitous technology wherever I go is easy.	3.35	0.505
Social Influence i) the usage of ubiquitous technology is due to the need in learning. ii) to use the ubiquitous technology makes me being appreciated more by friends, lecturers and community. iii) my circle of friends has influenced me a lot in using ubiquitous technology. iv) the usage of ubiquitous technology is due to current trends in social life.	3.11	0.545
Facilitating Conditions i) my university provides necessary facilities (e.g. Internet accessibility) in order to support learning using ubiquitous technology. ii) a specific person or group (e.g. helpdesk) is available for assistance when students face with difficulties while using ubiquitous technology. iii) my university encourages the use of ubiquitous technology for learning process. iv) my university provides workshop and training to use ubiquitous technology for learning process.	2.82	0.464

VI. CONCLUSION AND RECOMMENDATION

In a nutshell, the result showed that the performance expectancy, followed by effort expectancy, social influence and facilitating conditions were the contributing factors that influence the use of ubiquitous technology among engineering undergraduates. This had shown that, the engineering students perceived the ubiquitous technology as a very useful technology that might help them to attain gains in their job performance especially for learning purposes.

However, a in depth research is required, in order to investigate on the other factors that influence the use of ubiquitous technology among engineering undergraduates and find out what is/are others significant moderators that discriminate the levels in using technology. More efforts are needed to determine the students' use of ubiquitous technology and propose a framework that relatively portrayed engineering or perhaps undergraduates from all fields.

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Grammar in the Language Classroom: A Case Study of Teachers' Attitudes and their Actual Behaviour in the Class

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Abstract— **The purpose of this paper was to explore the language teachers' attitudes towards teaching English grammar. In addition, this study compared the teachers' beliefs and their actual behaviours in the class. The "Action Theory" was chosen regarding this issue. It was investigated if there was any compatibility between their beliefs and practice or not and in case of incompatibility, the subjects were aware of it or not. This paper also tried to explore the reasons of this incompatibility as well as to find out the factors that influenced the teachers' actual behaviours in the class. The present study is a case study done in a semi-government language centre in Mashhad, Iran. Three female language teachers were selected as subjects for this research. To identify the language teachers' attitudes towards teaching English grammar, a series of observations was done. And also, some interviews with three English teachers were planned to make known their attitudes towards teaching grammar. The Constant Comparative Method (CCM) was used to analyze the data obtained from observations and interviews. The findings of this study revealed that sometimes there was no compatibility between beliefs and actual behaviours. And, most of the time, teachers were not aware of this incompatibility.**

Key words: Attitudes, Grammar, Belief, Behaviour, Action Theory and Compatibility

I. INTRODUCTION

The word grammar is associated with "a fixed set of word forms and rules of usage". Chitravelu (1995) defines grammar as "the rules of a language". It depends on the word order in different contexts, that is, the way the words are put together to transfer the meaning. Generally speaking, grammar is partly defined as the study of what patterns are acceptable in a language.

Vossughi (2000) classifies grammar into two parts; prescriptive grammar and descriptive grammar. The former is a familiar type; it prescribes what people should do (writing and speaking). The latter is related to meaning of grammar which covers parts of speech. To clarify the meaning of prescriptive grammar, an analogy is used; it is like the physicist who says what the laws of physics are. The grammarian has no more right to decree how people should speak than the physicist has to decree how electrons should move. Then, he gives an explanation about parts of speech; it is analyzing a sentence, where the function of each word in the sentence must be labelled. After that, through an appropriate grammatical rule, it must be explained how the words combine (Vossughi, 2000).

II. BACKGROUND OF THE STUDY

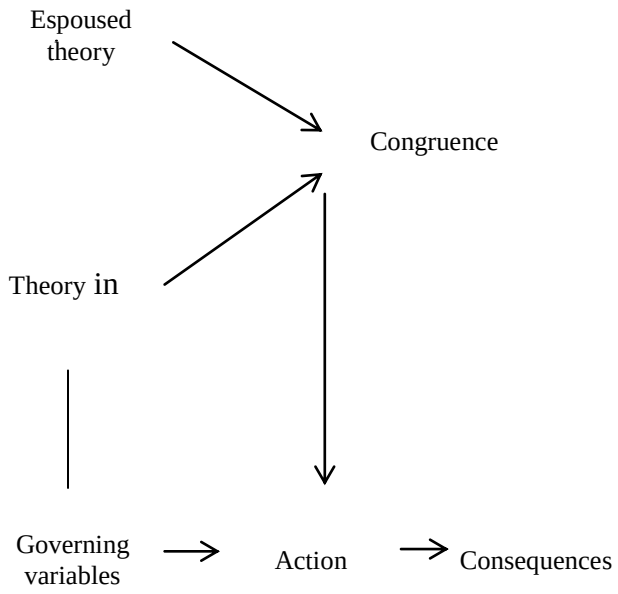
For many years, teaching of grammar has been debated; the place of grammar in the teaching of foreign languages is controversial (Ur, 1996). Teaching grammar looks like a pendulum; it has two extreme ends. On one side stand the advocates of teaching grammar and on the other side, their opponents. Their different opinions result from the different methods of teaching introduced at different times. The pendulum swung as a result of new methods of teaching being introduced. But, grammar teaching has now gained its status in the language-teaching field. Nowadays, many teachers and researchers believe that teaching and learning grammar play an important role in every English class (Dadvand & Azimi, n.d.).

Sometimes, there is difference between belief and practice. Argyris and Schon (1984) introduce the "Action Theory" regarding this issue. They believe that all persons have a mental map in their minds. Although they are not aware of it, they practice according to it; the mental map guides their performance instead of the theories they assert to believe (Argyris, 1980). The Action Theory divides theory into two parts: espoused theory and theory in use. If someone is asked about his action under certain circumstances, he explains his behaviours according to the espoused theory. Nevertheless, everybody behaves according to the theory in use. Sometimes, there is not any compatibility between two theories and persons are not aware of it (Argyris & Schon, 1974). According to Argyris (1980), the best result can be gained in case of congruence between espoused theory and theory in use.

Now, we can modify this model for teaching English grammar. It can happen for language teachers, there is no

congruence between their espoused theory and theory in use. They are not aware that their espoused theory is not the same as their theory in use. They believe in something, but they perform the other thing in the class. Therefore, they cannot obtain effective results.

Argyris (1980) stresses that if espoused theory and theory in use are aligned, the effectiveness will increase. The present study wants to generate awareness in the teachers in order that they create congruence between what they say they believe and their performances in the teaching field in case of inconsistency. Argyris (1990) points out it is not possible to know someone's theory in use by asking him. The only way of understanding someone's theory in use, is observing his actual behaviours, because, theory in use governs the person's behaviours.



Adopted from Argyris & Schon, 1974

Fig. 2 Espoused theory and theory in use

Figure 2 demonstrates that theory in use includes some variables. These variables are unconscious beliefs, rules and assumptions. These are governing variables because they guide the persons' behaviors to achieve certain goals.

These variables create the actions. But espoused theory is the explanations that persons give when asked their idea about something. If these two theories are compatible, the most effective results will be gained (Argyris, 1993).
For the present study, the above diagram was modified:

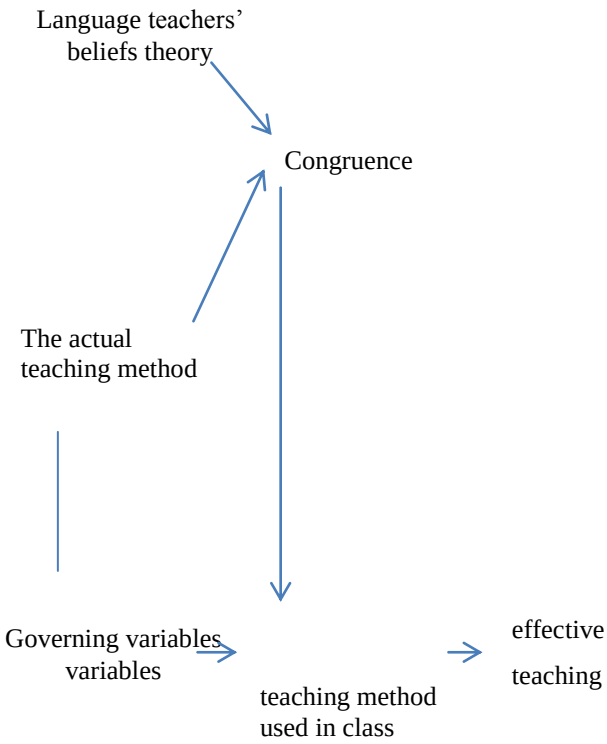


Fig.3 . Theory and its relationship to effective teaching

It must be mentioned here that one of the governing variables can be teachers' experiences, because Larsen-Freeman (1998) believes that teachers teach according to their experiences in the class instead of their knowledge.

Teachers' beliefs are the words they use to explain what they think they do in the class (espoused theory). Their actual behaviour-method used in the class- is theory in use which may or not be the same as their espoused theory. The present study aims to compare these two theories, in case of difference; the correction will be needed to put both theories in line.

Purpose and significance of the study

The aims of the present study were as follows:

- To compare the teachers' beliefs and their actual behaviours in the class.
- To investigate if there were any compatibility between beliefs and practice or not and in case of incompatibility, the subjects were aware of it or not.
- To explore the reasons of this incompatibility as well as to find out the factors that influenced the teachers' actual behaviours in the class.

III. METHODOLOGY

Subjects and procedures

A series of observations was done. All the observations was done by the researcher and the role of the researcher was just observer in the class; she went to the field and collect the data in the setting (fieldwork). Three classes in an English institute, in Mashad, Iran, were selected for observation. The selection was done purposefully. These subjects were selected because they could give the most useful information for in depth study; since grammar is not taught in the most language centres in Iran. The major focus is on speaking and listening. The selected language centre is the only one that has grammar classes in Mashad. The observations were done in the classes during one semester (one month and a half, three days a week, with every session taking two hours). Generally, there are 22 sessions. The 11th and 22nd sessions were devoted to mid-term and final examination, respectively. Therefore, these two sessions were excluded from the series of observations. 20 sessions out of 20 were observed to describe the methods/techniques for teaching English grammar in Iran. It must be mentioned here all subjects participated in this study voluntarily, and they could drop out from the study at any time they wanted.

The study was done through a qualitative description design about teaching methods and techniques for teaching English grammar in Iran. It must be mentioned here that the type of observation is descriptive observation. The aim of the observation was not to evaluate the current methods/techniques.

While doing observations, the teachers were interviewed in order to find out why they chose that method/technique for teaching grammar. It was planned that interviews with teachers lasted up to 45-60 minutes each. The questions started with general questions about the teachers, and then they moved toward the selected methods. The rest of the questions were made according to the teacher's activities in the class (using the observations).

Generally speaking, interview data was added to that obtained from observation, because the researcher wanted to know the subjects' (teachers) ideas, beliefs, opinions and expectations. Ekrami (2001) believes that whenever a researcher intends to gain a general trend, interview is the best and most appropriate instrument.

IV. DATA ANALYSIS

The constant comparative method (CCM) was used to analyze the data obtained from observation and interviews. Glaser and Strauss (1967) believe the constant comparative method consists of four stages:

1. Comparing incidents applicable to each category,
2. Integrating categories and their properties,
3. Delimiting the theory, and
4. Writing the theory

The researcher carried out data analysis during and after the data collection. The researcher followed the guidelines suggested by Miles and Huberman (1994, pp. 10-12) (See figure 3.3). Miles and Huberman define data analysis "as consisting of three current flows of activity: data reduction, data display and conclusion drawing/verification" (p. 10).

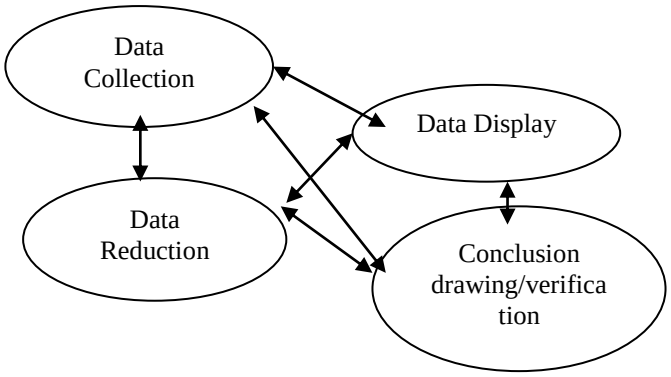


Figure 3.3. Components of Data Analysis. Adapted from "Qualitative Data Analysis (2nd ed.)," by M. B. Miles and A. M. Huberman, 1994, p. 12. Newbury Park, CA: Sage.

The next step was member checking; the thematic analysis (list of categories) was returned to a few subjects. Then, the result was demonstrated in report form.

V. DISCUSSION AND CONCLUSION

The findings of this study revealed that the subjects (three English teachers) teach English grammar by referring to their experiences that they had got from the training class. But, there was an interesting point: they do this unconsciously; they believe in some language theories and they think they teach according to it. It means that teachers believe in something, but they do another thing unconsciously. The observations revealed their actual teaching in the class and the interviews showed their opinions. It means that there is no relation between the methods/techniques used for teaching English grammar and the reason for selecting them and there is no relationship between teachers' thinking and their actions in the class, too.

The researcher can claim that she could find out of the most important reasons which the current methods/techniques are used by the language teacher are not effective enough. By considering "Action Theory, there is no congruence between teachers' espoused theory and theory in use. They were not aware that their espoused theory was not the same as their theory in use. They believed in something, but they performed the other thing in the class. Therefore, they were not able to obtain effective results. Argyris (1980) stresses that if espoused theory

and theory in use are aligned, the effectiveness will increase. The most contribution of this study is to inform the other language teachers and learners about "Action Theory".

In addition, some teachers believe that teaching grammar is a waste of time. But, they have to teach grammar to keep their jobs. They are asked to teach according to the policy of the language centre. They must choose to teach grammar or quit. The teachers have to teach English grammar against their desire. According to Kelly (1995), when attitude and behaviours are different, it is because of social pressure. She adds that the best solution is changing the teachers' thinking about grammar. For doing this important job, first of all, the attitude of teachers must be understood. Regard to this matter, additional research is obviously need.

The major limitation of the present study is that transferability of findings would depend on the context of research. The subjects of this study felt free to discuss about their likes, desires and wishes in education field, it is possible the same situation would not happen to other learners in a different place.

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Journaling Away To the Top

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I. INTRODUCTION

Keeping a journal is a common practice to review one's perspective about an action that took place and also a method to keep track of what one experienced. Many teachers allow their students to write about whatever they want every day or keep a journal although this may take time to complete their classroom task. But, students' writing can tend to get silly with a lack of focus. This way, by keeping a journal, students stay focused on a particular theme or topic that has been taught in the classroom. When they go home, they will remember what they have learnt and this (journal) can refresh their memory of events in the classroom.

II. TERMS

The following terms are key words for this research:

i) Journaling

Journaling is a word that refers to a person keeping a journal or a diary in a form of writing for a specific purpose. This is to reflect upon an opportunity to speculate on paper and event or topic, confident that their ideas, observations, emotions, and writing will be accepted without criticism. As teachers we should empower learners with critical framework to help them reflect on their own language experience and practices within which they live (Clark & Ivanic, 1997, pp.213 cited in Pennycook, 2003). In doing so, students develop critical language awareness.

ii) Classroom

A classroom is a room in which teaching and/or learning activities can take place. It can be found in educational institutions of all kinds, including public and private schools, home schools, corporations, and religious and humanitarian organizations. The main purpose is to provide a safe space where learning can take place uninterrupted by other distractions.

III. STATEMENT OF THE PROBLEM

Many teachers are dissatisfied with the level of reflection their students reach or rather their students make. There is rarely time for students to even open or make reflective journal for their parents to look at let alone teachers giving the students opportunity to keep a journal. This is because of time constraint on the part of teachers to complete their syllabus in time. Moreover, students have rarely been asked to keep a journal of what is covered in the classroom and therefore they do not consider it important or a task vital to undertake. Due to this, the parents of the students are not aware of what their children learn in the classroom. In this case, ignorance is not bliss.

IV. OBJECTIVE

The main aim of this study is to examine the effectiveness of journal keeping of the students in the perspective of their parents and also to also to create transparency in the teaching and learning process in the classroom. At present, students do not keep journals of what happens in the classroom and therefore their parents are not aware of what the students embark on in school.

A. Reserach Questions

This study aims to answer a few questions. They are:-

i) What are the perceptions of some parents in regards to keeping a journal?

ii) How differently do the students attend to keeping a journal since it is new to them?

B. Action

This study is considered a case study as it is an analysis of a group, stressing developmental factors in relation to the practice of writing in the classroom. It involves planning, action, observation and reflection (Kemmis & McTaggart, 1988, as cited in Burns, 1999), Students are asked to keep a journal of what is taught in the classroom during learning and teaching process. Their journal writing covered what is taught in the classroom. The students were also told to write what they feel during the lesson. After that, they take the journal back home and get their parent's to read it. Their parent's signature is then sought, apart from their opinion about the journal keeping. This will go on for a week.

V. PARTICIPANTS

Fifteen students are selected at random. This is because students have to be willing to participate in a week of keeping journal. They are from various classes, boys and girls and are of different age groups.

VI. SITE

This study is done in a secondary school in a sub urban area in Seremban, Negeri Sembilan. The school is a Grade "B" school that consists of 850 students.

VII. METHODOLOGY

While teaching, students kept a journal of what is taught. For every lesson, the journal is kept and after which they take it back to get their parents' signature. This will go on for a week. At the end of the week, the parents opinion about the journal is sought whereby they asked to answer an open-ended questionnaire about the journal their children kept.

VIII. LIMITATIONS

The limitation of this study is in the aspect of the students as this study only used selected students in a sub urban school. Also, the students who participated in this study are only from two classrooms. Therefore, they do not represent a particular cohort of students.

IX. SIGNIFICANCE OF THE STUDY

This study is significant to all teachers of all options, be it language or other than language (Geography, History, Science, Art, Living Skills, Islamic Education, Moral, or Maths). Journal keeping can be kept and encouraged for all subjects as it involves jotting down thoughts of what is taught in the classroom.

X. INSTRUMENTS

Instruments used in this study were questionnaire (APPENDIX A) answered by the parents and observation by the teacher. Questionnaires given were open ended. Observation on the other hand was done by the researcher herself as the teaching and learning processes was going on in the classroom. Also, the journals kept by the students themselves will be analysed qualitatively.

XI. FINDINGS

All the students got the signatures of their parents (APPENDIX B) on the journals they produced. The produced about three each as during the week, there were three classes. After that, the researcher asked them to get their parents to complete the questionnaire.

It was found that all the parents felt that keeping the journal was a good idea. All parents of the students said that they check on their children's' exercise books as well. As to why it is a good idea to keep a journal, they had various reasons. Below states their reasons:-
Remembering more – 4 parents
Good idea – 4 parents
Checking periodically– 3 parents
Improvement in activity – 4 parents

As for the observation on how the students attended to journal keeping, the researcher found that there was eagerness among the students to keep the journal. They copied all the notes on the black board so that it could be essential enough for their parents to know what was happening in the classroom. They were also eagerly listening so that there was readiness to write right content for the journal. Apart from that, from the second lesson onwards, the students were able to organise their thoughts confidently writing the journals differently elaborating on their journals what their teacher taught them.

Qualitatively, if their journals are analysed, it can be noticed that the manner of the students writing the journals differ. For example, let's look at the works of Siti Nabilah, G. Rammiah and Sulohshini of 2 Cemerlang produced on 23rd March 2012 (APPENDIX B). It is seen that she wrote her journal in two paragraphs but Suloh and Rammiah drew diagrams to support their notes. In addition to that, Rammiah gave more examples compared to Suloh and different coloured pens were used.

Other examples to examine is the journals produced by the Form Four students. The topic learnt for the day of 24th April 2012 was concern and sympathy expression. Saiful, Nurzaiwatie and Siti Nur Shahirah presented their journal differently. Saiful was on the note point. Nurzaiwaitie was also on the note point but elaborated a little more at no.3 and no. 4. Siti Nur Shahirah wrote more examples in note point as well. She gave more examples to support what she wrote.

Now let's discuss some of the journals produced on 8th May 2012 by the Forms One. Azraie wrote generally and added about the "Effects of Acid Rain" as Nur Ainin although Ainin did not add anything about the "Acid Rain" but Diyana elaborated on the "Pollution Diagram and the Effects of Acid Rain" together with the page number of the text book that was used. Now, let's look at what they wrote in their journals.

XII. IMPLICATIONS AND RECOMMENDATIONS

This study has implied that all teachers should encourage journal keeping among students on what is being taught in the classroom. Although they may differ from one another but journal keeping allows students to keep track of what is learnt in the classroom apart from being reflective about a particular lesson.

It is therefore recommended that journal keeping be part of the teaching practice whereby a teacher makes it a compulsory practice for all students to jot down what is taught in the classroom. It is also recommended that all students write a journal of what the teacher even says during the on-going lesson, somewhat like a dictation. This enhances students' involvement in learning and ownership of learning besides improving thinking when they construct new knowledge (Wilcox, 1998).

Journal keeping can be a tool for teachers to hear out the voices of the students. A teacher can also engage in a dialogue with her/his students as an alternative to the traditional classroom interaction, what more to parents. This way, parents too will be involved in the classroom practice as in this study. They will value the teachers' efforts and their children's thoughts and ideas apart from being responsible with the progress of their children. The journal will provide them (parents) with further guidance and encourage them to be more active beyond the classroom.

XIII. FUTURE RESEARCH AND CONCLUSION

From this study, it is hoped that all teachers, be it language or other subjects will encourage the keeping of journals among students during the teaching and learning process. This practice of jotting, being habitual, will enhance discipline among students to be attentive during the lesson.

Also, more researches can be done in the future based on the results gathered in this study. As this study only involved a school in the sub-urban area, the future researches can involve the same concept but with different sites but with a purpose of enhancing language skills (speaking, writing, reading and listening).

Apart from that, further researches can be done involving other subjects such as the Malay Language, Geography, History, Science, Mathematics and also Islamic Studies. Relatively, studies can be done comparing the jotting down of notes with pen and paper versus jotting down of notes using a technical notebook. It would be interesting to learn new insights that can be used in the classroom. After all, that's what a notebook is all about - keeping a journal!

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Implementation of Student-Centered Learning among Malaysian Polytechnic Lecturers

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Abstract— **Outcome-based education has been implemented in Malaysian Polytechnics in 2010, particularly in responding to the requirements of Malaysian Qualification Framework and the need to produce graduates with knowledge, skills and attitude that meet the changing industry needs. Despite the growing concerns of academician of the importance of student-centered learning under the philosophy of outcome-based education, the implementation remains an issue. This study was conducted mainly to examine the lecturers' readiness to implement student-centered learning in Malaysian Polytechnics. The instrument used in this survey was modified from a readiness assessment tool proposed by Mercado (2008). A total of 248 lecturers from three Malaysian Polytechnics participated in the online survey from April to June 2012. Data gathered were analyzed using the computer-assisted Statistical Program for Social Science (SPSS) for Windows version 19.0. The level of SCL implementation is found to be high (mean value of 3.89 from a scale of 5). However, perceived students' readiness towards student-centered learning and support by administrator are valued at moderate level (mean values of 3.44 and 3.37, respectively). Correlation analysis revealed that there are significant correlations between the three constructs at the .001 significance level. Suggestions and recommendations are proposed to enhance the implementation of student-centered learning.**

Keywords - student-centered learning, outcome-based education, readiness towards student-centered learning, Malaysian Polytechnics

I. INTRODUCTION

Outcome-based education has been implemented in Malaysian Polytechnics in 2010, particularly in responding to the requirements of Malaysian Qualification Framework and the need to produce graduates with knowledge, skills and attitude that meet the industry needs. Despite the growing concerns of academician of the importance of student-centered learning under the philosophy of outcome-based education, the implementation remains an issue.

The main aim of this research was to examine the lecturers' readiness to implement student-centered learning in Malaysian Polytechnics. This research was also conducted to achieve the following specific objectives: (1) to identify the level of lecturers' readiness to implement SCL, (2) to examine the relationship between the administrative support and usage of SCL among lecturers, (3) to examine the relationship between perceived students' readiness and usage of SCL among lecturer, and (4) to identify the problems faced by lecturers in implementing SCL.

II. LITERATURE REVIEW

A. Outcome-based Education

Since the introduction of outcome-based education in Malaysian polytechnics in 2010, the teaching and learning approach has undergone a series of changes. Lecturers need to focus on the outcome i.e. what students are able to do at the end of the course or program. Therefore, in outcome-based teaching and learning, the outcome of teaching should be clearly stated in the form of a statement of what students should be able to do at the end of the course and at what standard. The statement is referred to as the course learning outcome or CLO.

B. Student-centered Learning

Many academics perceive themselves as experts in their discipline and employ content-oriented conceptions of teaching. Therefore, it may difficult for them to deviate from their usual practices of teaching and adopt teaching activities that can engage students actively [1].

For a learning process to take place, the learners must be responsible for their own learning process as much as the teacher responsible for their teaching. Student-centered learning describes ways of thinking about learning and

teaching that emphasize student responsibility for such activities as planning learning, interacting with teachers and other students, researching, and assessing learning [2] (Cannon, 2000). It also concentrates on what learners do, and why they think they are doing it, rather than what the teacher does [3] (Biggs, 1999).

Innovative student-centered learning may be an effective approach to encourage deep learning and student learning engagement. It has been proven that student-centered learning is likely to engage a more academically diverse group of students than teacher-centered approach [5].

However, student-centered approaches may not appear to be effective for some students. The criticism is not focused on the approach but the implementation part. However, a greater proportion of students behaved in ways associated with surface learning in teacher-led strategies than when student-centered strategies are adopted [5]. Hence, student-centered learning tends to encourage deep learning amongst most students.

C. Teaching Strategies in Student-Centered Learning

Some of the teaching strategies that may be used are interactive lectures, discussion group, case study, problem-based learning, role play, brainstorming and academic visit. Lecturers should identify and implement the most effective teaching strategies that may help students achieve the desired learning outcome. It is also important to take into consideration the diversity of the students. Some teaching strategies may be preferred by some students but not by other students. Therefore, students have to be exposed to various learning style in order to make them more versatile and capable of adapting themselves in various learning situations.

D. Readiness of Students towards Student-Centered Learning

Lecturers should learn to develop or modify classroom routines that take into account the difference in the level of readiness, interest and modes of learning [6] (Tomlinson, 1999). Lecturers should proactively modify curricula, teaching methods and learning activities to address the diverse needs of individual students or small groups of students [6]. In this particular study, readiness of students towards student-centered learning refers to the readiness of students to undergo student-centered learning as perceived by lecturers.

III. METHODOLOGY

Data gathered were analyzed using the computer-assisted Statistical Program for Social Science (SPSS) for Windows version 19.0. Statistical analyses include reliability tests, descriptive analysis and correlations.

A. Instrument

The instrument used in this survey was adapted and modified from a readiness assessment tool proposed by Mercado (2008) [7]. This questionnaire consisted of brief demographic data and items to measure the following constructs: (1) implementation of SCL was measured using a total of 17 items, (2) perception of lecturers on students' readiness towards SCL was measured using 4 items and (3) support by administrator was measured using 5 items.

Among the items used to measure the construct of implementation of SCL were: (1) I used 'discussion' as a teaching strategy for the subject that I teach, (2) I encourage freedom and creativity from my students, (3) I facilitate and monitor the suitable interactions among my students, (4) I am flexible in handling the needs of my students and (5) Problem solving is an important skill for my students.

To measure the construct of perceived students' readiness, the items used were: (1) I believe that students are able to complete their group assignment with minimum supervision, (2) I believe that students are able to search for information on their own to solve problems, (3) I believe that students can participate in discussions if they are given opportunity to do so, (4) I believe that the students prefer student-centered learning to lecturer-centered learning and (5) Although I have tried so many approaches, the students still do not want to actively participate in the learning process. The fifth item was a negative item and had been re-coded accordingly.

The last construct, administrative support was measure using the following items: (1) The institution provides opportunity for professional development to help lecturers implement student-centered learning, (2) The institution is committed towards student-centered learning, (3) The institution is financially ready to implement student-centered learning and (4) The institution has enough human resources to support the initiatives of student-centered learning.

B. Sampling

Online questionnaire was developed and representatives from three polytechnics were contacted. The representatives distributed the online questionnaire to the staff in their polytechnics. A total of 248 lecturers participated in the online survey from April to June 2012. The data gathered were then transferred to SPSS after some transformations and coding.

IV. ANALYSIS OF RESULTS

A. Demographic Variables

A total of 248 lecturers participated as respondents in the study. Table 1 shows the profile of the respondents based on their academic department, gender and teaching experience. Majority of the respondents were from General Studies Department (16.9%), followed by Civil Engineering Department (16.1%). A total of 173 lecturers were female which accounted for 69.8% of the respondents. Most of the respondents (26.2%) had teaching experience between 6 to 10 years, followed by teaching experience more than 15 years (24.2%).

Table 1. Demographic Variables

Variables	Frequency	Percent
Academic Department:		
Civil Engineering	40	16.1
Electrical Engineering	26	10.5
Mechanical Engineering	38	15.3
Commerce	39	15.7
Mathematics, Science and Computer	31	12.5
Information Technology and Communication	24	9.7
General Studies	42	16.9
Marine Engineering	6	2.4
Others	2	.8
Gender:		
Male	75	30.2
Female	173	69.8
Teaching experience:		
Less than 3 years	47	19.0
3 to 5 years	29	11.7
6 to 10 years	65	26.2
11 to 15 years	47	19.0
More than 15 years	60	24.2
Has attended SCL courses?		
Yes	163	65.7
No	85	34.3

It was also found that most of the respondents (65.7%) had attended courses or training on SCL whereas 34.3% had never attended any courses related to SCL.

B. Reliability Tests

The result of reliability tests on the scales to measure implementation of SCL, perception of lecturers on students' readiness towards SCL and support by administrator show that Cronbach alpha values were within the range of .740, .833 and .914, respectively. These values are above 0.70 suggested as the cut-off value for reliability [8] (Nunnally, 1978). Therefore, it can be concluded that the internal consistency of the data was achieved.

C. Level of SCL Implementation, Students' Readiness towards SCL and Administrative Support

To determine the level of SCL implementation, perceived students' readiness towards SCL and administrative support, means for the three constructs were computed. The level of SCL implementation was rated at high level (mean value of 3.89 from a scale of 5), however, the students' readiness towards SCL as perceived by lecturers and support by administrator were valued at moderate level (mean values of 3.44 and 3.37, respectively, from a scale of 5). Support by administrator received the lowest rate compared to implementation of SCL and students' readiness towards SCL.

D. Correlation Analysis

Correlation analysis revealed that there were significant relationships between implementation of SCL, perception of lecturers on students' readiness to SCL and support by administrator at the .001 significance level. The results of the correlation analysis are shown in Table 2 below.

TABLE 2. CORRELATION ANALYSIS

	Implementation of SCL	Readiness of Students	Administrative Support
Implementation of SCL	1	0.337**	0.351**
Readiness of Students	0.337**	1	0.334**
Administrative Support	0.351**	0.334**	1

** correlation is significant at .01 level (2-tailed).

The Pearson coefficients shows that implementation of SCL had significant positive relationships with students' readiness towards SCL (r = .337) and administrative support (r = .351) at the .01 level. On the other hand, students' readiness towards SCL had a significant positive relationship with administrative support (r = .334) at the .01 level. This shows that a rise in administrative support was associated with an increase in implementation of SCL and students' readiness towards SCL. However, the correlation analysis cannot prove any causal effect.

E. Descriptive Analysis on Problems in Implementing SCL

The final part of the questionnaire dealt with identifying the problems in implementing SCL in Malaysian Polytechnics. Among the problems identified as significantly affecting the readiness of lecturers in implementing SCL were excessive workloads complicates the planning (83.9% lecturers agree to this statement), facilities constraints (78.8%), time constraints (78.8%), students not ready towards SCL (76.3%), large classes (75.4%) and too extensive syllabus to cover within a semester (73.7%). About half of the lecturers agreed that they have little knowledge in SCL (52.1%) and little experience and skills in SCL (56.8%). However, lecturers did not agree that the SCL approach is not suitable to be implemented in polytechnics (only 16.9% of the lecturers agreed to this statement).

V. DISCUSSION AND SUGGESTIONS

The level of perceived students' readiness towards SCL and administrative support were valued at medium level. The construct of perceived students' readiness can be improved by giving students more exposure to SCL. Students may accept the new approach of teaching and learning if they are given access to information regarding SCL. Lecturers should spend

some time to explain the concept to students and particularly the justification of applying SCL in polytechnics.

The construct of administrative support may be improved by providing opportunity for professional development in SCL or outcome-based education to equip lecturers with the knowledge and skills needed to implement SCL. About 35.7% of the respondents had never attended courses or training in SCL or outcome-based education. Even though the figure was not high, but all lecturers should be exposed to SCL or outcome-based education to ensure successful implementation of this new teaching and learning approach.

As all the three constructs were found to be have significant relationships with each other, it is important to ensure that all constructs are highly evaluated by lecturers to enhance the implementation of SCL in polytechnics. High perceived students' readiness towards SCL may be positively associated with administrative support and implementation of SCL in the teaching and learning process.

It was also found that lecturers' excessive workload was the most significant factor that thwart the lecturers' implementation of SCL since they did not have enough time to plan their teaching and learning approach. The workload of lecturers should be reduced by balancing the workload among lecturers or by employing more lecturers. Collaborative efforts among lecturers should also be encouraged to reduce duplicate in efforts and to enable sharing of knowledge and skills especially between senior and novice lecturers. Facilities constraints were also identified as the factors that discouraged lecturers from implementing SCL in polytechnics. The management should provide the needed facilities to ensure easy implementation of SCL at all times and places.

Large classes were also identified as another factor that discouraged lecturers from using SCL. It may not be possible to reduce the size of the classes while not increasing the lecturers' contact hours. Hence, it is suggested that lecturers attend training and courses that may guide them to implement SCL in large classes.

Too extensive syllabus to cover within the semester was also identified as one of the factors that obstruct lecturers from using SCL. The curriculum should be reviewed and modified accordingly to provide students with sufficient declarative knowledge and relevant functional knowledge to equip students with the skills needed to solve problems in the future.

Most lecturers did not agree that the SCL approach is not suitable to be implemented in polytechnics. This may suggest that most lecturers agree that SCL was recommended to be implemented in polytechnics. Therefore, despite the moderate level of perceived students' readiness towards SCL and administrative support, lecturers still believe that SCL is suitable for polytechnic students.

VI. CONCLUSION

Student-centered learning may be considered as an effective approach to encourage deep learning and student learning engagement. The diversity of students may necessitate the differentiation in teaching and learning approach. Student-centered learning may produce mixed results since the readiness of student towards student-centered learning differs among students. This study found that the level of implementation of student-centered learning was high but the perceived students' readiness and administrative support was moderate. The significant relationships between the constructs suggest that an increase in a construct may be associated with increases in the other two constructs. The factors that may discourage lecturers from implementing student-centered learning should be looked into to enhance the implementation of student-centered learning.

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The Effect of Integrated Affective-Cognitive Learning Approach on Classroom Behavioral Engagement of Engineering Students

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Abstract- **Students classroom engagement has been shown to be an indicator of active learning process which is important in ensuring learning. However, classroom engagement is a multifaceted construct that includes cognitive, affective, and behavioral aspect of engagements which makes it difficult to get a holistic measure of the construct. Thus, behavioral engagement alone has been oftenused to provide an indication of classroom engagement that represents the two aspects of engagement (positive/negative). Generating behavioral engagement that reflects affective engagement would require a teaching and learning approach that integrates affects and cognitive needs in the teaching and learning approach. Therefore, the purpose of this study is to get a better understanding on the impact of an integrated affective-cognitive learning approach on students' behavioral engagement during the learning process via observation. The proposed affective-cognitive learning approach integrates the affective and cognitive aspects of learning into teaching and learning activities. The study used quasi-experimental design method with a control group involving civil engineering diploma students. The experimental group (n=36) was taught mechanics of material using the proposed learning approach while the control group (n=34) was taught the same course using the conventional method. Results revealed that the experimental group was more engaged during class compared to the control group resulting in more of them submitting classroom tasks on time and less of them showing negative behavioral engagement such as yawning and sleeping in class.**

Keywords: behavioral engagement, affective-cognitive learning approach, observation method.

1 INTRODUCTION

The importance of student engagement has long being recognized by educators. The term *engagement* is used to refer students' association and participation in academic and non-academic activities [1]. Engagement is an essential element in the learning process because learning requires engagement for mastery attainment and knowledge acquisition [2]. From the educational perspective, the teacher plays a fundamental role in motivating the students which leads to engagement. A teacher's interest is not limited to engaging the students, but teachers are also interested in determining the influential factors that leads students towards greater engagement in learning. Interesting, such learning phenomenon only occurs in face to face interaction [3-4].

Student engagement is a multifaceted construct which is composed of three aspects namely cognitive, affective, and behavioral [1], [5-6]. Students engagement is a learning process used to refer students cognitive involvement, active participation, and emotional engagement with specific learning task. Thus,based on the information on the categorization; student engagement can be referred as students' emotional attachment towards the learning process which be perceived as a motivated behavior. That motivated behavior furthermore, can be indexed by the kinds of cognitive strategies. To sum up, it implies the use of three interrelated criteria to assess students' engagement.

Chapman [7] has defined students engagement as eagerness to actively participate in habitual school activities with subtitle cognitive, behavioral, and affective indicators of student engagement in specific learning tasks. Cognitive engagement is thinking exercise which is mainly dealt with the use of cognitive strategies such as coding, analysis, interpretation etc. Affective engagement is associated with the emotional reaction in learning process such as acceptance, rejection, level of interest, and attitude towards learning. Whilst, behavioral engagement is active participation of students in learning such as following the class rules, avoiding the disruptive behavior, attending the class and so on. Behavioral engagement is the operationalisation of the behavioral factor [8, 9, and 10]. It is related to active participant of student in learning that underpins the particular set of behavior such as devotion and determination [1], [4], [11-12], learning behavior and sense of belongingness [5], and students self-regulatory strategies to monitor their learning processes [7]. Educators often made

use of "time-base indices" which measure the time engaged in assignment completion.

This paper focuses on the two types of behavioral engagement namely positive behavioral engagement and negative behavioral engagement [5-6]. Positive indicators of behavioral engagement are the willingness of students, task management and students participation in routine class activities. On the other hand, negative indicators of behavioral engagement are cheating on tests, frequent absence from class, damaging school properties or having delinquent behavior [7]. Research has revealed that behavioral engagement is associated with academic achievement and it is more evident among academically resilient students and motivation [7], [13, 14, and 15]. Furthermore, students who positively engaged during classroom activities tend to reduce the likelihood of distracting and deviant behaviors. Research has revealed that behavioral engagement is associated with academic achievement and it is more evident among academically resilient students and motivation [12, 13, 14, and 15]. Hence, based on the literature information, a checklist for behavioral observation was formulated as shown in table 4.

Learning not only associated with cognition rather emotional aspects are also attached to the learning goals [16]. Looking at the engineering content, profession and learning goal in particular, the educators have emphases the need to promote cognitive learning mediating affective learning considerations [17]. However, currenteducational pedagogy is lacking in certain areas of engineering education as their focus is more on the acquisition of knowledge which is cognitive dimension instead of valuing the acquired knowledge; which is affective dimension. Therefore, engineering often perceived as object-oriented rather than people-oriented [18]. Subsequently, there is no consensus on how to integrate affect into cognitive teaching and learning [19]. Thus it is important to synthesize the affective and cognitive learning to get the deep understanding to their inter-dependent role and to make learning effective for future learners. The relationship between teaching and learning promotes students empowerment, especially in a classroom. To make a balance between pursuit of cognitive and affective goals where each goal is pursued as both; a means and ends of education in such a way that neither should be seen as subservient to the other rather they can be blended naturally into any lesson plan [20]. Moreover, behavioral observations are desirable as they enable the researcher to investigate outcomes "in-action" and evaluate the individuals' ability to function in the higher level of learning domains [21].

Therefore, the purpose of the paper is to study the effect of the integrated affective-cognitive learning approach on learning engagements through the means of observation method. The study is expected to lead to improvement in the understanding of teaching and lesson provisions [22].

Based on the above background, the following objectives are formulated:

- To determine if differences exist in the positive behavioral engagement between the experimental and the control group.
- To determine if differences exist in the negative behavioral engagement between the experimental and the control group
- To identify the prominent type of positive behavioral engagement among groups.
- To identify the prominent type of negative behavioral engagement among groups.

2 RESEARCH METHODOLOGY

This section describes the overall research methodology which consists of three phases namely the research design, sample, and data gathering instruments. Each phase is discussed in detail in the next sub-sections.

A) Research Design

This study utilizes the non-equivalent quasi-experimental design with the control group. The study did not make use of the true experimental design because randomizations of participants were not desirable. Randomization will not be the desirable in this study because putting the students into groups of unfamiliar faces may influence the outcome of the study or may bring threat to internal validity [23]. The quasi-experimental method was appropriate to determine the causal impact of the intervention on the target population. The quasi-experimental research design includes sequential procedure of pre-test, treatment, and posttest as illustrated in table 1. The time span between pretest and posttest was eight weeks [24]. The pretest was given to students on 12 January while the post test was given on 8 March 2012. However, the pre-test results and the post test results are not reported in this paper. This paper will only focus on the effect of the intervention on the teaching and learning process. The pre-test and post test results will be reported in somewhere else as part of a larger study.

TABLE 1 PROCEDURE OF QUASI EXPERIMENTER DESIGN

	Pre-Test	Intervention	Post-Test
Experimental Group	011	$X1$	012
Control Group	01	$X2$	02

Key

011 Pre-test on experimental group

012 Post-test on experimental group

01 Pre-test on control group

02 Post-test on control group

$X1$ Intervention, use of integrated affective-cognitive learning approach

$X2$ No intervention, does not use of integrated affective-cognitive learning approach

Figure 1: Research Design

(Adapted: Alias & Tukiran, [25])

The affective-cognitive learning approach was used as intervention. The independent variable was teaching method (using or not using integrated affective-cognitive learning) and the dependent variable was behavioral engagements.

B) Sample

The samples for the study were two intact classes of second year students form the Diploma level of the Civil Engineering Department, in the Universiti Tun Hussein Onn

Malaysia (UTHM). The sample for control and experimenter group was taken from the same university. The experimental group consists of 36 students and the control group consists of 34 students. The average range of age in both classes was between 18 to 24 years old. The reason for choosing two different samples from same university was to avoid confounding variables from arising from teacher's personality and teaching style [25].

C) Data Gathering Instruments

As the study was limited to observation of behavioral engagement, therefore participant observation technique and video camera recording techniques were used to gather the data. In brief, the mixed method approach was used for the data collection with qualitative and quantitative approaches. The use of both qualitative and quantitative approaches provides sufficient evidence to offset the weakness of the individual approach [26].

Official permission and informed consent was sought to draw a sample from Universiti Tun Hussein Onn Malaysia (UTHM). A debriefing on the study was given at the beginning of the study as required by ethics [27].

i) Participant Observation

Participation Observation schedule and video recording - frequently used approaches in the education setting - were employed to gather data on classroom learning process. Participation observation is the systematic attempt to discover the knowledge of a group that is used to make decision regarding future lesson and to make learning effective [28-29]. In naturalistic setting (e.g. classroom), an observer cannot observe everything. Therefore, researcher needs to target the behavior(s) prior to observation and make checklist to examine the types of behavior in which students are engaged and record the frequency of the occurrence of the identified behavior [22]. It is time-consuming method of action research. Nevertheless, it provides rich description and valuable outcomes regarding what is actually happening in the classroom. Moreover, it gives a ideas on how to enhance and to provide better future lesson plans and teaching aids [30]. Furthermore, classroom observation is an effective way to transcribe the process of teaching and learning being investigated. The common ethical issue to participant observation is "invasion of privacy". Therefore, the obtained information is kept confidential and it will be used only for educational purpose.

An observation schedule was divided into three sections. It was a mini time-series interpretation that has been used for the time-on task investigations [31]. Since there were two groups (experimental and control), the time observation frequency was once in 3 weeks, every Thursday from 11 am to 1 pm for the experimental group and from 4 pm to 6 pm for the control group. Both times is equally less than desirable time for learning. So no class is in a better position than the other.

Two observers took part in the data collection process. One researcher set in front while other set at the back with the stop watch, observation checklist and blank pages for recording the observations. Afterwards, at the end of each session, the researcher discussed their coding [31]. Prior to the main data collection observation, there was initial training session which was about an hour on the purpose of the observation study, to get the deeper understanding about the coded items and the way to observe the frequency of the behavior. It was also the time to practice using the instrument. Since the study utilizes systematic participant observation method so the two hour class time was divided into 10 min until 2 hour pattern. A total three sessions were observed by the two observers.

Observation was recorded and divided into two behavioral engagement categories namely positive behavioral engagement and negative behavioral engagement. The checklist for positive behavioral engagement includes asking questions voluntarily, responding voluntarily, responding only when teacher pose questions, interacting with classmates (peer learning), writing down notes, giving opinions freely, and submitting class assignment on time. The negative behavioral engagement includes yawning/sleeping in the class, wasting time when teacher a lot class assignment, disruptive behavior (taking with other while teacher is explaining the concept or delivering the lecture), wasting time (with headphone, stationary, and any other entity), looking outside, daydreaming, and looking at watch [7], [15], [25]. An assistant was trained to assist in the data collection. Both researchers record the data. Furthermore, a video camera was also used to make the study empirical and unbiased. The reason to conduct dual-way observation is to get accurate and valid results. Researcher doesn't depend on video recording solely because it can only be possible with the utilization of exceptionally wide-angel lens that enable to capture enough details clearly [22]. However, the video camera was particularly helpful in capturing the detailed information which could have been lost if the researcher had just depended on human observation. What the critical importance was to reduce the "Hawthorne effect" where the students could easily change their normal way of responding being aware that their action are being observed, which could have an adverse effect through eye contact. Students are likely to be on their best behavior if they know they are being watched and their behavior is being observed. This will result in students being unlikely to perform as normal during the learning session. Thus, both classes were video-recorded to minimize differential effect of camera. Efforts were also made to ensure that the classroom learning is as "real-life" as possible as it is important if learning are to take place [32].

ii) Research Procedure

Prior to the intervention, pre-survey on students' CGPA was conducted. During the intervention the experimental group was taught using the integrated affective-cognitive learning approach while the control group was taught using the conventional method of learning. The new integrated learning approach was designed based on the solid philosophical and theoretical foundation from four major schools of thought in teaching and learning that comprises of behaviorism, cognitivism, socio-culturalism, and constructivism respectively. The relevant techniques such as reinforcing appropriate behavior, immediate feedback, motivational video, persuasive technique, cognitive construction, magnification and minimization, arbitrary inferences, modeling, peer learning, group processing was used where appropriate [33-34].

The subject taught by the teacher in the study was mechanics of material (mechanics of rigid body) to diploma level student in Universiti Tun Hussein Onn Malaysia (UTHM). The topics covered in this semester were normal force (stress and stain), transverse force (beam bending), torsion, short member in compression and deflection respectively. Students in both classes had the same instructor, course content, materials and notes [35]. The only difference between the two groups was the teaching and learning technique; i.e. the integrated affective-cognitive learning approach was taught to the experimental group. The difference between both techniques is illustrated in table 2. At the end of the semester, students were prescribed the post test which consists of the same items as the pre-test.

TABLE2: TYPICAL TEACHING AND LEARNING ACTIVITY

Experimenter group (Integrated affective-cognitive learning approach)	**Control group** (Non-Integrated affective-cognitive learning approach)
SET INDUCTION	
Teacher gave motivational talk to prepare students' emotional association with learning; afterwards teacher inform students about learning objectives	Teachers inform students about learning objectives
LECTURE	
One-way lecture	
• Teacher gave a short lecture. • Students take down the notes	• Teacher gave a short note lecture. • Students take down the notes.
Interactive lecture	
• Give everyday life examples and students are encouraged to give other examples on the related topics with discussion of pros and cons that embodies their impact on lives. [student-teacher interaction that promotes feeling of empathy rather than sympathy to encourage cognitive learning].	• Give everyday life example examples and teacher encourage the students to give examples on the related topics. [student-teacher interaction focuses on cognitive learning].
DISCUSSION AND FEEDBACK	
• Teacher acknowledges student's contribution and gives feedback in the form of positive reinforcement to motivate students continuing efforts in the learning. [affective dimension of learning is emphasized in addition to cognitive emphasis]	• Teacher acknowledges student's contribution and gives feedback. [sole emphasis is on cognitive dimension of the learning]
PRACTICE BY STUDENTS	
• Students doing exercises	• Students doing exercises
CLOSURE	
• A summary of what has been learnt; reflection by students; teachers highlighted students strengths and potentials while giving positive feedback on personality to promote improvement, comments of self worth and contribution of personality in every field of life. • Students were given assignments.	• A summary of what has been learnt and what to be learnt; explanation on next assignments.

At the end of the semester, students received the post test which consists of the same tools.

3 RESULT AND DISCUSSION

Before discussing the results obtained from the observations; data from the pre-test that indicates group equivalence will be presented first. Table 3 indicates that there is no statistically significant difference on academic achievement between the groups and the groups are assumed to be equivalent with respect to their initial academic achievement ($t = -1.180$, $d.f = 66$, $p > 0.05$).

TABLE 3: T TEST RESULT ON MEAN DIFFERENCE OF ACADEMIC ACHIEVEMENT (CGPA) BETWEEN GROUPS

Levene's test for equal variance		t-test for equality of Means		
F	*P*	*t*	*df*	*P (2-tailed)*
1.937	*.169*	*-1.180*	*66*	*.242*

The types of behaviors and the related frequencies and occurrence of the behavior are given in table 4 while the graphic representation is given in figure 2.

TABLE 4: TYPES OF AND FREQUENCIES OF THE BEHAVIORS

	Observation 1		**Observation 2**		**Observation 3**	
Behavioral indicators	G 1	G 2	G 1	G 2	G 1	G 2
Positive Behavioral Engagement						
Asking questions voluntarily	5	17	9	6	1	2
Responding voluntarily	9	11	6	7	3	3
Responding only when teacher pose questions	7	25	34	36	11	25
Interacting with classmates	8	20	16	29	13	34
Writing down notes	34	36	34	36	31	36
Giving opinions freely	5	2	1	2	0	0

Submitting class assignments on time	17	25	12	36	33	36
Negative Behaviora1 Engagement						
Yawning/Sleeping in the class	21	12	56	25	40	20
Wasting time when teacher allot class assignments	3	0	20	16	9	1
Disruptive behavior	11	7	44	28	15	3
wasting time (headphone, stationary, so-forth)	5	7	5	5	6	4
looking outside	4	2	5	0	1	3
Daydreaming	13	4	11	8	9	0
looking at watching	7	1	5	0	1	1

Key: G1 is control group and G2 is experimenter group

From table 4 and figure 2, it is observed that experimental group exhibits higher frequency of positive behavioral engagements and less frequency of negative behavioral engagements. Prominent positive behavior indicators include interacting with classmates and submitting class assignments on time. The two positive behaviors indicate persistence in hard-work, positive attitude towards the subject as well as their sense of belongingness with their fellow classmates [15]. The experimental group was also exhibits more teachers –student interactions and class participations compared to the control group. Whereas, the control group was only active they have to such as when the teacher poses a question.

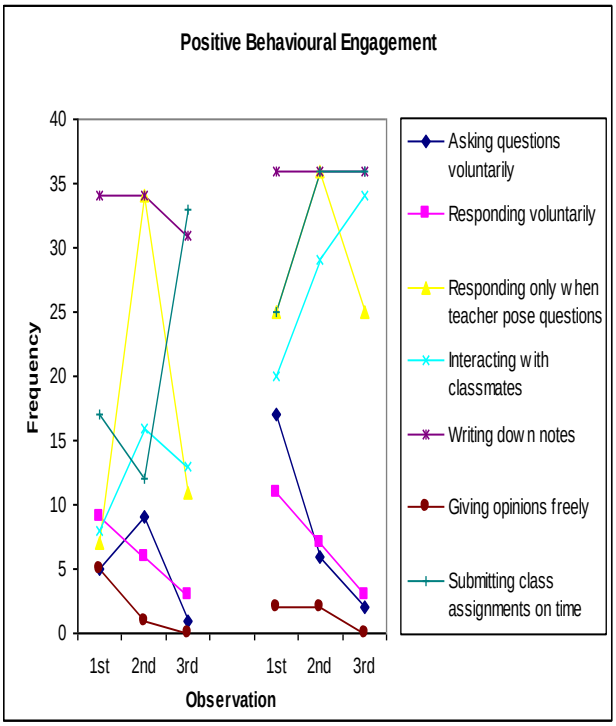

Figure 2: Graphic illustration on positive behavioral engagement between groups.

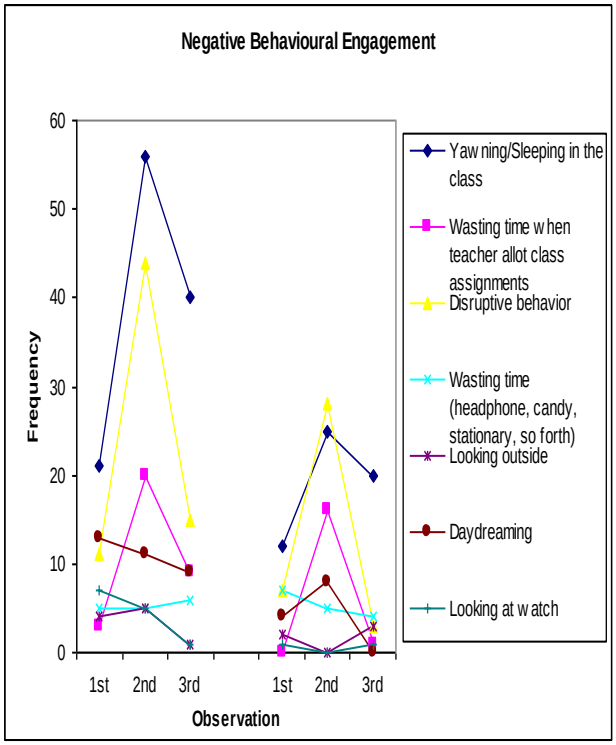

Figure 3 Graphic illustration on negative behavioral engagement between groups.

As far as the negative behavioral engagement is concerned, the prominent types of behavior are yawning, sleeping in the class and disruptive behavior. In general, the frequency of negative behavior was high among all observations in the control group whereas the frequency in experimental group was relatively low. The high frequency of negative behaviors indicates students' disengagement in learning tasks in general [36].

Research has revealed that positive behavioral engagement is associated with academic achievement and resilient students and motivation [13-15], [37-38]. Furthermore, students who positively engaged during classroom activities tend to reduce the likelihood of distracting and deviant behaviors [39-40].

The result also indicated that the use of integrated affective-cognitive learning approach keep the students motivated and engaged during their instructional and learning process. The approach has also provided a learning environment that may have promoted positive attitude towards learning. This conclusion is based on previous work that finds supportive learning environment which encourages learning responsibilities can develop a positive attitude towards the subject because it is not just what is taught, but how the material is taught influences the learning [41].

4 CONCLUSION

The study has established the worthiness of the integrated affective-cognitive learning approach in promoting positive behavioral engagement among engineering students based on the observational data. Lowering of negative engagement was also observed among students undergoing the integrated approach which further supports positive impact of the approach. Higher positive engagement and lower negative

engagement indicate positive attitude towards learning in general. Since, learning in past studies has been found to be not only associated with cognition but also with emotion. Therefore, the integrated approach which supports positive emotion as indicated by the positive behavioral engagements is expected to enhance students' learning experience making teaching more efficient and learning more effective. Future studies could look at the mediating effect of positive behavioral engagement and academic achievement.

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Active Learning: The PRIME Approach and Method with an Introduction to PRIME Projects

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Abstact— **It is arguably most challenging to deliver a 'paper' on Active Learning, such as this, to an audience at an academic conference. I have sat through many a 'paper' presentation. Much like watching TV, without the *only* advantage doing so provides the audience, that is, the commercial breaks to eat a snack, refill a cup or take that necessary trip to the bathroom, I have left either entertained or wishing I had chosen another program on the schedule. Some of the best 'talks' I have attended did spark an interest in pursuing and learning about the topic after the conference was over; which in any case should be the intent. But I still felt somewhat short-changed in the time it took to spark that interest. The presentations of ideas were generally quite contrary to the Principles of Active Learning. In the presentation of this 'paper', I did my utmost *not* to succumb to the temptation with which most of us 'teachers' are confronted when with a group of students, that is, to talk the audience into wishing they were watching TV instead. I wasn't even equipped to break the potential monotony with a little bit of chalk work. (Thank goodness!) However, there was a PowerPoint slide or two to titivate interest. The topic of this particular paper is perhaps the least suitable to a 'paper' presentation because as you hopefully will learn, PRIME Projects are the epitome of structures for Active Learning and deserve experimentation to be fully appreciated. With that said I urge the reader as I did the conference attendees, to visit the Buck Institute for Education at http://www.bie.org/. Note also the primary audience for this paper are English language teachers but the ideas are easily transferable and applicable to facilitating learning of any subject.**

Keywords; active learning, projects, principles of active learning, elements of projects, engagement, practical, relevant, integrated, meaningful, engaging, enriching, teaching and learning, college, university)

Background Concepts

To accomplish the ultimate goal of helping students use English effectively as a means of communication, we must understand:

- What English is
- Why we are facilitating its acquisition
- Who the students are
- What students need to acquire English

What is English?

Reflect for a moment on your first days in school. You had already acquired enough of your native language at home to be able to satisfy your basic personal and social needs. You could ask your friend for a piece of the sandwich his mother had prepared for his lunch. You understood when your facilitator told you to sit down and pay attention to what he had to say. You could introduce yourself to and make new friends. You could tell your friends about yourself and your family. You could ask your facilitator or parents to explain something you did not understand. You might have explained, in turn, this knowledge to a friend who did not understand. In addition, you could create imaginary play worlds to excite your imaginations and escape from the often cold and barren reality of the playground. You had no trouble USING your language. You had already acquired it sufficiently to satisfy the basic needs in your world through communication.

Then you began to learn your language, to understand its implicit rules and structure. Using what you had already acquired, you began to study its' elements, rules, structure, (grammar) and how to control its use to accomplish the expression of more advanced, demanding, and complex ideas in communication.

It is widely accepted that conscious learning of grammar or prescribed notions and functions does not lead to the ability to use the language. Use of the language to satisfy real and meaningful purposes does lead to its acquisition in an unconscious and spontaneous way [Oxford, R. 1994]. What are the purposes of communication? The relevant models of language use are shown in Table 1.

In school, the facilitator's use of the regulatory, the heuristic, and the representational (explaining and describing) models of language dominated. Students were usually confined to limited aspects of the representational. (Do you remember proposing many ideas to your facilitator?)

However, when you were first acquiring your native language, the instrumental, interactional, personal, imaginative, and the representational (including proposing ideas) models were equally important in developing your ability to USE language effectively as a means of communication. There was no prescribed text to follow! There were only wants and needs to

Models of Language Use		
Model	**Function**	**Description** **Language is used to:**
Instrumental	"I want"	satisfy material needs.
Regulatory	"Do as I tell you"	regulate behavior.
Interactional	"You and me"	establish and define social relationships.
Personal	"Here I am"	shape and express one's self.
Heuristic	"Tell me why"	investigate and learn.
Imaginative	"Let's pretend"	create imaginative worlds.
Representa-tional	"I've got to tell you"	express propositions, explain, describe…

Table 1 Source: original

fulfill, a context that provided those wants and needs and the models or mentors to observe, listen to, and imitate.

The program presented here recognizes "the many inconsistencies of direct analogies between first and second language learning and the differences between children and adults that lead to such inconsistencies" [Brown, R.D. 1994]. However, it does accept "the fact that adults are generally not able to verbalize the grammar rules of their native language, and that preoccupation with form distracts from the aims of using language" (ibid.)

For most of us, we undertake the application of knowledge for practical purposes without conscious awareness of the principles or rules underlying that knowledge. To reinforce this idea, think of any other subject you studied in school and see if it compares to the following example.

Physics: You knew, in a very practical sense, the properties of gravity before you learned the reason why a ball thrown into the air returned to earth, and that the harder you threw it the higher it went and the higher it bounced when it landed. You hardly need to know (or remember) the laws of physics to navigate safely through life; you only need to remember the time you miscalculated your reach and were struck by the falling ball!

Physicists make studying the laws of physics their life's work. Linguists make studying the intricacies and complexities of language their life's work. We do not need to be either in order to get to school or have meaningful talks with our students. English, for our purposes in this program, is not a 'textbook subject' like math, biology, engineering, or business. Therefore, we cannot teach it in the same manner, from chapter to chapter, point by point. Through language and the other means of communication, we express our identities, emotions, and ideas as private and social beings [Tweedie, W. M. 1997]. We cannot separate these psychological and emotional factors from the means we use to express who we are and what we want and need (Littlejohn, A. 2001). As situations, events, and the language associated with them are uncertain and, to a great degree, unpredictable, so are the wants and needs they create and so is the language they prompt us to use. This uncertainty and unpredictably in life and in communication makes life (and the facilitation of language acquisition), challenging, interesting, and hopefully enjoyable.

English then, like every other language, is quite simply, a means of communication, a PRACTICAL tool we need to fulfill needs, to regulate our environment, to identify ourselves, to interact with others, to learn, to relay information, and, perhaps, most importantly, to imagine and to dream. To teach English for the purpose of communication we need not first understand its intricacies and complexities. Our students and we must always have a practical need that communication will satisfy. Hence, the axiom that students will only learn and acquire the language they want or agree they need to.

Why are we facilitating the acquisition of English?

What are the students' wants and needs for communication in English we are trying to fulfill? Do they exist? If not, can we create them? Do some have only the imposed need to pass a required course? Is that enough motivation for them to acquire the language? If not, what then? Do some of our students have a clear idea of the importance of English to enriching their lives in the future, by expanding opportunities in their careers? Is English really a necessary or important tool for such enrichment? If not, what then? Are some of our students only fascinated with the language of the world's dominant fashion and musical pop culture? If so, what then? Is the identification, creation, or fulfillment of our students' wants and needs our concern at all? The answers to some of these questions are more obvious than the answers to others. They are all important.

To a greater extent than ever before the career markets define the needs and wants of students of fields such as Information Technology, Telecommunications, and International Business. We have not readily identified those needs and wants of the students of some industries such as Production Processes, Maintenance, and Food Technology, for example.[1] These and many other industry's needs must be researched, as they may be important elements of motivation for the students in their process of acquiring English. They may lie at the center of the students' wants and needs. If they do not, then we must determine what does or can motivate the student. We must identify and understand their backgrounds, existing interests, and goals (BIG) as starting points for their motivation. The program exists to motivate the students to fulfill the wants and needs that communication in English will satisfy.

We cannot extricate the purpose of facilitating the acquisition of English as a means of communication without considering the general goals of the process of learning. In the context of colleges or universities especially, it is a means of communication for learning. The imaginative and heuristic

1I use these careers based on consultation I did for the technical universities in Mexico in 2003

models of language are especially important. Encouraging the students to question must take a place at the forefront of facilitators' efforts along with the stimulation of their imaginations. These efforts fulfill the educator's responsibility to motivate the students to grow (to fulfill their wants and needs) in all dimensions of the learning process, i.e., confidence and independence, skills and strategies, knowledge and understanding, use of prior and emerging experience, reflection - both contemplative and critical [Syverson, 1999].

The facilitator's and the student's motivation is one of the foremost concerns of English as a Second Language (ESL) and of English as a Foreign Language (EFL) institutions everywhere. The satisfaction of needs and wants is the essence of motivation. It is the PRIME objective! Are the questions of wants and needs and their relationship to motivation adequately addressed in most EFL programs?

EFL programs have generally followed the trends in ESL research and development in Canada, the US, Britain, Australia, and New Zealand or other countries where English is a native language. The Mainstream English Language Training Project (MELT), for example, has become the standard model for all federally funded ELT programs for immigrants and refugees in the United States. It elaborates the principles of and provides a framework for the implementation of effective acquisition of English by adult learners in three proficiency levels: Pre- and Non-literate, Beginning and Intermediate [Grognet1997]. The following is an excerpt from Grognet's update report.

*First, language is most effectively learned through a curriculum **reflecting authentic contexts**. These contexts should **reflect the roles learners play** as workers, family members, and citizens in the world, in which the learner is expected to communicate in English: at work, in the supermarket, with the landlord, with the doctor, etc...*[2] *A corollary to this principle is that language is best presented not as isolated sentences or words, but as **meaningful discourse**. Group and pair work help learners acquire language through interaction with others while performing meaningful tasks in meaningful contexts. This collaborative work among students also helps prepare learners for the teamwork needed in the world of work.*

*Second, **communication is a process**, with **comprehension preceding production**. Adult learners need time to listen to language and absorb what is happening in a variety of communicative situations. They need many and varied opportunities in which to be exposed to oral language, using pictures, film, video, etc.*

*Third, **a low anxiety level in the classroom is key to student participation**. For adults, language learning is, by its nature, an anxiety-laden pursuit. The more a facilitator focuses on "doing something with language", (finding new information, describing a thing or situation, buying a product) rather than on "learning the language," the more likely the student will be to engage in the process of acquiring the language. The classroom should become learner centered, with a collaborative effort between facilitator and learner occurring, with the learners playing an active role in their own learning process.*

*Fourth, **assessment is part of teaching**. **Learners need to demonstrate what they can do with English, not what they know about English**. Learners also need **an opportunity to express what they feel their language learning needs are and in what contexts they need English**. Both the formal test mode and performance-based (non-formal) assessment are needed to give learners and facilitators information about individual and class goals and progress.*

*Fifth, **programs need to be accountable.** All programs, whether government funded, state funded, or private, need to be accountable to their students and their funding sources. Because students do not have unlimited time to learn English, programs must be able to demonstrate to both their learners and their funding sources that there has been **measurable progress** in learners' English proficiency.*

*The above principles were all stated, in one way or another, in the original MELT document (1983) that was grounded in a competency-based education framework. These principles have received new emphasis over the past fifteen years, as **competency-based education has evolved into a more collaborative process of language learning where students work together with one another and with the facilitator in meaningful activities that integrate reading, writing, speaking, and listening, as these skills are used in real life." (**Grognet 1997 - emphasis added)*

While these principles are unquestionably applicable to ELA programs everywhere, the content of this and the majority of ESL programs is simply not RELEVANT in an EFL context. For example, the "Consumer Economics" learning outcomes stipulated in the MELT (1986) program for beginners are:

- Ask for and read the price of food, clothing, or other items in a store.
- Differentiate size by reading tags and request size and color for an item - in simple terms.
- Ask for information and follow directions for buying food, clothing, and household items.
- Read and ask about store signs, aisle numbers, and store hours.
- Locate and read expiration dates on food items.
- Ask for food using common weights and measures.
- Read abbreviations for weights and measures.
- Order and pay for food at a restaurant.
- Respond to requests for change.
- Buy and fill out a money order.
- Identify total amount due on monthly bills.

[2] These are vital contexts of wants and needs of the students. They are, as a result, highly motivated to acquire English.

For ESL students in the United States or any other English speaking country (whether refugees or immigrants of other status), these are functional/notional [Finocchiaro & Brumfit 1983] objectives they want and need to achieve - for survival and the pursuit of happiness. They can 'learn' the language in class, practice it in simulated situations, and then acquire it in fulfilling real-world wants and needs. How many of our students are going to locate and read expiration dates on food items in English in their communities in Malaysia? For our students, these 'learning outcomes' are irrelevant unless they plan to live in another country, in which case, the needs and wants they anticipate having may provide the necessary motivation and we may accomplish a great deal by providing simulated survival type contexts. Simulations are an important Active Learning (AL) technique but the contexts and language wants and/or needs of the students that shape these simulations or scenarios may be quite different from those of integration or survival. (They may be just to have fun!)

The time factor in this 'process' deserves special mention. While some studies have generated average periods for acquiring 'communicative competence', there is a consensus among researchers that the rate of acquisition among language learners is as unique as their personalities and the many personal and social factors that affect this rate. It is, therefore, more important to monitor and assess the effort students put into their individual process than to test how much they have learned about the language (grammar) or the quality and quantity of English they have acquired. However, progress must be measured for the sake of program accountability but the measurement must be tempered with an understanding of the uniqueness of each student's language acquisition ability. Depending on commitment, effort and ability, each student's rate of learning, understanding, and acquiring in the approach described above, and the methods and techniques appropriate to this approach, will be unique. The facilitator must not be hesitant to experiment. (More on this in Section E below)

Most commercial ESL texts address the kinds of learning outcomes listed above in a variety of contrived 'pop culture' themes. Many of these ESL texts come disguised as EFL texts. In 2001 the Minister of Private Education in the United Arab Emirates (UAE) explained to me that his government had spent over 100,000 USD to have "experts" from native English speaking countries develop English teaching texts for UAE students. What they ended up with were standard ESL materials with the names of the characters and places changed from English to Arabic! This "new" material did nothing, he complained, disheartened, to improve the students' motivation or results in English speaking ability. Somebody missed the point.

The point clearly is RELEVANCE. What we must do in the Approach described in this paper is to identify the wants and needs that are relevant and unique to each of our students, to fully engage the students in the process of this identification, or to help them create wants and needs where they don't exist. Understanding who our students are is the first step in this process.

Who are our students?

We have a distinct advantage over many private commercial EFL programs in that we have students who have chosen specific career paths and therefore, have clearly defined areas of interest with identifiable language learning needs related to specific and identifiable lexis (words, phrases and expressions).

Each of them has an approach to learning that is a unique combination of multiple intelligences, learning styles, family and social background, interests, and goals, and possibly differing degrees of English Language Acquisition (ELA). Through the program, we must identify and accommodate Multiple Intelligences (MI) Learning Styles (LSs), be sensitive to backgrounds, use interests and goals, wants and needs, (BIG) to optimize motivation. These tasks must be INTEGRATED into our approach to each class just as we should integrate all means of communication (pictographic, sensational, motional, and emotional) and those skills more readily identified with ELA, which include Observing[3], Listening, Reading, Writing, and Speaking, in our activities with the students.

What do our students need in order to acquire English?

Clearly, they need:

- Motivation that comes from a clear understanding of their wants and needs and a belief that they can achieve them; from an understanding that MEANING-CENTRED communication is the purpose of their language acquisition activities and that making errors are useful and necessary to improving the quality and clarity of their communications.
- A supportive educational environment, both in class and campus wide with the encouragement and support of all faculty and staff. The leadership at the University and Departmental levels is essential in establishing this basis of support. The facilitators must be adventurous, innovative, and willing to take risks and have their efforts encouraged by administrators.
- Capable facilitators who are Flexible, Resourceful, Engaging and Enriching (FREE) who understand their students (MI, LSs, BIG), who can effectively provide them with the tools (information, strategies and skills) to initiate, control and direct their learning cooperatively with their fellow students and who are able to PRIME the pump (so to speak) and foster development across the many dimensions of learning. Traditionally minded 'facilitators' who are inflexible or unable to relinquish their 'control' over the students learning will seriously undermine the students' acquisition process. Facilitators must also have sufficient command and understanding of English to properly model for students and respond to their questions 'about' English. This knowledge

3Observing takes its rightful place as an essential teachable skill.

'about' English goes beyond structure and grammar to an awareness of the hundreds of varieties of English that exist in the world and the nature of its use by peoples around the world to communicate with each other.

- The tools for learning and acquisition and the skills needed to use them effectively. If a student has the skills and the tools necessary to prepare food, repair a broken machine, craft a new one, operate or program a computer, install telecommunications equipment , or run a business, s/he can do that work anywhere in the world. If our program provides the students with the skills and tools to learn English continuously, s/he can do so anywhere in the world while staying abreast of the latest developments progressing as learners throughout their lifetimes.

When you consider that in the United States, alone there are dozens of regions that have peculiar dialects, accents, idioms and expressions, and there are peculiar dialects, accents, idioms and expressions that cross over different regions, a so-called "standard English" is not going to help in the understanding or negotiation of intended MEANING. (Multiply the number by all the different regions of all the countries in the world where English is used and you have an astounding variety of Englishes.) The dictionary meaning of "lavatory", for example, is "bathroom". But in some language regions of the US, the word "laboratory" is used by some people instead. If you are desperate to use the "lavatory" and go to the "laboratory" instead, the consequences could be embarrassing or an interesting 'experiment', to say the least [Cassidy and Hall 1992].

Slang, idioms, expressions, the hundreds of new words that are added to the English language each year, dialects, and accents are not historically limited, fixed elements of the language but the products of the process of evolution of a language that has been ongoing for centuries and that will continue to change more rapidly than ever into the future. Consider the English language of Japanese businesspersons and their Italian counterparts [Graddol 1997]. Mastering some strategies and tools to learn and to negotiate meaning in English are vital to long-term success in the ability to use the language to communicate effectively.

Our students also need as many opportunities as possible to experiment with the language in practical ways, in relevant contexts, with integrated methods and techniques that encourage the negotiation of meaning and engage them in experiences that are ENRICHING personally and educationally.

Is it not the ultimate goal of any educational endeavor to enrich our students, ourselves, our cultures and somehow the human race? Too often, we forget the hidden potential for greatness that lies within each of our students.

The pursuit of knowledge for its own sake, exciting the imagination, and enjoying ourselves are clearly practical, relevant, meaningful, and enriching endeavors .We should not forget that a good laugh, if shared by all at no one's expense, is as enriching an experience as any and helps to create a lively and comfortable atmosphere. The excitement of understanding something new is also entertaining. So, entertainment is generally enriching. However, these activities cannot usefully occupy all of our time.

The curriculum outlined in PRIME Communication in English – a Model Curriculum provides a framework in which facilitators of English as a Foreign Language Acquisition (EFLA) can help their students, in the general context of Colleges and Universities in Malaysia, to maximize their abilities and achievements in the process of acquiring the English language [Tweedie, 2002]. The basic courses in the curriculum are:

Language Learning Strategies and Lexis
Communication in English
Projects

In each course, most of the content is supplied by the students themselves.

A Note about Student Evaluation

Evaluation is formally recognized as a requirement of the education system and as a necessary tool in the developmental process of acquiring a foreign language that is, students' monitoring their progress in achieving their and institutional goals and having the benchmarks for improvement.

However, as acquiring a foreign language is uniquely tied to a person's emotional and psychological self, in a foreign language context especially, the evaluation cannot be of how much of the language and how well the students have acquired it but of how much effort, what their attitudes are, and how they have developed socially and cognitively on their way to being able to use the language effectively, because we are preparing them for a lifelong process. Language is after all, a social tool and as a social tool it is necessary for intellectual growth. Students must be made aware of these factors and characteristics in order to consciously work at improvement in all aspects. Programs that implement the PRIME Approach and Method must also create appropriate formative (or interim) and summative (or unit achievement) assessment and evaluative instruments that reflect these features.

Assessment and evaluation can be done individually, in groups, or as a whole class from different points of view. A student's work must always be reviewed by her/himself but it also can be evaluated by members of the group, by the class and/or by the facilitator. The course objectives and the personal development outcomes articulated for the program guide the construction of assessment and evaluation products.

The students in this program cannot fail if they commit themselves to the process and give it their best effort, regardless of the quantity or quality of the English they acquire. If we are successful in helping them to believe in the process, in giving them the confidence to use the tools we present to them to the best of their abilities, they will continue to learn and acquire English, according to their wants, needs, and abilities well into the future.

They will succeed or fail in their proper career studies because there are industry standards in place by which they will be judged and as far as industry standards exist for their ability to use English, the program will provide them with the appropriate content matter and judge them accordingly. However, until those standards are clearly defined in all career undertakings, our best is done by giving them the ability, the learning confidence and tools to meet those standards when they are known.

The PRIME Approach©

The following provides the reader with a brief outline of the principles, theory, and implications for practical application of the PRIME (Practical, Relevant, Integrated, Meaningful, Enriching) Approach.

Principles and Implications of the PRIME Approach

The PRIME Approach can be seen as taking elements of historical as well as contemporary approaches and methods having the goal of making English as a Second Language Acquisition (ESLA) or more broadly Foreign Language Acquisition (FLA) as effective and expedient as possible and placing them in the context of a theory of communication that encompasses developments in Multiple Intelligence/Learning Styles and Learning Strategies research. The theory is simple. Communication in any of its myriad forms has the goal of satisfying needs and wants. Wants distinguish human communication from communication practiced by all other forms of life on earth whose relatively unsophisticated communication has the end of satisfying basic needs; needs which may, albeit, create desire. Humans desire, dream, and imagine when basic needs are satisfied.

The Psychological Tradition, i.e., Audio-lingual, and Cognitive Code Learning, and the Humanistic Tradition, i.e., Community Language Learning, The Silent way, Suggestopedia, and the Language Acquisition Tradition, i.e., Total Physical Response, the Direct, Natural, Functional-Notional, Communicative, Lexical Approaches, and Constructivism; each has principles or aspects that support the Prime Approach. (Despite the fact that it is still used in some EFL contexts, The Grammar Translation Method is not considered as it is widely accepted this method does not have real communicative objectives.) In other words, the Approach is the "conceptual development of thought based on a continuously developing set of empirical building blocks" [Hauser 1996].

This synthesis has been accomplished by analyzing these historical and contemporary systems, not as language learning pedagogies, but as frameworks for the facilitation of communication between human beings; frameworks ultimately concerned with the processes and pragmatics of human communication and learning.

The Approach is distinguished by the greater role that students play in developing the substance of the language they acquire, selecting, and applying strategies for their language acquisition, and a general concern for their development across all the dimensions of learning (see following section).

The problem the PRIME Approach addresses is that despite many and often intense hours of class time dedicated to ELA throughout their secondary and post-secondary school years, students of EFL in general have not acquired enough English to engage in meaningful conversation or have limited ability to progress beyond the beginner's level.

The theory the PRIME Approach presents is that ELA does not take place in EFL contexts unless the language being acquired is Practical and Relevant to the students' lives; the method of facilitation Integrates all communication skills, both oral and non-oral; the focus of communication is the understanding and conveyance of Meaning; and that the process and outcomes are Enriching to self and society. These concepts are elaborated sufficiently below to give the reader enough information to consider the validity of the Approach.

The PRIME Approach has been in development since 1995 and the theory is rooted firmly in seventeen years of observation, experience, empirical research, and reflection by the author over this time in EFL contexts in Korea, Thailand, the United Arab Emirates, Mexico, China, Malaysia and Oman.

Key Principles

Communication is the primary goal in the facilitation of English Language Acquisition. The implications take us beyond the accepted axiom that we should teach the language, not about the language. English, like all human languages, has one general purpose, that is, to convey our thoughts and feelings to other beings, to communicate. English is not the end. It is one means to the end.

Communication is PRACTICAL. People communicate for specific, identifiable purposes. We need to know and understand why people communicate and how English can be used as one means to accomplish these purposes. (See section I A above)

Human communication exists when signals are transmitted in the context of the satisfaction of needs and wants, fulfilling purposes. All else is communicatively useless action or noise.

Students acquire English if it is RELEVANT to their lives, that is, if it satisfies real needs and wants, involves them as individuals, addressing their backgrounds, interests, and goals and the *prior knowledge*[4] their experience has given them.

The choice of language used in oral and written communication involves interactional uncertainty. The language used in communication is, largely, unpredictable. Providing students with strategies to manage this uncertainty and the unpredictability in discourse is essential to building beginners' confidence and sustaining their motivation. For example, teaching them to say without shame or fear: "I'm sorry I don't understand."

Communication is accomplished through a variety of INTEGRATED means that should not be isolated in the learning/acquisition process. Observation, a teachable skill,

4Activating Prior Knowledge is the topic of another paper in progress.

takes its rightful place as an essential skill along with Listening, Reading, Speaking, and Writing. All other motional and emotional means of communication figure importantly in the process. Beginners need as many options as possible to support their efforts to communicate. All communication options should be explored before resorting to their native language and translation.

Communication is context dependent, must be comprehensible, and MEANINGFUL to both sender and receiver. Facilitators must ensure that their communication with students and the language students are engaged in acquiring are both comprehensible and meaningful and that the understanding and conveyance of meaning takes precedence over correctness of form, content, and structure.

The most important criteria in assessing students' progress are first, the degree to which the student is actively engaged in the process of English language acquisition and secondly, how effectively s/he comprehends, negotiates, and conveys meaning, not the correctness of form or grammar which is nothing more than a tool for clarification of meaning.

Facilitators of language acquisition have the responsibility of providing students with the tools necessary for progress. These include an array of strategies for learning in general and language learning specifically. Language learning strategies, direct and indirect, must be incorporated into the curriculum [Oxford 1994].

Students will acquire the English they want and agree they need to be able to use. Therefore, they must Initiate Direct, Control, Monitor, and Evaluate (SIDCME) their own learning. (See PRIME METHOD below) Facilitators provide the framework and guideposts, students provide the substance. The most significant implication of this principle is in the facilitator's acceptance of the role as 'guide on the side, not sage on the stage'. To achieve the objective of students becoming autonomous learners, the facilitator must have patience, resolve and be flexible, resourceful, engaging (motivating) and enriching (FREE) in adopting this Approach.

Language acquisition is an indefinite process with characteristics distinct from other subject matter learning. The psychological and emotional factors in language acquisition must figure largely in the approach facilitators and students take to the process because communication Is the expression of self, one's identity, in the process of fulfilling its purposes. Students cannot be expected to achieve goals set out on a continuum of grammatical structures, forms, and functions. The content they need and want to express in achieving relevant purposes will require different and varied structures and forms at different times. The facilitator must have sufficient command and knowledge of English usage to be an effective model for the students and provider of the information they need.

The facilitator's language and classroom material are known and perceived by the students to be models for their own language development.

The process must be enjoyable and ENRICHING to self and society. Is it not our ultimate goal, as facilitators of the acquisition of language for its practical use in achieving meaningful purposes, to help people understand each other so they can help each other progress towards individual goals and a better world? This principle will guide facilitators and students in the selection or development of material for classroom modeling and practicing.

Language acquisition is a process tangent to and reflective of the student's development and growth across all the dimensions of learning. The next section takes a closer look at this important concept.

The Dimensions of Learning

ESL standards articulated by such organizations as TESOL, USA and most commercial ESL programs pay little attention to the progress of students across all the dimensions of learning. It is important that facilitators be aware of the students' progress along these dimensions as it is likely they correlate directly to their progress in the acquisition process. The dimensions of learning commonly articulated are:

- Confidence and Independence
- Skills and Strategies
- Knowledge and Understanding
- Use of Prior and Emerging Experience
- Reflection - Contemplative and Critical

Learning occurs across complex dimensions that are interrelated and interdependent. Learning theorists have argued that learning is not an assembly line process that can be broken down into discrete steps occurring with machine-time precision, but an organic PROCESS that unfolds along a continuum according to its own pace and rhythm. The facilitator and student should be actively searching for, and documenting positive evidence of the student's development across the five dimensions.

These five dimensions cannot be separated out and treated individually; rather, they are dynamically interwoven and interdependent [Syverson 2006].

Confidence and Independence

Growth and development occur when learners' confidence and independence become coordinated with their actual abilities and skills, content knowledge, use of their experience, and reflective of their own learning. It is not a simple case of 'more is better'. The overconfident student, who has relied on faulty or underdeveloped skills and strategies, learns to ask for help when facing an obstacle; the shy student begins to trust his/her own abilities and begins to work alone at times, or to insist on presenting her own point of view in discussions. In both cases, students develop along the dimension of confidence and independence.

Skills and Strategies

Specific skills and strategies are involved in the process of language acquisition as well as other areas of learning that require instruction and the active participation of the students. These skills include technological skills for computer

communication for all students if they are to become active participants in the global village. 'Skills and strategies represent the "know-how" aspect of learning.' How well students actually learn (performance ability or mastery of any given content) or acquire, in the context of second language acquisition, depends on how well they know and use the skills and strategies laid open to them for their personal use.

Knowledge and Understanding

Content knowledge refers to the extent students understand the theory of new or revealed methods, techniques, and topics and the relationship between theories and practice. It is measured by how effectively the knowledge (ideas) is conveyed by facilitators of learning as well as by how well students demonstrate their understanding of the ideas through formal and informal presentations (examinations, writings, practical and relevant use of the knowledge). This dimension of learning is the most familiar as it has been the most quantifiable and justifiable in terms of historically modern educational systems. What is the simple past of the verb 'to think'? What is a "web site" on the World-Wide Web? These are typical content knowledge/understanding questions.

Use of Prior and Emerging Experience

Use of prior and emerging experience involves the students' awareness of the importance and relevance of their own experience, the ability to draw on this experience and connect it to their engagement in the process of learning. 'A crucial but often unrecognized dimension of learning is the ability to make use of prior experience in new situations' or when confronted with new learning challenges. It is necessary to overtly encourage and value learners' experiences and more over to help them incorporate their experiences into the process of learning and acquiring a new language in that case. 'Observing learners over a period of time as they are engaged in a variety of activities will allow this important capability to be accounted for.' This dimension of learning is, after all, at the heart of new imaginings and their realization. In structured, inflexible, predetermined curricula we cannot discover, nor can the student, how his/her prior experience might help build new or greater understandings, or how ongoing experience shapes the content knowledge and understanding, skills and strategies, indeed, the confidence and independence he/she is developing. Imagine you have no imagination.

Reflection - Contemplative and Critical

It is important to contemplate our own learning process and to analyze how we are progressing in the process of acquiring our knowledge or a second language. How well are we using the skills and strategies available to us to communicate better our thoughts and feelings? Are our students and we developing the ability to distance ourselves enough from the process to reflect on it in the general terms of the extent we are engaged in it and how important it is to our development as human beings and as a global society? Is our ability to think critically of the specific aspects of the process, i.e., how well we using the skills and strategies we need? How much effort are we putting into developing our confidence? How courageous are we becoming in validating our own experiences and using them to build our futures on? This overview thinking and recognition of limitations and obstacles provides the impetus for continued progress and is a necessary dimension of learning and acquisition of language for stronger, clearer communication.

Recently, Syverson has added an optional dimension to her framework that is essential to language learning:

Creativity, originality, imagination

"As learners gain confidence and independence, knowledge and understanding, skills and strategies, ability to use prior and emerging experience in new situations, and reflectiveness, they generally become more playful and experimental, more creative in the expression of that learning. This is true not only in "creative" fields such as the arts, but in nearly all domains: research, argumentation, history, psychology, mathematics. In all fields the primary contributions to the field at the highest levels are the result of creative or imaginative work. Even in the early stages of learning in a discipline, exploration and experimentation, taking new or unexpected perspectives, and playfulness should be recognized and encouraged as a natural part of the learning process. This optional dimension may be adopted as part of the Learning Record by teachers or schools to make explicit the value of creativity, originality, and imagination in students' development and achievement. Among other things, it recognizes the value of creative experimentation even when the final result of the work may not succeed as the student may hope. If we hope to foster this quality in students' thinking and development, it is important to encourage it, to document it, and to explicitly make it a value. We make this dimension optional because there are certain classes that depend on the transfer of information (as in human anatomy, for example) or the acquisition of fundamentally technical skills (calculus, for example) where creativity and imagination may not play a significant role. (Syverson, 2006)

(Source: Adapted from Syverson, M. A. 2006 - 2012.)

Facilitators in this program must monitor all the factors articulated in the program's learning outcomes because language cannot be acquired effectively without the management of and accomplishment in these areas. In the context of the program's application at the college or university level, while students are expected to achieve some of these minimum standards or learning outcomes, their efforts and progress will be the most important factor in assessments and evaluations, not the quality or quantity of English they have acquired. (See the section on Evaluation below) This is according to the unique nature of second language acquisition.

The PRIME Method©

The PRIME Method adopts appropriate aspects of other methods that conform to the principles of the Approach. As mentioned in the first section, elements of recognized

historical and contemporary methods fit with the PRIME Approach.

However, three methods developed in recent years figure prominently in the delivery mode of programs guided by the PRIME approach. Two of these developments are Active Learning (AL) and Project – Based Learning (PBL) [Moss and Van Duzer 1998]. Elements of a Collaborative Language Learning process are also evident [Simich-Dudgeon 1998]. These methods are currently in use by many public and private institutions throughout the world.

Concurrent with these methods is the provision of language learning strategies [Oxford 1993] and facilitation strategies for multiple intelligence learning [Gardner 2009] and thinking styles [Harrison 1987].

The Prime Method (Student Initiated, Directed, Controlled, Monitored and Evaluated learning - SIDCME) is distinguished by the high degree of active participation by the students in initiating the process of acquisition (largely through development of their own content), individually or collaboratively directing their own process of learning, having the confidence and the tools to control their conversations, monitor, and evaluate their progress. The method follows on the heels of the most recent research into second language acquisition. Elements of Active and Project-based learning figure prominently in the PRIME Method. Overviews of these two methods follow.

Incorporating the Principles of Active Learning

The Active Learning Model is guided by the following principles.

- Teacher talk should be kept to the absolute minimum necessary to accomplish learning goals
- Silence is necessary
- Students progress through errors
- Diversity is valued and incorporated in program activities
- A safe and comfortable environment is essential
- An accepting and predictable environment fosters motivation
- Students must be actively engaged
- Opportunities for experimentation with language must be optimized

Teacher talk should be kept to the absolute minimum necessary to accomplish learning goals

While Implementing the PRIME Approach instructors/facilitators should follow its 8-5-2 minute rule. Using these time guidelines, the instructor/facilitator should take no more than eight minutes to present and explain what the students are expected to be able to do at lesson's end and what they need to know in order to do it. In the following five minutes s/he needs to explain clearly the structure and procedures for the activity(ies) students will be engaged in to learn to do what is expected (how the learning process will be structured and reinforcing the objectives) and finally two minutes should be spent in determining that every student understands clearly the what and how; ideally by eliciting questions or having students repeat the key points. These guidelines are ideal and it will take more time in the beginning as students learn and adapt to what will most likely be new to them. Nevertheless, instructors/facilitators must keep their talk to a minimum so students can get on with learning.

Silence is necessary

Students must be silent at times as they learn. Some learners need to focus more on listening than speaking, especially during the early stages of the English acquisition process. For others, there may be a need to "tune out" briefly at points in the course to "recharge" from the constant effort of listening and speaking in a new language. It is actually a good indirect learning strategy.

Silence may also occur in extended pauses before a student answers a question. Students are allowed additional time to collect their thoughts and structure their answer. If a facilitator moves too quickly to the next student the first may be discouraged in his/her efforts to respond; in contrast, recognizing that the student needs more time to answer lets the student know that the facilitator is interested in listening.

Students progress through errors

As with first language acquisition, errors can actually have a positive meaning. They often appear when a learner is trying out new grammatical structures. When the focus is on communicating, direct correction of errors can hinder students' efforts and discourage further attempts to express ideas with the language skills they have available. Rather than correct errors directly, a facilitator can continue the dialogue by restating what the student has said (echoing) to model the correct form.

Diversity is valued

Valuing the diverse backgrounds and resources that EFL students bring to the classroom and being sensitive to their unique needs can serve to build an instructional environment that can benefit all students. Unlike many ESL situations where classes have a mix of students from different ethnic, social, cultural backgrounds, and countries of origin, many of these kinds of diversities don't exist in an EFL context. However, ethnically homogenous EFL students do have diverse social, economic and community environments that when mixed with individual personalities, learning and thinking styles, a rich pool of unique and special people comes together that must be valued for its diversity and potential.

Current education research and reform focus on increasing student participation in instruction and on basing instruction on the real-life needs of students. An active English acquisition instructional model for EFL students

includes elements that address the special language-related needs of students who are in the English acquisition process.

Instructional content should utilize student diversity. Incorporating diversity into the classroom provides EFL students with social support, offers all students opportunities to recognize and validate different perspectives, and provides all students interesting information. Also, examples and information relevant to EFL students' backgrounds assist them in understanding content.

Comfort levels must be high

The classroom should be predictable in its structure and accepting of all students. All students are able to focus on and enjoy the English acquisition process more when the school and classroom make them feel safe - comfortable with themselves and with their surroundings. Facilitators can increase comfort levels through structured classroom rules and activity patterns, explicit expectations, and genuine care and concern for each student.

Instructional activities should maximize opportunities for communication and as much as possible, language use. Opportunities for substantive, sustained dialogue are critical to challenging students' abilities to communicate ideas, formulate questions, and use language for higher order thinking. Each student, at his or her own level of proficiency, should have opportunities to communicate meaningfully in this way.

Students must be actively engaged

Instructional tasks should involve students as active participants. Students contribute and learn more effectively when they are able to play a role in structuring their own acquisition process, when tasks are oriented toward discovery of concepts and answers to questions, and when the content is relevant, meaningful, and challenging.

Instructional interactions should provide support for student understanding. Facilitators should ensure that students understand the concepts and materials being presented. For EFL students this includes providing support for the students' understanding of instructions presented in English.

The environment for learning must be accepting and predictable

A supportive environment is built by the facilitator on several grounds i.e., acceptance, interest, understanding of different backgrounds, beliefs, and learning styles or multiple intelligences. Explicit information on what is expected of students should be provided and reinforced through clearly structured daily patterns and class activities without compromising student input, the principle of flexibility, and the encouragement of creativity. These provide important social and practical bases for students, especially EFL students. When students are freed of the need to interpret expectations and figure out task structures, they can concentrate on and take risks in the English acquisition process. Provide a clear acceptance of each student.

The opportunities for experimentation with language must be optimized

Communication in all its aspects, i.e., observing, listening, reading, writing, and all other means, including oral expression, is central to the English acquisition process for all EFL students. Through experience in trying to express ideas, formulate questions, and explain solutions, students' use of their native as well as English language and other communication skills, *supports their development of higher order thinking skills*. The following points are important ways to maximize language use.

Ask questions that require new or extended responses.

The facilitator's questions should elicit new knowledge, new responses, and thoughtful efforts from students. They should require answers that go beyond a single word or predictable patterns whenever possible. Students can be asked to expand on their answers by giving reasons why they believe a particular response is correct, by explaining how they arrived at a particular conclusion, or by expanding upon a particular response by creating a logical follow-on statement.

Create opportunities for sustained dialogue and substantive language use.

It is often hard to give many students the opportunities needed for meaningful, sustained dialogue within a facilitator-centered instructional activity. To maximize opportunities for students to use language, facilitators can plan to include other ways of organizing classroom activities. For example, in cooperative process groups, students use language together to accomplish academic tasks. In reciprocal teaching models, each student/group is responsible for completing then sharing/teaching one portion of a given task.

Opportunities for maximizing language use and engaging in a sustained dialogue should occur in both written and oral English. Students can write in daily journals, seen by only themselves and the facilitator. This type of writing should be encouraged for students at all levels. Some EFL students may be too embarrassed to write at first; they may be afraid of not writing everything correctly. The focus in this type of writing, however, should be on expressing their thoughts and feelings regarding the process. Students should be given opportunities to write about what they have observed or learned. Less English proficient EFL students can be paired to work with other, more proficient students or be encouraged to include illustrations, for example, when they report their observations.

The facilitator should also ensure that there are substantive opportunities for students to use oral and written language to define, summarize, and report on activities. The English acquisition process takes place often through students' efforts to summarize what they have observed, explain their ideas about a topic to others, and answer questions about their presentations. EFL students' language proficiency may not be fully equal to the task; however, they should be encouraged to present their ideas using the oral, written, and non-linguistic

communication skills they do have. This can be supplemented through small group work where students learn from each other as they record observations and prepare oral presentations.

Provide opportunities for experimentation with language in multiple settings.

Opportunities for meaningful language use should be provided in a variety of situations: small groups, with a variety of groupings (i.e., in terms of English proficiency); peer-peer dyads (again, with a variety of groupings); and facilitator-student dyads. Each situation will place its own demands on students and expose them to varied types of language use.

The physical layout of a well equipped room should be structured to support flexible interaction among students. There can be activity areas where students can meet in small groups or the facilitator can meet with a student, or the furniture in the room can be arranged to match the needs of an activity.

Focus on communication.

When the focus is on communicating or discussing ideas, specific error correction should be given a minor role. This does not mean that errors are never corrected; it means that this should be done as a specific editing step, apart from the actual production of the spoken language or written piece. In oral language use, constant, insistent correction of errors will discourage EFL students from using language to communicate. Indirect modeling (echoing) of a corrected form in the context of a response is preferable to direct correction. Students should be made aware of this and other techniques early in the process. Discuss these with them frankly, what their purposes and your expectations are.

Provide for active participation in meaningful and challenging tasks.

Shifts in approach, that recent research and reform efforts indicate are effective for all students, are especially necessary in EFL contexts. For example, many descriptions of instructional innovation focus on increasing student participation in ways that result in students asking questions and constructing knowledge, through a process of discovery, to arrive at new information that is meaningful and that expands students' knowledge. An important goal is to create or increase the level of "authentic" instruction, i.e., instruction that results in an English acquisition process that is relevant and meaningful beyond success in the classroom alone [Newmann and Wehlage, 1993].

Give students responsibility for their own English acquisition process.

In active participation, students assist the facilitator in defining the goals of instruction and identifying specific content to be examined or questions to be addressed. Students must also play active roles in developing the knowledge that is to be learned and the language that they want or need to acquire (e.g., students decide on topics of interest, research or observe and report on what they have observed, and assist each other in interpreting and summarizing information). Active participation also involves some shifting of roles and responsibilities; facilitators become less directive and more facilitative, while students assume increasing responsibility.

EFL students need to participate. Their participation can be at a level that is less demanding linguistically, but still requires higher order thinking skills and allows them to demonstrate or provide information in non-linguistic ways. For example, using limited written text, an EFL student with very little oral or written proficiency in English can create a pictorial record of what was observed in one of his other classes, noting important differences from one event to the next.

Develop a culture of the process of discovery.

When students take an active role in constructing new knowledge, they use what they already know to identify questions and seek new answers. A discovery process is one in which students participate in defining the questions to be asked, develop hypotheses about the answers, work together to define ways to obtain the information they need to test their hypotheses, gather information, and summarize and interpret their findings. Through these steps, students learn new content in a way that allows them to build ownership of what they are learning and of the language that they are acquiring in the process. They are also in the process of learning how to learn and acquire the use of their new language.

Include the use of cooperative student efforts.

Recent findings about how people learn emphasize the social nature of the English acquisition process. Many successful examples of classroom innovation with EFL students show the value of using cooperative working groups composed of heterogeneous groups of students, including students at different levels of ability. The composition of groups should be carefully considered and should be flexible so that students experience working with different individuals. Mixing less English proficient with students who are more proficient promotes opportunities to hear and use English within a meaningful, goal-directed context.

Learning to work in cooperative groups requires practice and guidance for the students. Formal roles should be assigned to each member of a group when appropriate (e.g., recorder, reporter, monitor/group discussion leader), and these roles should be rotated. With a little encouragement, as students identify different tasks to be accomplished by a group, they will define and assign their own responsibilities. In all cases, the use of group work requires attention to ensure that each individual has opportunities and responsibilities in contributing to the development of the overall product. Facilitators need to be sensitive to the fact that some students prefer to work independently rather than cooperatively in the process' structures and activities. Facilitators may want to

consider adjusting the balance of the acquisition process activities for students to accommodate such differences and to provide more support, thereby allowing students gradually to become more comfortable in these activities.

Make the English acquisition process relevant to the students' experience.

Content matter is more meaningful for students when it relates to their background and experience, interests and goals (BIG). Furthermore, new knowledge is best learned and retained when it can be linked to existing prior knowledge, so new content should be introduced through its relationship to an already understood concept. For example, a discussion of food cycles can begin with a discussion of foods commonly found in students' homes and communities.

It is important that the learning experience regularly draws links between home, the community, and the classroom because this serves to contextualize and make content practical, relevant, and meaningful for students and ultimately to better acquisition of English.

An active acquisition instructional approach ultimately seeks to develop in students a view of themselves as learners in all aspects of their lives, not only in the classroom. Students should see opportunities and resources for the English acquisition process outside of the classroom as well. Whenever possible, the resources of the home and community should be used. For example, when a class is learning about structure, a parent or appropriate faculty instructor who is a carpenter and who speaks some English can be called upon to explain how the use of different materials can affect the design and strength of a structure (taking into account function, strength, flexibility, and so on). Asking students if they are aware of such resources should be part of the BIG assessment carried out at the beginning of the course.

Use thematic integration of content across subject areas.

The English acquisition process is also made more meaningful when it is contextualized within a broader topic. Business administration, Telecommunications, and Information Technology can all become interrelated through their common reference to the same theme or topic of interest just as Maintenance, Production processes, and Food Technology can (or any combination for that matter). In this way different perspectives on the topic are developed through linkages across different types of acquisition process activities.

Build in-depth investigation of content.

Instruction is more challenging and engaging when it provides in-depth examination of fewer topics instead of limited coverage of a broad range of topics. Furthermore, a comprehensive exploration of one or more content areas promotes understanding and helps students retain what they learn. In addition, integrated, thematic curricula that address the same topic across different content areas provide students opportunities to explore a given subject in greater depth. These areas need to be identified by examining the curricula of different faculties in the school when and where possible.

Design activities that promote higher order thinking skills.

Classroom tasks should challenge students by requiring them to develop and utilize higher order skills. Higher order thinking activities require students to use what they know to generate new information (e.g., to solve problems, integrate information, or compare and contrast). Higher order skills are utilized, for example, when students are asked to review a local folktale or when comparing it to one from another country that they have just read, to identify another folktale from their own background that they think makes a similar point, and to explain the similarities and differences. This is in contrast to lower order thinking skills such as rote repetition of responses or memorization of facts.

Provide support for understanding.

Students need opportunities to take responsibility for their own English acquisition process - to seek out information and formulate answers. This is what the active acquisition process instructional model provides. However, essential to the process, is the support provided by the facilitator. As a partner in students' investigations of new content, the facilitator should guide and facilitate students' efforts.

The facilitator's input, as a facilitator and guide to students, should be carried out in a variety of ways, such as:

- asking open-ended questions that invite comparison and contrast, and prompt students to integrate what they have observed, draw conclusions, or state hypotheses;
- assisting students in identifying needed resources, including setting up linkages with resources in the local and wider communities (e.g., experts who could visit, field trips to organizations, and so on);
- structuring acquisition process activities that require students to work cooperatively, modeling the different group member roles if necessary;
- encouraging students to discuss concepts they are learning, to share their thoughts, and to express further questions that they would like to tackle;
- establishing long-term dialogues with students about the work they are doing, either in regular facilitator/student conferences or dialogue journals; and
- setting up opportunities for students to demonstrate or exhibit their work to other classes in the school as a means of prompting further dialogue outside of the classroom
- work together with others

The attempt to restructure activities in the classroom and to deal with new forms of diversity is a challenging one. However, facilitators need not face the challenge alone. They should combine their expertise with that of other facilitators.

A significant body of recent research has focused on the value of facilitators combining their professional expertise and sharing their experiences with one another. Facilitators can offer important support to each other by serving as sounding boards for successes and failures, as additional sources of suggestions for resolving problem situations, and as resources to each other in sharing ideas, materials, and successful practices. In addition, the more facilitators who work with the same students share information, the more consistent and effective their students' overall instructional experience will be.

Facilitators should take steps to:

- Collaborate and confer with EFL specialists;
- Collaborate with other content area facilitators who work with the same EFL students to share resources, ideas, and information about students' work;
- Share ideas and experiences with facilitators who are interested in trying out more active instructional activities with their students; and
- Involve the program director. (Let him know what you are doing. Explain how you are implementing an active instructional model in your class and the benefits for the students. Ask for support. Some of this support should come in tangible ways, such as assistance in scheduling joint planning periods or in-class sessions in co-teaching or straightforward observation.)

Implicit in the active learning model's principles as applied to the PRIME Approach is a concentration on project based work. We turn our attention now to a closer look at this important framework for EFL acquisition.

Project-Based Learning

Project-based learning is an instructional framework that contextualizes learning by presenting learners with problems to solve or products (completed activities, summaries, reports, etc.) to develop and share. For example, learners may research an aspect of one of their career studies and create a report or handbook to share with other language learners in their program, or they might interview local employers and create a report of the employers' responses to questions about qualities or language abilities they look for in employees.

This overview provides a rationale for using project-based learning with young adult English language learners and describes the process.

The following principles characterize Project-based learning:

- Builds on previous work
- Integrates observing, speaking, listening, reading, and writing skills
- Incorporates collaborative team work, problem solving, negotiating and other interpersonal skills
- Requires learners to engage in independent work
- Challenges learners to use English in new and different contexts outside the class
- Involves learners in choosing the focus of the project and in the planning process
- Engages learners in acquiring new information that is important to them
- Leads to clear outcomes
- Incorporates self-evaluation, peer evaluation, and facilitator evaluation

Rationale for Project-Based Learning

Project-based learning functions as a bridge between using English in class and using English in real life situations outside of class [Fried-Booth, 1997]. It does this by placing learners in situations that require authentic use of language in order to communicate (being part of a team or interviewing others, etc.). When learners work in pairs or in teams, they find they need skills to plan, organize, negotiate, make their points, and arrive at a consensus about issues such as what tasks to perform, who will be responsible for each task, and how information will be researched and presented. Learners have identified these skills as important for living successful lives and by employers as necessary in a high-performance workplace [Stein, 1995]. Because of the collaborative nature of project work, development of these skills occurs even among learners at low levels of language proficiency. Within the group work integral to projects, individuals' strengths and preferred ways of learning (e.g., by observing, reading, writing, listening, or speaking) strengthen the work of the team as a whole [Lawrence, 1997]. Project-based learning is particularly applicable in the context of colleges and universities where practice and the practical application of knowledge acquired has significant weight (50% or more) in student evaluation. The inclusion of project work in the English as a Foreign Language (EFL) curriculum (foundation programs) is therefore particularly justified and appropriate.

The Process of Project-Based Work

The basic phases found in most projects include:

- selecting a topic
- making plans
- researching
- developing products, and
- sharing results with others (reporting) [Wrigley, 1998].

However, because project-based learning often hinges on group effort, establishing a trusting, cooperative relationship before embarking on a full-fledged project is also necessary.

Activities that engage learners in communication tasks and in peer- and self-evaluation help create the proper classroom environment. Information gap activities (where the assignment can only be completed through sharing of the different information each learner contributes), learner-to-learner interviews, role plays, simulations, field trips, contact assignments outside of class, and process writing with peers, prepare learners for project work.

Selecting Topics

A project should reflect the interests and concerns of the learners. Facilitators can begin determining project topics at the start of an instructional cycle by conducting a class needs assessment to identify topic areas and skills to be developed. As the facilitator and learners talk about projects and get to know each other, new topics and issues may come to light that are appropriate for project learning. Theme Webbing is a particularly effective tool for developing and flushing out different aspects of topics and their related topics [Tweedie 1998]. Projects will focus on the objectives spanning several units. They may be limited to one or two classes and/or culminate in a final event (presentation or report). Whatever the project, learners need to be in on the decision making from the beginning [Moss, 1998].

Making Plans and Doing Research

Once a topic is selected, learners work on their own or together (depending on learning style and the nature of the project selected) to plan the project, conduct research, and develop their reports, presentations, or products. Learners with low language proficiency or little experience working as part of a team may require structure and support throughout the project. Pre-project activities that introduce problem-solving strategies, appropriate gambits, e.g., language for negotiation, and methods for developing plans are useful. Learners may also need practice in specific language skills to complete project tasks. For example, learners using interviews as an information gathering technique may need instruction and practice in constructing and asking questions as well as in taking notes.

Sharing Results with Others

Students share project results in a number of ways. Oral presentations can accompany written reports or products developed within the classroom or in other classes within the program. It is essential that the product is shared with an audience for constructive feedback and enhanced learning.

Assessing Project-Based Work

Project-based work lends itself well to evaluation of both employability skills and language skills. Introducing learners to self-evaluation and peer evaluation prior to embarking on a large project is advisable. Learners can evaluate themselves and each other through role-plays, learner-to-learner interviews, and writing activities. They can become familiar with completing evaluation forms related to general class activities, and they can write about their learning in weekly journals where they reflect on what they learned, how they felt about their learning, and what they need to continue to work on in the future. They can even identify what should be evaluated and suggest how to do it.

Assessment can be done by facilitators, peers, or the student himself. Facilitators can observe the skills and knowledge that learners use and the ways they use language during the project. Learners can reflect on their own work and that of their peers, how well the team works, how they feel about their work and progress, and what skills and knowledge they are gaining. Reflecting on work, checking progress, and identifying areas of strength and weakness are part of the learning process. Assessment can also be done through small-group discussion with guided questions. What did your classmates do very well in the project? Was there anything that needed improvement? What? Why? The ability to identify or label the learning that is taking place builds life-long learning skills. Questionnaires, checklists, or essays can help learners do this by inviting them to reflect critically on the skills and knowledge they are gaining. Assessment can occur daily in dialogue journals, checklists, and portfolios [Lawrence 1997].

The evaluation criteria used for feedback on rehearsals as well as for final evaluations include the following:

- Introduces self and the topic clearly, respectfully, and completely
- Includes interactive activities in the lesson
- Speaks in a way that is easy to understand
- Is responsive to the audience
- Shows evidence of preparation and practice
- Shows knowledge of the topic

In addition, the facilitators and learners in the classes receiving the presentations wrote evaluations of the lessons. The presenters also wrote an evaluation essay reflecting on their own work and the value of the project itself.

Project-based work involves careful planning and flexibility on the part of the facilitator and support of the Institutions because of the dynamic nature of this type of learning. Moreover, sometimes a project will move forward in a different direction than originally planned. Project work is organic and unique to each individual, group, or class. This makes it exciting, challenging, and meaningful to young adult and adult learners.

It is easy to co-relate the principles of the PRIME Approach and Method with those of Project Based Learning and to therefor see how the latter maximizes the opportunities to make learning as active and productive as possible.

Project work can be an extremely enriching experience for the student, the school and the community at large. I hope that you will have your own examples to cite in the future.

Summary and Conclusion

The latest advances in the study of Language Acquisition clearly conclude that an approach to English language teaching in an EFL context based upon the sequential instruction of form and structure of language (a functional-notional method) and that views language as lexicalized grammar [Lewis 1994], does not lead to the ability to use the language for its intended purposes. It is also clear that a notional/functional curriculum fails in its lack of relevance to the students' needs and wants. That is not to say that facilitators should not be ready to teach grammar and the language of notions and functions. They should facilitate its learning and acquisition when the student is ready to learn this information and asks for it because it will help to accomplish relevant communication in a practical and meaning centered way to communicate in English more effectively.

For students to acquire the ability to effectively use English as a means of communication, they must, Initiate, Control, Direct, Monitor, and Evaluate, their learning for Practical, Relevant, purposes through Integrated, Meaning-centered, and Enriching (PRIME) activities. Facilitators must be Flexible, Resourceful, Engaging (motivating), and Eager to enrich the lives of their students.

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Stakeholders Influence on Malaysian Private Higher Education

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Abstract— **This paper discusses the growing importance of stakeholders in shaping the private higher education sector in Malaysia. It only highlights the pressures exerted by these stakeholders without making generalisation about the private higher education sector as a whole. It rests on the premise that these pressures affect private higher educational institutions (PHEI) differently. It should be noted that both the direction and magnitude of the changes are very much dependent on a myriad of factors, ranging from PHEI ability to upgrade their facility, academic strengths to student number. This paper has also identified seven important stakeholders that have been shaping private higher education in Malaysia since the government undertook higher education liberalisation in mid 1990s.**

Keywords: Private higher education, Malaysia, Stakeholders.

Introduction

Higher education sector in Malaysia was enjoying rather stable and predictable environments before 1996. The public higher education institutions were the only institutions granted the rights to confer degrees. In a stark contrast, private higher education institutions (PHEI) conducted courses that lead to the award of certificate and diplomas only. Over the years these two sectors evolved and diverged into two different entities. The public higher educational institutions were offering certificates up to postgraduate degree programmes, targeting school leavers and were sheltered from competition. On the other hand, PHEI were catering for those who could not get a place in the public higher education institutions in the programmes of their liking, working adults who wished to study part time to enhance themselves (earn and learn) and preparing students to study overseas.

However since 1996, the Ministry of Education Malaysia (MOE) set the stage for major revolutionary reforms in the higher education system. It had successfully introduced seven pieces of legislation that paved the way for structural changes especially at the higher education level. The legislation was also introduced to position Malaysia as a regional education hub. The Education Act 1996; National Council on Higher Education Institutions Act 1996; the Private Higher Educational Institutions Act 1996; National Accreditation Board Act 1996, the Universities and University Colleges (Amendment) Act 1996 and the National Higher Education Fund Board Act 1997, The amendments to the Universities and University Colleges Act (UUCA), 2008 have facilitated a more market-centred education system. Selected PHEI were granted permission to offer foreign degree programmes where students are able to complete their foreign university studies locally instead of going abroad. These programmes are better known as franchised 3+0 programmes, (3 refers to the years required to study locally and 0 means there is no need to go overseas). In addition, several local big corporations were invited to set up private universities and also selected reputable foreign universities were invited to set up branch campuses in Malaysia. Universiti Tenaga, Multimedia University and Universiti Teknologi Petronas are examples of private universities whereas University of Nottingham Malaysia and Monash University are examples of foreign university branch campuses. With the clear legal framework, the education system is indeed set for a quantum leap which will bring sweeping changes to Malaysian higher educational institutions, enabling them to offer a wider range of courses, different options and approaches to learning, better management, new teaching methods and an overall increase in productivity and standards (Ministry Of Education, Malaysia 2001).

The changes in private higher education since 1996 are probably greater in magnitude, scope and direction than during any period since 1970s. This has undoubtedly changed the Malaysian educational landscape and game rules. It is possible that competition in private sector is getting fiercer while the public sector remains relatively protected to a certain extent and also the possibility of the convergent of public and PHEI, hence may be the beginning of fierce competition. Both the public and private educational institutions may have to fight for the same category of potential students, competitors and programmes offered.

PHEI clusters

An important manifestation of educational reforms in Malaysia is the birth of four broad categories of PHEI. In this paper, these PHEI are grouped according to private ***universities and foreign university branch campuses, university colleges, colleges offering franchised 3+0 programmes and normal colleges. These categories havedistinctive features such as target market, size, programme offerings, human resource factors, ownerships and student fees.***

Category 1 – Private Universities and Foreign Branch Campuses

Private universities in Malaysia are owned by mostly government linked utilities companies such as Telekom Bhd (Multimedia University) and Tenaga Bhd (Universiti Tenaga Malaysia. In addition, Malaysian government also invited reputable foreign universities to set up branch campuses in this country. According to the PHEI Act 1996 (Malaysia), "branch campus" means a branch of a PHEI with the status of a University or a University College and includes a branch of a foreign University or a University College, that is established under this Act. Currently there are seven registered foreign branch campuses in Malaysia but one already ceased operation. All PHEI in this category can grant degrees. The current seven international branch campuses are complementing the existing public and private higher education institutions.

Category 2 – University Colleges

In many developed countries, the term university college is normally used to denote institutions that provide tertiary education but do not have full or independent university status. These institutions are generally seen as less prestige than 'university'. In Malaysia, university colleges are PHEI invited by the government to be upgraded. These PHEI are awarded the right to confer their own degrees but to a certain extent quite narrowly focused as compared to private universities. These institutions have two distinct characteristics; specialised academic programmes offered and also lower enrolment capacities as compared to full fledged universities with not more than 10,000 students. Most of them are actually reputable PHEI being upgraded to university colleges and share a humble beginning of offering twinning programmes in the past. Ideally these PHEI are supposed to offer their own degrees but currently they are still allowed to offer twinning or 3+0 programmes. Although the Ministry of Higher Education assures that all private university colleges are the same as full fledged universities, some distinctive characteristics are still prevalent such as having a lower percentage of PhD holders among the academics, having a large percentage of students from working adults, located in cities/towns and teaching based, offering of more "marketable" programmes and so on.

Category 3 – 3+0 PHEI

Economic downturn in 1997 further hastened the liberation of higher education. Following this, selected colleges were granted approval to conduct 3+0 programmes in collaboration with foreign universities. This mode of delivery has become popular and is instrumental in attracting many foreign students to study in Malaysia. In this paper, 3+0 PHEI refers to non-university colleges that are offering 3+0 franchised programmes. Although 3+0 degrees are accepted as on par with the foreign degrees, the process of quality control is different. It should be noted that 3+0 programmes are delivered by the academic staff of the partner colleges and not by the foreign partners. Hence, it can be argued that the foreign partners do not have direct control of the quality of programme delivery.

Category 4 – Other PHEI

Other PHEI refer to institutions offering professional courses (or degree equivalent), short-term courses leading up to higher diplomas. Sometimes there is a thin line separating these PHEI and training centres.

Defining Malaysian Private Higher Education Context – Stakeholder Analysis

Context is the environment within which PHEI operate. Macmillan and Tampoe (2000) argue that by not defining the context within which a company plans to compete would make strategic management invalid. Every context consists of both fact and perspective. Although facts are important, the context is also influenced by how individuals interpret the facts. Context includes everything that is important to the future of the organisation in the external environment as well as the internal characteristics of the organisation itself. Some of the dimensions of context in the higher education in Malaysia include the following:

- An industry context (i.e. does Malaysian private higher education include training)
- A national or international context (i.e. the focus of Malaysian higher education sector, local or global approach)
- An organisational context (i.e. the particular characteristics and capabilities of academic staff)
- A self-perception context (i.e. PHEI focusing on local or special group)
- An intention context (i.e. Teaching or research orientation)

One way to define the PHEI context is to analyse their various and often competing stakeholders that are also known as publics. The stakeholder view of strategic management considers the organisation from the perspective of the internal and external constituencies that have a strong

interest in the organisation (Harrison & St. John, 2004). According to Kotler and Fox (1995), every educational institution has several publics and the institution should have responsive relations with most or all of them. Publics are also popularly known as stakeholders in the management literature. In order to succeed, PHEI must deal with many stakeholders and generate a high level of agreement with them. Higher education is a contested field where too many stakeholders want to interfere (Lee, 2002). As stakeholder analysis continues to gain acceptance among higher education providers, this has also led to a significant number of stakeholders identified. Despite the introduction of new stakeholders, the emphasis on the customer remains evident (Reavill, 1998). An understanding of stakeholders can determine which groups are likely to have a positive or negative impact on PHEI. These stakeholders should be managed in such as way that the organisation can achieve its goals smoothly. It is also important to take note that not all stakeholders are equally weighted in the decision making process. The following discussion only covers important ones where they influence different clusters differently, may not necessarily be mutually exclusive or arranged according to importance.

1) Accreditation Organisations

So far, it has been widely accepted that one single most important indicator for higher education quality is accreditation. Lock (1999) alleges that business schools exhibit considerable dilemma about accreditation. Those who are excluded by a particular form normally against it and sometimes seek other accreditation. Those who are accredited see it as valuable distinguishing hallmark for quality provision an one which enhances demand and the fees that may be charged.

Holmes and Hooper (2000) have pointed out that accreditation is the most promising method on which to develop a strategy differentiating education from other products. Tooley (1999) undertook case studies of eighteen education projects – companies, schools and universities in twelve developing countries in order to identify factors of success in private higher education. He has identified certification/accreditation as a factor of success. A successful educational institution must offer respected and recognised qualifications.

The most important accrediting body in Malaysia is Lembaga Akreditasi Negara (National Accreditation Board). It is authorised by the Malaysian law and given wide discretionary powers to evaluate applications for the approval to conduct courses of study by PHEI; to conduct evaluation on the 'achievement of minimum standards' by PHEI in their courses of study and to evaluate applications by PHEI on the accreditation for courses of study. Only PHEI whose courses of study have obtained accreditation are allowed to use the statement "Recognised by Malaysian Qualifications Agency (MQA) accredited courses in Malaysia (previously known as LAN accredited)" in their advertisements and in their courses of study. Accredited programmes are the hallmark of quality education in Malaysia and have great implication on public sector and the students. All PHEI aim to have their programmes accredited by MQA due to the following reasons:

- PHEI can have access to student funding from PTPTN (National Higher Education Fund) loan scheme;
- PHEI can better position their courses as of high quality;
- Students pursuing accredited courses are qualified for consideration to serve in the public service sector;
- Students who pursue accredited courses of study will have the chance of obtaining scholarships or loan from sponsors and/or further their studies in any public higher educational institution;
- PHEI whose courses have been accredited may also franchise their accredited courses to other PHEI with conditions attached.

However, it can be quite costly to get programmes accredited due to the stringent criteria and obligations that PHEI need to fulfil. Among the criteria for accrediting courses in Malaysia that have a great impact on the financial burden of PHEI include the following:

- Total number of students who failed and were terminated in the past three years;
- Background of the teachers;
- Details of each teacher;
- Total number of support staff;
- Summary of resources and the profit and loss account of PHEI;
- PHEI public relations personnel;
- Curriculum details;
- Teaching method and so on.

Given the credence attached to MQA, many PHEI feature prominently the statement "Recognised by MQA" in their advertisements in order to attract students and at the same time enjoy the financial backing provided by Malaysian National Higher Education Fund (PTPTN) which charges low interest fees to students.

Most PHEI are also subjected to accreditation from other bodies, namely partner universities, professional bodies and qualifying boards. PHEI offering twinning programmes and franchised programmes are also obliged to be audited by these bodies to ensure that the programmes offered are of high quality and consistent with their partner universities. Unlike MQA accreditation, these collaborations can take many forms. They include simple visitation, facility audit, marking or remarking of examination papers, deliberation of examination results or the posting of academics to PHEI.

Recently, international accrediting bodies are beginning to have direct influence on some programmes in Malaysia, particularly MBA programmes and first degrees offered by foreign branch campuses. American Assembly of Collegiate Schools of Business (AACSB) is the most prestigious accrediting body in Northern America. Association of MBAs (AMBA) is a well established accrediting body in the UK. A prestigious European accrediting body is the European Quality Improvement Scheme (EQUIS). The impact varies greatly among these bodies. This is best illustrated by comparing AMBA and EQUIS. For example, AMBA (2006) which requires faculty teaching at MBA level to be appropriately qualified and credible and at least 75% of the teaching staff should have a relevant postgraduate degree (the majority hold a Doctorate). On the other hand, EQUIS (2006) has highlighted the importance of the faculty against the school's mission and its strategic objectives. The criteria include the following:

- Profile of the current faculty – composition of the faculty, ratio of faculty members to full-time students, ratio of full-time to part-time faculty;
- Qualification of the faculty;
- Effective policies and processes for the management of the faculty;
- Faculty exposure to the corporate world;
- Internationalisation of the faculty;
- Faculty quality to meet international standards of management education.

2) Faculty

The faculty consists of the skilled practitioners – professors, teachers and other instructors who deliver educational services. Faculty members of PHEI are expected to perform other non-teaching tasks such as record keeping, curriculum development, preparing lesson notes, preparing student attendance analysis and research or consultancy works. Staff characteristics vary greatly between university-status PHEI and non-university-status PHEI especially in the following areas:

- Teaching hours –Academics at private universities also generally have lower teaching hours and have more time to do research. In contrast, academics at non-university status PHEI have more teaching hours and also less time to do research. It is also not uncommon for them to have an average of 20-30 hours of teaching commitment per week.
- Number of subjects taught – University-status PHEI academics have fewer subjects to teach whereas academics at non-university-status PHEI have more subjects to teach. Not only that they also have to teach at different academic levels and programmes.
- Teaching oriented or research oriented – Lecturers from universities and university colleges are required to undertake research works whereas normal colleges focus more on teaching tasks instead. Programmes offered by universities are accredited by MQA and thus universities are encouraging activities or efforts among the academics that will contribute towards the fulfilment of MQA accreditation criteria such as publishing papers in international journals, undertaking of research and consultancy works, and writing books. On the other hand, normal colleges, especially those aiming to achieve minimal standard set by MQA to conduct programmes only focus on teaching excellence.
- Qualification – University-status PHEI academics are normally master's or doctorate degree holders, are working full time and have vast academic and research experience and also have proven publication record. This is expected because all these PHEI offer degree and post graduate programmes. In a stark contrast, non-university-status PHEI have the tendency to employ part timers or fresh graduates who have less or no relevant working experience. Furthermore, the recruitment criteria are also not so stringent.

Higher education is a form of service and service providers cannot be separated from service. People and process are two important aspects of service. Human resources (HR) influence PHEI in two ways. First, they contribute much to the development and delivery of educational programmes, which in turn enhances the PHEI brand name and prestige. Second, HR are also considered as expenses. Proponents of human resources as an investment argue that human resources add value to organisational effectiveness. However if not managed properly, human resources can adversely affect the organisation. In an in-depth study on six PHEI undertaken by Ong and Mohd Ridzuan (2003), it was found that human resource costs (HR Costs) made up the largest cost components of PHEI followed by rental and depreciation. The percentage of HR Costs over Revenue tends to be higher for private universities than that of private colleges. Methods employed by PHEI to reduce HR Costs include:

- Employing part time lecturers;
- Having longer teaching loads per lecturer;
- Having more subjects per lecturer;
- Employing lower qualification lecturers (especially non accredited colleges)

Another important issue is the number of academics with doctorate degrees or PhD in the private higher education sector. This affects PHEI in two ways. First, the quality of education provided, especially the offering of post graduate programmes. Second, the ability of the PHEI to undertake research activities will be undermined. As pointed by Ong (2006), the proportion of academic staff with doctorate degrees to total academic staff at PHEI is still very low even though improving. Furthermore, academics with doctorate degrees were estimated to constitute only about 10% of total academics in 2006. Not only that, most of them were at

university-status PHEI and 24% were foreigners. Highly qualified lecturers are the hallmark of PHEI programme quality.

3) Staff

The staff consists of the institution's other employees who work on a paid basis. They include middle management, security officers, facility and estate, academic counsellors and marketing personnel. Most non-university status PHEI put more importance on academic counsellors and marketing personnel only because they are linking the PHEI to other stakeholders, particularly the potential students for continued business. However it has also been observed by Ong (2006) that most of these counsellors and marketing personnel are inexperienced, do not possess relevant qualifications and are normally first degree holders.

4) Government Publics

Like any other establishments, PHEI are being scrutinised by government agencies and bodies. Two of the priority recommendations forwarded by The Zahid Report (Ministry of Higher Education, 2006) that will have great impact on PHEI if accepted by the Malaysian government are as follows:

- Recommendation 17: The Committee recommends that there be a moratorium on the awarding of licences for the setting up of PHEI and this be urgently established so that all existing PHEI can be clearly assessed;
- Recommendation 75: The Committee recommends newly recruited teaching personnel and lecturers take mandatory training programmes in pedagogy and andragogy. Even professors should be encouraged to be involved in post-doctoral studies.

Another recommendation that will have impact on the appointment to the position of Professor is Recommendation 29 which states that at least 15 articles published in international refereed journals be mandatory for the appointment to the position of Professor. This condition for appointment, whether for promotion purposes or otherwise, should apply to all public and private universities.

PHEI have to work closely with them in the matters pertaining student visas, permit to recruit foreign students, advertising guidelines and accreditation. Lately many PHEI were found to be involved in illegal activities such as abetting with workers to withdraw money from Employee Provident Fund (EPF) and delivery of dubious degrees to unsuspecting working adults. Others include PHEI operating prior to approval, illegal advertising, abuse of international student visas and so on.

5) Consumers

According to Kotler and Fox (1995), consumers refer to the persons who use and benefit from the product or service. The term customer refers to the person who selects a particular source for this product or service. Although the actual students are school leavers, it is not uncommon that family members especially the parents decide what programmes to choose. Ong (2006) reported that many students did not really know how to make decisions and therefore let their parents decide. This phenomenon could be due to democratisation of secondary education in early 1990s where there is a steady increase in the number of students pursuing higher education. Lifelong learning culture compounded with the encouragement from government has also resulted in an increase of working adults going back to PHEI to get education and training. The sudden and unanticipated changes in the higher educational landscape have adversely affected informed decision making among potential students and parents.

In addition, target market factors such as entry mode (school leavers or working adults) and background of students (local students versus foreign students) are thought to have impact on PHEI performance. School leavers are known to be attracted to academic-oriented PHEI and have a longer study duration pursuing degrees. Working adults on the other hand normally go back to PHEI to gain additional qualifications but shorter study duration, prefer to attend work related courses and so on.

Foreign students are known to pay higher fees in certain PHEI. Besides, some PHEI are also providing ancillary services such as hostel accommodation, tour packages and food catering. The extent of economic benefits to PHEI remains elusive as there is no published report in this area even though it is generally accepted that foreign students will benefit Malaysia. First reason is the foreign students can assist in promoting Malaysian qualifications when they go back. This will definitely enhance international recognition of Malaysian qualifications. Second reason is throughout the study duration in Malaysia, these students will contribute greatly to the local economy. Not only that, by coming to Malaysia the local higher educational institutions, local academics and students will experience the latent benefits of greater internationalisation process.

Michael (1997) argues that higher education services can be provided under two opposing philosophies. Consumerism is an ideology of the business world that defines consumer as the "king". This philosophy holds that the identification of a need, the conceptualisation of a programme in response to the need and the design and marketing are dictated by information obtained from the consumers. Hence the survival of an organisation depends solely on the continuing satisfaction of its customers. On the other extreme, "professorialism" refers to an ideology of the academic world

that defines academics as the "king". This philosophy holds that the faculty or professors determine what programmes to offer, how to offer and when to offer.

It is no surprise in a consumerist culture, service quality plays a pivotal role. Cuthbert (1996) highlights two reasons why service quality in higher education matters. First, students report that word-of-mouth recommendation plays a big role in their choice of institution and course managers are in a key position to influence customer perceptions. Second, government authorities as well as the university quality assurance systems place emphasis on the student experience as one of the assessment criteria. However this does not imply that an organisation should continue to strive for quality at any cost (Caruana & Pitt, 1997).

A customer-led approach emphasises meeting customers' expressed needs. This has led to grade inflation. There are many problems associated with this approach such as it sends the inappropriate misperception that the student is the one and only customer of the university, the focus is on short term goals, convenient rescheduling of examinations, rule-bending exceptions, offering significant academic credit for work/life experience and the reinforcement that the customer is always right. On the other hands, a market-oriented approach is concerned with anticipating customers' current and future, expressed and latent needs and is more likely to be innovative (Slater and Narver, 1998).

6) Ownerships

Most of PHEI are concentrated in high population density areas such as the Klang Valley because of the presence of a larger market and a larger teaching resource pool as compared to other parts of the country (Lee, 1999). PHEI have evolved into different modes of ownership. Institutional diversity has a major impact on the conduct of these PHEI. Lee (1999) has identified profit-making institutions as those set up by:

- an individual proprietor;
- a private company;
- a consortium of companies;
- a public listed company;
- government corporations

The concept of 'corporate parent' as the level of management above business units is crucial in understanding how the owners influence their PHEI. These owners who look after these PHEI act in a corporate parenting role. Johnson, Scholes and Whittington (2005) identified the following roles that are thought to be able to add value to the whole organisation:

- A primary role is that of envisioning the overall role and expectations of the organisation or establishing a clear corporate level strategic intent – PHEI will stay focus on what they are doing, external stakeholders will also be clear of what the PHEI are and PHEI are able to align their goal and strategies in line with the corporate parent's strategies;
- A second role is that of intervening within business units to improve performance or to develop PHEI strategy – corporate parents can regularly monitor the performance of PHEI, taking action to improve performance, actively seeking to challenge and develop the strategic ambitions of PHEI, coaching and training of human resources and achieving synergies across other business units and helping develop the strategic capabilities of PHEI;
- A third role is the corporate parent may be able to offer central services and resources to help PHEI – corporate parents can provide investment, scale advantages in the use of infrastructure and transferable managerial capabilities;
- A fourth role is that corporate parent may also have expertise of its own and can be helpful to PHEI – the provision of expertise not available to PHEI.

7) Business Community

Business community is a collection of businesses that have interest in PHEI. Since 1980's Malaysia has progressed from agricultural-based economy to production-based economy. This transition is characterised by foreign direct investment in this country and the establishment of many multinational corporations (MNC) has resulted in the shift of the type of graduate demand. Another aspect is the privatisation of public enterprises in the mid 1980s. The increasing roles of private sector in the economy are putting pressure to the government to produce graduates who have the following qualities:

- proficiency in English;
- have relevant skills and knowledge that can be put to use immediately (job-ready upon graduation);
- have vocational skills;

The Malaysian government has explicitly acknowledged the importance of business community in the academic programmes. As illustrated in Point 11.62 of The Ninth Malaysian Plan (2006-2010):

> "Institutions of higher education will design their academic programmes and develop their curricula based on market requirement to ensure the employability of graduates. These programmes will be implemented with greater collaboration and active support from industry and employer associations. In addition, students will be given early exposure to workplace environment through a minimum of four months internship and structured attachment programmes" (p. 257).

Another strong evidence of business influence is the fact that all PHEI in Malaysia must be registered as private

companies under the Private Higher Educational Institutions Act (ACT555). In short, the academic system as a whole is caught in a market logic that demands graduates who are judged solely based on economic value consideration instead of social value. Business community has also resulted in the demand for workers with non-academic qualifications. In certain areas, there is a blurring distinction between training and education. This has given rise to the demand for lifelong learning among working adults. One important manifestation of the increasing roles of the business community is the inclusion of PHEI as part of the industry value chain system. Universities are measured according to their ability to meet industry criteria instead of social criteria.

> As put by Aronowitz (2000):
> "…Instead, academic leaders chant the mantra of "excellence," the new horizon of university administration, as corporate slogans corresponding to bottom line corporate practices drive higher education's goals. Excellence means that all of the parts of the university "perform" and are judged according to how well they deliver knowledge and qualified labour to the corporate economy and how well the administration fulfils the recruitment and funding goals needed to maintain the institution…" (p.158).

Aronowitz (2000) also highlights some of the adverse impact of industry pressure on universities in the following manner:

- the current academic system has distorted the distinctions between training, education and learning. PHEI are not only catering for the needs of students but also a new market segment, the corporate sponsors.
- universities have succumbed to pressure to introduce vocational courses in curriculum and encouraging internships – often subtly coded as "experiential" learning to lure employers to hire their graduates.
- rigorous core curriculum has been berated as being "elitist".

These developments can be quite disturbing given the fact that taking a closer look at most university ranking tables such as The Times Higher Education Supplement and Economist tables, reveals that many of these criteria are based on business needs. In Malaysia, PHEI are dependent on student fees for survival. Then PHEI may make the ability to produce marketable students as their main concern. The debate about higher education for work versus education for life seems to stay. This phenomenon has also further reinforced the notion that exchange value is greater than use value among parents and students.

Another main concern is the "vocationalisation" of higher education. The popularity of vocational courses could stem from a number of factors. First, vocational courses are often coded as "experiential" learning where students can "feel" and appreciate the relevance of these programmes and at the same time the learning process is normally less formal. Second, vocational courses are particularly appealing, given the tight job market and high unemployment rate among graduates in Malaysia in recent years. This is further exacerbated by employers which prefer to employ graduates who can apply their skills and knowledge. As noted by Wylie (2006):

> "Business seems perennially unhappy with graduates, often characterising them as lazy, incapable of adding or spelling, and generally unsuited to the world of work. But a charge of laziness could just be easily be levelled at employers who want universities to carry all the burden for creating 'oven-ready' graduates" (p. 1).

Third, vocational programmes normally have lower entry requirements as compared to academically inclined programmes. This provides a good alternative (second chance) for students who could not gain a place in other institutions.

CONCLUSION

Several major conclusions can be made. First, needless to say that an interplay of stakeholders' influence determines which stakeholders' criteria get into consideration when quality is operationalised. Thus, it is not uncommon that education quality itself needs to be redefined everytime the equilibrium is disturbed by the emergence of new stakeholders or change in the power base of existing stakeholders. As a result, these stakeholders do not have the same degree of influence. The future direction of private higher education sector will be driven by changes in the configuration of stakeholders.

Second, it can be argued that the stakeholders themselves are in fact affected by environmental factors such as political, social, economical and technological changes. Therefore, their priorities may also change in response to macro environmental changes.

Third, PHEI may have their own ambition to move to another desired cluster. As a result they have to be aware of new configuration of stakeholders and the potential influence. Undeniably, meeting all their needs is almost impossible. Striking a balance is a delicate job. PHEI have to treat these issues as paradoxes rather than as a dilemma or a puzzle. A paradox is where there is no way to logically integrate the two opposites into an internally consistent understanding of the problem.

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Using Emotional Intervention to Teach English Language: Instructional Design Perspectives

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Abstract— **This assessment argues that emotional interventions in learning a foreign Language especially the English language are imperative. Emotions generate desire and desire initiates motivation. Emotion is crucial in creating knowledge and meaning as thus, affecting how learners learn a language. The prime purpose of this assessment is to investigate the effects of positive and negative emotions in learning English as a foreign language. Researchers and Psychologists agree that positive emotions bring physical and psychological changes to human being. Scientists further postulate that positive or negative emotions bring fundamental changes in the way a person behaves. Using positive emotional interventions and arousing inner feelings of the learners help them to learn better and enjoy learning. Researchers further claim that strong positive emotions assist people to be motivated and to manage their lives in a positive way. As thus, this analysis attempts to study how collective emotional intervention by instructors, parents, socio-cultural forces and cogitative interferences motivate learners to learn.**

Keywords: Instructional design, English Language, Learning, Teaching, Emotion, Psychology

I. INTRODUCTION

The impact of positive and negative emotions on young learners is no more in doubt among scholars and educational psychologists (Rager, 2007). Researchers and psychologists have shown a considerable interest in the notion that learners learn a foreign language better when they have positive feelings and are motivated in the classroom. Emotions play a crucial role in learning because they either motivate or discourage learners (Albornoz, 2007). To understand how a foreign language is mastered, it is crucial to examine the learner's emotional state even before lessons begin. Instructors who endeavor to teach a foreign language must understand the problems and challenges faced by the learners, and the effects of positive and negative emotions in learning outcomes. Positive emotions create motivation while negative emotions hinder the learning process (Geunyoung, 2007). Emotional intervention in the classroom is vital to create an effective learning environment. Studies indicate that negative emotions are created when the instructor fails to boost learners' self-esteem and does not motivate them. Hence, to ensure success in the language classroom, the instructor should encourage active class participation in meaningful and enjoyable language tasks.

When students are in an emotionally positive state, learning is facilitated (Lin, 2008). In addition, the instructor's personal beliefs also help shape a constructive and meaningful classroom environment. He must understand the concept of learning, the background and interests of his students, his role in the class and the goals of education in order to create a conducive learning environment. In other words, the teacher's personal beliefs about education are vital to the success of the learning process.

II. PARENTAL INTERVENTION

Children need emotional support from their parents to acquire a foreign language. Parents, who have a close relationship with the school and their children, can help overcome learners' psychological and educational impediments (Mo, 2008). Studies indicate that parents' relationship with their children can help them succeed in school. Parents can use scaffolding techniques at home to teach their children and help them to perform well in the school (Michelle, 2009). Research findings indicate that students who receive educational and emotional support from their parents perform better in class compared to those who do not (LaRue, 2007). Studies have also found that a child's first five years of life are crucial to successful learning and during this period, the child needs psychological and emotional support from his parents in order to do well later.

Findings designate that parents who help their children emotionally and physically, perform well compared to children who do not receive parental interventions (Lesley,2008).

Parents can intervene to motivate their children to master the English language by doing the following:

1. Make him aware of the intrinsic benefits of learning the English language.
2. Never compare his progress with that of other students.
3. Help him understand why he is studying the English language so that he can strive to achieve his goals.
4. Never compare him with any member of the family because this may arouse negative emotions.

5. Always satisfy his basic needs such as food and safety so that he can concentrate on higher needs such as academic pursuits.

III. INSTRUCTOR INTERVENTION

The instructor can exploit the use of emotions in the class to motivate learners and hence teach more effectively. The instructor must be prepared to intervene emotionally even before lessons begin. There are three questions, which define the teacher's personal conviction about teaching and learning (Akkoc, 2006).

1. What is his/her personal perception about learning and world-view of education?
2. What is his/her experience as a student?
3. What does he/she know about pedagogies?

The mental perception of the instructor is vital in shaping the success or failure of the students in the classroom. Instructors can use the following motivational interventions to bring behavioral changes in language learning: (Nakanishi, 2002).

1. **Integrative Motivation:** The learner is motivated to learn the English language because he wants to be part of the English-speaking community. He is eager to understand and use the language to communicate.
2. **Instrumental Motivation:** When a learner feels that a particular language will help him secure a better job or the language has transactional value, he will be motivated to learn the language.
3. **Intrinsic Motivation:** A learner might want to study a particular language because he enjoys learning it or the language has a special significance to him.
4. **Extrinsic Motivation:** A learner might be motivated to study a language because he anticipates a reward or promotion if he does well, and punishment if he fails. Hence, a reward or fear of punishment is an extrinsic motivation.
5. **Confidence:** When a learner's confidence level is increased, he will take up the challenge of learning a new language.
6. **Anxiety:** When a learner feels that he will be rejected if he fails to be proficient in a particular language, he will be anxious to study it.
7. **Autonomy:** When a learner feels that he is free from any pressure in learning a foreign language, he will take the initiative to study at his own pace.

Teachers also can utilize the following guidelines to motivate learners: (Weller, 2005).

1. The learning environment must be conducive to attract learners' attention.
2. Students must be given incentives and rewards upon successful execution of learning tasks.
3. Stimulate intrinsic and extrinsic motivation of learners.
4. Pay attention to the physical state of the learners and make sure that they are ready to learn.
5. Plan his lessons carefully to ensure that the materials are relevant and meaningful to facilitate understanding.

Besides the guidelines mentioned above, it is important that the learners are given autonomy and empowerment. Empowerment invites motivation, and motivation leads to more effective learning outcomes. Instructors should also introduce learners to socio-cultural issues of the language in order to learn the language effectively (Marian, 2009, Xuesong, 2008). Teachers could also use a game-based learning class environment to engage students in a friendly atmosphere for more productive learning outcomes. A game-based learning classroom stimulates positive emotions in learners, making them more eager to participate in classroom activities, and thus inculcates personal interest in learning (Aroutis, 2008).

Studies indicate that computer games effectively engage learners and awaken their inner feelings, and in the process, productive learning conditions are created (Ping, 2008). Collective learning and an engaged classroom setting arouse students' positive socio-cultural emotions and strengthen their academic ability and thinking patterns. Monitoring socio-cultural behavior could bring immense changes in the way students perceive learning. When learners are emotionally receptive to learning the English language, they have a better chance of success (David, 2008). Research shows that conducive and emotionally monitored learning environments contribute to meaningful learning (Yaron, 2008).

A carefully designed environment and abundant positive feedback would boost learners' intrinsic motivation and encourage them to persevere (Virginia, 2008). Studies also indicate that external motivation such as positive feedback and a well-designed classroom environment have a significant impact on the learning outcomes of students (Hyungshim, 2008). As such, instructors should understand their learners' mood and emotions. They should also introduce positive changes in the learning patterns by providing emotionally suitable challenges to motivate their students (Penny, 2008).

IV. PSYCHOLOGICAL INTERVENTION

Instructors must have knowledge of educational psychology before even attempting to teach a foreign language. In a classroom environment, the teacher must avoid negative or embarrassing comments that psychologically demoralize learners. When a learner feels ashamed or embarrassed of his mistakes, he will not be motivated to learn. Feelings of shame are an impediment to successful learning. Shame is a powerful force, subverting the learning patterns of students (Bond, 2009). Instructors should instead emphasize cognitive and critical thinking aspects of the learners so that their students understand why such errors are made and how they can avoid repeating them. *(Malm,*2009). The human brain is a unique and dynamic processor, responding to learners'

experiences. If learners are emotionally disturbed in the classroom, it will disrupt their learning pattern. The human brain filters important sensory information from all that is perceived, including the unimportant information. This part of the brain is called the *Amygdala*, which is the main part of the brain and processes human emotional content.

The *Amygdala* also processes human memories and human emotions. Once *Amygdala* is emotionally disturbed, it affects human feeling as well as learning significantly (Christina,2008). Another important part of the human brain is called the *Thalamus*. This part of the brain registers external conditions of the human behavior. The *Thalamus* then reports any stimuli to the brain, which results in an immediate eruption of emotion. Its function is to inform the brain of what is exactly happening in the human body. If learners are emotionally disturbed, the brain immediately releases hormones called *Cortisol*, *Endorphins* and *Adrenaline*, which affect human behavior. As such, emotionally disturbed learners are not able to concentrate on their lessons [http://health.howstuffworks.com/brain9.htm 2009].

V. CULTURAL INTERVENTION

Socio-cultural activities help learners to be involved, motivated and encourage them to learn a foreign language. Socio-cultural activities must be introduced in the classroom to arouse students' interest and make the class environment more pleasant and autonomous (Julianne, 2009). Studies have indicated that students who are given autonomy and choice in learning a foreign language are motivated and significantly improve their learning (Brian, 2008). It is crucial to note that effective learning happens in a student-centered environment (Effie,2008). This condition invites motivation in the classroom. Teachers must introduce a goal-oriented environment and make the lessons interesting. Instructors must inculcate students' personal interest in learning in order to produce the desired outcome. (Bandura, 2002). Research also demonstrates that promoting learners' socio-emotional development in the classroom would help learners use the target language for communication. The teacher must provide a caring and culturally rich classroom environment. Her students would learn to develop strong social skills by being cooperative and responsive. In the absence of such an environment, it is difficult to conduct successful English language lessons *(Corso*,2007).

For a meaningful learning environment, the instructor should:

1. create an individualized zone of support in the classroom.
2. have clear teaching strategies, keeping in mind the emotional and social needs of learners.
3. create a supportive classroom environment.
4. have a positive relationship with learners' families and friends.
5. cultivate a positive relationship with each learner all the time.
6. provide daily structured activities with a selected focus.
7. create enjoyable activities for learners.
8. be positive and focused when teaching.
9. acknowledge and pay attention to the social behavior of his learners.
10. give full attention to problematic behavior of the learner.

VI. CONCLUSION

As evident from the above discussions, instructors must provide a meaningful and emotionally inviting environment to teach the English language effectively. Such a positive environment allows learners to be engaged and learn cooperatively. Students must be given the opportunity to interact with each other, without fear of being humiliated or embarrassed. Research shows that the best way to stimulate positive emotions in learners is to make the classroom interesting by introducing songs, games and other engaging activities. Classroom activities must be relevant to students' everyday life. Carefully chosen activities, games and songs help learners to facilitate the acquisition of language skills.

Hence, emotional and motivational interventions help students to feel comfortable and perceive the class environment as non-threatening (Lin, 2008). Studies indicate that when games are used as part of the lesson, they assist learners to reinforce new knowledge as well as expand existing knowledge and skills (Collier, 1996). As such, positive intervention from instructors and parents not only helps nurture socio-cultural and cognitive skills of learners but also facilitates the mastery of new language skills (Gardner, 1982, 2001).

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Pedagogical Perspective on Problem Posing and Metacognitive

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Abstract— **Mathematics education is moving toward student's centred which is beyond problem solving abilities and can become skilful in problem posing tasks. This paper presents the description of theoretical framework for investigating the types of problem posing abilities, related difficulties, their preferences of strategies and developing problem posing tasks regard to metacognitive awareness. The research instrument consists of secondary data such as the learning theories which are related to the problem posing and metacognitive machineries, in addition proposed frameworks for problem solving-posing process. The review resources reveal that problem posing tasks can provide appropriate situations for engaging students in specific learning process through inquiry-based learning environment [1] which stress on social constructivism ideas [2]. On the other hand, educators can establish a balance in three domains' Tall [3] by merging cognitive- metacognitive strategies to this active learning. Consequently, we assert that this pedagogical perspective can encourage teachers to incorporate problem posing activities in teaching- learning materials.**

Keywords-mathematics problem posing; metacognitive skills; learning theory ; theiritical framework ;pedagogical prespective

I. INTRODUCTION

The current trends of Iranian mathematics undergraduate curriculum are equipping teaching and learning materials in higher education to valid activities that can promote advanced skills such as creative thinking, decision-making, problem solving and team working among undergraduates who will compose the voting public, the consumers, and the workforce in the near future. To achieve these goals, one of the major concerns is engaging students in mathematical problem solving situations, particularly in "real life" problems. However, the recent classroom instruction is limited to problem solving tasks alone appears ineffective in developing students' thinking skills and higher level cognitive abilities. Therefore, mathematics teachers should complete problem solving tasks by problem posing tasks for challenging learners to the quality problems whose solution strategies are not immediately known to each student, as a result can stimulate high-order-thinking among them.

In this regard, problem posing can be applied as a means of instruction where the students pose questions in response to different circumstances, namely real life situations, another mathematical problem, or the teacher [4]. On the other hand, students' perception on the subject matter is profoundly altered while constructing their own original mathematical questions and subsequently observed that all their created ideas became the focus of discussion among peers [5]. Meanwhile, the shift of responsibility problem posing from teachers to students [6] could embed pupils in metacognitive strategies during face to face (FTF) interactions in classroom settings and led them to be independent learners.

Despite of educational researchers, over the decades, have reached to consensus about effectiveness mathematical problem posing activities, these valid tasks remain under shadow problem solving approaches in developing pedagogies. This could be due to lack of a comprehensive theoretical framework that can justify how learning can occur in problem posing environment and how these activities can implement as a operational tasks in mathematics classrooms which are limited in subject content and time . Furthermore, a cognitive-metacognitive model of problem posing process is needed to give a novel direct to class activities based on both problem solving and posing, as a result learners can equip to more competency.

Here we present the description of theoretical framework for investigating the types of problem posing abilities, related difficulties, their preferences of strategies and developing problem posing tasks regard to metacognitive awareness. In addition, due to the importance of cognitive engagement in making classroom effective activities that could be linked to higher-order-thinking skills [7] developing mathematical problem

posing tasks as a valid activities were intended among undergraduate.

II. LEARNING THEORIES AS PEDAGOGICAL PERSPECTIVES

"Learning Theories" are elaborate hypotheses that describe how exactly learning procedure occurs. Hill [8] stated that they could take directly attention to crucial variables which have significant role in solution practical problems; additionally these theories provide appropriate methods for interpreting the examples of learning in term of conceptual framework. In this study, learning theories as secondary data consist of "Social Constructivism" theory [2], "Inquiry-Based-Learning" [1], "Face to Face Learning Environment' [3], [9], "Zone of Proximal Development" [10] and "Metacognitive Theory" [11]. They specify the relationship between problem posing phenomena and the component of teaching-learning environment. Consequently, "Fig. 1" as a schematic diagram of the theoretical framework is drawn to illustrate how the types of problem posing abilities, related difficulties, their preferences of strategies, and levels of performances are clearly identified and influenced by metacognition approaches as well.

III. LINKS "SOCIAL CONSTRUCTIVISM" THEORY TO PROBLEM POSING ACTIVITIES

Ernest [2] stressed mathematics as a social construction in "social constructivism" theory, namely learning occurs during a process which the learner actively builds new ideas or concepts. Therefore, the components of this theory can justify how knowledge transfer via implementing problem posing tasks in mathematics classroom.

Linguistic knowledge, conventions and rules form the basis for mathematical knowledge is necessary for understanding the given problem posing regard to situations (free, semi-structure and structure). In addition, interpersonal social processes are needed to turn an individual's subjective mathematical knowledge into accepted objective knowledge that is sociality understood. In the other words, constructivism's special features are observed in the interplay between subjective and objective knowledge. In problem posing view, these elements are arisen when peers discuss together about tasks' situation (objective knowledge), then constructing their own problems (subjective knowledge). Continually, peers encounter together by posed problem (objective knowledge). In addition, objective knowledge is transferred to subjective knowledge when students are investigating solvability or insolvability generated problems. Another interpersonal social process happens in altering unsolvable problem to solvable problem (subjective knowledge) by guiding teacher. However all of the mention stages directly depend on students' prior learning experiences.

Most significant, constructivism asserts mathematical learning is a process of individual construction with sensitive to social interventions. For instance, cultural factors influence many aspects of cognitive processes that students deploy in thinking and problem solving, such as knowledge base and structural organization. In the other word, cultural differences learners may lead them to perform in different ways of problem posing namely generate problems in different ways because of their prior experience, culture, and community.

Conclusively, through glass social constructivism theory, we can monitor the types of problem posing abilities among pupils, their preferences of strategies, and levels of performances. Hence, social constructivism idea stress on problem posing tasks can provide appropriate situations for engaging students in specific learning process through "Inquiry - Based Learning" environment.

IV. PROBLEM POSING ACTIVITY THROUGH "INQUIRY-BASED-LEARNING"

"Inquiry-Based-Learning" theory presents a more effective method of instruction based on teamwork situations. In this method, the teacher begins with a question, and then allows the students to search for information and learn on their own with the teacher's guidance. The most significant learning processes that students engage in during inquiry-learning include: creating questions of their own, obtaining supporting evidence to answer the question(s), explaining the evidence collected, connecting the explanation to the knowledge obtained from the investigative process and creating an argument and justification for the explanation. As a result, the problem solving-posing tasks can be called as beneficial educational activities if associated with "Inquiry-Based-Learning" environment.

In this respect, Bruner [1] declared a range of philosophical, curricular and pedagogical approaches to teaching as "Inquiry-Based-Learning" theory. He emphasized that pedagogy and curriculum should require students to work together during solving problems, as a form of active learning. However, Engelbrecht, Bergsten and Kågesten [12] reported that mathematics teaching and learning environments are teacher-centred at majority of the mathematics classrooms of universities as well as the most tasks and examination tests are considered procedural in character, more formal in the concepts as well. Therefore, "Inquiry-Based-Learning" reminds education should trend toward novel attitude that students' role is beyond problem solvers as well as they can become skilful in discovering and correctly posing problems. When students begin posing their own original mathematical questions and see these questions become the focus of discussion, their perception of the subject is profoundly altered. Meanwhile, these activities could embed them in metacognitive strategies during face to face (FTF) interactions in classroom settings, and lead them to independent learners. Consequently, teachers' role can be reformed in this environment.

Teachers should be viewed as facilitators of learning. Due to problem posing definitions as a means of instruction, activity, a powerful tool diagnostic and a way exercise of real life situations, then these tasks in teachers' hands not only facilitate learning process but optimize it by establishing balance between conceptual understanding

and procedural understanding. Furthermore, teacher ' role as guidance during the altering unsolvable posed problems to solvable can be labelled to expeditor. On the other hand, integrating problem posing activities in mathematics lessons enable teachers to know level of their students' mathematical knowledge and the ways that students can lead to understanding better of mathematics concepts. Since teachers have an crucial role in the implementation of problem posing in curriculum, they have to develop skills in problem posing and must be able to create tasks with suitable situations which engage their students in problem posing [13], [14] so that, they can generate a strict image of concepts and procedures for representing in future problems .

There are three types of representation of human knowledge in mathematics, namely, "Enactive", "Iconic" and "Symbolic". In the other word, it asserts to importance integration of internalize knowledge as well as mastery in formal and precise mathematics' languages for involving in mathematical problem solving and posing correctly and deeply. Yu and Li [15] revealed that the participants' knowledge system stored in the minds is incomplete and their internalize knowledge cannot be integrated effectively. For example, they could not know concept and understanding propositions multi-angles and multi-levels. Lowrie[16] asserted that the children are less successful in identifying the types of understanding or processes that would be required to develop a solution when they are posing more novel problems. The lack of connection between school mathematics and real life experiences prevented children from recognizing formal symbolisms as representing verbal mathematical problems, so that children have weakness to construct a variety of problems in formal task [17]. Abdollahpour [18] stressed that Iranian undergraduate students have the significant difficulties related to using formal mathematics language and symbols during structural proof in "calculus 1" questions. Obviously, overemphasizing the importance of providing a proof prevented the development of inquiry abilities [19]. Whilst, posing problems based on given problems can be a useful strategy for found develop a new thinking situation, thinking of the given information in the problem statement, thinking of best strategy to solve it using his own questions that lead him/her to solution and thinking of more information related to the given information [20] .

Therefore, problem posing activities can provide a suitable environment based "Inquiry-Base-Learning" in mathematics classroom, due to trainer can shift some their responsibilities of problem posing to students who must inquiry given conditions by reviewing the part of material used for constructing a new product. Additionally, teachers can take pupil in preferred strategies for monitoring learners' level of performances , the types of their weakness in term of revised Bloom's taxonomy [29] such as understanding, applying, evaluating and creating .These results indicate what types of supplements are needed for developing academic achievement related to problem posing tasks .

V. ROLE OF "ZONE OF PROXIMAL DEVELOPMENT" IN PROBLEM POSING TASKS

Vygotsky [10], as a social constructivist, suggested that development is the product of social and cultural interaction around the shared experiences, used cognitive tools, linguistic and physical nature. On the other hand, he defined a measure called the "Zone of Proximal Development" (ZDP) as the difference between problem solving that students are capable of performing independently and their performance on problem solving with guidance or collaboration. This means that it is the range of abilities that a person can perform with assistance, but cannot yet perform independently. Meanwhile, the appropriate assistances and tools as scaffolding need to guidance learner how accomplish the new task or skill, consequently the scaffolding can be removed and learners will be able to complete the task independently. Hence, mathematics activities, learning strategies, interaction with peers and mastery teacher are vital parts of the learning process, so that individuals construct mathematical meaning as they participate in a variety of communities within which particular mathematical practices, reasoning, conceptions, beliefs, and interaction patterns are shared.

In this respect, problem posing activities and strategies can be considered as scaffoldings that should be structured around projects that engage students in the solution of a particular community based problem, school based problem or regional problem relevance to their worlds. Furthermore, teachers as scaffolding are experts who should control students' achievements in problem posing tasks and seek their difficulties in these attempts. Finally, they can lead students toward removing their weakness particularly in preferences for problem posing strategies.

Nevertheless, researchers [21] stressed to importance of teachers' role and applied strategies in blossoming pupils' problem posing skills, an educational instruction must be able to turn learners toward independency. In the other word, it is necessary that problem posing tasks are equipped to cognitive-metacognitive strategies which gradually lead them to independent learners to more competencies such as self-questioning, self-regulation and so on. Therefore, a communication is needed to argue how metacognitive skills can develop problem posing abilities.

VI. IMPORTANCE OF "METACOGNITION" APPROACHES IN PROBLEM POSING TASKS

Flavell [11] defined that metacognition knowledge is one's knowledge concerning one's own cognitive processes, executive and control that can be divided as declarative, procedural and conditional. Declarative knowledge is knowledge about oneself as a learner and about what factors influence one's performance, and on the other procedural knowledge is knowledge of how to do things. Furthermore, conditional knowledge is related to know when and why to use declarative and procedural knowledge. On the other hand, ability to use the metacognitive knowledge strategically is called as metacognitive skills which generally consist of

self-instruction, self-questioning and self-monitoring. In this respect,metacognition in problem solving refers to the knowledge and processes used to guide thinking directed toward the successful resolution of a problem [22]. In the other word, metacognitive skills support problem solvers in understanding the problem, selecting suitable solution strategies, monitoring solution strategies effectively, and identifying and overcoming obstacles to solving the problems. Ultimately, metacognition is an important component for incorporating appropriate information and strategies during the problem solving.

Accordingly, metacognitive strategies are a type of scaffolding that can help the student to improve his/her problem solving and posing skills. Scaffolding can take many forms, for example, cueing or the posing of metacognitive questions (e.g., "What is your goal?" and "What strategy do you use?"). Kapa [23] found that when students were cued during at ask they became more successful in problem solving activities than students who were cued only afterwards. Therefore, when teachers use these metacogintion questions in a continually bases, students will get access to the development of their metacognitive strategies and self-guiding in their learning processes, ultimately become independent learners [24]. On the other hand, there exist scaffolding for developing metacognition within the framework of constructivism learning, such as implementing problem posing strategies in mathematics classroom that can be encourage students to ask effective questions in term of metacognitive abilities.

Due to importance these phenomena in effective learning, Pativian [25] and Phang [26] investigated metacognitive abilities in problem solving process, whilst the types of these abilities in problem posing activities are partly identified. In this respect, Ilfi & Md Nor [27] reported that the phases of metacognition involved in problem posing tasks among secondary school students are reading, planning, interpreting, and checking which adopted from Phang's categories [26] . The metacognitive skills involved in mathematical problem posing tasks are yet to be determined among undergraduates as there are several sets of metacognitive skills engaged in problem solving suggested by pervious researchers (e.g., Pativisan [25] and Phang [26]). On the other hand, some communications is needed to indicate how implementing problem posing and metacognition instruments can promote mathematical thinking and high-order-thinking in mathematics classroom interaction .

VII. FACE TO FACE LEARNING ENVIRONMENT

"Didactic triangle" model related to face to face learning environment with the multiple relations among the three vertices namely, the student, the teacher and the mathematics were presented by Tall [9]. In a practical problem posing activities, students are active learners who should be applied mathematics teaching-learning material for fostering mathematical thinking by teacher's guidance.

Tall [3] categorized mathematical thinking into three significantly worlds namely, conceptual-embodied world, perceptual-symbolic world, and axiomatic-formal world. The theory of three worlds of mathematical thinking provides a rich structure in which to understand and interpret mathematical learning and thinking at all levels:

a) The conceptual-embodied world based on our physical perceptions that are built into mental conceptions through reflection and thought experiment.

b) The perceptual-symbolic world that begins with real-world actions (e.g. differentiation, integration) and symbolization into concepts (e.g. derivative, integral) developing symbolic that operate both as processes (e.g. differentiation, integration) to do and concepts (e.g. derivative, integral) to think about (called precept).

c) The axiomatic-formal world based on formal definitions and proof.

Educational experts [12] investigated how conceptual and procedural are involved in variety subjects of calculus, continually, they found that participants' conceptual understanding is lower than their procedural understanding, namely they have been unbalanced by trainings technique-centred. In mathematics education, conceptual understanding is knowledge that involves a thorough understanding of underlying and foundational concepts behind the algorithms performed in mathematics as well as procedural mathematics understanding focuses on skills and step-by-step procedures without explicit reference to mathematical idea. Meanwhile, pure procedural skills without awareness of concepts underlying them often unsuccessful in gaining readily appropriate methods to solve mathematics problems, in contrast, students that have conceptual understanding also have successful procedural performance. Consequently, mathematics teaching should aim to establish balance between both procedural and conceptual knowledge [28] parallel foster metacognitive skills among undergraduates; as a result, they can be guided toward upper stage of Bloom's taxonomy [29] which associated with higher-level thinking.

VIII. CONCLUSION

This paper presents pedagogical perspectives on problem posing and metacognition approaches by learning theories which can direct educational experts' attitude toward designing the effectiveness means of instruction. This study asserts that cultural differences and prior educational experience influence strictly learners' mathematical problem posing abilities, their performances and preferences problem posing strategies. Consequently, experts should be intended the social aspects and curriculum contents that a community has been engaged in them to each of mathematical problem posing activities. Furthermore, the review resources reveal that problem posing tasks can provide appropriate situations for involving students in specific learning process through inquiry-based learning environment which stress on social constructivism ideas for

transferring knowledge via interaction between objective and subjective knowledge. On the other hand, it clarifies the role of teachers as guidance as well as mathematical problem posing tasks, their strategies and metacognition skills as the vital scaffolds for developing students' performance along mathematics problem posing attempts. As a result, these interventions during face to face (FTF) interactions in classroom settings led gradually pupils to be independent learners with a balance among the conceptual-embodied, the perceptual-symbolic and axiomatic-formal. Briefly, "Fig.1" presents a theoretical framework of links between considered learning theories and desired components in problem posing tasks regard to a "didactic triangle".

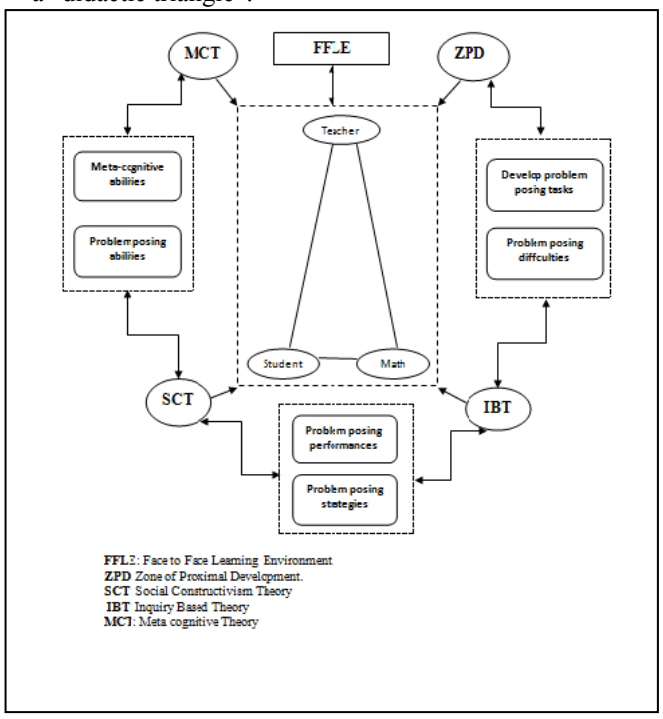

Figure1. Schematics for the theoretical framework of this study.

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Using the WBCS System as Complement of Activities in the Classroom

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Abstract—**The importance of the formal specification in the software life cycle is barely concealing to any one, Formal specifications use mathematical notation to describe the properties of information system precisely, without unduly constraining the way in how these properties are achieved. Having a correct and quality software specification is not easy task. WBCS has been implemented based mainly on the a proposed supported cooperative work model and a survey conducted on the existing Web-based collaborative writing tools. During the evaluation of the WBCS system, many students have proposed of using the system as a complement of their activities in the classroom. Some students who had used the system state that the system was helped them most in learning the process of writing formal specification. In this paper we present the user session with the prototype system and provide an explanation of both the user level and system (component) level interaction.**

Keywords- formal methods; Formal specifications; collaborative writing; classroom teaching tools.

I. INTRODUCTION

Collaboration in general is increasingly common in both professional and academic fields. In software development, the ability to produce correct computer programs that meet the needs of the user has been a long-standing desire on the part of computer professionals and it is clear that the need for correct software systems is growing [1]. Formal Methods are one of the routes to much better software writing. Formal Methods help to reinforce the importance of a proper engineering approach to software development, as they relate both to the requirements specification and to the subsequent coding stage [2]. Every stage in the development of a software system is a kind of specifications. Software specifications will become the major reference document when the work shared through the software lifecycle [3]. We believe in software development life cycle, the collaboration on producing a formal specification document of the software would save time overall and deliver a better result.

In this study, we concern with how a group of rectifiers can communicate with each other and work to prepare and produce a correct formal software specification. To address these matter, we come into view of a theoretical framework that categorized into two; collaborative issues and formal specification issues. The overall issues are shown in Figure 1. Both issues are taken into consideration when we propose the solution of the subject that is a web-based model of Computer Supported Cooperative Work (CSCW) for preparing and writing formal software specifications document [4].

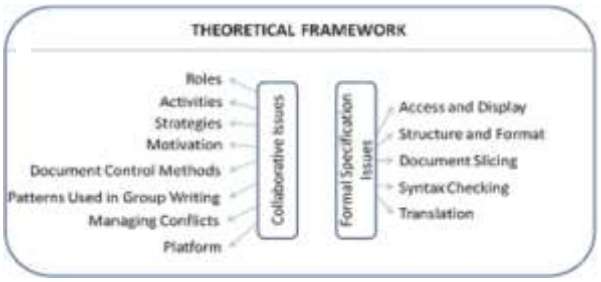

Figure 1. Issues in CSCW for formal specification

II. THE STUDY MODEL

The proposed model as shown in figure 2 and figure 3, provides software developers with a web environment that supports them to collaborate and to help them to produce correct formal software specifications. A group of rectifiers and a drafter who co-ordinates and supervises the whole process and initiates each stage, are the teamwork in the model [5].

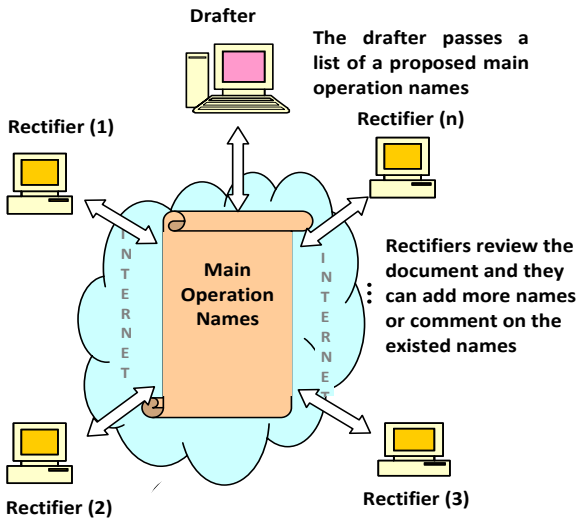

Figure 2. Rectifying processes of Basic Types and State Schemas

They collaborate to perform all the activity of writing and rectifying the specification constructs in Z formal notation that are used to modularize system state and behaviour. The model uses a spiral approach for resolving conflicts that may rises through the rectifying process between the writer and the reviewers.

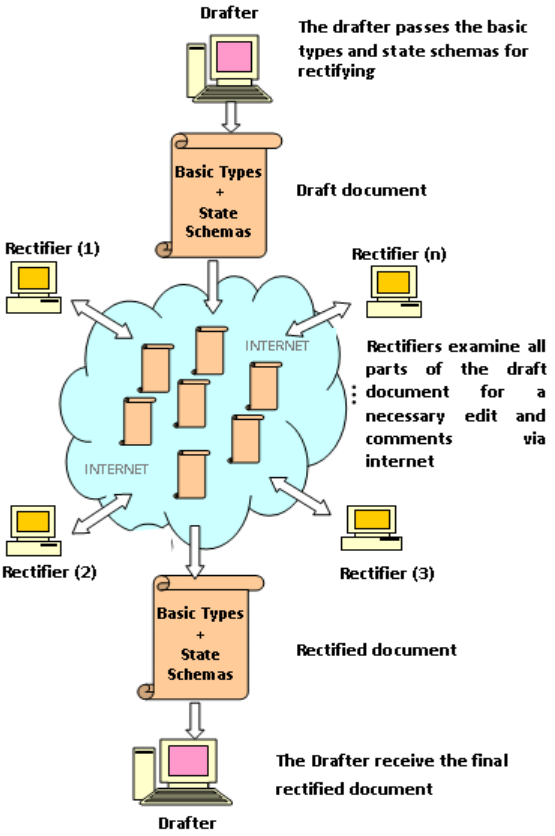

Figure 3. Rectifying processes of Basic Types and State Schemas

The model introduces a new technique to produce a formal specification called SNL2Z [6]. It provides the rectifiers with the facility of writing the operation schemas in structured natural language statements, then it automatically translates these statements into formal specification form. A report contains the translated operation schemas is produced and many other reports for each stage of the process and a team over all progress report for the management purpose is also produces.

III. THE WBCS SYSTEM

Based on the proposed model, a web-based prototype application system has been developed. This prototype is called (WBCS). The aim behind developing of the WBCS system was to design a Web-based collaboration system that provides well-structured, easily accessible, and reliable to enhance creation of formal specification document.

A Web-based prototype described in the previous chapter. This chapter describes the design and the development of the prototype implementation of the architecture for WBCS. The aim of the prototype development was to design a Web-based collaboration arena that provides well-structured, easily accessible, and reliable to enhance creation of formal specification document.

As shown in figure 4, the logical design of WBCS prototype system can be divided into three main basic components:

1. There are users who represent the people involved in the use of the system for preparing software formal specifications. The two users are Rectifiers and Drafter.
2. There are pages or areas for the users to work in. in WBCS two areas are used, and they are: Rectifiers page and Drafter page
3. Different processes are performed in the system. Each process is depending on the person who is carrying out this process or the area which was carried out this process. These processes are: Processes done by rectifiers and Processes done by drafter.

A multiple approach is used at the laboratory test to evaluate the developed system. In the test, a group of users was divided into 4 teams. Each team needs to prepare a Z specification based on a given case study. Two types of data have been collected. The first type of the data is based on reports that have been generated by the system. The second type of the data is obtained from the survey that has been carried out.

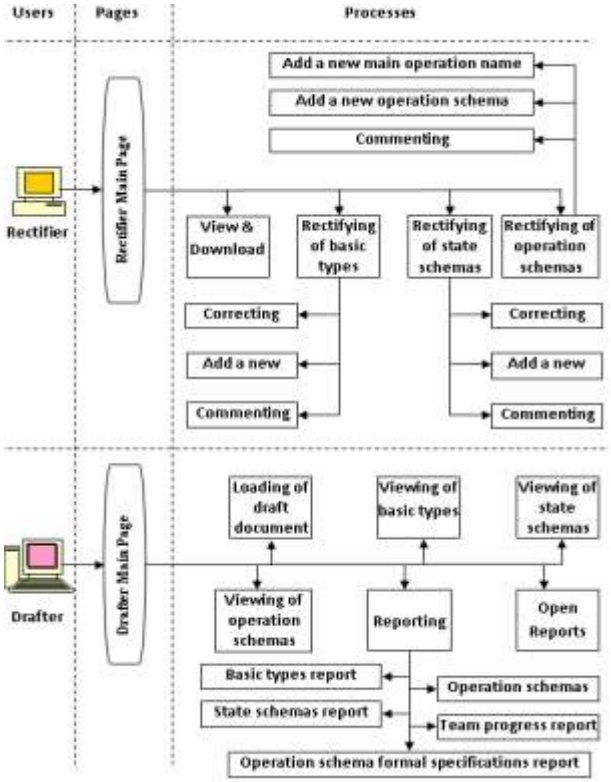

Figure 4. The logical Design of WBCS Prototype

As example of the process of rectifying basic types and state schemas, we explain the state schema rectifying process. The process started with choosing one piece of the document (one schema) by one of the users. This schema will be locked for this user and no one can choose this schema while this user still working on it. After choosing the schema, the user can go for:

- **Writing**: in this part, the user will get the facilities to write a correction. As the screenshot of the prototype shows in figure 5, the user can use the system to copy line(s) from the origin schema and/or using the system to determine if there are syntactical and typing errors in the specifications by using the Type Checker button.

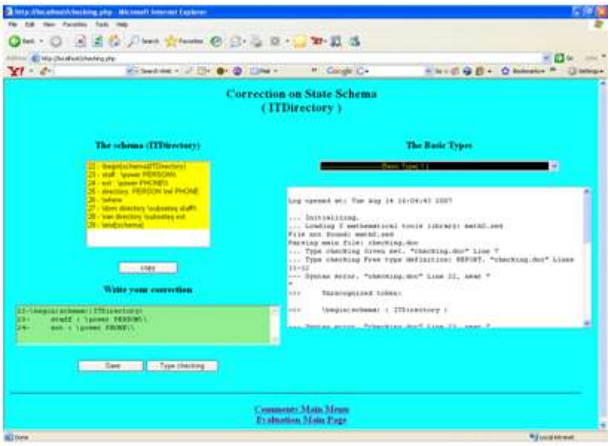

Figure 5. Write Correction of State Schema

- **Reviewing**: in this part, the user will get the facilities to evaluate and write comments on other's corrections or to read other's comments on his/her correction. As shown in figure [6], the system will show the chosen schema, all the related schemas, a pull down menu with all the basic types and a list with all the corrections that were written on the chosen state schema and each correction will be followed by the writer name. In this page, the user should choose one correction, and he/she can go for:

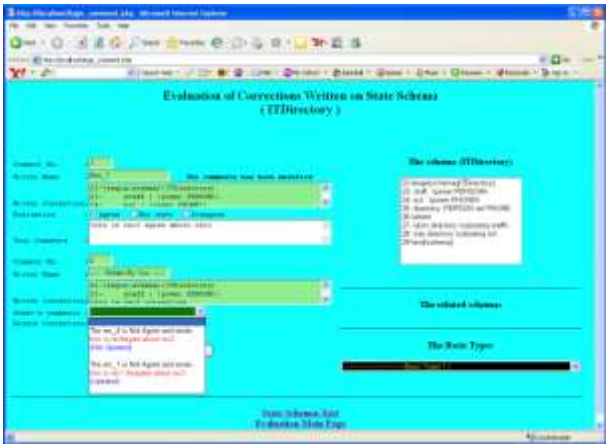

Figure 6. Evaluation and Write Comments

  - **Updating**: here the user will review the chosen correction and all the comments written on it. There are two kinds of updating can be taken here:
    - **Updating correction**: this action can occur if the user is the writer of chosen correction. The correction will be followed by pull down menu to show the user all the comments written by others on this correction. In light of this comments the user can modify or update his/her correction or thick the checkbox if he/she decided to delete this correction.
    - **Updating comments**: this action can occur if the user is not the writer of chosen correction. in this page the user can update his/her comments on the chosen correction in the light of the updated correction.
    - **Commenting**: this action will be for the corrections that written by others. The user can evaluate the corrections by click one of three radios buttons (agree, not sure, disagree) follow each correction and use the text box to write his/her comments.

Rectifying of operation schema is slightly different from rectifying of basic types and state schema. This different is mainly in the part of the process preparation. State schemas as we mentioned in previous section, proposes by the drafter and he/she is included them in the draft document. In operation schema rectifying process, the operations are completely prepared and written by rectifiers themselves and then they will collaborate to rectify these operation schemas.

Therefore, the scenario of operation schema rectifying process started with choosing of either writing a new operation schema or reviewing the existing ones. The detailed description of these two options is as follows:

- **Writing**: writing a new operation schema starts with selecting of a main operation name, then the user will get the facilities to help him/her to write the new operation schema or delete his/her existing one. As the screenshot of the prototype shows in figure 7, the system provides the user with a form that consists of six fields to write the details of the schema and two pull down menu that provide information for the state schema names and its component. These two kinds of information are automatically generated by the system. When the user completes the filling up the fields, he/she should save his work before the back to the operation main page.
- **Reviewing:** in this part, the user starts the process with choosing an operation schema from the operations list. The list of operations consists all the registered main operation names and each operation name attached with all its operation schemas. The user can review all the specifications of all operation schemas.

The specification will appear in two different colours. The yellow colour indicates to the operation that written by the entire user, whereas the other colour indicates that the specifications has been written by other user. Each operation schema in the page followed with a radio button that allowed the user to choose one of them. When the user chooses one operation schemas, this schema will be locked for him/her and no one can choose this schema while this user still working on it. After choosing the schema, the user can go for:

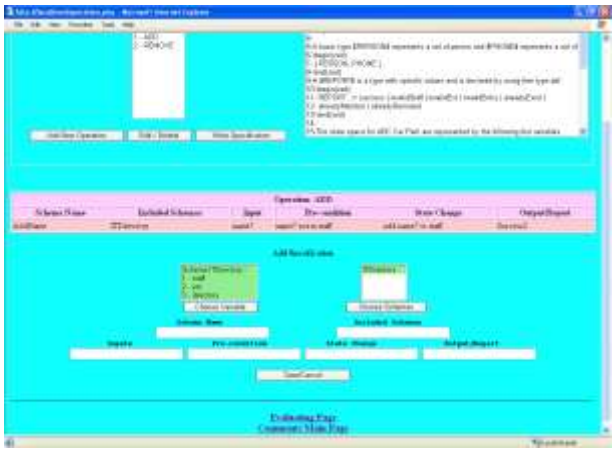

Figure 7. Write a New Operation Schema

- **Updating**: here the user will review the chosen operation schema and all the comments written on it. There are two kinds of updating can be taken here:
  - **Updating the operation**: this action can occur if the user is the writer of chosen operation schema. Upper the chosen operation there will be a pull down menu contents all the comments written by others on this operation schema. In light of this comments the user can modify or update the operation schema or press the 'Delete' button if he/she decided to delete it.
  - **Updating comments**: this action can occur if the user is not the writer of chosen operation schema. In this page, the user can update his/her comments on the chosen operation schema in the light of the operation schema updates.
- **Commenting**: this action will be for the operation schemas that written by others. The user can evaluate the operation schema by click one of three radios buttons (agree, not sure, disagree) follow the operation schema and use the text box to write his/her comments.

IV. LABORATORY TEST

The main aim behind carrying out the study is to assess the feasibility of executing the web-based collaboration process using WBCS. the study involved sixteen of participants. They are undergraduate students at the Faculty of Information Science and Technology. They are well accustomed to use computers in their daily working routines. The participants have a technical background and all of them have experience using the Web and are familiar with other Web-based discussion tools. The participants have completed at least one course in Formal Method through their study and they are familiar with the formal specifications and Z notions. The participants were randomly assigned to four groups of four students.

The case study of the test is presenting of a university wants to computerize its internal telephone directory. The database must keep a record of all the staff who are currently member of the university (as only they can have telephone extensions). The database must cope with the possibility that one person may be reached at several extensions and with the possibility that several people might have to share an extension.

In the study, two main types of data have been collected. The first type includes observations from the interaction between users (objective data). These data include the corrections that the users wrote, the comments that they produced, the reports that the system produced, and the log files that our system kept. The other main type of data we have collected is subjective, resulting from the survey we have carried out with users. Most of the data collected for the study of our system was objective data.

V. THE RESULTS

Participants in the test bring with them Expectations about collaborative writing. These attitudes uncovered in the questionnaire present that 37.5 % of the participants are a strongly agree that they do not prefer to work independently and they feel that working with other people is more helpful than working alone, while 62.5 % of them are just agree.

As for sharing their work through the WBCS prototype system, the most common advantage reported was the easy of using the prototype and accessibility to the information and comments in all the stages of the

processes. 87.5 % of the participants valued the fact that all the prototype system was easy to use and no much difficulties they fund in working on it. One respondent wrote, "*It is easy to use; we just need to click some buttons or type in the needed information*".

Beside the ease of the use, some participants consider that the using of comments in the rectifying process in the WBCS prototype system has helped them to get the job done. One respondent wrote, "*It is easy to use and we can know what the error is, and other's comments are helping me to know my mistakes and to assist me do the correction*", anther one said, "*Comments and solutions from others have helped me to overcome the problems that I did not even know*."

Respondents after using the WBCS prototype system, they state that the system was helped them most in learning the process of writing formal specification. One of them expressed "*The system helped me to understand more clearly about Z specifications,*" "*It helped me to learn and understand Z specification,*" another user said. Some mentioned that by suing the prototype system they learn how work with others and correct their work, in this context a respondent has wrote, "*This is a good system where I can learn and correct my specification ... It is easy and better to work with others*"

Many of the views and valuable observations have been collected through this questionnaire; one of these important observations was to use this system as a learning tool for students. They believe that the using of the system and the different process that it uses, by students it will increases their skills and abilities. One respondent wrote, "*Student should try these specification writing processes in WBCS to improve their skill.*"

A few disadvantages were also mentioned from some participants. Some of these disadvantages were related to the using of the WBCS prototype system, while some others were related to shortcoming in the facilities that the prototype offered. Some users got some confuse during the use of the system and they were complained from the difficulty of understanding the process. The reason for this is the neglecting of some students in the good preparation for the work on this system, where the user manuals were distributed to students in advance, but some students have not prepared well. Two users have mentioned to this problem and one of them wrote, "*I felt a bit confused when I was using the system*," the other used stated, "*It is difficult to understand the flow of the operation*."

One more complain have received from the users is regarding to the facilities of the WBCS prototype system. Some of the respondents indicated to some problems with the system and the solving of these problems should be taking in mind in any future upgrading of this WBCS. 50%, mentioned that the system should provide the user with a help to write the Z symbols and not depend on the symbols booklet. One user has suggested that the WBCS should have information library and he wrote, "WBCS is a good system ... It should have library for people to search about information while using this system."

VI. CONCLUSION

Through our discussion with the students who have used the WBCS system, we found that they welcomed the idea of using the system in classroom to learn about formal specification. They believe that the using of the system and its various processes will increases the skills and abilities of students. For the students of the formal specification courses, it is beneficial for them to work collaboratively to write, correct each other's work, and comments on each other's corrections. As we have seen from the results of the evaluation of our prototype system, the working of students (as rectifiers) on such collaborative environment helps the students to grasp the subjects more than working individually on the same subjects without using the prototype system.

For the teacher of the formal specification course, it was also valuable to have access to the students' work from one place and to have a flexible time to work with the students through the system (as drafter and rectifier). This is mainly because when working on paper, the comments made on a particular work by the teacher are commonly given directly to the author and kept by him or her (one student). Using the WBCS, students can gain from reading the teacher's comments that he/she might have made on other students' work and share them with all the other students. Another benefit for the teacher from using WBCS system in classroom is to have reports on the students' activities through their working on the system. These reports will help the teacher to know the level of the students' grasp and evaluate their work and achievements.

Finally, the use of the WBCS system in the teaching formal specification courses for computer students are positive points for the system and it should be taken into account in any development of this prototype system.

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Design of Mobile Collaborative Informal Learning Activities Using Activity Theory, Mobile Devices and Social Tools: Universiti Teknologi Malaysia Case Study

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Abstract— **During the past few years penetration of mobile devices increases among the students in higher education institutions. Due to this digital environment expansion, learning activities span across the boundary of classroom. Learners are more mobile and connected using social technologies and tool like, Social networking site, Blog, wikis, online board, and virtual world than ever before. There is gap between academic institution, curriculum, faculty and 21 century learner. Mobile learning stake holders are still using traditional methods. This makes learner less engaged and learning less interactive. Thus we are going to explore under the area of Mobile Computer Supported Collaborative Learning (mCSCL), how to design learning activities for collaboration, Informal, interactive, and mobile learning environment. For our design requirements we used Activity theory (AT). Therefore to address this gap we proposed a design framework for designing learning activities. How collaboration can be effective during the learning activities, tools, facilitators interaction, division of labor among team members, and supportive campus environment. This paper will be answering the main question, how to design mobile collaborative informal learning landscape using smart mobile devices in higher education institutes? Inferences from the case studies conducted at UTM that mobile tools, facilitator role, and team all mediates learning activities. Result shows that by using our design model facilitators were able to design more interactive learning activities.**

Keywords: Mobile Computer Supported Collaborative learning (mCSCL), Interactive Learning environment, Activity theory

LITERATURE REVIEW

Collaborative learning is rooted in Vygotsky's[1] activity theory. Computer Supported Collaborative Learning (CSCL) incorporated in to an innovative learning paradigm. Sharple and his group worked on designing learning activities using mobile devices. Mobile society concept was given by him where learner can learn across different environment to resolve the conflict of formal and informal learning [2, 3, and 4]. Zurita and Nussbaum used mobile phones to design Maths and English courses learning activities [5]. Baloian, and Zurita explain the importance of mobile devices in creation of Mobile Collaborative Knowledge [6].Kurti, & Spikol explore outdoor activities using mobile devices and proposed design toolkit for emerging learning landscape. (D*TELL)[7, 8]. Noorasura designed Mobile learning object for engineering students using mobile learning with augmented reality (MLAR) provided as a learning aid tool [9].

DESIGN PROCESS

Figure 1 show the design process of learning activities. Where the field work is actually the case studies conducted at UTM.

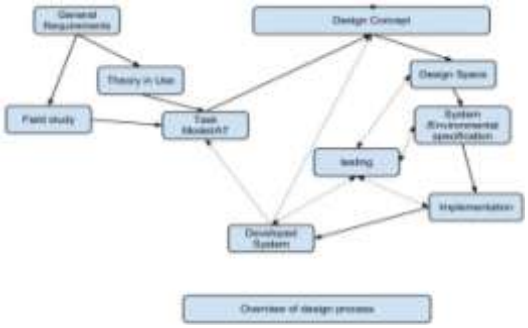

Figure 1. Overview of Design Process

CONCEPTUAL FRAMEWORK

Figure 2 shows the overall conceptual framework for research project. Framework consists of five phases. Phase two is key phase where we design the learning activities using Integrative learning design (ILD) method.

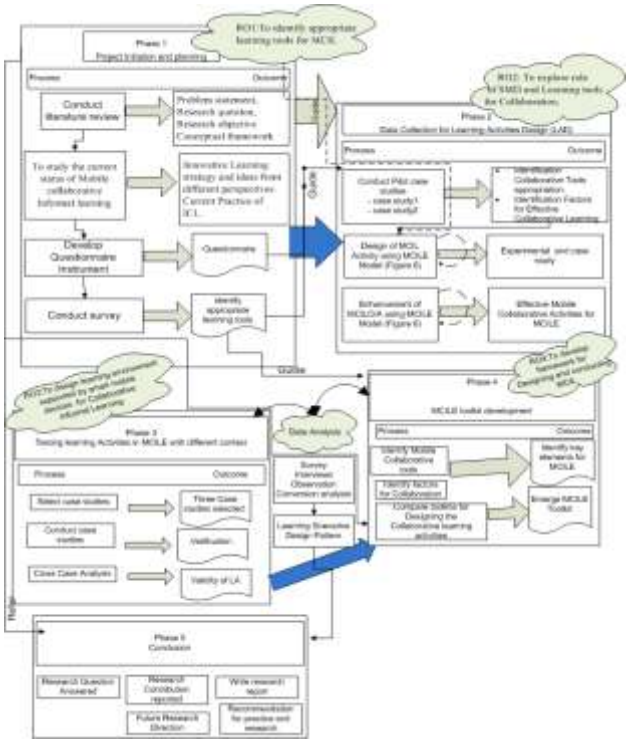

Figure 2: Conceptual Framework for research

CASE STUDIES

Researcher conducted two case studies for design of Collaborative learning activities. Frist case study was in a modular base course for PhD students. Researcher started the discussion with facilitator to get general requirements, after that designing of learning activity collaboratively. Students were asked to work in groups. Once they accomplish the task data was collected using Google docs. And selected groups were interviewed.

Second case study author used collaborative e-board to capture the activities conducted by the groups. Group members were asked to key in data whenever they use tool and learning space to perform the collaborative task. AT was used to design the data collection instrument. Figure 3 shows overall steps for case study two.

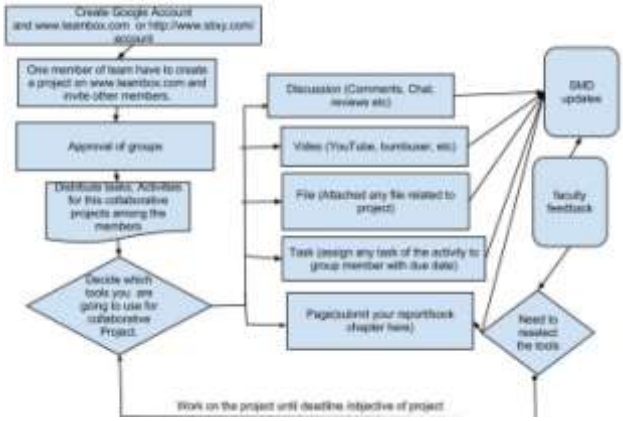

Figure 3: Overview of Case study two

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Role patterns in discussion forum interaction and its criteria in e-learning

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Abstract—**Online discussion forum becomes a popular tool for discussion activity among instructor and student in higher education institutions. During discussion activity, a lot of interactions occur and many patterns may arise that reveal a deep understanding about the participants of the group. However, to identify the pattern of interaction, it is not an easy task and there is a need to determine some criteria on how the group members share and construct knowledge. This paper discusses on various patterns for the role of a leader, facilitator and follower. Better understanding on the user's roles during the discussion can benefit the educators in many aspects, such as for guidance and assessment purposes. Therefore, this paper explores the criteria for each interaction pattern according to the user's role which guides us to analyze other user interaction patterns more easily. The sample data use in this research is log activities from an academic group discussion of a simulated in the field of IT entrepreneurship. The interaction pattern of these data is matched with the identified criteria reviewed for journal and articles survey. The social network analysis (SNA) tool is used to evaluate the log activities and produce the interaction pattern in a form of sociogram. Finally, this paper shows the pattern of leader, facilitator and follower. Leader and facilitator have highest in-degree and position in the center of the group. The follower with a broker pattern has a highest betweeness centrality and is positioned between two groups, while the follower with an isolative pattern is positioned on the edge of the group.**

Keywords- online discussion forum; interaction; pattern and social network analysis

I. INTRODUCTION

The online discussion forum also known as internet forum is an asynchronous application that plays an important role in stimulates discussion. It consists of several threads which contain question post by the user, conduct by host and maintain by moderator [1, 2]. The online discussion forum offers a suitable feature to discuss various topics in any fields especially for educational purpose. The online discussion forum also becomes a popular tool for discussion activity [3] other than discussion in traditional class among instructor and student in higher education institutions. In fact, online forum has more advantage as it is convenient and effective than traditional classroom because participants can take part anytime [4].

There are many learning strategies that can be done in online discussion forums. Some few examples are collaborative learning, small group discussion, collaborative project work and problem-based learning.

During discussion activity, a lot of interactions between the user may occur. From previous research, interaction can be between: teacher-learner, learner-learner and teacher-teacher [5]. From Paulsen, 1995 [6] perspective, there are one-alone, one-to-one, one-to-many, and many-to-many interaction. For every type of interaction, many patterns arise that reveal a deep understanding about the group pattern.

II. INTERACTION PATTERN AND ISSUE

Interaction pattern is the structure of interaction among participants involve in collaborating learning task activities [7]. To identify the pattern of discussion interaction is not an easy task and there is a need to determine some criteria on how the group members share and construct knowledge.

During discussion activities with different learning strategies, there occur few role patterns namely leader, facilitator and follower.

A. Leader

According to [8] leader is "the person who leads or commands a group, organization, or country". In an online discussion forum, a leader is referring to someone that leads or has influenced in the group discussion [9]. Leader in different learning strategy may handle different tasks. It is said that a leader can shift among member [9]. Thus, it is possible for any member in the group to be the discussion leader. Obviously, there are two leader types, namely the autocratic and democratic. The criteria of both types of leader are explained as follows:

- Autocratic

  According to [10], autocratic relate to a ruler who has absolute power, giving little consideration of others opinions. This type of leader almost all decisions and

express opinion. The leader is more personal in praise and criticism.

- Democratic

  The term democracy is "relating to or supporting democracy or its principles" [11]. On the contrary of autocratic criteria, democratic leader tend to be less authorize and giving more freedom to other members to decide. During the first period of discussion, the leader usually gains the activity perspective, and may leave the members to make decisions or conclude the discussion.

B. Facilitator

The facilitator is a person who supports groups to collaborate, work more successful and achieve interaction [12]. He or she is open, unbiased and not taking any site or voicing a point of view during discussion [12] and also a person who becomes a reference in the discussion. The role of facilitator is important for the success of the discussion to be on the right track. Discussion that is on the right track makes it easier for the discussion objective to be achieved. The facilitator is in central position; the pattern of interaction could be similar to a leader. A way to distinguish its role of a leader through observes the log activity whether the member is active in the middle phase of discussion. Also, the content of the discussion can be studied to ensure if the person is monitoring the discussion and become the center for people to refer. Berge, 1995 [13] points out that an instructor who plays the role of facilitator carried by instructor in several styles. Two of them are discussed next which is pedagogical and social.

- Pedagogical

  A facilitator who is towards pedagogical will give a question and encourage participants to respond. The discussion can be on critical concepts, principles and skills. [13] [14]

- Social

  If focusing social, the facilitator focusing more on participants' relationships, develop group cohesiveness for the participants to solve an issue together. Those are all critical to success in any conferencing activities. [13].

C. Follower

In a group discussion, other important role is followers or subordinates. According to [15], [16] and [17], follower refers someone who supports a particular person or set of ideas. The follower role may lead to several patterns: isolative and broker.

- Isolative

  In a group discussion, there is possibly some participants in the position of isolative. According to [18], isolate means "cause (a person or place) to be or remain alone or apart from others". The person in a group discussion has no or lack of interaction such as give question or post but does not get a response.

- Broker

  A broker is "an employee that ties together otherwise disconnected people" [19]. For online discussion forum in this paper, it refers to the user who connects together or disconnects the other member. [19] and [20] agree that this role can be positive and negative. It is a positive role if he/she connects to two people and make interaction a success. It is a negative role if he/she isolates or if the group loses few users to support the discussion. Another definition of this role is a bridge, boundary spanners, bridge builders, bottlenecks and gatekeepers [19].

III. METHOD

From the interaction pattern criteria identified from Section II, we then determine who plays the role in the discussion activity.

The methodology used in this work is an exploratory study. The criteria of user interaction patterns are gathered and identified from journals and survey articles. The criteria are analyzed and divided into two : physical criteria (such as the actions and total posts) and content (such as discussion words or sentence). Data source for the physical criteria is the log data obtained from the e-learning system, while the content will be the messages in the discussion forum.

For discussion forum, the sample data of simulated discussion is conducted using an e - learning system based on the Moodle 2.3 platform. The discussion is using 'discussion of general use' category and consist of ten students and an instructor. After the end of the discussion session, the log data is retrieved from the reports. The social network analysis (SNA) tool is used to analyze the log data and calculate the degree. The calculation of degree involves the formula as shown in Figure 1. Then, the sociogram is produced using the feature of SNA tool.

For directed graph:
In-degree:

$$d_i = t_i$$

t_i= "The number of arcs pointing to a given node"
Out-degree:

$$d_o = t_o$$

t_o="The number of outbound arcs"

Betweeness centrality:

$$C_B(n_i) = \sum_{j<k} \frac{g_{jk}(n_i)}{g_{jk}}$$

where:
$g_{jk}(n_i)$=particular node;
g_{jk}=number of shortest path that interact with jk

N. Sakinah, 2008 [21]; Degenne & Forsé, 1999 [22]

Figure 1. Formula of degree calculation.

IV. FINDING AND DISCUSSION

Table 1 lists the role and patterns of a leader, facilitator and follower based on the criteria that have been discussed in section III. These criteria become the basis to determine the interaction pattern.

TABLE I. ROLE AND CRITERIA

Role	Pattern	Criteria	
		Extent	**Content**
Leader [7], [3],[24] ,[25]	Autocratic [23], [26]	• Own higher popularity • Tends to respond more actively to other member's request • The one who normally has the most intense participation in the team • Prompt a response either from other members or other leaders • Degree centrality of actor is highest	• Identify problems, objectives, for follower. • Determine discussion policy • Make consideration of others input • Provide limited freedom for subordinates • Personal in praise and criticism
	Democratic [23], [26]		• Gives more freedom to subordinates • May not make a final decision • Aim to get agreement among the group members • Encourage and assist in policy matter • Follower free to choose who they want to work with • Objective or fact-minded in praise and criticism
Facilitator [7]	Pedagogical [13],[14]	• A central member in community in the middle phase	• Use question and probe response focus on critical concepts, principles and skills
	Social [13]		• Promote relationship among members
Follower	Isolative [3], [27], [19]	• The position is on the edge of the community • No or lack of communication (few connections) • Interact in one way (post but did not get a response)	• Seldom publish articles and opinions • Made few contributions to the community
	Broker or Bridge [19],[20]	• Have a high betweeness score • Position between two important constituencies	• Provides information, connection and potential contributions

Figure 2: Show the sample of simulated discussion conducted on Moodle 2.3 platform. Based on criteria in Table 1, the discussion is developed. From the Figure 2, it shows that there are sequences of interaction and who responded to whom can be identified as well as the content of the interaction.

Figure 2. Sample of discussion.

Moodle 2.3 provide feature to generate reports in different formats. Figure 3, shows the log generated in excel format. From the log, user can see action made by participants whether the participants add, view or delete posts. For this research, only participants who add post will be counted. The sender and receiver of the post from the analyzed log and discussion is inserted into SNA tool.

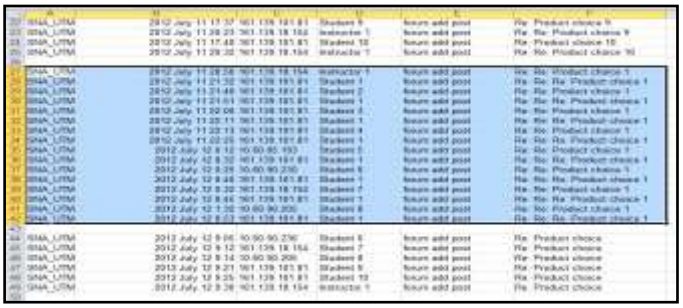

Figure 3. Discussion log data

Table II concludes the member's degree. The calculation which calculates using SNA tool feature can assist in matching criteria. For example, Instructor 1 and Student 1 has a highest degree centrality for leader and facilitator, respectively. Meanwhile, Student 4 has a high betweeness centrality score for the broker. Those calculations involve formula as stated in Section III.

TABLE II. DEGREE CALCULATED

Degree	**I 1**	**S 1**	**S 2**	**S 3**	**S 4**	**S 5**	**S 6**	**S 7**	**S 8**	**S 9**	**S10**
In-degree (receive feedback)	7	7	3	2	2	4	2	2	1	1	0
Out-degree (give feedback)	7	7	2	2	2	4	2	2	1	1	1
Betweeness centrality	32	32	18	0	0	34	0	0	0	0	0

Figure 4 is the generated sociogram using the SNA tool after the log data has been analyzed. From this sociogram, the position of each participant can be seen. It is shown that student 1 and Instructor 1 in the central position of the group, Student 10 on the edge of groups and Student 5 in between two groups.

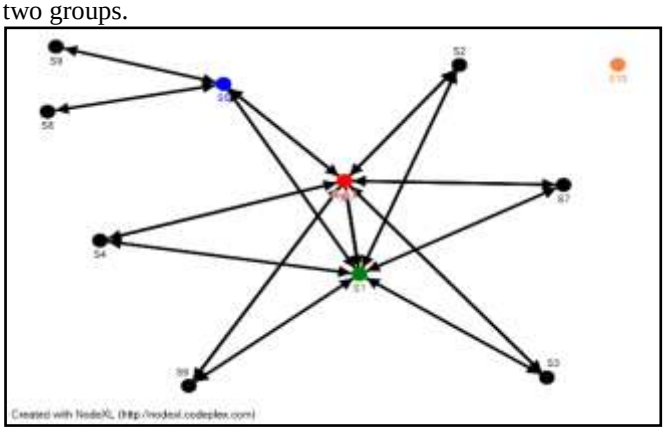

Figure 4. Sociogram of role patterns.

Finally, Table III shows the results of the matchmaking. As stated in Section IV, the criteria obtain from journals and survey article (Table I) is matched with the discussion content (Figure 2), logging data (Figure 3) and SNA tool calculation (Figure 4).

TABLE III. ROLE AND CRITERIA

Criteria of role patterns	**I 1**	**S 1**	**S 2**	**S 3**	**S 4**	**S 5**	**S 6**	**S 7**	**S 8**	**S 9**	**S 10**
Leader											
Extent											
Own higher popularity	/	/	x	x	x	x	x	x	x	x	x
Tends to respond more actively to other member's request	/	/	x	x	x	x	x	x	x	x	x
The one who normally has the most intense participation in the team	/	/	x	x	x	x	x	x	x	x	x
Prompt a response either from other members or other leaders	/	/	x	x	x	x	x	x	x	x	x
Degree centrality of actor is highest	/	/	x	x	x	x	x	x	x	x	x
Leader-autocratic criteria											
Content											
Identify problems, objectives, and plans for the subordinates.	x	/	x	x	x	x	x	x	x	x	x
Determine discussion policy	x	/	x	x	x	x	x	x	x	x	x
Make consideration of others input	x	/	x	x	x	x	x	x	x	x	x
Provide limited freedom for subordinates	x	/	x	x	x	x	x	x	x	x	x
Personal in praise and criticism	x	/	x	x	x	x	x	x	x	x	x
Leader-democratic criteria											
Content											
Gives more freedom to subordinates	x	x	x	x	x	x	x	x	x	x	x
May not make a final decision	x	x	x	x	x	x	x	x	x	x	x
Aim to get agreement among the group members	x	x	x	x	x	x	x	x	x	x	x
Encourage and assist in policy matter	x	x	x	x	x	x	x	x	x	x	x
Other member free to choose who they want to work with	x	x	x	x	x	x	x	x	x	x	x
Objective or fact-minded in praise and criticism	x	x	x	x	x	x	x	x	x	x	x
Facilitator											
Extent											
A central member in community in the middle phase	/	x	x	x	x	x	x	x	x	x	x
Facilitator-pedagogical											
Content											
Use question and probes respond focus on critical concepts, principles and skills	/	x	x	x	x	x	x	x	x	x	x
Facilitator-social											
Content											
Promote relationship among members	x	x	x	x	x	x	x	x	x	x	x
Follower											
Follower-isolative											
Extent											
The position is on the edge of the community	x	x	x	x	x	x	x	x	x	x	/
No or lack of communication (few connections)	x	x	x	x	x	x	x	x	x	x	/
Interact in one way (post but did not get a response)	x	x	x	x	x	x	x	x	x	x	/
Content											
Seldom publish articles and opinions	x	x	x	x	x	x	x	x	x	x	/
Made few contributions to the community	x	x	x	x	x	x	x	x	x	x	/
Follower-bridge											
Extent											
Have a high betweeness score	x	x	x	x	x	/	x	x	x	x	x
Position between two important constituencies	x	x	x	x	x	/	x	x	x	x	x
Content											
Provides information, connection and potential contributions	x	x	x	x	x	/	x	x	x	x	x

According to the criteria, leader obtains higher popularity. This role is provided by Student 1 which position is in the center of the group. Other criteria must also be considered which is an active response to others and have higher degree centrality. This criterion can be checked from the log which shows Student 1 keep response for each student. According to [28], "actor-level degree centrality is simply each actor's number of in-degree or degrees in a non-directed graph". The leader in simulated discussion is designed according to autocratic criteria which the sentence "I think you have to" and addressing name is a command [29] which provide limited freedom, shown in Figure 5.

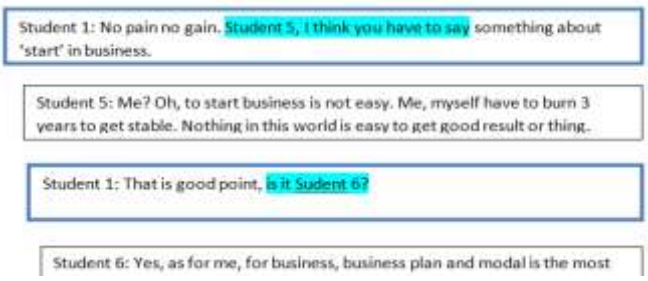

Figure 5. Discussion script for autocratic.

Instructor 1 represents the role of facilitator pattern. After the log arranged in the sequence, it is clearer to see the

discussion flow. The purpose is to see who the central member is in the middle phase of discussion. Middle phase of discussion is based on [30] which is in phase 3-'negotiation of meaning and/or co-construction of knowledge'. Because of the forum is asynchronous (the user can respond anytime), the time cannot depend on, to directly see the sequence of discussion from the log. From the log analyzed which is based on criteria, the Student 1 act as the facilitator. The pattern looks similar to leader pattern. Hence, to look into its content is important. The facilitator in simulated discussion is designed according to pedagogical criteria which focus on critical concepts, principle and skills shown in Figure 6.

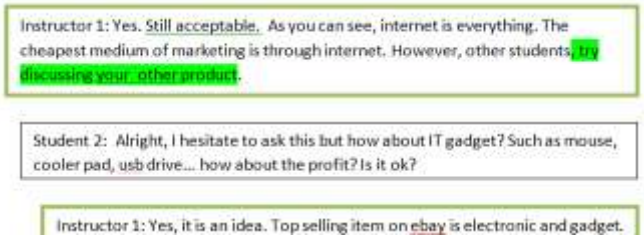

Figure 6. Discussion script for pedagogical.

Isolative pattern which the role plays by Student 10. As discussed in Section II, the position of student 10 is certainly on the edge of the community. There is no interaction as there is neither out-degree nor in-degree which shows the Student 10 did not make the response. His lack of communication which he did not post even once.

Broker pattern play by the Student 5. According to the criteria, the broker has a high betweeness degree. The position of the actor is between two users or groups. Thus, the pattern shows Student 5 act as broker to connect Student 8 and Student 9.

V. CONCLUSION

The main objective of this paper is to discover the criteria for each interaction pattern according to the user's role. In conclusion, this paper discussed patterns for roles which are leader, facilitator and follower. For the leader, the criteria are the actor will be in the center of the group in the early phase of discussion, while isolative is on the edge of the group during the discussion. And to identify facilitator, the actor is in the center of the group during the middle phase of discussion while broker is in the between of two users or group during the discussion. Those patterns (leader, facilitator) have highest in-degree while isolative do not have in-degree and broker has a high betweeness degree. Thus, it is hoped that the finding can become a guide in identifying or ensuring related patterns when it occurs in interaction. Content can really influence the interpretation of the pattern and for this paper, it only based on authors' conclusions. Thus, the research would like to expand study on content in future study.

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Pedagogical Blog:University Lecturers' Perception and Application

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***Abstract*—Recent studies have found the values of weblog in extending teaching and learning beyond the space and time of a classroom. The pedagogical application of blog have resulted in various benefits in instructional processess. However, not much research has been conducted in this area locally. In view of the research gap, a survey study was undertaken to mainly investigate the extent of blog application for pedagogical purposes at the tertiary level. The results of the study reveal that 45% of a total of 207 lecturers surveyed admitted using blog in their instructional processes. Various reasons were given to the non-use of blog. For those who applied blog, the purposes include communication, discussion of course content and assignment, activity log, posting assignments for assessment, reflective thinking and writing practice. Other important findings and implications were also drawn from the study.**

Keywords: pedagogical blog; perception; application; weblog; university lecturer (key words)

I. INTRODUCTION

Recent studies have found the values of weblog in extending teaching and learning beyond the space and time of a classroom. The pedagogical application of blog encourages the formation of coummunities of active learners through interactive learning and authentic tasks [1] [2]. Weblog is found to motivate the sharing of ideas, and learners get the chance to act as experts on subjects they are
passionate about, and this promotes positive feeling central to active learning [4]. Besides the extended lecturers' support made possible through blog, learners get to help each other in the learning process as the comment feature of weblog allows for peer feedback and learning support that foster comradeship [1] [5] [6]. The blogging act also instigates students' involvement in tasks such as reading for information, evaluating and researching information resources in creating content, thinking critically about issues, and learning digital skills as well as language and communication skills at the same time.

In view of the aforementioned benefits and potentials of pedagogical blogging and the apparent research gap in this area locally especially in the tertiary sector, a survey study was undertaken toinvestigate the perception and application of weblog among university lecturers.

II. METHODOLOGY

The target population of the study comprises lecturers in both public and private universities. The respondents were invited through e-mails and print flyers manually distributed at various universities that directed them to the survey website. In order to attract the respondents' interest in the survey, lucky prizes were used as incentives.

The survey questionnaire was designed by the research team based on references to related studies through a tedious process of item creation, piloting and validation. The self-designed questionnaire comprises three sections: demographic information, perception of blog, and basic uses of blog in instruction.

Prior to adopting the use of SurveyMonkey, the questionnaire was piloted through manual and web-based methods. The pilot study found more or less the same poor response rates for the two questionnaire administration methods. However, the web-based SurveyMonkey had the advantages of automating data analysis and presentation, and was also more cost effective. Therefore, it was adopted to conduct the survey for the present study.

III. RESULTS AND DISCUSSION

The survey managed to solicit a total of 207 responses from various disciplines among the invited universities over a period of three months. The results are presented according to the three sections of the questionnaire.

A. Demographic information of the respondents

Out of the 207 respondents, 60% are female and 40% male. This reflects the gender ratio of university lecturers. About 35% of the respondents are from the age range of 21-30 years old, 32% from the range of 31-40 years, 20% from 41-50 years, and the rest are above 50. In terms of portfolios, 46% of them are lecturers, 24.5% senior lecturers, 8.8% associate

professors, 3.4% professors, and the rest are either language teachers or tutors. About 80% of them taught at the undergraduate level, and the rest taught postgraduate courses. About 27.5% of them were from the discipline of languages and communication, 9.8 from ICT, 7.8 from engineering, and the rest, of insignificant numbers, were from other disciplines. About 35.6% of the respondents had between 1- 5 years of teaching experience, 19.8% had 6-10 years, and only 12.4 % had more than 20 years of teaching experience. Almost all of them (98.8%) agreed that it is important for lecturers to be IT savvy, and they indicated using the following in their teaching practices: email (99%), online forum (67.5%), instant messaging (64.4%), wiki (61.3%), blog (44.6%), chat (42.5%), and listserv (22.2%). It is indeed a positive sign that the respondents had embraced ICT in their teaching, and about half of them were using blog.

B. Perception of the respondents

In finding out the perception of the respondents about blog, the following Likert-style statements were given: 1. Lecturers should take the initiative to learn about weblog technology; 2. Weblog should be used as an instructional tool at tertiary level; 3. Interaction via weblog is a useful complement to face-to-face interaction; and 4. Weblog is likely to encourage collaboration among students. Generally, about 60-70% of the respondents agreed or strongly agreed to the four statements, about 20-30% were not sure, and a negligible number disagreed or strongly disagreed. They generally perceived blog positively for instruction.

C. Basic uses of blog

Only 21.1% of the respondents had been using blog in their instruction. The rest quoted reasons such as: unaware that weblog has been used in the educational domain; do not see the importance of using weblog in teaching; find the use of technology too troublesome; like to use weblog but do not know how to apply the technology; want to introduce it, but lack of access to computers and the Internet to support weblog; for the non-use of blog.

For the practitioners of blog, 37% of them had started using it in their teaching from 3 or 4 years ago, 26% 1-2 years ago, 18.5% less than one year, and 18.5% more than 4 years ago. This shows that using blogs for pedagogical purposes is quite a recent practice. They cited the following purposes of using blog: to communicate with students outside class hours (93.0%); for students to communicate socially with each other (79.5%); for students to discuss course content and/or assignments, and the posts are graded (87.5%); for students to discuss course content and/or assignments, and the posts are not graded (80%); for students to post assignments for assessment (73.2%); for students to keep a log of their activities (63.4%); for students to do reflective thinking (77.5%); and for students to practise writing (76.9%).

Half of the blog users (51%) said that they kept a personal blog. About 56% read other educator's blogs for ideas and information. About 24 % claimed to have formal training and the same percentage said that they were assisted by others in using blog for instruction.

IV. CONCLUSION

It is observed that the take-off of any innovation is often by individuals who are passionate about it, and they usually acquire the skill of using it by self-learning based on trial and error. This study found that the initiative to adopt blogs for teaching is mainly due to the personal interest and passion for the technology, although formal training and peer or administrative supports are also important to make the implementation a success.

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The Architecture of Instructional Design: A Critical Assessment

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Abstract— **This assessment argues that Knowing the concept and structural design of a curriculum are vital to teachers and educational institutions as they prepare themselves for crucial changes taking place now and in the future. These changes may be socio-economic, political, technological and more importantly, environmental. Only then, they can apply relevant and the most up to date techniques and methodologies to create a workable curriculum. This appraisal further contemplates that knowing what constitutes an effective curriculum also helps educators to relate the contents of their subject to their localized setting. As such, a good curriculum implies learning activities are pre-planned; what and how to achieve the results are spelled out explicitly in the curriculum. When developing a curriculum, one must think of what the learners are going to do and how they will be facilitated in the learning process. The curriculum should always show learners how to learn rather than tell them how to learn. The curriculum should show students where exactly they are heading and how to reach the desired destination. A good curriculum designer makes concepts clearer to learners by giving them examples from their everyday activities so that learning becomes more relevant and meaningful. Hence, the students become more engaged in their learning tasks and are confident of achieving success in their educational endeavors. As such, this critical evaluation attempts to clarify what is a curriculum. How to design a viable curriculum, determine characteristics of a good curriculum, provide a checklist for teachers to help design a feasible Curriculum to their classrooms.**

Keywords: Curriculum, teaching, learning, instruction, design

I. NTRODUCTION

History has seen educators and curriculum designers having had difficulty in coming to a mutual understanding about the hows, whys and wherefores of an effective curriculum (Wallin, 2011). Indeed, it cannot be denied that the development of an effective curriculum development is a challenging process. Nevertheless, the common consensus among educators is that there has been a significant change in the perception of a workable curriculum design. From being merely a basic syllabus, an effective curriculum should also outline effective techniques of delivering knowledge to students (Beyer et al., 1998). Designing a workable and a feasible curriculum is vital to the successful implementation of educational goals (Faryadi, 2010). The curriculum is the backbone of any teaching and learning environment. Hence, without a well-designed curriculum, it would be difficult for an institution of learning to function effectively.

II. WHAT IS A CURRICULUM?

The origin of curriculum can be traced back to ancient Greece, when it was referred to as currere. Interestingly, in Latin, curriculum means to run a course or to race. A curriculum can be perceived as providing a logically planned and guided learning environment, akin to a well-planned roadmap to the delivery of knowledge. Unfortunately, many members of the public still associate curriculum with a syllabus, textbook, teacher, guide or even a concise learning package. Scholars and educators, on the other hand, view the curriculum as a set of workable activities, long-term educational plan with specific intentions and outputs (Wiles, 2008). Curriculum developers view the curriculum as a process whereby attention is focused on the designing of conducive learning conditions (Macken, 2011).

One of the primary objectives of an effective curriculum is to discipline learners to think creatively as well as act meaningfully (File, 2011). Curriculum planners should therefore, strive to relate students' experience to educational tasks so learning becomes more meaningful, and hence more effective. This view of the curriculum is also shared by Wiles (2008), who explains that the curriculum is a set of well-planned learning guide with the primary goal of providing meaningful learning opportunities to students.

The curriculum should help the teacher identify the targets of learners in a specific field of study. Curriculum designers are not only concerned with what students do in the school but more importantly, what students ultimately learn as they go through the planned curriculum (Remillard, 2011). Tanner, (1995) defines curriculum as a set of courses, coursework, and their content, offered at a school or university. As such, a curriculum is a critically planned framework to restructure learners' knowledge and experience into a measurable outcome. It is a plan that consists of learning opportunities

for a specific period and place, a tool that aims to bring about behavior changes in students because of planned activities and includes all learning experiences received by students with the guidance of the school.

III. HOW TO DESIGN A CURRICULUM

Knowing the concept and structural design of a curriculum are vital to teachers and educational institutions as they prepare themselves for crucial changes taking place now and in the future. These changes may be socio-economic, political, technological and more importantly, environmental. Only then, can they apply relevant and the most up to date techniques and methodologies to create a workable curriculum. Knowing what constitutes an effective curriculum also helps them to relate the contents of their subject to their localized setting. As such, a good curriculum implies learning activities are pre-planned; what and how to achieve the results are spelled out explicitly in the curriculum.

When developing a curriculum, one must think of what the learners are going to do and how they will be facilitated in the learning process. The curriculum should always show learners how to learn rather than tell them how to learn. The curriculum should show students where exactly they are heading and how to reach the desired destination (Lam, 2011). A good curriculum designer makes concepts clearer to learners by giving them examples from their everyday activities so that learning becomes more relevant and meaningful. Hence, the students become more engaged in their learning tasks and are confident of achieving success in their educational endeavors.

IV. CHARACTERISTICS OF A GOOD CURRICULUM

1. A feasibility study must be conducted by a learned committee or individuals who have in depth knowledge of the subject matter. The committee must not only understand the problems facing learners, but they must also describe the problems in an explicit manner (DeSchenes,1994).
2. The objectives, missions and goals must be clearly stated.
3. Supervisors, administrators and teachers must support the curriculum.
4. A committee should be established to review, develop and oversee the implementation of the curriculum.
5. Specific subject areas of the curriculum must be determined by the committee.
6. The curriculum must be supported financiallyby the government.
7. The quality of the curriculum should be monitored.
8. The curriculum must be tested in the classroom to determine its effectiveness.
9. Parents, guardians and students should be encouraged to give suggestions and feedback.
10. The Education Ministry must review and evaluate the final product.

V. A CHECKLIST FOR TEACHERS TO HELP DESIGN A CURRICULUM

1. Since the curriculum is a goal-oriented product for a specific purpose or target, it should provide opportunities for learners to accomplish specific goals and objectives. Here are some questions to help design a good curriculum:
2. What do you expect your students to know? What activities do you want your students to perform? How many activities do you plan to include in your curriculum? How much is too much?
3. How much time is allocated for each activity to be completed by the students? How much time is given to an individual or group to finish a given activity?
4. How do you help a student who cannot finish a given skill on time? Do you create a zone of proximal development?
5. How do you deliver your curriculum? Do you give more examples, use visual aids, provide hands on activities, ask students to brainstorm, use concepts, avoid facts and encourage learners to learn cooperatively?
6. What level of skills is included in your curriculum? How do you guide learners to accomplish an activity meaningfully?
7. How do you prefer to communicate with your students? Verbally or let them write their answers?
8. How do your students participate in class? Do you give autonomy to your students to express themselves or use the one size fits all method?

V1. REQUISITES FOR CURRICULUM DEVELOPMENT

According to Dr. Sutapa Bose (2012), the following are some vital issues to consider when developing curriculum:
(http://www.youtube.com/watch?v=SQbdbSbu95E)

1. The curriculum designer must take into consideration the individual needs of the target group. The age, nature of discipline, practical indoor and outdoor activities, experience and interests of the learners must be given priority.
2. The curriculum must take into account the social forces, cultural heritage, philosophy, history and politics that can affect the curriculum development process.
3. The curriculum developer should also consider the resources of the institution and avoid information overload.

4. When developing the curriculum, the designer must understand the implications of social and legal aspects of the curriculum.
5. Institutional consideration, teachers' capabilities, current trends and globalization must also be taken into account.
6. Integration of knowledge is vital in developing a curriculum. One must start the lessons from the concrete to the abstract in order to help learners learn effectively. The developer should use the concept of student-centered methodology in the classroom.
7.

Therefore, to develop a workable and a practical curriculum one must understand how learning takes shape. Educators should observe their students' pattern of behavior and then create a model of learning for them. These important steps help educators to design an appropriate curriculum for their learners. The curriculum must contain different types of activities. If the activity is new, it stimulates the brain to experience new skills.

V11. CONCLUSION

As stated earlier, the curriculum is the backbone of any teaching and learning environment. Without a proper curriculum, it is difficult to gauge where students are heading. The concept of the curriculum is not new. It is almost a century old. Curriculum designers must empathize with learners and anticipate their needs. The curriculum cannot be presented to students as a finished abstraction. In fact the curriculum must consider learners' point of view about learning. Learners' behavior such as constructive, artistic, expressive, problem solving as well as critical thinking must be kept in mind during curriculum development (Jayson 2011).

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The Effects of Audience Response Systems on ActiveLearning

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Abstract - **Research literature shows that isolation and lack of interaction and engagement exist in traditional classes. Audience Response Systems (ARS), which have been identified as a potential, innovative solution, to aid in fixing disconnection associated with traditional education practices. The aim of this paper is to investigate the effects of audience response systems on student active learning in secondary education. The sample learning institution in this research is Adni International Islamic School. This study used survey and observation method to determine the effect of audience response systems on active learning in computer studies class at Adni International Islamic School. Based on the pilot study's findings, continued use of audience response systems is recommended. ARS can trigger student active learning. ARS give teachers a means of presenting information and gauging comprehension while engaging students. Students learn using various learning styles and audience response systems give teachers another opportunity to meet those varied styles of learning. Changes in delivery of instruction are needed to meet all learning styles of children today. Leaders in education should embrace technological changes and incorporate them into instruction. Audience response systems may provide that change in instructional practices.**

Keywords - active learning; audience response system; engagement; interaction; discussion

I. INTRODUCTION

Active learning is any instructional method that gets students involved in activity in the classroom rather than passively listening to a lecture [1]. Classroom assessment involves a wide range of activities from designing paper-pencil tests and performance measures to grading, communicating assessment results, and using them in decision-making [2]. To effectively monitor and influence the development of students' thinking processes, inquiry skills, attitudes toward science, and learning behaviors requires continuous forms of assessment integrated into everyday learning activities [3].

The use of Audience Response System (ARS) in learning institution is becoming more widespread. Lecturers have used ARS in their teaching without radically changing the traditional lecture format. With this method, standard lectures are supplemented with questions, and students' response provides feedback to both students and teacher on the learning process [4]. The equipment is essentially that of the TV show "Who wants to be a millionaire?": every member of the audience i.e. each learner in the classroom has a handset similar to that of a TV remote control, the presenter displays a multiple choice question (MCQ), each learner transmits the digit corresponding to their chosen answer by infrared, a small PC e.g. a laptop accumulates the answers, and it displays, via the room's projection system, a bar chart representing the distribution of the responses to audience and presenter alike [5]. Audience Response System greatly enhances communication among students and between students and the teacher, increasing active engagement during class and affecting both learning and instruction. Audience Response System gets immediate feedback about everyone in the class [6].

As an educator it is important to know the new emerging tools to assist educators in preparing and managing courses. ARS have been effective in higher education science classrooms, although almost no research has been done at the secondary school level [7]. Various authors describe ARS as facilitating a variety of good teaching practice. ARS in higher education can give the following: engage students, encourage peer instruction, facilitate diagnostic assessment, formative assessment, provide constructivist method of teaching, question based method, problem based method, critical thinking skills and anonymity [8]. However, existing literature on the use of ARS focus on the higher education [8]. It is not known to what extent ARS add to an active learning in secondary school classroom environment. Several study calls for the need for the research in this area [8-11]. The purpose of this research is to investigate the effects of audience response

system on student active learning. The objective is to increase student active engagement, discussion and interaction in secondary education classroom by using audience response system. The first part of this paper described active learning, audience response system and the needed to explore more in this area. Secondly, the literature review about active engagement, discussion and interaction are discussed. Part three and four outline the method used and result of the pilot study. The final section is the conclusion.

II. PREVIOUS WORK

Increasing active engagement in the classroom is crucial. There are two aspects of engagement such as task involvement (attention, effort and verbal participation) and influence attempt (student and teacher verbal and non-verbal attempt to influence the behavior or decision of the other party in a constructive manner [12]. An implicit strategy for using ARS is the engagement value and if students are engaged, it is argued they are more likely to actively construct knowledge. In general, students in ARS based classes report being more interested or engaged in concepts presented and discussed [13-16] For example; students may be more engaged because they are actively involved in the learning process.

Audience response system increases the quantity and quality of class discussions, particularly when employed with a strategy known as ‘‘peer instruction” [17-20]. Peer instruction occurs when a teacher presents a question using an ARS, collects student responses and presents responses from the class, but does not provide the correct answer. Instead, the class is instructed to discuss possible solutions in pairs and then students are provided with the opportunity to vote. After the second vote, the issues are resolved through class discussion and clarifications from the teacher. The research indicates that students feel they are better able to discuss and calibrate their understanding of specific concepts when peer instruction is employed [19]. Moreover, Laurillard identifies dialogue between teacher and learner as the heart of the educational process [21]. However, she dismisses large group teaching - such as lecturing - as an environment where effective learning cannot take place, because of the lack of opportunities for dialogue.As Laurillard's model predicts, these interventions have been shown to improve educational performance significantly [22].

Interaction is, in principle, a series of events or actions that take place between at least two objects. Several types of interaction have been identified as parts of various educational approaches. These typically include: learner-tutor interaction, learner-learner interaction, learner-content interaction and learner-interface interaction [23]. Numerous studies suggest that frequent and positive interaction occurs when ARS are used [8, 17].

III. RESEARCH METHOD

A. Survey Method

The questions prepared based on the research objectives and research problems. There is only one type of questionnaires that was used in this survey. A personally administer questionnaire was distributed personally by the researcher to the respondents. A survey was conducted toward the end of the semester (2010/2011) with all students using audience response systems. The survey was given to students in the treatment group to determine the effect of ARS on student active learning.The comparison group was not included in the survey because they used non-ARS instruction (Table I).

TABLE IV. EXPERIMENTAL DESIGN

Computer Pioneer Course Class	**Semester 1 2010/2011**
SEC2B	Traditional Method (Comparison)
SEC2D	ARS Treatment
SEC3B	ARS Treatment
SEC3D	Traditional Method (Comparison)
SEC3C	ARS Treatment
SEC4B	Traditional Method (Comparison)
SEC4C	ARS Treatment

B. Observation Method

There are observation notes taken weekly during the class regarding audience response system use on student engagement, discussion and interaction. The notes are analyzed through an open coding process in which generalizations are made. According to Strauss and Corbin open coding is a process in which concepts are identified and then broken down and examined to identify similarities and differences [24]. Observational notes acquired during audience response system use and instruction not involving the use of audience response systems is compared. Comparisons are made between treatment and comparison group (Table I) concerning student discussion, student engagement and student interaction.

IV. RESULT: PILOT STUDY

Pilot study was conducted for the survey and observation for both treatment and comparison group. The survey is pilot tested with 133 students in different classes in treatment group. Student observations are piloted with both treatment and comparison group compose of two eighth grades, three ninth grades and two tenth grades computer classes at Adni International Islamic School. The treatment groups are using ARS while the comparison group used the traditional method.

A. Student Survey

To answer research question, “What does audience response systems add to an active learning in secondary school classroom environment?” The survey was conducted. The descriptive statistics, means and standard deviations is used to provide a description of participants’ responses to the 10 items audience response system on student active learning survey. One hundred thirty three participants (n = 133) completed the audience response system survey. For each item participants are asked to rate their agreement (1 = *strongly disagree*, 2 =

disagree, 3 = slightly disagree, 4 = *neutral*, 5 = slightly *agree* 6 = *agree* and 7 = *strongly agree*). Means and standard deviations are presented in Table II.

TABLE V. DESCRIPTIVE STATISTICS FOR END OF SEMESTER STUDENT SURVEY

Statements	N	Mean (Likert Scale)	Std. Deviation
1. I feel more engaged during class because we used Audience Response System.	132	4.96	1.292
2. My mind engaged with the topic during class because we used Audience Response System.	131	4.87	1.139
3. I found the Audience Response System made it easier for me to participate in class and learn.	133	5.11	1.176
4. Because we used Audience Response System, I have a great sense of participation in the class.	133	4.89	1.195
5. Using Audience Response System heightens my interest in whatever we do during class.	131	4.95	1.258
6. Audience Response System promotes class discussion and resolution of problem.	133	4.91	1.215
7. I have always opportunity to discuss with my neighbor because we used Audience Response System.	133	4.60	1.527
8. We always exchange answer and ideas with my classmate because we used Audience Response System.	133	4.98	1.288
9. I interact more with my peers to discuss ideas when using Audience Response System.	133	4.71	1.152
10. Using ARS increase my interaction with my teacher and classmates.	133	5.15	1.184

B. Interpretation of Survey Findings

Survey data suggests that, the students in the treatment group believed that using audience response systems in the classroom was a positive experience.

When asked if Audience Response System made it easier for them to participate in class and learn, student reported an average score of 5.11. Student's average score is 5.15 when asked if audience response system increase their interaction with the teacher and classmates. When asked if ARS promotes class discussion and resolution of the problem, an average score of 4.91 was reported. The highest average revealed through the use of the survey is on the question 10, when the student was asked if using ARS increase interaction with teacher and classmates. An average score of 5.15 was reported.

The engagement, discussion and interaction in the classroom are extremely important. If students are enjoying what they are doing, student understanding and eventually student performance outcome should increase. Student discipline problems may even decrease as a result of audience response system use.

The data revealed through this study suggests that audience response system can trigger and increase student engagement, participation, interest, discussion and interaction in computer studies classroom at Adni International Islamic School. Several studies [25-27] stated that learning is active.

C. Percentage of respondent's choice in each statement

For this study statements 1, 2, 3, 4, and 5 are about student active engagement. Statements 6 and 7 are about class-wide discussion. Finally, statements 8, 9 and 10 are about student interaction in the classroom. Almost 62 percent of students agreed that they were more engaged during class because they use ARS as opposed to the 7 percent of students who disagreed with this statement (Fig 1).

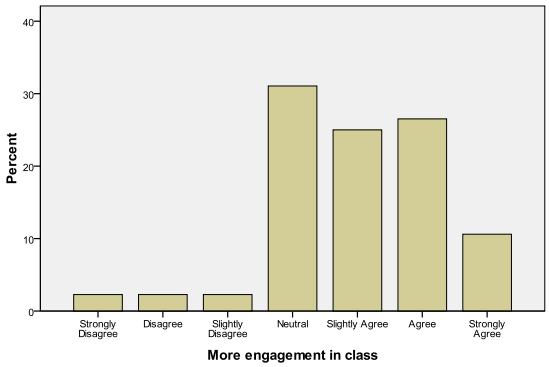

Figure 7. Results for statement: "I feel more engaged during class because we used Audience Response System."

About 60 percent of the students surveyed agreed that their mind engaged with the topic during class because they used ARS, while 5 percent disagreed with this statement (Fig 2).

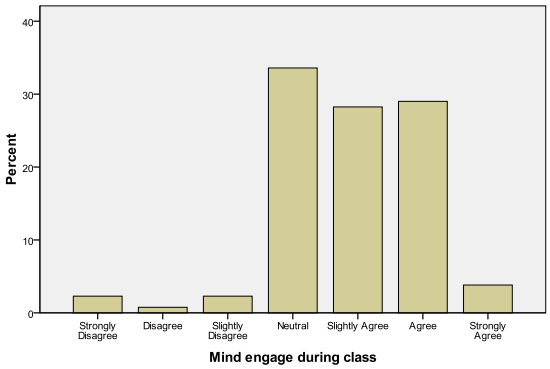

Figure 8. Results for statement: "My mind engaged with the topic during class because we used Audience Response System."

Approximately 71 percent of students found the ARS made easier for them to participate in class and learn, while almost 6 percent did not agree to the statement (Fig 3).

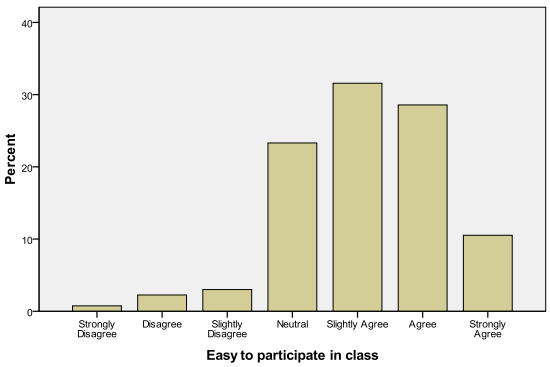

Figure 9. Results for statement: "I found the Audience Response System made it easier for me to participate in class and learn."

About 62 percent of the students have a great sense of participation in the class because they used ARS, while only about 9 percent of the students disagreed with this statement (Fig 4).

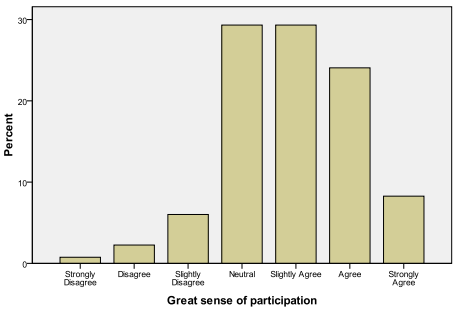

Figure 10. Results for statement: "Because we used Audience Response System, I have a great sense of participation in the class."

Nearly 45 percent of students said that, ARS heightens their interest during class and only about 7 percent said they disagreed with the statement (Fig 5).

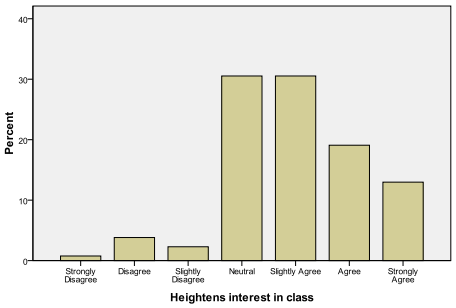

Figure 11. Results for statement: "Using Audience Response System heightens my interest in whatever we do during class."

About 63 percent of the students believed that using ARS promotes class discussion and resolution of problem, while only about 10 percent of the students disagreed with this statement (Fig 6).

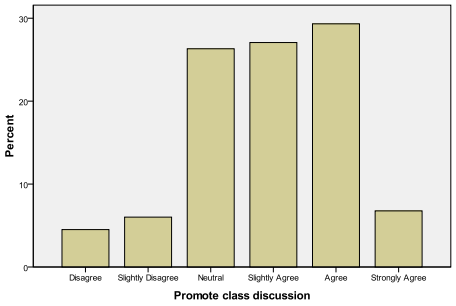

Figure 12. Results for statement: "Audience Response System promotes class discussion and resolution of problem."

About 53 percent of students said that they have always opportunity to discuss with their neighbor because they used ARS and only about 19 percent said they disagreed with the statement (Fig 7).

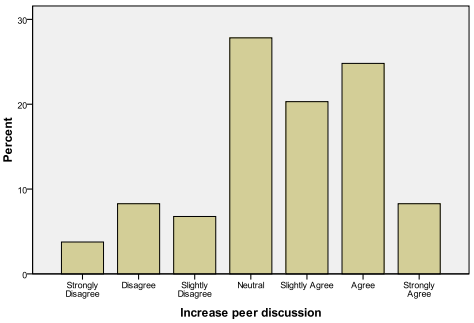

Figure 13. Results for statement: "I have always opportunity to discuss with my neighbor because we used Audience Response System."

About 66 percent of the students exchange answer and ideas with their classmates while only about 9 percent of the students disagreed with this statement (Fig 8).

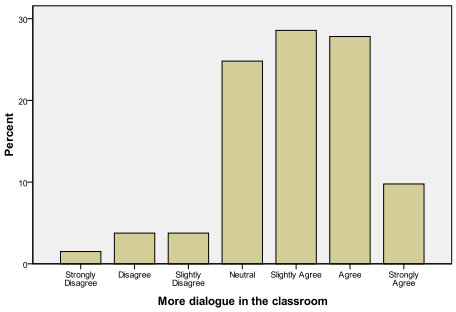

Figure 14. Results for statement: "We always exchange answer and ideas with my classmate because we used Audience Response System."

Approximately 50 percent of students interact more with peers to discuss ideas when utilizing ARS, while almost 11 percent did not agreed with the statement (Fig 9).

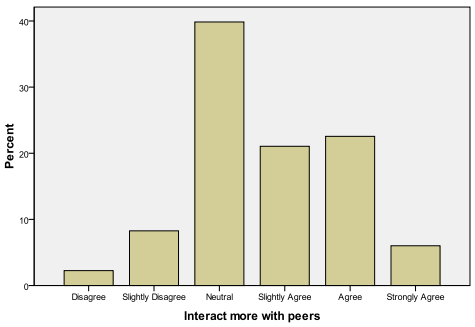

Figure 15. Results for statement: "I interact more with my peers to discuss ideas when using Audience Response System."

Nearly 73 percent of students said that it increases their interaction with teachers and classmates and only about 7 percent said they disagreed with the statement (Fig 10).

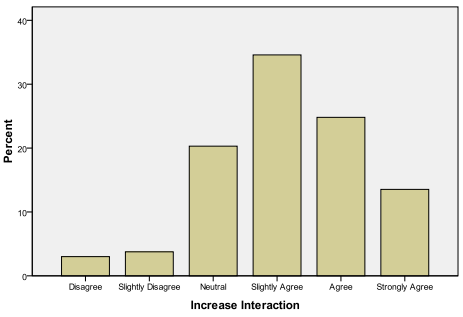

Figure 16. Results for statement: "Using ARS increase my interaction with my teacher and classmates."

TABLE VI. PERCENTAGE OF EACH FACTOR

Active Learning	**Factor**	**Agree (%)**	**Disagree (%)**
Engagement	More engaged	62	7
	Mind engaged	60	5
	Easy participation	71	6
	Sense of participation	62	9
	Heightens interest	45	7
Discussion	Promotes class discussion	63	10
	Increase peer discussion	53	19
Interaction	More dialog	66	9
	Interact more with peers	50	11
	Increase interaction	73	7

The percentage of each factor in table III shows that utilizing audience reasponse system in computer studies class can increase active engagement, discussion and interaction.

D. Observational Data Analysis

Through the analysis of the observational data, several generalizations can be made. Observations allowed the researcher to evaluate, direct, how audience response systems affect students' active learning. For the purposes of the observational data analysis, each observation category will be discussed independently, comparing the observations using audience response systems, and the observations in which audience response systems are not used.

E. Student Interaction

During observations which involved the use of ARS, students increase their interaction during the lesson. Student conversation, for the most part, is focused on the lesson. Students are excited about the use of the ARS and are eager to answer questions. They particularly enjoyed seeing the answer slide and how everyone else answered. All of the students answered quickly and there is much interaction after each question. Many of the students asked questions and made several positive comments.

During observations when audience response systems are not used, the students did not seem as excited about the lesson. For the first few minutes of the period, students seem to pay attention, but lost focus after a few minutes. Some of the students did not pay attention at all. Behaviors observed during these observations included; playing game and talking not related to the subject matter.

F. Student Engagement

While ARS are used, 100% of the students participated in the lesson. That could be verified through the graphical

feedback chart that can be presented after each question. The students seemed excited about entering their answer to observe how they did as compared to the rest of their class. Sometimes teacher did not have to remind a few students to enter their response.

During lessons presented that did not require the use of ARS, only a few students answered to the pose questions. The teacher called on students who raised their hands most of the time many of the students did not actively participate in the lesson.

G. Student Discussion

The teacher structured the class period around the class-wide discussion of questions. The closure of one question often leads to the presentation of a second so that instruction has a cyclical quality. For ease of presentation, the teacher break down question cycleinto 6 stages: 1) Concept question posed, 2) student provide individual responses, 3) peer discussion, 4) student receive feedback, 5) class-wide discussion, and 6) teacher summarizes and explains correct response. The students oblige to discuss with their peer when the teacher ask to talk about their answer to their neighbor in utilizing ARS.

The comparison group which is basically not using ARS, there are also discussion but it is not related to the subject matter. Some of the students play computer game.

H. Observation Result

Observation data suggest that, students enjoy using ARS during classroom instruction. Students appear to be more eager to participate and more attentive during lessons which incorporate ARS. The following behaviors are evident from the observations: confidence, peer discussion, engagement and participation, and interaction. Students have shown a high level of satisfaction while using ARS.

Evidence also suggests that, students are engaged in the lessons and are less hesitant to respond. That is a result of the anonymity that the system provided. Teachers are able to see student answers and provide appropriate feedback. Student participation is 100% when ARS are used. The participation level is evident through the graphical feedback which is provided after each question.

During observations in which ARS are not used, student did not appear to be as engaged in the lessons. Only a few students answered posed by the teacher. Several students exhibited off task behavior during many of the observations in which ARS are not used.

In summary, the majority of students are more actively engage, discuss and interact in learning when audience response systems are used during lessons.

V. CONCLUSION

There is a growing acceptance of ARS as tools to enhance student active learning [17, 28] as well as in this study. Audience response systems are far more that mere multiple choice/true-false quizzing or attendance-taking tools. Their potential spans all academic disciplines, and is especially useful in increasing active learning. ARS technology provides an avenue for strengthening the teaching-learning connection and active learning, as evidenced in this pilot study by improved student engagement, interaction and discussion. Further research is needed to investigate all of these variables before arriving at definitive conclusions on the effects of ARS on student active learning in other learning institution specifically in secondary level education.

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Impak Refleksi Komunikasi Visual Terhadap Hasil Karya Pelajar – Praktik Studio Grafik Di Bumi Yaman

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Abstrak— **Republik Yaman adalah sebuah negara yang terletak di bahagian selatan Semenanjung Arab.Sejarah ketamadunan Yaman menyaksikan penentangan terhadap penjajahan, peperangan saudara dan pergolakan dalaman berterusan sehingga ke hari ini.Kajian dijalankan untuk memahami impak refleksi dalam bidang komunikasi visual.Kajian dijalankan ke atas pelajar kohot pertama Ijazah Sarjana Muda Seni Reka Grafik program usahasama Universiti Teknologi MARA (UiTM) dan University of Science and Technology Yemen (USTY). Pemilihan kaedah kajian ethnography dan kajian kes diguna pakai untuk menghuraikan kesan pengaruh persekitaran terhadap hasil karya visual.Pelajar diberikan tugasan menghasilkan karya visual dan penelitian dilakukan terhadap pemilihan subjek dalam karya.Hasil kajian menemukan bukti wujudnya pengaruh persekitaran yang mempengaruhi hasil kreativiti pelajar.Pelajar menghasilkan karya berdasarkan subjek yang berada disekelilingnya. Contohnya, penggunaan imej senjata api, yang menggambarkan suasana negara berkenaan yang masih dibelenggu dengan ancaman peperangan. Pengaruh persekitaran terdiri daripada faktor utama iaitu fasiliti pengajaran dan pembelajaran yang disediakan pihak USTY. Faktor lain pula dilihat dari sudut seni bina di sekitar bandaraya Sana'a dan peradaban bangsa Yaman yang masih kekal utuh setelah berabad lamanya.**

Kata Kunci : Refleksi, ethnography, kajian kes, komunikasi visual

PENDAHULUAN

Yaman terkenal di serata dunia dengan keagungan senibina yang tersendiri dan kecantikkan alam semulajadinya.Dari segi kedudukan geografi, Yaman terletak di bahagian Selatan Semenanjung Arab.Ia berkongsi sempadan di sebelah timur dengan Negara Oman dan di sebelah Utara dengan negara Arab Saudi.Yaman dipisahkan dari benua Afrika dengan Laut Merah yang terletak di bahagian Barat sempadannya.Ibu negara Yaman, iaitu Sana`a berasa pada ketinggian 2300 meter dari aras laut. Tidak seperti bahagian lain di negeri arab, Sana'a dikelilingi gunung ganang yang tinggi, menjadikannya kekal berabad lamanya tanpa pengaruh luar. Iklim yang sederhana sepanjang tahun memberikan keunikan untuk bandaraya yang pernah menjadi pusat pemerintahan kerajaan Sabaa' pada abad ke 6 selepas Masihi.

Fig.1. Kedudukan Yaman yang terletak di Selatan Semenanjung Arab

Program usahasama Praktik Studio Seni Reka Grafik di University of Science and Technology, Yaman bermula pada 18 November 2005. Ianya mula terjalin apabila Universiti Teknologi MARA menandatangani perjanjian usahasama pada Mei 2005.Pelajar kohot pertama terdiri daripada 7 pelajar lelaki dan 21 pelajar perempuan.Keseluruhannya 22 dari pelajar adalah warganegara Yaman manakala selebihnya dari kalangan negara Arab.Pengajian yang ditawarkan adalah pada peringkat Ijazah Sarjana Muda Seni Reka Grafik.Pengambilan pelajar dibuka kepada lulusan sekolah menengah dan keutamaan diberikan kepada calon yang memiliki kredit dalam Bahasa Inggeris.Matapelajaran Seni tidak dikira sebagai salah satu syarat pengambilan kerana silibus persekolahan di Yaman tidak menawarkan matapelajaran Seni Visual.

PERKEMBANGAN AWAL PRAKTIK STUDIO GRAFIK

Pada kebanyakan pelajar, untuk memulakan Pengajian di peringkat Universiti adalah suatu tempoh yang kekeliruan dan ketidakpastian.Proses transisi seumpama ini lazimnya,

memberikan gambaran yang kurang jelas ke atas apa yang akan dilalui dan dihadapi pelajar baru. Mereka berada di dalam kumpulan yang memiliki minat yang sama dan dilihat begitu gembira diberi ruang dan kebebasan untuk berkarya. Setiap pelajar sering menghabiskan masa bersama untuk meneroka perkara baru seperti teknik lukisan yang menggabungkan pelbagai medium dan peralatan. Namun, terdapat beberapa kekangan yang sedikit sebanyak menggangu kelicinan proses pengajaran dan pembelajaran. Contohnya kemudahan studio lukisan yang disediakan,belumcukup sempurna. Tiada meja dan kerusi untuk pelajar melukis dengan selesa.Masalah yang sama turut berlaku ke atas kemudahan makmal komputer. Kerja-kerja penyelengaraan sering tertangguh kerana masalah berkaitan seperti pendawaian dan pemasangan meja komputer.Namun dalam tempoh hampir setahun, setiap kemudahan untuk tujuan pengajaran dan pembelajaran telah disediakan oleh pihak pengurusan USTY.

Fig.2.(SEBELUM)Pelajar melakukan aktiviti di studio tanpa kemudahan lengkap

Fig.3.(SEBELUM)Peralatan dan kelengkapan makmal komputer dalam peringkat awal pemasangan

Fig.4.(SELEPAS)Pelajar lebih selesa berada di studio setelah kemudahan di pertingkatkan

Fig.5.(SELEPAS)Makmal Komputer Grafik yang turut dilengkapi kemudahan internet

ANALISA HASIL KARYA PELAJAR (TATANAN IMPAK REFLEKSI)

Dalam proses mengenal pasti gaya dan pengaruh hasil karya pelajar, beberapa kaedah telah digunapakai. Antaranya adalah kaedah kajian *Ethnography* dan kajian kes yang begitu kerap penggunaanya dalam kajian kualitatif bidang pendidikan (Johnson, 2008). Menurut Creswell (1998) yang memetik kenyataan Merriam, terdapat enam ciri-ciri pendekatan penyelidikan secara kualitatif iaitu :

i. Lebih mengutamakan proses dan bukannya hasil atau produk
ii. Cenderung mencari makna
iii. Penyelidik ialah instrumen penting dalam pengumpulan data dan membuat analisis
iv. Melibatkan kajian lapangan
v. Berbentuk deskriptif atau penghuraian

vi. Berbentuk induktif

Penyelidikan kualitatif menurut Creswell (1998), berfokus kepada kaedah multimetod, melibatkan pentafsiran (*interpretive*) dan pendekatan natural (*naturalistic approach*) terhadap subjek yang dikaji. Penyelidikan kualitatif melibatkan pengkajian dan pengumpulan pelbagai material empirik contohnya seperti kajian kes, pengalaman peribadi, kaji diri (*introspective*), kisah kehidupan, temubual, observasi, pensejarahan, interaksi dan teks visual yang menghuraikan permasalahan, rutin dan makna dalam kehidupan individu. Melalui kaedah ini, cara pemikiran pelajar serta tindakannya dapat difahami dengan lebih mendalam.Seolah-olah menggambarkan pengkaji berada bersama kumpulan pelajar dan berkongsi nilai, praktis dan sikap.

Bagi menjalankan analisis impak refleksi karya pelajar, dua (2) karya daripada pelajar Hadil Riyadh Al-Qirshi (2006) telah di kenal pasti sebagai subjek utama penelitian. Di peringkat awal, pelajar diberi tugasan untuk melukis bahan kajian yang berada disekeliling mereka. Opsyen bebas diberi kepada pelajar, begitu juga dengan penggunaan serta pengolahan media yang digunakan. Karya dihasilkan dengan menggunakan warna air dan arkilik pada kertas lukisan bersaiz A2.Analisa dimulakan dengan mengenalpasti pemilihan imej yang dipilih oleh pelajar dalam karya visualnya. Seterusnya, penilaian dilakukan terhadap kemungkinan yang mendorong pelajar memilih imej tersebut.

APRESIASI DAN KRITIKAN SENI VISUAL

Di dalam memberi apresiasi dan kritikan bagi melihat impakrefleksi komunikasi visual praktik studio pelajar Yaman, pemahaman jelas perlu diketahui oleh pengkritik dan juga pengkarya agar disiplin ilmu apresiasi dan kritikan berada di tempat yang sewajarnya, tanpa prejudis dan retorik kosong. Apresiasi seni pada pandangan dasar ialah latihan yang melibatkan deria pandang dan deria sentuh seniman yang mana pernyataan-pernyataan seni seni seperti catan,lukisan dan cetakan cuma boleh dipandang sedang karya berupa arca dan binaan boleh disentuh. Justeru kedua-dua deria saling berhubung agar dapat membantu manusia menikmati karya seni dengan lebih baik. Objek seni itu bertindak sebagai alat penyimpan idea daripada seorang seniman (lihat Zakaria Ali, 1989).

Penelitian terhadap karya yang dihasilkan oleh Hadil Riyadh Al-Qirshi, jelas dapat dilihat pengunaan rupa geometrik dan organik mendominasi keseluruhan karya. Kombinasi kedua-dua unsur ini melengkapkan sebuah lukisan yang di dalamnya terkandung maksud tersendiri, bagi ditanggapi dari sisi eksplisit bahkan di sudut implisitnya.

Fig.6. Karya satu (1)Hadil Riyadh Al-Qirshi (2006)

Pengaruh nilai jika dilihat dalam karya ini adalah berdasarkan kepada kesan cahaya dan bayang objek yang seterusnya menghasilkan ruang fizikal antara objek-objek tersebut. Objek Burger tampak mendominasi keseluruhan satah tengah dan diimbangi oleh dedaun rumput menghijau dicelahannya. Kesan imbangan yang terhasil di dalam karya ini dilihamkan dari prinsip *Assymmetrical Balance* seolah-olah mewujudkan dimensi keseimbangan yang sama. Namun senjata api di sebelah kanan lukisan mempunyai perspektif berbeza jika dibandingkan dengan kelopak peluru di sebelah kiri. Keseluruhannya, jika diperhatikan berlaku sedikit kejanggalan apabila melihat berlakunya gabungan unsur makanan yang diwakili imej burger dan unsur senjata yang diwakili imej senjata api.

Fig.7. Fokus kepada kesan cahaya kelopak peluru dan bayangnya pada permukaan burger

Perhubungan antara kedua unsur dapat difahami dengan mengenal latarbelakang negara Yaman.Berdasarkan kajian, Yaman adalah sebuah negara yang bergolak hasil daripada konflik dalaman yang berpanjangan dan ditambah dengan

ancaman pengganas. Setiap rakyat di Yaman dibenarkan memilik senjata api dan senjata tajam Jambiya atas alasan untuk melindungi keselamatan diri.Ia juga menjadi simbol keberanian dan sifat tanggungjawab yang tinggi.Malah disesetengah kawasan, setiap kabilah mempunyai kekuatan tentera sendiri yang turut dilengkapi kereta kebal yang ditinggalkan oleh penjajah.Penggunaan imej senjata turut digunapakai untuk menghiasai bahagian tertentu rumah seperti pintu pagar dan juga bahagian dinding batu.

Fig.8. Karya dua (2) Hadil Riyadh Al-Qirshi (2006)

Analisa visual pada karya kedua Hadil Riyadh Al-Qirshi menyampaikan gagasan pemikiran daripada perspektif yang berbeza. Figura gajah memerhati skrin televisyen yang mentransmisikan imej pepohon rimbun mungkin dilihat agak canggung dan aneh bagi rantau budaya yang perselitarannya tandus dan dikelilingi padang pasir. Semacam ada pengaruh impresionis dan gabungan sentuhan elemen surealis longgar cuba diketengahkan pengkarya. Sapuan warna-warna alam yang kelam cuba membawa maksud tertentu tetapi boleh ditanggapi dengan mudah. Namun, pengkarya kurang cermat mengimbangi elemen dan prinsip rekaan. Latar belakang horizon dan langit tampak sekata tanpa wujudnya ilusi ruang melalui olahan warna yang rata dan papar di setiap sudut karya, mujur figura empat (4) ekor burung berlainan saiz bagi menampilkan impak ruang berupaya menyelamatkan sedikit situasi tidak logik ini.

Karya ini mengekspresikan pertembungan budaya dan persekitaran berbeza dengan memperlihatkan figura gajah yang berdiri di latar padang pasir sedang di latar televisyen jelas paparan pohonan rimbun, dedaun lebat justifikasi hutan tropika yang sememangnya tidak terdapat di rantau timur tengah.

Menghalusi karektor gajah dalam karya ini jelas menyampaikan fikrah pengkaryanya. Umum mengetahui, gajah fauna gagah di belantara yang tidak tertewas oleh mana-mana saingannya memberi metafora bangsa atau mungkin manusia yang kuat, tinggi wawasan dan kaya cita-cita yang tidak mahu terkalahkan. Pengkarya seboleh-bolehnya cuba menghindari senario klise dan stereotaip dengan mengangkat gajah sebagai subjek utama sedangkan di rantau timur tengah, haiwan unta menjadi ikon simbolik bagi menggambarkan budaya dan masyarakat Arab. Disamping itu, kecenderungan pengkarya untuk mengekspresikan simbol kemajuan dan kemodenan dapat diperhatikan melalui imej televisyen yang pada satah kiri karya. Imej pepohon bukan wujud pada latar nyata, sebaliknya ditransmisikan oleh bantuan digital (televisyen), lantas impak teknologi dipersembahkan secara implisit oleh pengkarya.

Fig.9. Fokus imejan pokok pada televisyen

Jika diberi penumpuan terhadap figura pohonan berdedaun rimbun pada latar televisyen di dalam karya Hadil, olahan warna serta penggunaan elemen dan prinsip senireka diterjemahkan dengan baik malah terperinci hinggakan ilusi ruang,bayang dan pencahayaan berjaya diwujudkan. Pohonan pada latar depan '*dikeraskan'* sedikit palitan dan sapuan warnanya, manakala pohonan terkebelakang dan paling jauh direndahkan nilai warna, yang jelas menemukan kita kesan ruang yang logikal ditambah dengan kesan bayang-bayang pepohon, menonjolkan kesan kuat realisma.

Imej pepohon ini memberi impak refleksi pengkarya yang secara tersirat menemukan dua budaya daripada latar dan perspektif berbeza. Tenaga pengajar dari rantau asia (Malaysia) yang bentuk muka bumi dan cuaca berbeza dengan rantau asia barat sedikit sebanyak memberi ilham dan pedoman karya sebegini boleh terhasil.

YAMAN: REFLEKSI SENI DARIPADA PERSPEKTIF KEBUDAYAAN

Fig.10. Lelaki Yaman bersama pisau Jambiya yang diselit pada tali pinggang.

Fig.11. Pintu pagar rumah memaparkan imej senjata api, yang dihasilkan menggunakan teknik kimpalan besi.

Fig.12. Bahagian dinding rumah yang mana permukaan batu telah diukir menyerupai bentuk senjata api.

Fig.13. Bahagian dinding rumah yang menunjukkan ukiran senjata berupa pisau jambiya.

KESIMPULAN

Faktor persekitaran memberikan kesan visual yang kekal di dalam ingatan.Ini mendorong kepada individu meluahkan pemikiran yang terpendam dalam hasil karya.Lantaran dari itu, terhasil unsur seperti senjata, makanan bahkan ekspresi pertembungan budaya dalam karya seperti yang dihasilkan Hadil Riyadh Al-Qirshi. Tatanan ini jelas menurut Taylor (dalam Frederick, 1948) yang memberi satu takrif yang klasik mengenai kebudayaan yang mana ia merupakan satu keseluruhan yang kompleks yang mengandungi ilmu pengetahuan, kepercayaan, kesenian, kesusilaan, undang-undang, adat resam dan lain-lain kebolehan serta kebiasan yang diperolehi oleh manusia sebagai anggota masyarakat.

Ini adalah kerana cara melihat bergantung kepada pengetahuan dan juga kepercayaan yang berlandaskan ilmu (John, 1972). Pendekatan *Ethnography* danKajian Kesdapat difahami cara pemikiran pelajar dengan mendalam. Seterusnya mesej tersurat dan tersirat yang cuba disampaikan dalam karya seni visual lebih mudah difahami. Melalui penelitian ini juga, dapat dilihat kebolehan serta kemahiran pelajar untuk mengekspresikan idea, pengamatan bahkan pengalaman mereka ke dalam bentuk karya seni. Maka, hasil seni yang terhasil berupaya menyerlahkan kematangan, sensitiviti, perangkat nilai malah mengangkat upaya intelektualisma pelajar.

Impak refleksi praktik studio pelajar komunikasi visual, disamping mendedahkan pelajar kepada nilai dan manfaat seni, secara tidak langsung turut menjadi medium penghubung kepada masyarakat melalui karya-karya seni visual yang dihasilkan. Memetik Arnheim (1954), yang memberi pernyataan bahawa seni diterjemahkan ke dalam bahasa visual yang mana ia menjadi medium penghubung dengan masyarakat manusia melalui intuisi unik dan ekslusif manusia

bergelar seniman menjadi justifikasi tuntas dalam memahami wadah seni visual sebagai upaya dan wacana masyarakat yang mendukungnya.

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Augmented Reality Implementation in Preschool Environment Using Experiential Learning Model Perspective

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Abstract— **In Malaysia, science is the core subject in curriculum. Based on the Malaysia students' perspective, science is one of the most difficult subjects to learn and understand. For this reason, Augmented Reality (AR) technology has been introduced in science subject to solve the problem. This paper describes AR as a supportive tool for Basic Science (BS) subject in preschool education environment focus on Human Body topic. Currently, preschool students just learning the human body without learn the internal organs. This study enlightened the basis of the muscular system with produce the Augmented Reality for Learning in Muscular System (ARMS). It assists as a supportive tool for teaching and learning session in improving the quality of teaching and attract the students' attention. It has been proven that integration of AR in traditional teaching creates the enjoyable learning environment. In an effort to ensure the study is conducted in a relatively proper sequence, five phases of methodology has been followed. However, this paper focus on the last phase; evaluation by experts respectively. This paper presents the result from the Experiential Learning Model (ELM) perspective. As the result, the students are able to develop their cognitive based on their understand, memorize on the fact and concepts, and experience.**

Keywords- AR; preschool education; Basic Science; ARMS, ELM

I. INTRODUCTION

Augmented Reality (AR) is to enhance the user perspective in physical world beyond their experience. Some of researcher [1, 2, 3], have been described the AR is the combination among reality situation and virtual graphics at the same environment using the special display devices. Currently, AR proposed a solution for wide range domains such as engineering, medical, construction, and education. This section covered the current teaching in Basic Science (BS) subject in government preschool and the benefits applied technology as a support tool.

Based to the learning environment, various style and method of teaching in the classroom are important to ensure the teaching and learning session become fun, effective, and meaningful. Thus, it can affect students' cognitive development. Based on the interviews conducted, there are traditional methods that applied by teachers to teach this topic consists; singing, paint, chart display, word card, puzzles, worksheets, follow the teacher movement, and CD's.

Additionally, the finding of a study by [4] found that often, the use of technology in science will assist teaching and learning session. Thus, it makes the learning process with fun, easy to understand, and encourages students to think critically and creatively [5]. This paper starts with the AR has been used in education. Following, focus on the learning style which is the Experiential Learning Model (ELM). Lastly, the article discuss on the finding based on the ELM perspectives.

II. AUGMENTED REALITY IN EDUCATION

AR technology is an innovative tool to assist teacher enhances the quality of teaching. In this century, education domain should shift from the traditional method of teaching to the new technology-supported material or tool to improve the efficiency of teaching method [6, 7]. This is proven by [7] that presented the finding of his study on AR in education domain that AR attracts, stimulates, and excites students in learning new knowledge.

According to [2], AR is a powerful technology to be implemented in the education domain. This is due to the collaborative nature of AR that permits the use of single virtual environment by multiple students in a real environment. In addition, he also states that from a psychological perspective, AR is safer to be used by the students since it does not immerse them completely in the virtual environment giving them the sense of comfort in learning. The next section focuses on the ELM.

III. EXPERIENTIAL LEARNING MODEL

The definition of learning style is the way to learn the knowledge according to individual preference [8, 9, 10, 11]. Thus, the main role of teachers is to motivate students to learn based on their strengths and interest, learning preference, and styles [12].

According to [10], students learn in various ways such as reading, watching, talking, self-learning, group learning, learning in a relaxed, and learning through music. Thus, to

make the teaching and learning session in an effective way, teachers need to recognize their students learning style [12]. This supported by Piaget's that he realizes children as active, and should be encouraged to explore and should be exposed to a stimulus as a learning active process [13]. This study preferred ELM as learning style.

IV. EVALUATION PROCESS

This study was enlightening to preschool students the basis of muscular system using AR as a supportive tool in BS subject. The users are able to interact with the virtual of muscular system objects through ARMS. The evaluation session was conducted in 4 government preschool in Jitra, Kedah. This evaluation was involved 4 expert teachers and 88 students as respondents. It is found that the expert respondent who has been teaching in the early education for more than 10 years in public preschools.

Table 1 shows the evaluation process for ARMS in control group stage. While, Table 2 shows in experimental stage. As mentioned early, this paper just focused on the ELM perspectives.

Table 1: Implementation process in control group stage

Steps	**Student content**	**Activities**		**Supportive tool**
		Teaching (Teacher)	**Learning (Student)**	
Introduction	Teachers start the class with the students' attention on the human body.	Teachers begin the lessons by asking students about their knowledge of the internal organs that they know.	With existing knowledge, students answer the teacher questions.	- Human body
Set induction	Teachers attract their students with the pictures of the muscular system.	i. Teacher explains the general of the muscular system. ii. Teacher shows where the location of the muscle system iii. Teacher explains the function of each muscle system. iv. The teacher explains how to taking care their muscular systems. v. Teacher provides examples of diseases that can be in high morbidity and mortality.	i. Students are able to give full attention in learning session. ii. Students hold their own body iii. Students are given full attention and interact with the teacher when the teacher explains the functions, the healthy tips, and example of diseases of muscular system.	- Picture of muscular system - Human body

Table 2: Implementation process in experimental group stage

Steps	**Student content**	**Activities**		**Supportive tool**
		Teaching (Teacher)	**Learning (Student)**	
Pre-implementation	Teachers attract students by giving the comprehensive notes, and markers.	i. Teachers encourage the students recalled on the muscle system, using the comprehensive notes. ii. Teachers encourage students to spell the letters and identify the object that appear on each marker.	i. Students participate in activities and interact with each other in class. ii. Students spell the letters and identify the objects that appear on the markers.	- Comprehensive nota - Marker
Implementation	Teachers attract students by using the ARMS prototype	i. Teachers demonstrate the ARMS prototype while interacting with them	i. Students try themselves and interaction with teachers and their friends.	- Marker - ARMS prototype
Post-implementation	Teacher distributes the ARMS exercises to students.	i. Teacher gives instructions to complete the exercise sheet provided.	i. Students learn to follow instructions and complete their exercise. ii. Students who have completed the exercise required to show the front of the ARMS.	- ARMS exercises - ARMS prototype

V. DISCUSSION

The result of ELM was evaluated by the 4 experts' preschool teacher according to their students. This section has been divided into 4 part analysis based on the four-stage of ELM as below:

1) *Abstract conceptualization: Listening to explanation on the topic by their teacher*

According to this stage, students able to understand the concept of muscular system based on the explanation by their
teacher. Thus, students trying to arrange and organize the muscular system information systematically in concepts, and ideas.

2) *Concrete experience: Going step-by-step through the comprehensive note that given to students*

Based on the concrete experience, students participate fully in active experience with open minded, and give the good feedback to them in teaching and learning session. In addition, the experts has stated and agreed that students acquire the muscular system information by direct experience when they involved as active engagement in learning environment. This is proven when there has several misunderstanding of the muscular system before the study conducted. Therefore, the direct experience required to gain the understanding and create, or change their mind to receive the right information.

3) *Active experimentation: Practicing using ARMS prototype*

Students are directly participated and using ARMS. After used the ARMS, there are clearly about the muscular system. In addition, ARMS able to attract students attention in teaching and learning session. Therefore, it more helpful for teachers to deliver the complex topics with the easy, and entertain way for preschool students.

4) *Reflect observation: Test students using ARMS exercises*

Result shows the learner must possess decision making and problem solving skills in order to use the new ideas gained from the experience. This study provided the ARMS exercises for preschool students. They need to complete the task based on their understanding about the muscular system. Based on the exercises provided, students gain the potential benefits of skills which is listening, skill, and attentive in the new experience using ARMS as supportive tool.

VI. CONCLUSION

This paper presented an AR as supportive tool in preschool for teaching and learning in BS subject based on the ELM perspective. Based on the evaluation done, it was found that ARMS, specifically, and AR technology, generally are highly effective to be implemented in BS subject. Apart from that, it was also proven that the integration of AR technology in traditional teaching creates an enjoyable learning environment. This is due to the fact that AR simplify the explanation of difficult topics via visualization of 3D virtual objects. As the result, the students are able to recognize and understand better regarding the function, health, and disease of the muscular system for human internal body. Additionally, they are also able to form cognitive development while learning about the human body via the use of ARMS.

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The Effectiveness of Role-playing Activities to Motivate Students' of Ungku Omar Polytechnic to Confidently Communicate in English Language Classroom

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Abstract—**English as a tool of communication has been playing an important part in acquiring cultural, scientific and technical knowledge, for collecting worldwide information and carrying out international exchange and cooperation. When students are motivated to learn they try harder to understand the material and thereby learn more deeply, resulting in better ability to transfer what they have learned to new situations. This paper is an attempt to exemplify how the effectiveness of role-playing activities can raise learners' motivation and prepares them for communication in the working world. The main problem observed in Ungku Omar Polytechnic is seen through the students' participation in English Language classroom where the students appeared to be very passive in the classroom. This study examines whether the effectiveness of using role-playing activities can increase students' motivation in learning the language in ESL classroom, and to identify the factors contributing to the lack of motivation in learning the language among the students. This study looks into the oral assessment done by a group of students at Ungku Omar Polytechnic who were taking AE301: Polytechnic English course, observation notes from the lecturers, a survey and questionnaires from the students. This group of students come from multiple level of English language proficiency. Their oral assessments were analyzed and have shown that the students become more interested in speaking in English as they work together in a group to complete the task given and they are motivated to participate and contribute to the lesson. From the observation notes, it can be concluded that in English Language classroom, the lecturers should use role-playing activities in teaching and learning to arouse the students' motivation and confidence to communicate in English.**

Keywords- Motivation, Communicative teaching methods, Oral English assessment, Role-playing, cooperative learning.

I. INTRODUCTION

Malaysian Polytechnic has been operating for almost 41 years. The Ministry of Education with the help of UNESCO established it in 1969. The amount of RM24.5 million is used to fund the pioneer of Ungku Omar Polytechnic (UOP) located in Ipoh, Perak from the United Nations Development Program (UNDP). At present, Malaysia has developed 27 polytechnic at all over states in engineering, agriculture, commerce, hospitality and design courses with 60,840 students in 2009 to 87,440 students in 2012. The Department of Polytechnic Education is committed to provide quality, efficient and customer-friendly services to the highest level of objectivity, confidentiality, integrity and professionalism. Their main purpose is to break boundaries for the creation of transformative and creative learning environment for an innovation-led economy and to be Malaysia's number one provider of innovative human capital through transformational education and training for the global workforce by 2015.

The national issues on 'Unemployment Graduate Scheme' introduced by government to re-skilling graduates is a benchmarking of a poor training and education programs run by public universities. Re-skilling is a process of transforming graduates to fit current employment market but considered as time and cost consuming to Malaysian government. The issues related on transformational of conventional polytechnic towards students, lecturers, stakeholders, communities, workforce and skill development in lifelong learning.

From the educational standpoint, teachers/lecturers must facilitate the learning that can help students to develop the ability to differentiate the relevant from the irrelevant when accessing information in today's world. Organizations today are seeking those individuals who able to exhibit an effective communication, analytical and critical thinking and creative problem-solving skills as they drive successful today's ever-changing conditions. These skills can be cultivated in the educational setting if students are given an

opportunity to experience conditions that promotes deep learning (Yew and Karney, 2008**).**

In preparing the students towards this transformation, an effective teaching technique is needed to motivate them to communicate confidently as it is the needs of the organizations today. In conjunction to that, the researchers would like to determine how far the role playing activities can motivate the students to communicate confidently and how it can help students to develop the ability to differentiate the relevant from the irrelevant when accessing information in today's world.

Role-playing activities are a part of cooperative and active learningtechniques that incorporates epistemological assumptions of constructivism. It does not exist independently of the student, but rather is created based on the student's experience, observation, reflection, experimentation and interaction with the environment (Glaserfeld, 1995). Role-playing activities are a teaching technique that puts students in positions they have never experienced before and allows them to interact, communicate and negotiate with others in certain roles under given circumstances (Yardley-Matweiejczuk, 1997).
In doing so, they look at occurrences from different perspectives as well as experience and understand problem situations from a different point of view. They learn something about the specific person and situation through imitation, observation, feedback, analysis and conceptualization (Steinwachs & Sugar, 1990). Role-playing is student-centred and as such can motivate students to practice various types of behavioral modes. Role-plays provide rapid feedback on students' learning and develop the students' ability to interact (Ments, 1994). However, they also may be time consuming and contain the risk of dominating up to the exclusion of solid theory and facts (Ments, 1994). When students are motivated to learn, they try harder to understand the material and thereby learn more deeply, resulting in better ability to transfer what they have learned to new situations.

At UOP, there are three English language course offered to the students, namely AE101: Communicative English 1, AE301: Communicative English 2, and AE501: Communicative English 3. It is compulsory for the students who entered UOP to complete all the English Courses before they can graduate.

AE101: Communicate English 1 is designed to help the students to be more aware of English Language. It covers the major aspects of writing, and reading, listening and speaking. It also focuses on dictionary skills, presentation skills and group discussion.

AE301: Communicative English 2emphasises the skills needed to describe products and services as well as processes and procedures. It focuses on the skills to give and respond to instructions. The course will also enable students to make and reply to enquiries and complaints in their future workplace.

AE501: Communicative English 3 emphasises the skills needed to write a curriculum vitae, and cover letter. It also focuses on the job interview skills; understanding job advertisements and mock meeting and by the end of the semester, students will create a mini project in order to complete this course.

The main problem observed in UOP is seen through the lack of students' participation in English language classroom whereby the students' have very low motivation in learning and communicating in English.

Due to lack of confidence, students tend to be quiet during English lessons. They are also afraid to be mocked by peers if they speak or attempt to communicate in English. Students are hardly exposed to English speaking environment outside the English lectures and are prone to speak in their native language frequently.

The purpose of this study is to exemplify how the effectiveness of role-playing activities can raise learners' motivation and prepares them for communication in the working world, and identify the factors contributing to students lack of motivation and students anxiety in learning English. This study attempts to answer the following research questions, (a) "What are the factors contributing to students' lack of motivation in English Language classroom?" And (b) "Is role-playing an effective tool to motivate students' to communicate confidently in English Language classroom?"

II. LITERATURE REVIEW

Definition

Cooperative learning has been found through some studies to be an effective strategy for to be used in classroom. Several studies have linked cooperative learning to improved student achievement across grade levels and subject areas (Graves, 2008). He also mentioned that there are several types of cooperative learning activities, and Role-playing is one of the favourite cooperative learning activities.

Role play is a good way to bring real life situations into the classroom. Numerous definitions can be found to describe the phrase Role-Playing, but the definition that is being used in this study is the one explained by Aronson and Carlsmith (1968) of which had mentioned Role-Playing as an (or as-if) experiment in which the subject is asked to behave as if he (or she) was a particular person in a particular situation.

Motivation in Role-Playing

Motivation is always connected to learning and always considered as one of the most important matter in learning. Role-playing is one good way to increase students' motivation. Naidu and Linser (2000) indicated the same thing by saying that role plays increase motivation.

Earlier, Brown and Yule (1995) told that role play can help students become more interested and involved in classroom learning by addressing problems, and exploring alternatives and creative solutions in terms of not only material learning, but also in terms of integrating the knowledge learned in action. Furthermore, constructive role

plays make students become more interested and get involved in classroom learning not only in terms of the teaching material, but also in terms of integrating the knowledge learned in action (Brown & Yule, 1995).

Students expressed positive attitudes towards the implementation of role plays. According to Simina and Hamel (2005), learning is an active process in which new knowledge is developed on the basis of previous experiences and role play is a highly flexible learning activity which has a wide scope for variation and imagination.

Role play is a useful activity that can be utilized to help students with their L2 learning. Ringel (2004) states students can benefit from role-playing in many ways; such as they gain self-confidence, and they improve their critical/analytical thinking skills and improve legal research or writing skills.

Schaap (2005) found that role-playing to be more likely to promote active learning amongst undergraduate students than a traditional university lecture. By using the role-playing technique, his students had a high level of energy and excitement, they were encouraged to express ideas and they were able to get immediate feedback on ideas. His students thoroughly enjoyed the activity and he mentioned that he would definitely use it again and encourages other educators to try it as well.

Communication and Speaking Skills.

According to Ladousse (1991), constructive role play involves different communicative techniques, develops learners' language fluency, and promotes interaction in the classroom as well as increasing motivation. He also added by stating, this is the main reason why the majority of the students agreed that constructive role plays should be utilized more in speaking classes because they actively participated in learning to speak English.

Shen & Suwanthep (2011) concluded in their study that role-playing have positive effects on improving the speaking performance of students at various language proficiency levels, and the students performed well and they applied the knowledge gained from the tutorial class and from their previous studies to perform the constructive e-learning role plays actively and successfully.

The teacher becomes a study helper instead of a lecture giver. It is helpful in creating an active, interactive and constructive learning environment for students to practice their L2 speaking (Shen & Suwanthep, 2011). Role plays do have positive effects on improving students' L2 speaking and, students agreed that role-playing should be practiced in speaking classes. They encourage students to engage in L2 speaking freely and creatively, as well as explore options through the creative use of language.

Real Life Knowledge

Role-playing activities help introduce student to "real-world" situations (Oberle, 2004). He identified three general advantages to role-playing activities: they are positive and safe in dealing with attitudes and feelings, they provide a safe venue for expressing personal and sometimes unpopular attitudes and opinions, and role-playing is highly motivating as the majority of students enjoy these types of activities and become more inspired learners.

Morris (2003) found that role-playing helped the students engage in perspective taking at multiple times and places. In his conclusion, Morris (2003) specified making connections between time and places are vital to learning and making the material stick

Language and Creativity Control

According to Ladousse (1991), the incorporation of role play activities into the L2 classroom adds variety, a change of pace and opportunities for a lot of language production, other than a lot of fun.

Students will enthusiastically apply as much knowledge as possible from their previous studies to construct new knowledge and students actively explore the knowledge instead of passively accepting it (Shen & Suwanthep, 2011).

Meaningful Communication

When it comes to role-playing, students will not be not passive recipients of the instructor's knowledge. Rather, they have to take an active part. Poorman (2002) noted that true learning cannot take place when students are passive observers of the teaching process. Fogg (2001) told that a student at Barnard College who was enrolled in a role-playing class revealed, "This class tricks you into doing so much work". The result of the involvement had increased learning (Fogg, 2001).

If the information is more meaningful to them; therefore, they willretain it for longer periods of time. "Brain research has found that the brain searches for patterns and connections as its way of building meaning," if students are not actively engaged in their learning, then they are unable to make the connections necessary to make learning meaningful (Cuthrell and Yates, 2007). Cuthrell and Yates (2007) found that social studies content should be in depth with lessons and activities.

When a student is actively involved in his or her learning, he or she is more likely to truly connect with the material and remember the concept for a long period of time. (Graves, 2008). Research also has shown that integrating experiential learning activities in the classroom increases interest in the subject matter and understanding of course content (Poorman, 2002).

Good Assessment

One of the reasons for using role-Playing in the language is that Role-playing can be used for assessment and feedback purposes at the end of a text- book unit. They can be used to help you determine the degree of mastery attained. They can consolidate learning and allow students the opportunity to discover their own level of mastery over specific language content. Role-Playing encourages individuals to reflect upon their knowledge of a subject, of which made role-playing an excellent teaching method for

reviewing material at the end of a course of study (Jarvis, Odell, & Troiano, 2002).

Related Field

Other than motivating the students to do better in Communication, Role-playing is also helpful in other fields, such as learning history. Morris (2003) wrote about a type of role-playing for history classes that is also effective. Morris (2003) said that when students act out history, they also engaged the subject matter. Schaap (2005) said that he had found that role-playing has been used effectively in disciplines such as history and others.

III. METHODOLOGY

The research is divided into four major parts. First, the observation notes from lectures to determine the students' attitude in learning the language in English classroom whereby, the students' attitude in learning the language is a reflection of students' motivation in the classroom. Then, a survey using likert-scale and open-ended questions was carried out to identify students' opinion regarding learning English language.

Next, students' oral assessment; after the students had completed 8 hours of lesson comprised of role-playing activities that they need to complete within 2 weeks, the students were given an oral assessment to determine the effectiveness of role playing activities to enhance students' motivation in learning English language. The Communicative English 3 (AE30) Syllabus was used to carry out these role-playing activities. The syllabus focuses on interactive skills; complaints, reply to complaint, to help the students to learn and apply skills necessary to the working world. The assessment rubric for role-play assessment was used to assess the students. Finally, a set of questionnaire was distributed to different groups of respondents in different departments by the researchers themselves over a period of a week after students' oral assessment, to grasp the students' opinion of learning English language after they had participated in the role-playing activities.

The researchers supervised closely the respondents' completion of the questionnaires and survey in order to ensure greater reliability and validity of the data collected. For example, certain difficult terms had to be translated into Bahasa Malaysia or explained further when students had difficulty comprehending them.

After completion, the questionnaires were collected back immediately. The data was coded and keyed into the computer. This questionnaire and survey sought to obtain information on the students' perceptions of their needs and use of the English Language; this is to identify their motivation to learn the English language.

The questionnaire consisted of three sections: Section 1 examined the students' background, i.e. language learning experiences; Section 2 focused on their perceptions towards the exposure to and use of the English Language in different contexts such as the use of English in lectures or classroom, use of English in social situations; self-improvement and future job, while Section 3 dealt with administrative factors which affect the students' attitude to the English Language; how English language was taught in their previous classroom and their opinions on how to improve the quality of English language learning to motivate them in learning and participating in the classroom.

The respondents for this study consist of 100 students who are currently in Semester 3 (AE301 Course), selected at random from different department in UOP, they are Mechanical Engineering Department, Civil Engineering Department, Marine Engineering Department, Information Technology and Communication Department, Electrical Engineering Department and Commerce Department.

Thus, the sample of students can be considered as fairly representative of the students in UOP, since they comprise a fair cross section of the general population of students, coming from different departments, and are at different levels of maturity and language proficiency.

Their grade for English however may range from F9 to Al in their SPM English Language examination. Most of them fall within the lower range, i.e. from low to average proficiency in English. A structured questionnaire was constructed with the aim of eliciting as much information as possible within the shortest time possible while requiring the minimum of effort from the subjects responding to it. The structured questions consisted of Yes/No and multiple-choice items from which respondents were required to tick off or rank. Numerical values, which corresponded to the frequency of responses, were assigned to each response. These values were converted to percentages to indicate the degree of positivity or negativity of the student's attitude.

IV. FINDINGS & DISCUSSIONS

Research Question 1

The first research question for this study is "What are the factors contributing to students' lack of motivation in English Language classroom?" This study is in search to know factors that contribute to the students' lack of motivation to learn and participate in English language classroom. In order to identify the factors, first, the lecturers' observation notes were compared to identify students' attitude in the classroom in order to see the differences after the role-playing activities were used in the classroom. Then, a survey was carried out to establish students' opinion of learning English through their previous and current learning experiences.

Based on the findings, On the whole, the findings indicate that students hold more negative attitude towards participating and learning in the classroom. Motivation has a clear link with the language learning process. A motivated learner possesses the attributes of positive attitude in his perception of needs and use of the language. With positive attitude, learners would diligently expend efforts to achieve the goals of learning. Since motivation is the outcome of positive attitude and desire to achieve, it is necessary then too ensures that students have positive attitude while

learning English. According to 6 lecturers' observation notes that were chosen to represent each department, the students showed more negative attitude towards participating and learning English in the classroom.

The students from the lower income groups possess a slightly lower negative attitude level (60.5%) than those of the higher income group (62%). As for department with the most positive group is from the Marine Engineering Department, while the least positive class is from Information Technology and Communication Department.

The average positive score is only 35.8% whilst the negative score is 64.2%. The percentages of positive and negative attitude based on the lecturers' observation notes were listed in the Table 4.1.1 below. Lecturer A, represented Mechanical Engineering Department; Lecturer B, Civil Engineering Department; Lecturer C, Electrical Engineering Department; Lecturer D, Marine Engineering Department; Lecturer E, Commerce Department; and Lecturer F, Information Technology and Communication Department.

Table 4.1.1

LECTURER	Positive attitude (%)	Negative attitude (%)
A	40	60
B	32	68
C	23	77
D	55	45
E	45	55
F	20	80

Based on the observations, there are 6 main negative attitudes that were identified in the notes which are A) undisciplined and disorderly B) unprepared for lesson C) passive in classroom D) arrived to class late E) did not bring lesson materials and finally F) did not do homework. Based on the table 4.1.2 below, it can be seen that, from the observation notes, all the lecturers agreed that most negative attitude of the students were "very passive in the classroom". 100% of the students were very passive during the lesson, especially during classroom activities and discussion. Students need to participate in these activities in order for them to learn the language.

Table 4.1.2

ATTITUDE		Percentage (%)
A	Undisciplined and disorderly	33
B	Not ready to present	83
C	Passive in the classroom	100
D	Arrived to class late	67
E	Did not bring lesson materials	33
F	Did not do homework	83

To answer this research question, the students' survey data were also analysed to identify the factors contribute to lack of motivation in learning English language classroom. In this survey, students were asked to answer a wide array of questions that were divided in 3 parts; a) students' background, i.e. Their socio-economic status and previous language learning experiences; b) their exposure to and use of the English Language in different contexts such as the use of English in i) lectures and tutorials, reading reference books or text books; ii) use of English in social situations; iii) peer-group discussions; iv) self-improvement and v) future job; and finally part; administrative factors such as curriculum, syllabus and facilities.

Part 1 of the survey results indicate both positive and negative answers, the students from the lower income groups possess a slightly lower positive attitude towards learning and using English level (62.5%) than those of the higher income group (68.7%). As for department with the most positive attitude is the Marine Engineering department while the least positive class is the Civil Engineering Department. Most students indicated agreement in the important of English language in daily life, whereby almost 87% agreed English language was very important for communicating with others, and to help them get a very good job in the future (96%). These answer to the statements showed a high level of integrative motivation. Based on the result, the students' socio-economic status didn't show any big differences in term of understanding the importance of English language in their lives.

Students' previous learning experiences in secondary school indicate negative responses on how English classroom and lesson was implemented. For this question, the responses were grouped according to categories as the students also gave extended answers, which some of the students gave several points to the question.

Table 4.1.3 represent what's students' opinion regarding their past English learning experiences. Many

students responded in positive view of their past learning, especially learning new language, but many also responded negatively in certain areas such as the teachers; based on the answers, most students encountered teachers who ignored them in the classroom, punished and embarrassed them in front of the class and didn't spend more time to explain the lesson to them. The environment created in English classroom is very important to improve students' motivation in learning the language. The teachers need to make the students feel safe and comfortable to use the language as the students will "seek out intake by volunteering and may be more accepting of the teachers as source of intake" (Krashen, 1981). Others responses are i) how the lesson was carried out in the classroom (not accommodating to specific needs), ii) peer pressure, iii) difficulties in writing, listening and speaking, iv) understanding reading text and finally v) grammar.

Table 4.1.3

RESPONSE CATEGORIES		**NUMBER OF RESPONSES (students)**
1	Learning English is interesting.	64
2	Don't like the teacher	35
3	Teacher didn't spend time to explain lesson (grammar)	65
4	Classroom environment (too crowded, only used blackboard/whiteboard and text book)	52
5	Classmates were not supportive	78
6	Don't understand reading text	67
7	Difficulty in writing, listening and speaking.	82
8	Pronunciation problems	73
9	Difficulty in following the lesson	63
10	Can't relate to daily life	66

Part 2 of the survey results indicate both positive and negative answers regarding their exposure to and use of the language according to different contexts. Table 4.4 showed their positive and negative responses regarding the use of English in the contexts which determined the students' motivation to learn English when they feel the need to use the language in these contexts.

Table 4.1.4

Context The use of English in:		**Positive (%)**	**Negative (%)**
1	Lectures and tutorials	55	45
2	Reading reference books or text books	31	69
3	Use (communicating) of English in social situations	18	82
4	Peer-group discussions	56	44
5	Self-improvement	34	66
6	Future job	20	80

On the whole, the learners show a more negative attitude than a positive attitude in their perceptions of the use of English. For certain contexts such as lectures and tutorials, and peer group discussion, the students' responded positive as they can accept the lecturers to teach in English and they feel more relaxed to use English in group discussion as they communicate among their own classmate in a small setting. While, use of English in social situations and future job showed the most negative as the students feel timid, anxious and unconfident to speak to strangers and in formal setting.

Finally, Part 3, the administrative factors such as curriculum, syllabus and facilities; the survey indicates that the students displayed positive responses for both curriculum (82%) and syllabus (92%). This is because the module Communicative English 3 (AE301) includes lessons that related to their future job where the students will learn how to write and respond to complaint, and product presentation. However for facilities, 78% students gave negative response whereby, they feel the classroom was too crowded, some of the chairs and tables were broken, untidy classroom, not proper language laboratory, having no internet connection in departments and insufficient English books in the library.

Thus, the findings observed from the data showed above, the factors contributing to students' lack of motivation in English Language classroom are varied from bad past experience in learning English where the teachers were not really supportive and the students had difficulties in learning the language. While, peer pressure is identified to contributed a very unpleasant classroom learning both in past and present learning environment, and finally lack of facilities in the learning institution has become a problem too.

Research Question 2

The second research question for this study is "Is role-playing an effective tool to motivate students' to communicate confidently in English Language classroom?" This study is in search to know whether the effectiveness of using role-playing activities can increase students' motivation in learning the language in English language classroom. In order to prove the effectiveness of role-playing activities to motivate the students to communicate confidently in English language, their oral assessment were compared to see the students' performance in using the language. Three areas were assessed; a) content b) language and c) delivery; total score for this oral assessment is 30 marks. Next, a set of questionnaire was distributed to gain students' perceptions of using the role-playing activities in English classroom in order to help them to communicate confidently.

The percentage of students according to departments who obtained more than 60% marks (18 over 30 marks) is presented in Table 4.2.1 From the table, we can concluded that most students obtained more than 60% in their oral assessment. However, only Civil and Electrical Engineering Department obtained less than 50% students who obtained more than 60% marks in the oral assessments. According to these students' assessments, most of the students achieved lower marks in delivery and language area, as they tend to read and refer to their notes most of the time.

Table 4.2.1

Students (Department)		**Percentage (%)**
A	Mechanical	65
B	Civil	40
C	Electrical	30
D	Marine	68
E	Commerce	76
F	Information Technology and Communication	58

Questionnaire

Based on the questionnaire, role-playing activities received positives responds from the students. From the Table 4.2.2 below, it's clearly shown that students respond positively to role-playing activities.

Based on the table, we can see the students responded positively to the activities. Only 15% students did not enjoy the activities because they were not prepared for the activities and they tend to refer to their notes while presenting. 9% of the students preferred to do individual presentation, while the rest enjoyed working in the group. Most of the students worked and discussed actively among their group members. 78% of the students feel more comfortable to communicate in English after the activities, the students managed to present their role-play activities quite well since they had their group member to give them support.

Table 4.2.2

Statements		**Positive (%)**	**Neutral (%)**	**Negative (%)**
1	I enjoy role-playing activities	83	3	15
2	I enjoy working with others during role-playing activities.	91	-	9
3	I understand the lesson better by using role-playing activities	87	-	13
4	I feel more comfortable to communicate in English after role-playing activities	78	4	18
5	I feel more confident to communicate in English after role-playing activities	70	19	11
6	Role-playing activities should be conducted in a large classroom (students)	27	32	41

V. CONCLUSION

As conclusion, pertaining to the findings examined from this study, the factors that had contributed to students' lack of motivation in English language classroom are diverged from bad past experiences in learning English language, and the students had brought along with them their difficulties, from earlier days, in learning the language. Other than those factors, peer pressure is seen to be an immense factor to students' lack of motivation, besides not having conducive learning environment such as having inadequate English language learning facilities neither in their schools nor in their current learning institution.

As for the effectiveness of role-playing activities to be used as a tool to motivate students' to communicate confidently in English Language classroom, it is safe to say that role-playing is indeed an effective method because the role-playing activities received positives responds from the students. This was clearly shown through how the students had worked and discussed actively among their group members, and majority of the students feel more comfortable to communicate in English after the activities, other than they had managed to present their role-play activities quite well given that they had their group member to give them support.

There are some recommendations that can be highlighted in order to improve current English language learning lessons. Firstly, more and bigger studies like this study needs to be carried out. This is important as it will be very useful to have a huge pool of data regarding the students' motivation to learn, and later to able to know exactly how to boost them. UOP could be the 1st to create this pool. Second, as role-playing has been shown to have good effects, it is highly recommended that MOHE should consider role-playing more seriously and maybe could emphasize more and promote the use of role-playing activities to all learning institutions. Hence, more English language learning material could be developed, such as CD-ROMs and online software to assist Role-playing in classrooms, with hope motivation will at the top floor through fun role-playing activities.

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Encouraging Active Learning and Collegiality:Implementing a Peer Coaching Program in a Malaysian Teacher Training Institute

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Abstract — "The more I learn, the more I learn how little I know". With this one statement, Socrates summed up life-long learning succinctly. Whether you see yourself as a teacher, lecturer, tutor, facilitator, trainer, supervisor, manger or academic, we are all in some way educators. As educators, we are acutely aware that learning is a life-long process. We also understand that learning must be an active, not a passive process. To this end, we must constantly strive to improve our skills.

Nowadays, it is not enough to deliver quality lessons/seminars/tutorials and create innovative materials, even though this in itself can be challenging. The expectation in contemporary educational institutes is for educators to constantly update and refine their skills. We cannot close our classroom doors and focus exclusively on our students. We must incorporate novel ideas of evaluation and strategies to facilitate improvement within our own practices. One way for educators to actively learn throughout their career is to use a largely untapped source – each other. Indeed in schools and higher education establishments in the western world at least, peer coaching has been very successful and is now standard practice. Therefore in Malaysia, we must begin to open our classroom doors to our colleagues; learn from each other in an informal, comfortable, non-threatening way; share our skills, knowledge, and experience; as well as help each other to stay in touch with new innovations in education.

In this paper, peer coaching will be defined; the principles behind establishing such programs will be discussed; benefits will be explored as well as possible problems with establishing such programs; and a description of our small-scale research project which is currently being undertaken with a small group of Teacher Trainers at IPG KBA in Kuala Lumpur will be described.

Keywords – peer coaching; peer observation, peer mentoring, peer networking, professional development

LITERATURE REVIEW

I. BACKGROUND

The processes of in-service teacher training and implementation have only really been scrutinized in the last 30 years or so. Joyce & Showers (1996) give us a comprehensive overview of the history of teachers' professional development, which we will briefly summarize.

In most western countries during the 1950s and 1960s there were efforts to make improvements in education mainly focusing on quality and social equality. At this time, it was assumed that educators could learn new strategies, return to their places of work and implement new methods without any problem. However, despite intensive training that occurred during summer breaks and also in-service workshops throughout the school year, the organization and structure of schools did not support the teachers with the implementation of new innovations once back in their classrooms. The improvement of teaching practices was almost entirely left to individual teachers working in isolation. Whether learning a new practice or working to improve a current practice, teachers were expected, without appropriate support, to work it out on their own. One-off in-service training sessions, extended classes or workshops were rarely followed up with feedback and support or continued training. Few workshop participants implemented what they had learned into their teaching repertoire. Rates of transfer were low even for those who had volunteered for the training. Innovative curriculum and teaching models were not finding their way into general practice and thus could not influence students' learning environments. Initially this failure was attributed to lack of motivation, effort, and attitudes of the educators rather than to the state of the organization or the design of training programs. By the early 1970s, educators recognized that many of the

attempts to improve their skills, even when adequately funded and with public approval, seldom led to changes. Lack of research about how educators learn teaching strategies and how schools successfully implement innovations contributed to the failures.

During the 1980s however, attitudes began to change and blame for the failures of the system and training began to be lifted from the teachers. The notion that changes in the school organization and in training design might solve or at least ease implementation problems, became more widespread. In addition, understanding of how people learn new behaviors and put them into practice was continuously evolving, as a result of work by educators in schools and universities such as Joyce & Showers, who are probably the most prominent and prolific researchers and in this area.

Joyce and Showers first promoted the idea of peer coaching, after completing a review of literature on training and they presented their findings as a set of hypotheses about types of training and their likely results. They hypothesized that educators attempting to master new curriculum and teaching approaches would need continued assistance at the classroom level. For purposes of research, they distinguished between the initial development of a skill that would enable a teacher to experiment with new teaching methods, and the classroom practice of that skill until it had become a part of the teacher's repertoire. At that time, training designs for skill development were much better developed than were designs for conditions that would lead to transfer. The hypothesis that coaching, following initial training would result in much greater transfer than training alone was investigated by Showers (1982, 1984). The hypothesis was proved to be correct. Results from early studies showed that educators who had a coaching relationship, shared aspects of teaching, planned together, pooled their experiences, practiced new skills and strategies and applied them more often and more appropriately than did their counterparts who worked in isolation to improve their skills and expand their repertoires. Members of peer-coaching groups exhibited greater long-term retention of new strategies and more appropriate use of new teaching models over time (Baker and Showers 1984). Peer coaching helped nearly all the teachers in the studies, implement new teaching strategies. Another important aspect was that teachers who had been introduced to the new methods and strategies could coach one another, provided that the teachers continued to receive periodic follow-up in training settings. Therefore it was recommended that schools organize teachers into peer coaching teams and arrange school settings so that the teachers could work together to gain sufficient skill to affect student learning.

Hence, with this seemingly simple innovation, the situation had progressed from the 1950s and 1960s, where the probability of implementation was extremely low, to a reversal of these odds. The peer coaching process was added to the training paradigm, taking into account the two levels of skill development described above. Peer coaching took off at primary school level and then moved to secondary schools. By the 1990s peer coaching had also started to be used as a means of professional development in tertiary and higher education.

In summary, there has been a significant shift in teacher learning towards a more reflective and collaborative approach to developing teachers' classroom practice. The current situation in many countries is that peer coaching is now standard practice as a professional development method in K-12 teaching. The benefits seen in K-12 teaching have led professors, searching for excellence in teaching, to implement peer coaching in many higher education institutions.

II. DEFINITIONS

Variations of the term *peer coaching* appear in educational literature so you may have heard or read about *technical coaching*, *team coaching*, *collegial coaching*, *cognitive coaching*, and *challenge coaching*. Research suggests that the terms can be grouped into three general categories based on the professional development strategies used. Technical coaching and team coaching focus on incorporating new curriculum and instructional techniques into educators' routines (Ackland, 1991; Becker, 1996; Showers & Joyce, 1996). Collegial coaching and cognitive coaching aim to develop existing teacher practices by refining techniques, improving collegiality, increasing professional dialogue, and aiding teachers to reflect on their teaching (Ackland, 1991; Becker, 1996; Showers & Joyce, 1996). The third type of coaching, challenge coaching, concentrates on identifying and treating a specific problem and can be used in a larger context than the classroom such as a school or grade level (Ackland, 1991; Becker, 1996). Vidmar (2006) describes peer coaching as the vehicle through which teachers engage in meaningful professional dialogue. This process allows instructors opportunities for pre-observation conversations, an observation, and finally a vital reflection session. The process creates a non-threatening professional relationship and allows instructors to gain awareness and improve teaching practice, and promotes long-term change. Awareness and tolerance for others' ideas and ideals combined with teacher enthusiasm provide a framework for professional development. Regardless of the label, all peer coaching relationships focus on the collaborative development, refinement of skills, and sharing of knowledge to improve the teaching and learning process. In the context of this study, peer coaching can be any of the above as participants can choose what they would like to focus on with their peer coach. However, according to the definitions above it will most likely be collegial or cognitive peer coaching that takes place in our small-scale research.

One should try not to be put off by the word *coach*. Some may assume the word *coach* implies that one person in the collaborative relationship has a higher status than the other. This may cause some discomfort as it implies some inequality among colleagues. Our experience in Malaysia

reveals that a hierarchical structure based on age and experience seems to be prevalent in the teaching profession and institutions. We do not deny that experience and age are respected in western educational contexts but it seems to be to a far lesser extent. Anecdotal evidence from staff here reveals that past coaching or mentoring programs in this institute have been relationships where an older, more experienced lecturer has mentored a younger, less experienced lecturer. Feedback on individual's skills may also have been used by the administration. In comparison, research and experience in western countries inform us that age and experience does not necessarily make us more effective teachers. Educators in the same institute usually have the same classroom space, number of students, and requirements. Our belief is that a teacher who has 40 years of experience but who has not developed or updated his or her skills, might not be as effective as a teacher with just 3 years of experience who is constantly trying to improve his or her abilities. Therefore for this study into peer coaching, we will try to ensure that those lecturers involved know the relationships are, and feel them to be, equal and reciprocal.

In peer coaching, the focus is on the educator as the learner. Peer coaching in this research will simply be two or three teachers rotating roles and sharing in a conversation, focusing on a teacher's reflection and thinking about his/her instructional processes that lead to a refinement of classroom practice. One of our objectives is to create an environment where our lecturers can feel secure, connected, competent and empowered.

Another point which make explicit to our lecturer participants is that peer coaching is a confidential process and is not to be used by management to assess employees' skills. Peer coaching has nothing to do with evaluation. It is not intended as a remedial activity or strategy to eliminate bad practice. In the past, it seems that mentoring relationships in this institute have been used as a way of reporting performance to management. Rather than have lecturers fear the process and worry about what will be reported back, it should be used as a way to increase feedback about instruction and curriculum, a time when they can take risks and try out new ideas, instructional strategies, or different approaches and discuss the results with a trusted colleague. It is hoped the lecturers will see the value of the program. For example, the support and advice of a peer could be given before a formal evaluation, a kind of 'dress rehearsal, before the final performance.

III. POTENTIAL BENEFITS OF PEER COACHING

Joyce (1987), during a staff development conference, used the following data as statistical support for peer coaching.

- 5% of learners will transfer a new skill into their practice as a result of theory.
- 10% will transfer a new skill into their practice with theory and demonstration.
- 20% will transfer a new skill into their practice with theory and demonstration, and practice within the training.
- 25% will transfer a new skill into their practice with theory and demonstration, and practice within the training, and feedback.
- 90% will transfer a new skill into their practice with theory and demonstration, and practice within the training, feedback, and coaching.

Results from studies done by Joyce and Showers (1996, 2002) confirmed that fewer than 15% of teachers implemented new ideas learned in traditional staff development settings such as workshops. These statistics are certainly convincing and support peer coaching. The strength of peer coaching not only lies in its potential to improve the level of transference and adoption of skills to a teacher's repertoire of teaching techniques, but also the promotion of a culture of collaboration and professionalism among teachers.

As previously mentioned, peer coaching among teachers has become the norm in K-12 schools and some higher educational establishments in a number of countries around the world. As a result, much professional development of educators has become school or institute-based. The reasons for this shift are clear; research on effective staff development shows that a peer coaching methodology meets teachers' needs better than traditional workshops, and is effective at changing classroom practice. One problem with traditional approaches to in-service training is that educators often do not have the skills or knowledge needed to apply what they learn in workshops and have no way to receive support or feedback when they do attempt to apply what they have learned. Teachers need time to see new strategies modeled during the school day and opportunities to use new skills in developing and implementing learning activities. (Garet et al., 2001; Joyce and Showers 1996, 2002; Rodriguez and Knuth, 2000; Garet, Porter, Desimone, Birman & Yoon, 2001).

In conjunction with studying the impact of traditional professional development, many researchers have identified the characteristics of effective staff development, and their findings are remarkably consistent. Russo (2004) summarized these research findings: for staff development to be effective it must be; ongoing and deeply embedded into the educators' everyday class work; specific to levels or academic content; and focused on research-based approaches. Such conclusions have made it increasingly clear that one key to changing educational practice is to provide educators with opportunities for ongoing discussion and reflection. While coaching activities may involve only some of an institute's staff, collectively they can increase the climate of collegiality. Therefore, it is hoped that even if only done on a small scale here at our teacher training

institute, it might develop into something ongoing and more widespread. Indeed, our Head of Department would like to see it implemented in departments other than the English Department.

Typically institutions of higher education (certainly in western contexts) put a heavy emphasis on student course evaluation as a way to evaluate teaching. Of course having the students' opinions on courses is necessary and valuable however, student evaluations provide little actionable information. For example, they might comment on the difficulty of a test or the length of a project. It can be argued however, that they rarely provide specific information that could be used to make improvements that would lead to better student learning outcomes. Of course students may be correct, the test might be difficult, but as an educator we need to know, did it adequately measure student learning? The project may have been comprehensive, but did it allow students to demonstrate and apply knowledge and skills? Unlike students, peer coaches are qualified and experienced professionals and hence can provide us with actionable information.

Research done with many peer coached instructors report positive changes in their behaviors as long as participants are provided with an appropriate peer coaching system that ensures confidentiality, accountability, companionship, support and specific feedback over an extended period of time (Licklider, 1995; Tschantz, & Vail, 2000). The use of peer coaching has been demonstrated to have a positive impact on teaching and learning and to increase collegiality in K-12 schools and higher education (Joyce & Showers, 1995).

In addition the peer coaching model is not necessarily restricted to improving individual lecturer's skills. If the practice is extended to faculty within a department or discipline, it can lead to an overall assessment of program effectiveness as well as have positive effects on individual instruction. Opening classrooms to colleagues can provide opportunities for peer feedback and a forum for making improvements to curriculum. Peer coaching can empower instructors to transfer and internalize new skills fostering excellence in teaching that leads to continuous program improvement.

Our peer coaching program is only on a very small scale but it is hoped that those involved will be able to eliminate feelings of fear instilled by past mentoring programs, and be able to envision the possible benefits to all stakeholders.

IV. INHERENT DIFFICULTIES

Despite the potential benefits of peer coaching described above, getting a peer coaching program off the ground can be extremely difficult. Ironically, some of the factors that provide a rationale for coaching can also cause coaching attempts to fail. Even at the outset of the research, we were acutely aware that a peer coaching program was going to be extremely difficult to establish successfully in this teacher training college. Mr Harbinder Singh, co-author of this paper and lecturer here in IPGKBA, believes that many of the staff here are afraid that through the peer coaching process, weaknesses in their knowledge or skills will be recognized and they do not necessarily trust that confidentiality will be maintained.

The Higher Learning Commission in their Academic Quality Improvement Program, encouraged recognition of weaknesses, because they support the belief that once acknowledged, these weaknesses can become opportunities which provide us with actionable feedback (Spangehel, 2007). In other words, by recognizing weaknesses, we can act upon those identified and turn them into opportunities for improvement. For peer coaching to work, we asked our volunteer lecturers to be brave, have open conversations, be reflective, and supportive of each other. If an institute's administration or management tries to use peer coaching as a means of assessing the skills of the staff it can destroy the program. Hence, we made it explicit to participants that this program is completely confidential and allowed lecturers to choose their own peer coaches so they feel comfortable and non-threatened.

Another potential problem with the introduction of a peer coaching program is that it may be seen as just another addition to an already large workload. Mr Harbinder Singh again alerted us to this possible hurdle here at IPGKBA. Many lecturers are reluctant to sign up for what they perceive as 'extra work' because they already feel overwhelmed. We could have had the Head of Department enforce participation in the program but again this goes against the principles. The goal is to achieve a situation where lecturers; feel as if development is a normal part of their job, something they must do; and see the personal benefits of peer coaching. Due to issues of time, we gave volunteers some ideas about how they could be creative. We advised lecturers to join groups of students together to allow one lecturer to observe the other without adding extra time to their schedules and we also offered to cover their classes to free up time.

Another potential problem is that volunteers may start the program but not finish it. In order to be able to gather data for research, we asked participants to commit to doing a minimum number of activities: one observation of each other; an initial workshop; completion of relevant questionnaires; feedback forms; and informal interviews.

V. PRINCIPLES OF PEER COACHING

As discussed, active life-long learning and having appropriate knowledge, skills and learning opportunities, are necessary if we are to reform and improve curriculum, standards, resources/materials, assessments, methodologies and technology. Educators require time for reflection, coaching relationships, collegial interaction, expert role models, and ongoing professional development for any changes to be effective. Now we will reflect on the key principles which enable peer coaching to be successful.

One of the key features of peer coaching is that the participants have an opportunity to engage in a genuine dialogue. This involves the ability to listen carefully and with empathy. Participants must trust each other and be compassionate. To grow from the process they must be open to new ideas, be able to identify challenges and also to act as critical friends. This process and dialogue must occur irrespective of sex, cultural background or social class of the participants. Therefore equity is a key feature of the emotional literacy component of peer coaching. Participants must be of the opinion that they can learn from each other irrespective of age, experience or the other factors mentioned above.

There are cultural, racial and social issues within the Malaysian population which sometimes result in inequality, and these are evident in workplaces. However, this is beyond the realm of the paper. What might be possible to change though, is that compared to western educational settings, here in Malaysia, there is a very strong hierarchical system which places educators at different levels often related to age and experience on the job, rather than on qualifications and demonstrated ability. We cannot deny that age and experience are also respected in western education systems but certainly not to the same extent. Dynamism, innovativeness and demonstrated performance skills are more important than age. For these reasons, the equal, reciprocal, confidential nature of peer coaching may take some time to implement here. With this in mind, we will only accept lecturers who have volunteered to be part of the program, we will not impose it upon them and secondly, we will allow lecturers to choose their own partners, we will not pair them up randomly.

Peer coaching usually involves establishing a contract between the participants and getting them to agree to a long term commitment to gather and share information. In this context, we will only have the peer coaching pairs agree to a very limited amount of work in the hope of attracting volunteers from a busy staff. Peer observations are more successful if the person being observed identifies the focus for the observation and gives guidelines for the coach's behavior in the classroom during the observation, the parameters of the discussion of observed teaching, and the date and time of the observation. We will follow these practices during our research. Our pre-observation meeting form included these guidelines.

The observation process has three main stages. Firstly, there is a pre-observation session where the coaches obtain information from their peers concerning his/her class goals, students, and particular teaching techniques utilized for this class. Secondly, during the actual observation, the colleague, who plays the role of coach, watches for specific teaching and student behavior. The third step would be for the pair to have a feedback session where they have the chance to discuss the lesson. In this study, it is stipulated that participants have to complete at least one observation of each other following the three steps above and then complete a questionnaire/interview. In a larger program, lecturers could be involved in multiple means of peer interaction for example, planning lectures and making materials together, evaluating test items and syllabi or interviewing each other. They could then use these activities as a means for identifying areas for improvement and a catalyst for reflection and change. As has been the case in many educational institutes in other countries, the next step would be to formalize the process of peer coaching within a particular program where all the instructors regularly participate in the activities of peer review and coaching and the results are looked at programmatically. The goal would be for all educators to feel that peer coaching is a normal and necessary part of their job.

Becker (1996) summarized effective strategies which should be included in a peer coaching program:

- trust, confidentiality and empathy among all participants
- administrative and managerial support for the program
- belief of participants for the need for continual improvement and ongoing learning
- clear expectations for engagement in the process
- 3-step process for observations
- methods for measuring the outcomes for the experience
- release time for peer coaches
- funds to pay for necessary training

Becker (1996) lists possible outcomes of peer coaching programs.

- improve student learning
- facilitate / increase discussion between / among colleagues of professional topics / research
- sharing of successful practices through collaboration
- encouragement of and provisions for reflective practice
- a problem-solving vehicle
- reduce feelings of isolation among teachers
- promote idea of educators as researchers
- create a forum for addressing instructional problems
- build collaborative norms to enable teachers to give and receive ideas and receive assistance

Some of the benefits reported by professionals who had been involved in peer coaching can be seen below (Becker, 1996):

- improved student achievement
- enhanced student progress
- enhanced sense of professional skill
- increased ability of teachers to analyze their own lessons
- better understanding of what we know about best practices in teaching and learning
- wider repertoire of instructional strategies/resources
- deeper sense of efficacy
- stronger professional ties with colleagues
- improved teaching performance
- a better articulated curriculum
- more cohesive school culture
- positive working climate

There will undoubtedly be differences of opinions between colleagues. However, respectful conversation and debate is the hallmark of higher education and quality education programs. Hence, discussions must be viewed as opportunities to identify critical need within a program and plan for improvement. Identifying actionable aspects of the program leads to overall enhancement. In order to accomplish this goal, we must be willing to continually raise the bar on our teaching and to work together to provide quality programs of excellence. Peer coaching is one technique by which this can be done.

VI. REASONS FOR RESEARCH

We have described how peer coaching is widely used and is seen as good practice in educational contexts in most western countries. However, peer coaching is not standard practice here in Malaysia. Some mentoring has taken place in this institute but it has been done with a more experienced lecturer mentoring a less-experienced lecturer and so has been unequal. Two authors of this paper are Training Fellows who have been brought in from overseas by Brighton Education to work within the Ministry of Education teacher training institutes. Part of our role is to observe practices here and to decide what innovations from other countries, not currently done here, could be brought in and used effectively. It was established that peer coaching on an equal basis was not part of the regular routine here and so that is why it was chosen for a small-scale study. The overriding view is that peer coaching could be extremely beneficial and of lasting value to the organization. Moreover, if peer coaching can be successfully integrated into the lecturers' routines, perhaps their students – Malaysia's future teachers - would see it as a normal and beneficial part of their job.

VII. THE RESEARCH PROCESS

The first step of the process was to approach the Head of Department with the idea. She was very responsive to the idea and encouraged us to try to implement a program.

As a forum to introduce the idea to lecturers, a monthly departmental meeting was used to introduce the idea to lecturers and to ask for volunteers. Initial questionnaires were also given to all lecturers present at the meeting to investigate their past experience and feelings of peer coaching. They were asked to complete it regardless of whether or not they were interested in volunteering for the program. Overall 43 questionnaires were given to English Department Lecturers.

Next, more information was given out to lecturers about what being part of the program would actually involve in an attempt to preempt queries. This took the form of a short letter placed on the lecturers' desks.

Once three pairs, six lecturers agreed to be involved, a workshop was held for them explaining roles, expectations, potential benefits and reinforced that everything would be kept confidential.

Each pair must observe each other at least once and complete a first meeting sheet (establishing aims) and a peer observation sheet (for feedback). It is hoped that the peer coaches will also do some team teaching, lesson planning, materials development and more observations together but initially the goal was to make the process look 'doable' knowing that the lecturers already complain of having a very heavy workload. The need to be creative with getting time to have meetings, observations and so on was addressed as mentioned above. After observations, participants should complete feedback forms and have feedback sessions, complete a questionnaire and take part in an informal interview through which their feelings about the program can be gauged.

VIII. RESEARCH TOOLS

The instruments for this research are as follows:

- An initial questionnaire given to as many lecturers from the English Department as possible.
- A letter distributed to lecturers explaining the project, role of participants and expectations.
- A short workshop where participants are asked to commit to a minimum amount of work and again made clear the expectations.
- An Initial Meeting Form where participants decide what aspects to focus on during observation.
- An observation feedback form for peers to complete to use in feedback session.
- Final questionnaires given to gauge feelings and thoughts of participants about the process.
- Short informal interviews of participants to glean any more relevant information.

The data gathered will be both quantitative as well as qualitative in nature. All questionnaires and forms have been kept as short and simple to complete, as possible.

IX. RESULTS OF THE STUDY

The study is incomplete at this stage. However, we can report the following results from the initial questionnaire.

Firstly, only 9 out of the 43 initial questionnaires were completed and given back to us by the English Department Faculty. We will use data from all 9 initial responses but only 6 of the lecturers who responded have actually agreed to take part in the whole peer coaching process. We can only assume that the other lecturers are too busy or have little interest in the program and so did not complete the questionnaire.

From the questionnaires we got the following information:

When asked to define "peer coaching" in Question 1, 8 out of 9 lecturers wrote about *'helping each other'*, *'working with a colleague to improve performance*', '*sharing knowledge and skills'*. These responses show that the lecturers had a pretty good understanding of what the relationship involved but it should be noted that "peer coaching" had already quickly defined in the departmental meeting when introducing the idea and giving out the questionnaires. Only 1 out of 9 of the responses clearly saw it as an unequal relationship, *'Assisting fellow colleagues by providing support and guidance in areas which we are more experienced in.'*

Question 2 asked about previous experience of peer coaching. 8 out of 9 lecturers said 'yes' they had been involved in a peer coaching program however 2 of those saw it as an unequal experience commenting: *'Mentoring a new teacher for practicum'*, *'Training a facilitator'*. Interestingly, in the first case, the respondent saw it as beneficial only to the new teacher and not a reciprocal process. This shows that there is still some misunderstanding with what peer coaching involves.

Question 3 revealed that 5 out of 9 respondents believe that peer coaching is beneficial while 4 out of 9 said it was 'sometimes' beneficial and 2 of these added that, *'It depends on personality and cooperation as well as discussion and collaboration.'* Another added, *'If nobody acts more superior than the other.'* This second comment also alludes to the notion that inequality may be an issue in the institute.

Question 4 revealed that 2 out of 9 respondents said 'yes', they would like to be involved in a peer coaching program and added reasons: *'change of scenery'*, *'able to have a second opinion', 'self-improvement and development is necessary in any profession'*. For the 7 who replied 'maybe', they added reasons: *'uncertain feelings', 'If I am not overburdened with other work', 'We've got a heavy workload and we might not be able to coach our peers well', 'to utilize knowledge and skills that I have to help colleagues'*. The second comment resonates with a number of informal comments that were received from lecturers in the office when trying to cajole them into taking part. A number of lecturers apologized for not being involved due to being too busy with other things.

All 9 respondents to question 9 relating to whether they feel they are still learning in their job, said 'yes' and comments added were; *'learning never stops, 'education is constantly evolving', 'learning is lifelong', 'there will always be something new to learn, 'there is no end to learning', 'I'm always open to new ideas', 'because the world is moving so quickly'*. These responses were expected due to being asked to a group of educators.

All 9 responded positively to question 6 relating to whether or not they have colleagues they trust and feel comfortable with and added comments: *'You need to be in a non-threatening environment and feel that you can trust the person you are with,' 'Some of them are very experienced as well as kind', 'We are able to work on so many issues together', 'I respect some of my colleagues'.* These responses were very positive.

2 out of 9 responded positively to question 7 believing there to be a sense of collegiality within the department whereas 1 said 'no' adding*, 'Definitely not. Many people are only on self- interest basis.'* 7 out of 9 responded 'sometimes' with added comments being: '*There is too muchwork, at times, we hardly have any time to communicate', 'I'm still searching…'.* This shows that collegiality is certainly something which could be improved upon in the department.

The final question 8, related to collegiality within the institute as a whole. 2 out of 9 responded positively and 1 responded negatively. The other 6 responded 'sometimes'. Again, this illustrates that collegiality could be improved upon within the institute.

X. THE RESEARCH CONTINUES

The six lecturers who have agreed to be part of the peer coaching program have paired up and two of the pairs have had their pre-observation meeting and are due to do the observations any day. The other pair has arranged their pre-observation meeting for this week.

All participants will be interviewed individually as well as completing a post-observation questionnaire. After analyzing the information gathered, it will be possible to conclude whether or not the process was mainly positive or negative for the participants and also be able to give feedback to the Head of Department.

XI. CONCLUSIONS

Although the research is incomplete at this time, it can be deduced from the number of respondents to the initial questionnaire (9 out of 43) and the fact that only 6 lecturers (3 pairs) are willing to participate, that the program was not particularly well received by lecturers. We wait to find out from those involved how they feel about the process once they have completed it. We hope it will prove beneficial for them.

At this stage it can be predicted that whether or not the experience of our 6 lecturers is positive, peer coaching is unlikely to take off in a big way here at this time. Reasons for this hypothesis are as follows: the lecturers feel that they already have a huge workload; the hierarchical system and culture in the institute leads to fear that colleagues will report to management; lack of a feeling of need for the program.

We could recommend that participation in peer coaching is enforced by management, but would this defeat the purpose and make it less beneficial? Perhaps it does need to be enforced initially so that it becomes a normal part of the job? According to Jean Piaget (n.d) the goal of education is to create individuals who are capable of doing new things, not simply repeating what other generations have done. It is hoped that whether or not this particular research project is successful, in the future, peer coaching will become entrenched in the working life of educators in Malaysia. If lecturers of teacher training institutes see it as a normal and important part of their working lives then perhaps their students, our future teachers will also feel the same way.

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Improving Visibility in Medium-Size Lecture Rooms by Repositioning the Projector Screen

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***Abstract*—The presented study built upon a pilot project on improving the physical layout of classrooms [1]. The most urgent deficiencies of existing classrooms for calculation-intensive basic engineering courses were the obstruction of writing space by the projector screen and the visibility in general. Repositioning the screen to the side increased the writing areas by 50%. With much larger pools of room users and course characteristics, it was found that the major factor on the users' satisfactory were the course contents and teaching styles of lecturers. The new layout was most suited to basic mathematically-intensive lecture courses as well as lectures with less equations and more discussion in which whiteboards were frequently used and the projected contents could be annotated on tablets or visualizers, if needed. Nonetheless, the change did not notably affect the quality of studying under different approaches.It was recommended that more rooms should be modified and the lecturers provided with the options of the old and new layout rooms during the room allocation for courses. Suggestions for the next step of improvement were also provided.**

Keywords-lecture room; visibility, projector screen, writing space

I. INTRODUCTION

At the Faculty of Engineering, Chulalongkorn University, the Knowledge Management (KM) activity and the resulting Community of Practice has yielded many pilot initiatives on teaching and learning. If the assessment on impact on both teaching and learning experiences was satisfactory, the project would be further expanded to wider audiences.

One of these pilot projects concerned with improving the physical layout of classrooms [1]. From brainstorming sessions among interested lecturers, the list of suggestions, with selected priorities, was forwarded to the Assistant Dean for Infrastructure who approved selected items of the list, secured the fund and helped the implementation for the most cost effective improvements in one pilot classroom.

To gauge the effects of changes, lecturers that used the room were asked informally for their opinions. The feedbacks were very positive, with many more suggestions. In addition, a questionnaire was distributed to students in 3 basic engineering courses to rate their opinions. The satisfaction ratios were also consistency high at over 70% in all items except one. The study identified the visibility-related problems within the classroom as the most important factor on the satisfaction.

From such positive feedbacks, the project was expanded to 2 more rooms. This wok increased the number of participating lecturers from 3 [1] to 11. This allowed more diverse styles of teaching to be studied. This paper described the process, feedback, evaluation and recommendation on the improvement in a larger scale. It also attempted to identify sets of recommendation for classroom improvement under such diverse teaching styles.

II. METHODOLOGY AND APPROACH

A. Room Descriptions & Improvements

The selected rooms were located in a 1950's four-storey building. Literature survey and detailed descriptions of the rooms, process recommendation lists and rationalization could be found in the previous study [1]. Three typical medium size classrooms with the dimension of 9.3 × 10 m^2 were modified. The layouts prior to and after improvement were described in Figure 1.

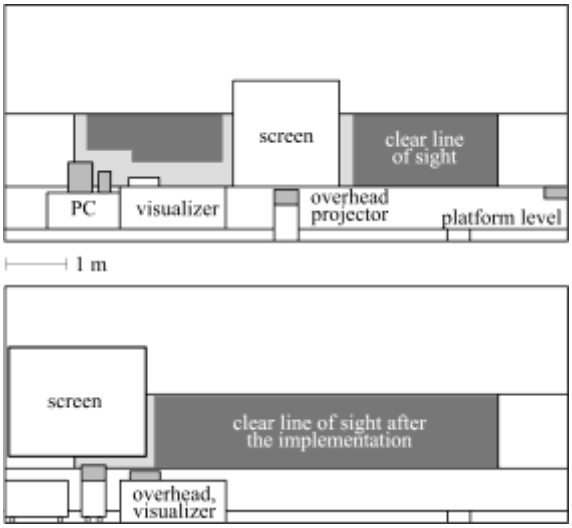

Figure 1: Front view diagram: Before (top) and after (bottom)

Initially, the whiteboard covered most of the lower half of the front with cock boards at both ends. The projector screen was located at the center and had to be pulled down over the whiteboard. The floor in front of the room was raised into a platform with desks for a computer set, an overhead projector and a camera visualizer. The original layout was characterized by a large area of whiteboard obstruction by the projector screen and the equipments. Around 50% of the whole board, denoted by the shaded areas, was unobstructed to all students.

The main improvements were (1) increasing the screen size from 70 to 120 inches and relocating the screen to the left corner at an angle and (2) replacing the projector to match the new screen size and to improve the brightness. The implementation cost around 45,000 Baht per room. In the new layout, the quality, non-fragmented writing areas were increased by over 50%.

B. Evaluation Approach

As before, the users' needs and suggestions were paramount. Students were asked about their opinion on the new layout using the questionnaire that was developed for the pilot project. Lecturers, informally asked in brief chats in the previous study, were formally asked in a newly modified questionnaire that mirrored the students' one.

Even though there were then 3 modified classroom for the the second semester of the academic year 2011 (December 2011 – March 2012, a month delay due to the 2011 Great Flood in Thailand), only one-third of students and lecturers was randomly asked for feedback as there were sufficient course diversity (Table I). The total number of registered students was 387 with the questionnaire return rate of 44%.

TABLE1: SELECTED COURSES FOR FEEDBACKS

	Course	**Students**				
Indx	***Title (Dept, Code)***	***Program***	***Year***	***Total***	***Ans***	***%***
1	Mechanics of Materials I (ME, 2103231)	ME/AE/ MR/IE/CH/MN	UG2	54	23	43
2	Principles of Engineering Materials II (MT, 2109212)	MT	UG2	40	8	20
3	Linear Control Systems I (EE, 2102332)	EE	UG3	38	14	37
4	Fluid Mechanics I (ME, 2103351)	ME/AE/ MR/GE/ PE	UG3	55	15	27
5	System Analysis and Design (CP, 2110332)	CP	UG3	29	18	62
6	Software Development Project (CP, 2110399)	CP	UG3	30	11	37
7	Computer Networks (CP, 2110472)	CP	UG4	46	22	48
8	Hydraulic Engineering (WR, 2112440)	CE, EV	UG4	21	16	76
9	Advanced Transport Phenomena (CH, 2105602)	CH	PG	35	21	60
10	Heterogeneous Catalysis (CH, 2105636)	CH	PG	34	19	56
11	Plumbing Design (EV, 2107638)	EV	PG	5	5	100

In this lecture room, courses were offered to undergraduates (UG) in years 2, 3 and 4 as well as to Master and Ph.D. degrees (PG) by 7 departments for 12 programs. The abbreviations for department and programs were Automotive Engineering (AE), Civil Engineering (CE), Chemical Engineering (CH), Computer Engineering (CP), Electrical Engineering (EE), Environmental Engineering (EV), Industrial Engineering (IE), Mechanical Engineering (ME), Georesource Engineering (GE), Naval Architecture and Marine Engineering (MR), Metallurgical Engineering (MT), Petroleum Engineering (PE) and Water Resources Engineering (WR).

III. LECTURERS' FEEDBACKS

In this study, the feedbacks from lecturers were emphasized. Lecturers for the courses in Table I were contacted and asked about the types of courses, utilized lecturing tools, opinions and actual experiences in the lecture room as well as the suggestions for future action.

A. *Course Characteristics*

The course nature in terms of teaching types and equipments were collected in Table II. In all, 4 courses was identified as mathematically intensive (dark grey shaded), 1 medium (grey shaded area) and 4 with few equations. For the mathematically intensive group (courses 1, 3, 4 and 9), there were widely varying degree of whiteboard usage. However, courses with few equations (e.g. courses 2 and 10) commonly had a rather low whiteboard usage. It was noted that this grouping will be further supported by students' responses in terms of its mathematically intensive nature.

TABLE II: COURSE TYPES AND TEACHING EQUIPMENTS

Indx	Type	Tools (% of time)
1	- Lecture with lots of equations - Discussions - Draw/write over projected images on whiteboard	- Transparency (70%) - Whiteboard (30%)
2	- Lecture with few equations	- Powerpoint & desktop (90%) - Whiteboard (5%) - Visualizer (5%)
3	- Lecture with lots of equations	- Whiteboard (50%) - Transparency (50%)
4	- Lecture with lots of equations	- Pdf file & desktop (90%) - Whiteboard (10%)
5	- Lecture with few equations - Discussions	- Powerpoint & notebook (70%) - Whiteboard (30%)
6	- Students' presentation	- Powerpoint & notebook (80%) - iPad apps (20%)
7	- Discussions	- Powerpoint & notebook (75%) - Transparency (25%)
8	- Lecture with medium calculation	- Transparency (60%) - Visualizer (40%)
9	- Lecture with lots of equations - Draw/write over projected images on whiteboard	- Powerpoint & notebook (90%) - Whiteboard (10%)
10	- Lecture with few equations	- Powerpoint & notebook (80%) - Whiteboard (20%)
11	- Lecture with few equations	- Powerpoint & notebook (40%) - Visualizer (40%) - Drawing & Autocad (20%)

B. Perception on the New Layout

The questions on the new layout for students were slightly modified for lecturers, with 5-level Likert scales for answers, as followed.

A1 The new screen position to one side was better.
A2 The angle of the new screen was satisfactory.
A3 The larger size of the new screen was better.
A4 The uses of screen and whiteboard were more coordinated.
A5 Overall learning atmosphere was better.

Answering in 5-level Likert scales with (5) being strong agreement, (4) agreement, (3) no change, (2) disagreement and (1) strong disagreement, the answers (Table III) were processed into a simple satisfactory parameter, % sat as

$$\% \text{ sat} = \frac{[\text{No. of (5) \& (4) }] - [\text{No. of (2) \& (1)}]}{\text{No. of All Opinions}} \quad (1)$$

The results were varied. The satisfactory seemed to depend not on the course contents, but on the uses of whiteboard as lecturers of courses 8 and 9 indicated their difficulties in adapting to the new layout. The mathematically intensively groups usually voiced their appreciation for the improvement. The low equations group also liked the changes provided that the courses also involved discussions (courses 5 and 7).

C. Actual Effects and Consequences

Lecturers were asked whether they agreed with the statement according to their personal observation. The questions were as follows

B1 The teaching was smoother with the new screen positioning.
B2 It was easier to see the images and read texts on the larger screen.
B3 The new screen location did not impede students' line of sights.
B4 From observed responses, students could followed lectures better.
B5 Lecturers could see and read the projected contents.

The answers were the simple 'Yes', 'No Change' and 'No' answers. The percentage agreement were calculated thus,

$$\% \text{ agree} = \frac{\text{No. of Yes} - \text{No Answers}}{\text{No. of All Opinions}} \quad (2)$$

The results were also summarized in Table III. The answers for question set B agreed with the question set A where the mathematically intensive group as well as the less equation/discussion courses favored the new improvement.

D. Suggestions and Other Comments

Lecturers were asked to rank or suggest improvements that they would like to be realized in this room as well as other lecture rooms. The results were shown in Table III. The suggestions very much varied, clearly depending on the teaching styles and tools.

In addition, those who brought in personal notebooks and tablets were asked why they did not use the installed desktop PC. In the previous study [1], all lecturers used personal notebooks or tablets in the lectures, leading to the possibility of cost reduction as the built-in PCs might be no longer needed. It was found that the main reasons were personal ownership, complicate wiring between different equipments, file formats, and fear of computer virus. However, some lecturers expressed interested in using the PCs if they were better maintained.

TABLE III: LECTURERS' PERCEPTION AND EXPERIENCES

Q	Index	Perception						Q	Index	Experience			
		(5)	*(4)*	*(3)*	*(2)*	*(1)*	*%sat*			*Yes*	*NC*	*No*	*%agree*
A1	1	o						B1	1	o			
	2			o					2	o			
	3	o							3	o			
	4		o						4	o			
	5		o						5	o			
	6		o						6		o		
	7	o							7	o			
	8				o				8			o	
	9				o				9		o		
	10	o							10	o			
	11	o							11		o		
	All	***5***	***3***	***1***	***2***	***0***	***55***		***All***	***7***	***3***	***1***	***55***
A2	1	o						B2	1	o			
	2								2	o			
	3	o							3	o			
	4		o						4	o			
	5		o						5		o		
	6		o						6	o			
	7	o							7		o		
	8			o					8		o		
	9				o				9	o			
	10	o							10	o			
	11		o						11	o			
	All	***4***	***4***	***1***	***1***	***0***	***70***		***All***	***8***	***3***	***0***	***73***
A3	1	o						B3	1	o			
	2		o						2		o		
	3	o							3	o			
	4		o						4	o			
	5			o					5	o			
	6		o						6	o			
	7	o							7		o		
	8			o					8	o			
	9		o						9	o			
	10	o							10	o			
	11		o						11	o			
	All	***4***	***5***	***2***	***0***	***0***	***82***		***All***	***9***	***2***	***0***	***82***
A4	1	o						B4	1	o			
	2		o						2		o		
	3	o							3	o			
	4		o						4		o		
	5		o						5		o		
	6								6				
	7	o							7	o			
	8				o				8			o	
	9				o				9		o		
	10	o							10	o			
	11	o							11		o		
	All	***5***	***3***	***0***	***2***	***0***	***60***		***All***	***4***	***5***	***1***	***30***
A5	1	o						B5	1	o			
	2								2		o		
	3	o							3	o			
	4		o						4		o		
	5		o						5	o			
	6		o						6	o			
	7	o							7	o			
	8			o					8			o	
	9				o				9		o		
	10		o						10	o			
	11		o						11	o			
	All	***3***	***5***	***1***	***1***	***0***	***70***		***All***	***7***	***3***	***1***	***55***

For further improvement of this room, most suggested a larger whiteboard area and less clutter, more reliable wiring. A solution to this suggestion might be the two vertical panels of whiteboard that could move up and down in alternate. Lecturers cited the niggling issues of defective, ineffective markers required to write on the whiteboard. Many also proposed wireless projector that could also simplify and improve the wiring problem. There was also strong request to improve WIFI.

For the suggestions for others rooms, lecturers suggested moving the screen to the side and buy large screens. This bodes well as a support to the first phase of the improvement that focused only on these two issues. Other suggestions included markers, wiring and WIFI.

IV. STUDENTS' FEEDBACKS

The questionnaire on effects of room layout of students' perception, experiences and suggestions were first tested on a focus group of six students and modified several times before the final version were launched during the preliminary study [1] involving 131 students with 71%, return rate. The questionnaire comprised of background questions – department, year of study and GPA – and the main questions in 3 aspects – the perception on the new layout, the real effects on students and the priority for the improvement of this and other lecture rooms.

A. Perception on the New Layout

Students were asked to compare their preference of the new room layout to the old layout. The questions were:

a1 The new screen position to one side was better.
a2 The angle of the new screen was satisfactory.
a3 The uses of screen and whiteboard were more coordinated.
a4 Overall learning atmosphere was better.

The answers were 5-level Likert scales with (5) being strong agreement, (4) agreement, (3) no change, (2) disagreement and (1) strong disagreement. The answers were processed into a simple satisfactory parameter, % sat as in (1). This percentage satisfaction was classified as high for 70% or more, medium between 69% to 50% and low for any number lower than 50%.

The answers (Table IV) clearly showed that students studying Fluid Mechanics I, Hydraulic Engineering and Principles of Engineering Materials II were very pleased with the new layout with so few numbers of disagreements

and satisfaction ratio of over 70%. On the other hand, the students who studied Software Development Project, System Analysis and Design, Heterogeneous Catalysis and Advanced Transport Phenomena had the lowest satisfaction ratio with less than 50% with several no-change opinions.

For the screen angles, students in Plumbing Design and Fluid Mechanics I were very satisfied; an interesting combination as they were the smallest and largest classes under studied. The least satisfied were students in System Analysis and Design and Software Development Project.

TABLE IV: STUDENTS' PERCEPTION ON THE NEW LAYOUT

Q	Index	Answers (5)	(4)	(3)	(2)	(1)	%sat
a1	1	3	13	4	3	0	57
	2	2	5	0	1	0	**75**
	3	1	8	4	0	1	57
	4	5	9	1	0	0	**93**
	5	1	7	9	1	0	39
	6	0	4	6	1	0	27
	7	2	14	3	3	0	59
	8	4	9	3	0	0	**81**
	9	0	13	5	2	1	48
	10	2	9	5	3	0	42
	11	1	3	0	1	0	60
	All	***21***	***94***	***40***	***15***	***2***	***57***
a2	1	2	14	5	2	0	61
	2	1	4	3	0	0	63
	3	0	10	3	0	1	64
	4	4	7	4	0	0	**73**
	5	2	6	9	1	0	39
	6	0	7	2	2	0	45
	7	2	12	6	2	0	55
	8	4	7	5	0	0	69
	9	0	12	8	0	1	52
	10	2	10	5	2	0	53
	11	1	4	0	0	0	**100**
	All	***18***	***93***	***50***	***9***	***2***	***58***
a3	1	9	10	4	0	0	**83**
	2	1	4	3	0	0	63
	3	3	6	5	0	0	64
	4	5	9	1	0	0	**93**
	5	7	8	3	0	0	**83**
	6	0	6	5	0	0	55
	7	7	11	3	1	0	**77**
	8	6	7	3	0	0	**81**
	9	3	14	3	1	0	**76**
	10	5	9	5	0	0	**74**
	11	1	4	0	0	0	**100**
	All	***47***	***88***	***35***	***2***	***0***	***77***
a4	1	3	12	8	0	0	65
	2	1	5	2	0	0	**75**
	3	1	11	2	0	0	**86**
	4	1	11	3	0	0	**80**
	5	1	9	8	0	0	56
	6	0	5	5	1	0	36
	7	4	12	5	1	0	68
	8	2	10	4	0	0	**75**
	9	0	12	8	0	0	60
	10	5	9	5	0	0	**74**
	11	2	2	1	0	0	**80**
	All	***20***	***98***	***51***	***2***	***0***	***68***

The more coordinated utilization of screen and whiteboard was very clearly acknowledged with no low satisfaction and only 3 medium satisfaction ratios for Software Development Project, Principles of Engineering Materials II and Linear Control Systems I.

For the overall learning atmosphere, the high satisfaction also dominated in 6 classes while only students in Software Development Project had a low satisfaction percentage. When the lecturers' opinion on the overall improvement (A5) was compared against students' satisfaction (a4) in Figure 2, the lecturers' rating tended to agree with the students' reaction with the notable exception of the presentation class.

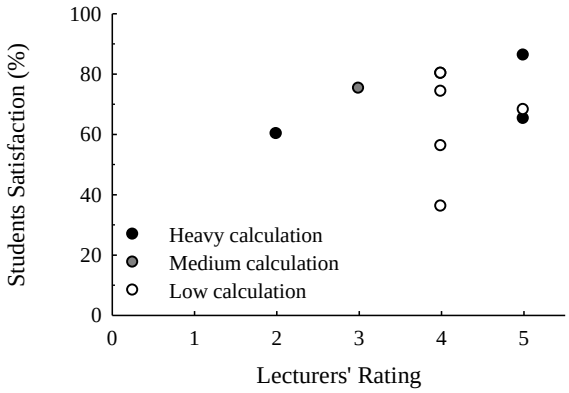

Figure 17. Lecturers' and students' answers about overall improvement.

B. ACTUAL EFFECTS AND CONSEQUENCES

Students were asked whether they agreed with the statement according to their personal observation. The questions were the same as in the previous study [1]. The answers were the simple 'Yes', 'No Change' and 'No' answers with the agreement calculation in (2).

b1 It was easier to see the projection on the screen due to the brightness of the new projector.
b2 It was easier to see the images and read texts on the screen.
b3 It was easier to see the whiteboard as the overhead lighting could be turned on.
b4 The analyses and calculations required to find solutions were very long.
b5 It was easier to understand the content due to the increased whiteboard spaces.
b6 Other classroom equipments did not impede the line of sight on the screen and whiteboards.

The answers (Table V) showed that the re-positioning improving the line of sight and visibility of the projection screen and the whiteboard for around 40 to 50% of all students.

The numbers were distinctively lower than the previous study for the questions 1 (41% vs 80%), 2 (51% vs 75%) and 4 (41% vs 82%), slightly lower in questions 5 (45% vs 58%) and 6 (65% vs 75%), and comparable for questions 3 (56% vs 59%). Nonetheless, the numbers could be considered quite satisfactory. The majority of students voiced supports for the improvement of the line of sight. The support was not as strong for the new projector although the request for better projectors robustly came from lecturers.

It was noted that the class characterization in section IIIA is confirmed here with response from question b4 as

the classes 1, 3, 4, 7 and 8 agreed much more when compared to other classes. The answer for the question b5 on whether it was easier to understand received surprising negative responses. The answer from class 11, however, gained some 50% agreement. This prompted further investigation on the reason behind such responses.

It was interesting to note the strong positive response in b6, compounding with the positive response from a4, suggested that students appreciated the new uncluttered look. That did not translate into "easier to understand" factor in response to question b5 though.

C. Priority for Further Improvement

Lastly, students were asked to rank or suggest the lists of 3 improvements that they would like to be realized in this room as well as other lecture rooms. The choices were limited to the 11 most common suggestions selected from the previous study [1]. These items were numbered, in which the first 7 questions was grouped under the visibility category, as followed.

c1 Repositioning the projection screen to one side
c2 Use a larger projection screen
c3 Install a new projector
c4 Relocating computers and front table
c5 Reduce light reflection on whiteboard
c6 Improving lighting
c7 Use thicker and darker whiteboard markers
c8 Double whiteboard area with sliding panels
c9 Improve the microphone and sound system
c10 Improve the tables and chairs
c11 Improve the WiFi system

The results were either simply counted or, respectively, weighted with 1.5, 1.0 and 0.5 for the 1st, 2nd and 3rd choices

$$\% \text{ count} = \frac{\text{No. of Counts}}{\text{No. of All Opinions}}, \quad (3)$$

$$\% \text{ weight} = \frac{\sum(\text{No. of Counts})(\text{Weighting Factor})}{\text{No. of All Opinions}}. \quad (4)$$

With low rates of answers for improvements in each course, it was decided that only the overall results were shown in Table VI. The numbers clearly confirmed the visibility problems in all classrooms for both indices. Apart from the suggested list, students could freely suggest other improvements as listed in Table V. Some of these did not involved room improvement directly.

Other suggestions were the erratic WIFI signals. In the previous study [1], there were some doubts whether this suggestion and the request for electricity sockets came from study-related uses or personal use that was a study distraction.

Open comments and suggestions, which mostly mirrored the lecturers' opinions, included

- Uneven temperature due to improper air conditioning (4 times)
- More electricity sockets (4 times)
- Writable projector screen (2 times)
- Removing unused screen, PCs and monitors, etc. (2 times)
- Fixing clocks, air conditioner and lighting
- Better use of whiteboard
- Ready supply of markers
- On-time lecturing (3 times, might indicate better alarms)

V. CONCLUSIONS

This study explored the effectiveness of screen repositioning on the visibility as well as other issues. Under diverse course contents and teaching styles, the mathematically intensive as well as less equations courses with discussion gave positive perception and responses in terms of teaching proficiency. The better line of sight and clearer visibility were the main factor for such responses. Extra comments from lecturers supported the expansion of this improvement to other classrooms. The data from students also offered strong positive perception to the new, uncluttered look. With varied contents and teaching styles, the percentage agreement was lower than the previous study [1], but still satisfactory.

To summarize, this study confirmed that the screen repositioning to free up writing spaces were found to positively affect the quality of learning in medium sizes classrooms in particular and the visibility in general. Suggestions for the next step of improvement included an even larger whiteboard area, uncluttered and better wiring as well as reliable WIFI.

TABLE V: ACTUAL EFFECTS ON STUDENTS

Q	Indx	Answer				Q	Indx				
		Yes	***NC***	***No***	***%agree***			***Yes***	***NC***	***No***	***%agree***
b1	1	10	10	3	30	b2	1	11	11	1	43
	2	4	4	0	50		2	6	1	1	63
	3	8	5	0	62		3	6	7	1	36
	4	9	5	1	53		4	9	5	1	53
	5	7	9	1	35		5	9	7	2	39
	6	5	5	1	36		6	6	4	1	45
	7	5	15	2	14		7	9	12	1	36
	8	6	7	2	27		8	9	6	1	50
	9	5	15	1	19		9	9	10	2	33
	10	8	11	0	42		10	12	7	0	63
	11	3	2	0	60		11	2	3	0	40
	All	***70***	***88***	***11***	35		***All***	***88***	***73***	***11***	45
b3	1	12	9	2	43	b4	1	10	13	0	43
	2	5	3	0	63		2	1	2	5	-50
	3	6	5	2	31		3	5	7	1	31
	4	10	5	0	67		4	7	8	0	47
	5	11	7	0	61		5	5	12	1	22
	6	7	4	0	64		6	1	7	3	-18
	7	9	11	2	32		7	11	9	2	41
	8	10	6	0	63		8	9	6	1	50
	9	10	8	3	33		9	14	7	0	67
	10	12	7	0	63		10	5	12	2	16
	11	4	1	0	80		11	2	2	1	20
	All	***96***	***66***	***9***	***51***		***All***	***70***	***85***	***16***	32
b5	1	1	8	15	-58	b6	1	15	8	0	65
	2	2	2	5	-33		2	6	2	0	75
	3	3	7	5	-13		3	9	3	1	62
	4	4	5	9	-28		4	11	4	0	73
	5	5	8	10	-22		5	11	5	2	50
	6	6	2	9	-18		6	8	2	1	64
	7	7	11	9	-7		7	18	4	0	82
	8	8	8	7	4		8	15	1	0	94
	9	9	13	6	11		9	15	4	2	62
	10	10	10	9	3		10	11	6	2	47
	11	11	2	3	50		11	5	0	0	100
	All	***66***	***76***	***87***	-9		***All***	***128***	***39***	***8***	68

For the last thought, formal lectures had long been a preferred method of instruction in many basic, calculation-intensive courses. These subjects might, in many students' mind, be unglamorous and out-of-date but they were the basic for more advanced courses. Solid foundation in these contents were not only necessary, but also affected graduating GPAs more than any other types of courses [4]. The teaching method that students copying down the contents on the whiteboard might looked very lecturer-centered and strived creativity. With proper class conduction and management, it could, however, provide an acceptable level of active learning for students. In a related study at the Faculty [3], students approved in-class writing for 'freshness' and detailed analyses of examples in-class as beneficial to the understanding and communicating of the analyzing procedures.

TABLE VI: SUGGESTED IMPROVED PRIORITIES

Item	This Room					Other Rooms				
	1st	***2nd***	***3rd***	***%c***	***%w***	***1st***	***2nd***	***3rd***	***%c***	***%w***
c1	Implemented					22	11	10	8.7	9.9
c2						16	16	10	8.5	9.1
c3						21	11	16	9.7	10.2
c4	8	8	8	6.6	6.6	0	5	9	4.5	4.8
c5	28	23	19	19.3	20.6	9	21	15	14.1	15.1
c6	6	21	12	10.8	9.9	2	11	14	7.9	7.3
c7	19	24	21	17.7	17.4	12	16	15	12.9	12.7
Visibility	***61***	***76***	***60***	***54.4***	***54.6***	***120***	***114***	***96***	***66.7***	***69.1***
c8	5	7	6	5.0	4.8	0	4	5	3.6	3.5
c9	10	15	14	10.8	10.2	9	7	13	7.9	7.5
c10	4	6	9	5.2	4.6	1	10	6	3.8	3.3
c11	43	18	17	21.5	25.1	35	17	9	15.8	18.4
Others	1	4	6	3.0	2.3	0	2	5	2.2	1.7

From the results of this study, some changes in administrative procedures were strongly suggested. The course characteristics should be taken into account in the classroom allotment in form of an option to choose different layout of the class to lecturers. The exact demand for the new room layout and built-in PCs could be gathered and used in the planning of future room refurbishment.

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Factors Affecting OBE Implementation in Teaching: Challenges faced by UiTM Cawangan Melaka Lecturers

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***Abstract*— The Outcome Based Education (OBE) teaching method has been introduced into the UiTM system since July 2010. The OBE method brought about a new dimension towards the teaching and learning process as compared to the traditional educational practices. In terms of the teaching process, OBE focuses on student-centered learning and outcomes compared to the traditional teaching method which emphasized on examinations and grades. OBE focuses on achieving competencies to meet the needs and demands of potential employers. The role of the lecturers also changes from a teacher to that of a coach. This study was undertaken with the aim of exploring the challenges faced by the UiTM Cawangan Melaka lecturers in the implementation of teaching and learning via OBE. Among the challenges faced are; inter alia, understanding on OBE implementation in the classroom, resource adequacy, work pressure, innovation, staff freedom and others. Data for this study are obtained from questionnaires consisting of quantitative questions. The respondents are lecturers of various faculties who have been teaching using both traditional and OBE methods. At the end of the study, it is hoped that the findings would assist in a deeper understanding of OBE implementation.**

Keywords: ***OBE, challenges, teaching,***

I. INTRODUCTION

The traditional education focuses primarily on the resources that are available to the student, which are called inputs. The Outcome-Based Education (OBE) on the other hand, focuses on empirically measuring student performance, which are called outcomes. OBE does not specify any particular style of teaching; however, it requires that students are able to demonstrate that learning has taken place. The role of the teachers also changes with the introduction of new teaching and learning methods. Hence, enabling teachers to be managers of change is a crucial aspect in the introduction of any educational reforms. [1] concede that research literature in industrialized nations is replete with the problems of changing teacher behavior because many teachers "teach how they were taught". Teachers might find it difficult to shift from traditional practices. Therefore, ongoing teacher development is crucial in changing teachers' pedagogical behavior.

In addition, the quality of the environment of the institution where the teaching and learning is taking place is equally pertinent for the implementation of OBE [2]. This study looks at lecturers' perception of five dimensions of the environment and its relationship towards OBE implementation at UiTM Melaka. The five dimensions are Resource Adequacy, Innovativeness, Professional Interest, Staff Freedom and Work Pressure.

The general objective of this study is to determine the relationship between Resource Adequacy, Innovativeness, Professional Interest, Staff Freedom and Work Pressure with OBE Implementation.

II. BRIEF LITERATURE REVIEW

The commitment of both learner and provider is very important in the initial stages of introducing OBE [3]. While learners have to take greater responsibility for their learning, teachers have to plan and manage the learning environment of their learners. One of the attractions of OBE is that it can provide teachers with a large degree of freedom to select the content and methods through which they will help their students achieve those outcomes [4]. The freedom comes through the choices of teaching methods and assessments that are left up to teaching institutions and individual teachers. On the other hand, administrators could impose a control over the intended outcomes of education. This could cause some tension as teachers might be unhappy with the outcomes specified by administrators.

Many teachers are unhappy with the amount of time spent and the demand on teachers' energy with the implementation of OBE [5]. In some institutions, the dissatisfaction of teachers was due to being tired of change over recent years, a lack of justification of the impact of OBE on achievement of intended learning outcomes and the fact that teacher appraisal was not OBE-related which underscores innovative teaching approaches [5], [6], [7]. Teachers are also concerned that outcomes-based programming is too technical/mechanical or even inflexible, and that it does not give teachers room to be innovative and creative.

Conversely, successful implementation of OBE will require teachers to be able to contextualize the principles of OBE to suit their particular situation. No system of education will work if teachers are not committed to it. Each teacher can use his/her unique style to be an effective educator; it requires knowledge of the educational process, a mastery of the instructional methods and an ability to use these methods with a variety of learners and setting [8].

III. METHODOLOGY

Data were collected from lecturers teaching Degree programs and have used the OBE method at UiTM Melaka. Currently, students from Semester 1-4 are categorized as the OBE cohort. A total of 180 lecturers were involved in teaching various Degree programs using the OBE method. Based on [9] table for determining sample size for a given population of 180, a sample size of 118 would be needed to represent a cross section of the population. Hence, a total of 120 questionnaires were randomly distributed to the staff based on the list of lecturers who are currently involved in teaching using the OBE method. However, only 102 questionnaires were returned; a highly acceptable return rate of 85%. Table 1 presents the demographic characteristics of the respondents.

TABLE VII. DEMOGRAPHIC CHARACTERISTICS

Variables	**Demographic Characteristics**		
	Category	***Frequency***	***Percentage***
Gender	Male Female	37 65	36.3 63.7
Race	Malay Chinese Indian Others	94 5 1 2	92.2 4.9 1 2
Education Level	Masters PhD	96 6	94.1 5.9
Teaching Experience	1-5 years 6-10 years 11-15 years More than 15 years	68 14 8 12	66.7 13.7 7.8 11.8

Data were collected via self-administered questionnaire survey only on a one-time basis, rendering this study a cross-sectional one. The measures used in the questionnaire for this study were based on the works of various researchers in the area of teaching and learning.

Section A asked for the background information of the respondents. Questions 1-3 from Section B tested on the implementation and familiarity of OBE which measured successful implementation of curriculum innovation by teachers [10]. Questions 4-6 of the same section measured Resource Adequacy, mainly the adequacy of personnel, facilities, finance, equipment and other resources for OBE implementation. Questions 7-12 of Section B measured Professional Interest, to identify teachers' interest in their work and in further professional development. Questions 13-18 (Section B), measured Staff Freedom, to test on teachers' perception towards freedom in setting assessments and teaching methods. Questions 19-24 of Section B measured Innovation to test on individualization and experimentation of new methods in teaching. Finally, Questions 1-6 in Section C measured Work Pressure, to identify perceptions of teachers on work load with the implementation of OBE. All the questions from Question 4 (Section B) to Question 6 (Section C) were adopted and adapted from the widely-used School Level Environment Questionnaire (SLEQ) [11].

IV. FINDINGS

Cronbach's Coefficient Alpha was used to determine the reliability of the various items used in this study. The reliability of measure relates to how consistent the measure is [12]. Table 2 presents the Cronbach Alpha for all the variables.

TABLE VIII. RELIABILITY ANALYSIS

Variables	***Scale***	***No of Items***	***Cronbach Alpha***
OBE Implementation	5-point Likert Scale	3	0.857
Resource Adequacy	5-point Likert Scale	3	0.814
Professional Interest	5-point Likert Scale	6	0.837
Staff Freedom	5-point Likert Scale	6	0.861
Innovation	5-point Likert Scale	6	0.707
Work Pressure	5-point Likert Scale	6	0.812

This study followed the minimum value of .70 which is considered good [13].

Pearson Correlation was used to determine the existence of a relationship between variables and to determine its magnitude and direction as this study hopes to determine the relationship between OBE Implementation with Resource Adequacy, Professional Interest, Staff Freedom, Innovation and Work Pressure.

The correlation between OBE Implementation (OI) and Resource Adequacy (RA), Professional Interest (PI), Staff Freedom (SF) and Innovation (Inv) is positive and statistically significant. However, the relationship between OBE Implementation (OI) and Work Pressure (WP) was insignificant.

TABLE IX. CORRELATION BETWEEN OBE IMPLEMENTATION AND OTHER FACTORS (N=102)

	OI	RA	PI	SF	INV	WP
OBE IMPLEMEN-TATION (OI)	1	.359**	.272**	.415**	.439**	.086

**P<.01

V. CONCLUSION

The present study was undertaken primarily to examine the various dimensions of institutional environment that were likely to support successful implementation of Outcomes-Based Education. From the findings above, it can be concluded that the implementation of OBE methods at UiTM Cawangan Melaka is perceived in a positive light. The lecturers perceive that it is important to have sufficient/ adequate resources in order to implement OBE successfully. The lecturers also perceive greater professional interaction, greater staff freedom and greater innovation with OBE Implementation. The relationship between OBE Implementation and Work Pressure is insignificant, hence it can be concluded that generally lecturers here do not associate the implementation of OBE Methods to Work Pressure. These findings are in line with findings by [14].

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"I think I'm an active learner": a narrative-quantitative research on the metacognitive preparedness of first semester

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***Abstract*— Metacognition is an area of study that has gained credence within theories of learning that focus on human thought and actions. It is an interdisciplinary area of study that combines insights from educational studies, educational psychology and also developmental (cognitive) psychology. In its simplest term, metacognition refers to the processes that happen before learning where learners start to plan, monitor and assess their own thinking before they apply this knowledge towards certain outcomes. In this present study, narrative frames were employed as a data collection instrument to examine how first semester students in a tertiary institution are starting to plan, monitor and assess their new status and roles as tertiary students. Although narrative data were collected, the analysis of this body of data was done quantitatively to find out the frequency of references these students make to predefined metacognitive categories from research literature. Although largely exploratory in nature, interesting results emerged from this study when these young tertiary students were asked to plan, monitor and assess (in their minds) their present selves as 'active learners' in a new learning environment. The implications of our research findings are also discussed with reference to the benefits of metacognitive training for new learners coming into tertiary from secondary education, and how tertiary educators can ensure that new students employ metacognition to learn actively and productively to become successful future graduates within this educational context.**

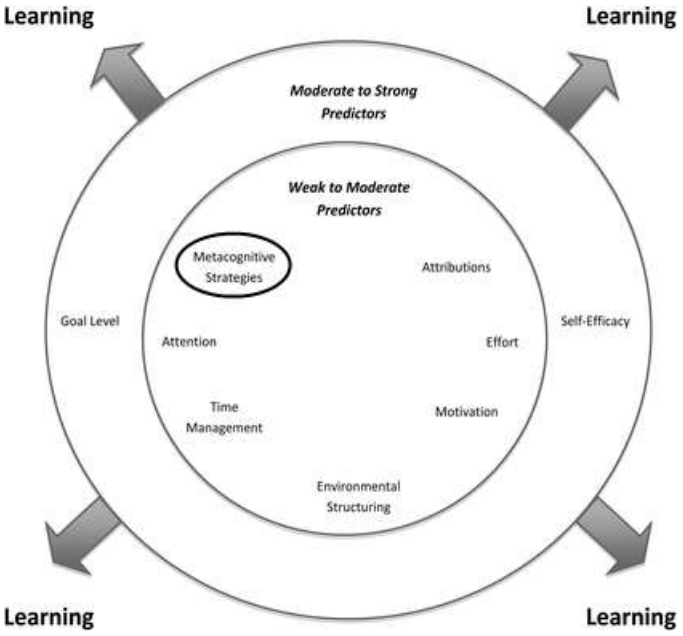
Keywords- narrative study; narrative frames; metacognition; metacognitive training; tertiary education

I. INTRODUCTION

More than three decades ago, metacognition was introduced into the realm of education. Since then, it has become a significant concept that has gained credence in general educational studies, educational and also developmental (cognitive) psychology. The term 'metacognition' is largely attributed to John Flavell [1]. As a developmental psychologist who specialises in children's cognitive development, Flavell coined the term to describe "cognition about cognitive phenomena" or in other words, our "thinking about thinking" (p. 906). To this day, the use of this term has remained relatively faithful to Flavell's original conceptualisation [2].

Most importantly, the study of metacognition has also led to vigorous research efforts in order to observe and measure it in real life situations. From these efforts, the 'self regulated learning' model was introduced as a general construct in educational studies in order to create independent learners. Self regulation is defined as the ability of learners to actively develop positive mindsets and use general learning skills to acquire knowledge in different contexts. Boekaerts [3] introduced a tri-layered model of self regulated learning. The inner layer relates to regulation. It involves steps in choosing and processing different cognitive strategies to apply toward purposeful learning. This is connected to the middle layer that focuses specifically on the actual regulation of the learning experience. It is here that learners use their metacognitive skills to direct their own learning in a productive way. Finally, the outer layer relates to the regulation of the individual (self) by balancing between different goals and resources.

FIGURE I. METACOGNITION AND SELF DIRECTED LEARNING (ADAPTED FROM SITZMANN AND ELY, 2011)



Building on Boekaerts's conceptualisation of self regulated learning and his operationalisation of metacognition within this learning model, contemporary researchers like Sitzmann and Ely [4] have expanded the notion of self regulated learning further, referring to their own model as 'self directed learning' (see Figure I). Working together with other educational constructs like 'motivation' and 'attention', Sitzmann and Ely go on to suggest that knowledge and application of metacognitive strategies can even be used to predict success in different learning endeavours.

In the present day, metacognition is perceived and accepted as a general 'enabler' for all learners at all levels of the formal education system. Through training in metacognitive skills and regular consciousness raising activities, the scholars mentioned above suggest that learners will greatly benefit from them. The final outcome will be learners who are independent and able to plan, monitor and assess their own thinking before they start to apply this useful knowledge towards productive (real) learning outcomes.

II. LITERATURE REVIEW

As mentioned in the previous section, metacognition is accepted as a general 'enabler' for learners at all levels of the formal education system. This idea was originally forwarded by Kuhn and Dean [5] who believe that metacognition serves as an "enabler" in the educational realm, especially for weaker learners and those who are just starting to learn in a new environment. Using metacognitive training and 'consciousness raising activities', these learners are made to be aware of their roles and responsibilities and to be ready to learn productively.

For Kuhn and Dean, and other scholars like Schneider and Lockl [6] and Schraw [7], there are many educational benefits for raising the general metacognitive preparedness of learners, regardless of their educational level. This is due to the fact that metacognition is a form of mental executive control that involves constant monitoring and regulating of learning-directed activities. As such, Lai [2] considers metacognitive skills as different from 'general' intelligence due to the fact that metacognition may even help to compensate for deficits in general intelligence.

Due to active research in the field of metacognition and continued interest in this important subject matter, different terminologies have emerged with reference to metacognitive skills (see Table I). As Table I suggests, it is now generally accepted that there are two distinct metacognitive components: cognitive knowledge and also cognitive regulation. Although in this present study our stated focus is cognitive regulation, it is important to acknowledge that these two components will interact with each other as learners apply their metacognitive knowledge towards productive learning outcomes.

At this juncture, we also want to stress the term *productive* because metacognitive knowledge (within the mind) might not necessarily be translated into real gains as useful learning outcomes in the real world. In other words, *knowing* what one must do with reference to learning, does not necessarily mean that one will take positive and productive steps to do so. In our opinion, this is one of the biggest drawbacks with reference to the subject matter of metacognitive preparedness.

TABLE X. FROM LAI'S (2011) TYPOLOGY OF METACOGNITIVE COMPONENTS

Metacognitive Component	Type	Terminology
Cognitive knowledge	Knowledge about oneself as a learner and factors affecting cognition	Person and task knowledge
		Self-appraisal
		Epistemological understanding
		Declarative knowledge
	Awareness and management of cognition, including knowledge about strategies	Procedural knowledge
		Strategy knowledge
	Knowledge about why and when to use a given strategy	Conditional knowledge
Cognitive regulation	Identification and selection of appropriate strategies and allocation of resources	Planning
	Attending to and being aware of comprehension and task performance	Monitoring or regulating
		Cognitive experiences
	Assessing the processes and products of one's learning, and revisiting and revising learning	Evaluating

At the same time, our review of contemporary research on metacognition, metacognitive training and also consciousness raising activities [references 8 through 12] yielded five general guidelines to ensure that the general benefits of metacognition can be translated into actual, productive learning outcomes. The five guidelines for metacognitive preparedness are: (1) Identifying current knowledge and learning context; (2) preparing to talk and discuss about thinking; (3) planning to learn independently; (4) monitoring independent learning; and (5) evaluating the process of learning. These five guidelines are explained further in the following paragraphs before we outline the methodology of our present empirical inquiry into the metacognitive preparedness of first year tertiary students in our research site.

Identifying current knowledge and learning context – As learners enter a new learning context (environment), they must be made aware about their preparedness to learn in this new context. They must also gauge their own knowledge and prepare to acquire new information (knowledge) as appropriate within this new context. With time and further consciousness raising, learners can verify, clarify and expand or replace what they know and what they 'think' they know with more accurate information.

Preparing to talk and discuss about thinking – Talking about thinking is important because new learners in a new (and possibly strange) learning context need to adopt new sets of skills to ensure their success in the future. So, during planning and problem-solving situations, instructors can help their learners to start 'thinking aloud' in a productive way. Learners can also start to share their beliefs and expectations with their peers through smaller discussion groups and prepare mentally for the learning activities that will follow in that new learning context.

Planning to learn independently – Learners need to assume increasing responsibility for planning and regulating their own learning, especially when they move to a higher level (e.g. from secondary school to college or university). It is difficult for these learners to become independent when learning is planned and monitored by someone else (as in the case of secondary schools). Hence, part of their initial training to increase their metacognitive preparedness might include making plans for independent (solitary) learning activities including estimating time needed, organising study materials and scheduling procedures necessary to complete learning tasks given by their instructors.

Monitoring independent learning – Constant monitoring must happen so that learners can develop their awareness of useful strategies that should be applied in their new learning environment. A three-step model will prove to be useful in this context. Firstly, the instructor can guide her/his learners to review learning tasks and also gather data on thinking processes and feelings. Then, learners should be asked to classify related ideas and identify the thinking strategies that they used. And finally, they should evaluate their own success and discard inappropriate strategies, identifying those that will be valuable for future deployment and looking for alternatives in case certain learning outcomes were not achieved.

Evaluating the process of learning – Guided evaluation can also be introduced through individual consultations and checklists focusing on thinking processes, beliefs and expectations. Gradually, self-evaluation should be applied more independently as learners become more comfortable in their new learning environment. Once they notice what works (and what does not) in their learning at this level, they can then start to transfer relevant metacognitive strategies to future situations in a more productive manner.

Based on the preceding paragraphs and the discussions in this and the previous section, an original empirical inquiry was initiated. In this research, 179 first-year first-semester tertiary level students were asked to mentally plan, monitor and assess themselves as 'active learners' in a new study environment to explore two guiding questions:

ONE: How do these students mentally (metacognitively) perceive their new status and roles as tertiary students, and how do they prepare for them (the status and roles)?

TWO: What do they see as their own responsibilities with reference to becoming tertiary learners who can actively plan, monitor and assess their own learning?

III. METHODOLOGY

To explore the two guiding question above, we employed a qualitative instrument to gather data from 179 first-year first-semester students in a tertiary college in central Malaysia. These tertiary students are mainly local school-leavers who have just finished their SPM examinations and who will undergo three years of higher education in a scientific-technical field to graduate with a tertiary diploma.

Instrument of data collection – Given the large number of participants and the limited resources we had at our disposal to collect useful and useable data, the research methodologist in our team (Airil) came up with the idea to use narrative frames. In Barkhuizen and Wette's study [13], they designed and used four narrative frame templates to investigate the different experiences of university language teachers in China. According to these researchers, generally, it is not easy for research participants to describe their feelings and experiences and "to write reflectively on a personal level, especially in narrative form" (p. 375).

For instance, some people will often be unsure about what to write ("*I don't know what to say*") and how to write 'narratively' ("*What style should I use?*") [13]. Due to these caveats, Barkhuizen and Wette believe that the use of narrative frames to collect research data "provide guidance and support in terms of both the structure and content of what is to be written". In addition, using narrative frames "ensure that the content will be more or less what is expected (and required to address the research aims) and that it will be delivered in narrative form" (p. 376). Barkhuizen and Wette cite empirical studies by Warwick and Maloch [14] and Wray and Lewis [15] as further examples of other researchers who have also successfully employed the use of narrative frames to collect research data.

For this present study, we designed three templates for our 179 research participants corresponding to three metacognitive skills domains: metacognitive planning (*mentally preparing to become an active learner*), metacognitive monitoring (*mentally preparing for future progress*), and metacognitive assessing (*mentally preparing to evaluate future progress*). Each of our template consisted of a single sentence starter that was written in such a way as to ensure that it would determine the direction the narrative response(s) would take. Our own research team (led by Nurulhayati) distributed, administered and collected all the templates for the participants.

The focal aim of the frames was to encourage the learners to reflect on their new status and roles as tertiary students and how they will prepare for them. The participants were also asked to write freely about what they perceive to be their own responsibilities with reference to becoming tertiary learners who can actively plan, monitor and assess their own learning. A further unstated aim of the research design we adopted was to limit the quantity of narratives that we collected from the participants. Although narrative-based studies are largely interested in collecting 'thick' descriptions of beliefs, expectations and real experiences, narrative frames limit the data collected to ensure that large amounts of data could be managed efficiently and effectively for a research project with limited resources (such as ours).

Analysis of data collected – As with most qualitative data, we started with open coding [16] of all the narrative frames. Working as a team, we then analysed the data collectively in two cycles. In the first cycle, Nurulhayati and the research team generated raw codes based on vertical readings of the data (case by case). Then, in the second cycle, the research methodologist in the team (Airil) went over and further refined these raw codes based on horizontal readings of the data (across all cases). This resulted in a shortened list of final themes and larger categories that we all discussed and finally agreed upon.

To finish the analysis of data from our participants, these themes and categories were then quantitatively analysed and tabulated based on frequency. They were then further revised and selected to be included in this research article based on saliency, in connection to our two initial guiding (research) questions. In the next section below, we present the data that we collected and analysed from all our participants.

IV. PRESENTATION OF DATA

As mentioned in the previous section, 179 first semester (first year) tertiary diploma students (n = 179) took part in this research project. In this section, our three metacognitive skills domains (see Figure II) are presented and analysed based on frequency/saliency and also relevance to research questions. To reiterate, our empirical work was focused on processes that happened prior to actual learning where learners in a new learning environment start to plan, monitor and assess their own thinking before they apply this knowledge towards actual learning outcomes.

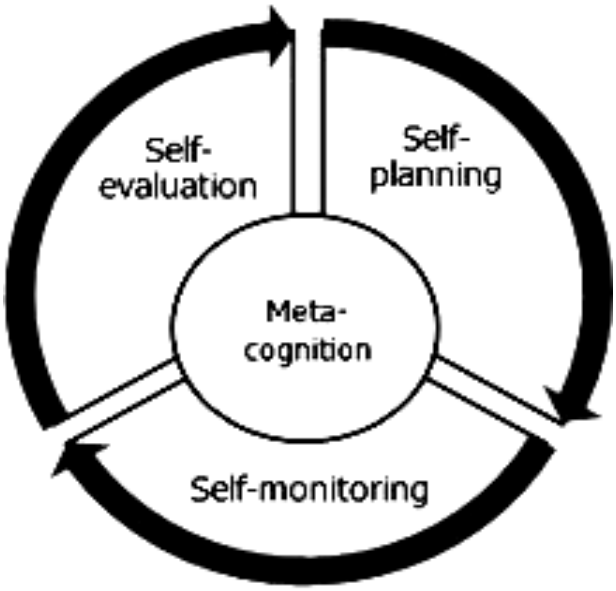
Because of this, the results that we discuss below are merely mental projections or mental plans that might not necessarily be

translated into actual action. At the same time, the focus of metacognitive preparedness is, first and foremost, consciousness raising activities where learners are made aware of their roles and also responsibilities from the outset.

In the following segments, we present three of the most frequent and salient responses (themes) with reference to planning, monitoring and assessing one's roles and responsibilities as active learners within our site of research. It is also important to mention that many themes emerged from the narratives frames that we collected. There were altogether 13 response themes for the planning category, 12 for monitoring and another 7 for assessing.

Nevertheless, due to the constraints of space and because some responses given by participants are not directly related to our initial concerns and research questions, in this research report only the top three response themes will be presented and discussed.

FIGURE II. THE 3 METACOGNITIVE DOMAINS IN OUR STUDY



DOMAIN 1: metacognitive planning (*preparing to become an active learner*).

*As a new student, **I plan to become an active learner** by...*

1. focusing primarily on my academic achievements ***(22%** of participants) [**Theme**: achievement focus]*.

2. participating actively in academic programmes on campus ***(14%** of participants) [**Theme**: active participation]*.

3. making sure that I love my current programme of study in this campus ***(10%** of participants) [**Theme**: study orientation]*.

DOMAIN 2: metacognitive monitoring (*preparing for future progress).*

*As a new student, **I will make sure thatI make progress** by...*

4. checking to make sure that I study in a positive manner ***(36%** of participants) [**Theme**: achievement focus]*.

5. giving equal focus to my academic and non-academic development ***(14%** of participants) [**Theme**: balanced focus]*.

6. setting up study groups to help support my studies here in this campus ***(13%** of participants) [**Theme**: study support]*.

DOMAIN 3: metacognitive assessing (*preparing to evaluate future progress).*

*As a new student, **I shall evaluate the progress I make** by...*

7. ensuring that I meet all my academic targets for every semester ***(40%** of participants)[**Theme**: achievement focus]*.

8. being active in all the academic and non-academic activities on campus ***(20%** of participants) [**Theme**: active participation]*.

9. comparing my own progress in my programme of study with other students on campus ***(17%** of participants) [**Theme**: study support]*.

V. DISCUSSION OF DATA

It is interesting that focus on achievement and focus on achieving balance (in academic and non-academic progress) feature prominently as the most frequent and salient narrative responses by our 179 research participants.

This finding seems to indicate that our participants are generally (meta-) cognitively prepared to learn in this new tertiary environment and they have set their minds on academic achievements from the outset. Hence, when it comes to assessing/evaluating their progress, 40% of the participants are mentally planning to meet all their academic targets for each semester. Simply put, although they are newcomers at tertiary level, these new students seem to start to adapt quickly to the challenges of learning at this level, at least mentally.

Another noteworthy observation relates to metacognitive monitoring where 14% of our participants want to focus on achieving balance between their academic and non-academic progress in their programme of studies. As tertiary educators, we believe that this is a very healthy mental plan and one that will bring long term benefits to all tertiary students, if this plan is translated into actual action.

The second theme which features prominently out of the students' narrative responses is active participation. About a fifth of the students (20% of the population) involved in this study have mentally planned to participate actively in all the academic and non-academic programmes conducted in their campus. In fact, some of them have highlighted their awareness of the importance of becoming active students, stating that it helps them to develop leadership skills, broaden their networks when participating in inter-collegial competitions and also obtaining more certificates of participation. These, as narrated by some of them, will develop higher confidence level within them to answer job interview questions in future and providing better chances for employment. It is somewhat interesting to learn the fact that although these students are newcomers at tertiary level, they not only mentally planned for a better future but are also aware of the characteristics of outstanding job applicants with higher chances to be accepted in the workplace.

Study support – It was also found that 17% of the participants have mentally planned to become active learners by choosing to learn with peers and forming study groups. This indicates quite a number of students who are aware of the benefits of learning with friends instead of learning individually. Some of them have stated their knowledge about the advantages of forming small study groups. For instance, these groups can help them to avoid work procrastination, get new study skills and obtain new perspectives from peers. Most of them have explained that studying with friends generally help them to learn faster. We believe that as newcomers, these students must have experienced the advantages of peer learning in schools. As a result, they perceive this metacognitive strategy as one of the most effective learning techniques to be employed in order to succeed at tertiary level. We also believe that having this intention in their minds before actual teaching and learning take place enables them to appropriately manage their learning progress, and to be able to perform well in exams.

Meanwhile 10% of the participant population have mentally planned to improve their study orientation. Some of them have carefully planned to make sure they will always be updated with the latest information of each subject. They have also stated that they will try their best to build good rapport with their instructors and will definitely make full use out their meetings with the lecturers either in class or during personal consultations. Other than that they have also planned to complete tasks given on time and will try their best not to procrastinate work. These, according to them will definitely help them to perform well in every semester.

As we can see, quite a number of the whole population have beforehand planned for certain actions to be taken to make sure they graduate successfully. The semester is still in its 'ice-breaking' session but these success driven students have already mentally prepared to walk their journey to succeed carefully and smoothly as planned. We believe having these beautiful plans will definitely lead these students become more independent and practice more on self-regulated studying instead of relying solely on the help of their instructors. Hence, we also believe these students to reach their expectations with fewer obstacles.

VI. CONCLUSION

Within the limits and contexts of our study, the empirical data that we collected indicate that *generally* secondary school students who become tertiary level learners possess a satisfactory level of metacognitive preparedness as they begin their new lives in this new and strange learning environment. Due to this overall observation, we strongly feel that *all* first-semester first-year tertiary learners *will* benefit greatly from metacognitive consciousness raising activities at the start of their journey into higher education.

Even a short metacognitive exercise (as straightforward as writing narrative frames) will be beneficial to these young learners. Without a doubt, if all tertiary instructors are able to assist their young learners to make adequate metacognitive planning to start learning, and later on to continuously monitor and independently assess themselves for the duration of their studies at tertiary level, these learners will become successful graduates in their programmes of study.

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Innovative Lesson Plan on Active LearningThinking Aloud Pair Problem-Solving (Tapps)

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Abstract— **Active learning methodology such as Thinking Aloud Problem-Solving has become a preferred way to change the traditional teacher centered classroom into the innovative lesson plan on active learning. This paper describe the case study on technique on active learning such as Thinking Aloud Problem-Solving in various faculty in Higher education in Malaysia. The statement of the problem in the program is how an active learning methodology can be implemented to assure that a student learns through the activities established in active learning within a new pedagogical framework. This paper aim to present some ideas of how to use active learning techniques in the lectures in ordinary classroom in Malaysia (more than 35 students), and describe how training on active learning is successfully within twelve (12) programs during 2011. The participants come from various faculty such as engineering information communication and technology, management and entrepreneurship. Universiti Teknikal Malaysia Melaka, Cosmopoint International College, Polytechnic and Community College. They were more than 30-40 participants every training program. The main idea in the program is to use inductive, active learning, with many small exercises/ group discussions during the training session to show the example of how to apply some techniques in their own classroom. They were ten (10) actives learning frameworks/formats were introduced to the participants. More than 33 lesson plan in active learning develop and ready to use in ordinary classroom. The framework/format of active learning contains some visualize, design, and implement stage from the cooperative learning principle.**

Keywords: student centered learning, active learning, inductive teaching, training, pedagogy

I. INTRODUCTION

There are many active learning techniques which have been designed to encourage independent learning for the students in the classroom. The notion that the classroom is no longer a teacher centered classroom but a student centered classroom is a significant change in the way knowledge is transferred to the student. Most teachers throw up their hands when they are told to let the students figure out what they are suppose to learn leaving the teacher wondering what they are suppose to teach. It is Malaysia higher education experience, that many lecturers find it difficult to implement active learning in large classes (classes containing more than 30-40 students), Khairiyah MY, Mimi HH and Azila NMA. (2004). In addition practicing active learning gets even more complex when evaluation and testing of what the student has learned is initiated, Vos, H. (2009).

II. CONCEPTS

Pedagogically practice, the teacher in an active learning classroom should have pre-designed steps prepared for the exercises a student will participate in, which in turn will challenge the student to increase their own learning skills. An easy exercise can be followed by a more difficult exercise until the teacher has fulfilled the design criterion for an active learning technique and the student has a working knowledge of the exercise. The following is an example of this pedagogical content knowledge (PCK) framework demonstrating active learning techniques.

This case study give a description of how lecturers problem in practicing active learning can be change, and a way to structure the lectures using active learning and inductive teaching. The use of inductive teaching and active learning is of course not new. What we try to convey here is how to use it in lectures for large classes (more than 40 students). We also give a concrete way to structure the lectures that incorporate both inductive teaching and active learning.

In this section, I describe my ideas. (In this training, lecturers are my students. I note them as participant). In the first subsection I describe how I get all participants to actively take part in the training program. Table 1 below; show the active learning techniques and its effectiveness in ordinary classroom in Malaysia.

Table 1: Active Learning Techniques and it Meaning in Teaching and Learning Practice

No	**Active Learning Techniques**	**The usefulness in teaching and learning**	**Content Analysis based on their meaning in T&L**
1	Double Entry Journal	The purpose of the double entry journal is to encourage students to build personal meaning by making connections from various sources of information. This form of journal writing helps students develop skills in:	*We used it during tutorial for Community Project- College Community Program*
2	Focused Listing	Focused listing can be used for brainstorming or as a strategy to identify understandings of concepts.	*It easy to manage. I used this techniques at the beginning of the semester- Engineering classroom-Cosmopoint- Sarawak*
3	Group Investigations	In group investigations students collaborate to produce a group product for presentation. This is an open-ended investigation which students may help determine the focus of their investigation. The activity is structured to emphasize higher-order thinking skill	*I used it when come to the topic HoTS, in Creative Thinking and Problem Solving. It works but need close supervision- Politeknik Merlimau*
4	Jigsaw Method	Students work in "expert groups" to study one aspect of a topic or concept and then go to cooperative groups to share their expertise with other group members who are experts in other areas. This strategy ensures individual accountability as each student must teach to the other members of the group.	*It is not easy, because student need to be guide to be experts and before convince the content.* *I used during tutorial- Cosmopoint Pulau Pinang*
5	Roundtable	Roundtable can be used for brainstorming ideas, possible answers to a question or generating a group of questions.	*It quick activities and I applied it during teaching Malaysian Economic and Socio Development. – (UTeM)*
6	Send a Problem	Send-A-Problem can be used to promote discussion and review material, or create possible solutions to content. The problems can be generated by the teacher or by the groups.	*This method applied in POLISAS, Pahang. I took 4 weeks to assess this project. Politeknik*
7	Structured Problem Solving	Structured problem-solving is a strategy which presents a problem for solving but requires each member of the group to be a spokesperson for the group solution. This strategy promotes problem-solving strategies, group interdependence and communication skills.	*This method needs more than 2 hours assignment. I used this in course work for entrepreneurship course. (UTeM)*
8	Thinking Aloud Pair Problem (TAPPS)	A technique of verbalizing problem-solving thinking to a listening partner. Using this strategy, students rehearse the concepts, relate them to existing knowledge, and produce a deeper understanding.	*It applied in my mechanical classroom. I used TAPPS for enhance students to rehearse the concepts such as thermodynamic. (UTeM)*
9	Think Pair Share	Think-pair-share is a simple, low risk cooperative group activity in which students can share and reflect on their ideas or answers with a partner before sharing with the large group. It can be used as a quick assessment tool to determine if students understand the basic concepts before moving on.	*Relevant to my engineering students because they interact with closets' pair, asking each other questions. (UTeM)*
10	Three Step Interview	Three-step interviews can be used as an introductory activity or as a strategy to explore concepts in depth through student roles.	*The steps is good, it make my students really insight the topic and concept. Tutorial should be*

III. ACTIVE /PARTICIPANTS / STUDENTS

To keep the participants active during training program, they are given small exercises that they can solve either by themselves or together with the students sitting next to them. They are given 15- 20 minutes to solve the exercises, and then their solutions and ideas are discussed in classroom seminar. They also gave Flip Chart Board, *mahjong* white paper and big marker pen to write their ideas. The motivation for this is

• It forces the participants to think and get in touch with the material during the lectures. Forexample, the participants appreciate a solution more if they have tried to solve the problem by themselves first.

• It gives the participants time to get some understanding of the material before they proceed.

• It gives the participants a chance to see what the students find easy/difficult during the lecture,and thereby an opportunity to adjust during the lecture.

• When the participants are allowed to talk to each other and solve the exercises together, they are more inclined to answer/participate in the discussion afterwards (this can otherwise be a big difficulty in large classes). Unless they are allowed to have small group discussion and add another 10 minutes before they could write down their answer on the *mahjung* paper

It is a mix of standard lectures and exercises. The exercises/small group discussions are

progressing during the lecture. Starting with small examples and ending with questions that lead to a mathematical proof. In the last exercise (7) the students are given questions in an order that also show how to build up a mathematical proof.

IV. LESSON PLAN FOR ACTIVE LEARNING: (example)

They are 33 lesson plan develop by participants from Jan-November 2011 training program. For example, only three of lesson plan are present.

Lesson Plan 1 : **TAPPS-Thinking Aloud Pair Problem-Solving**

PROGRAM : DIPLOMA IN INFORMATION TECHNOLOGY (SOFTWARE ENGINEERING)

GROUP MEMBERS : **Not real name**

PEO : To produce software engineers who can apply their skills, knowledge and engineering principles to meet the industrial needs.

SUBJECT : OBJECT ORIENTED PROGRAMMING 1(JAVA)

SUBTOPIC : GUI (PART 1)

LEARNING OUTCOME : 2 hours

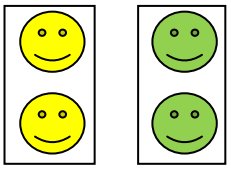
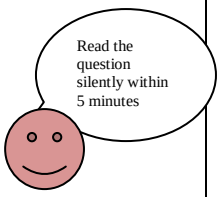
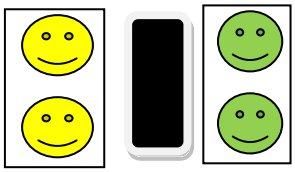
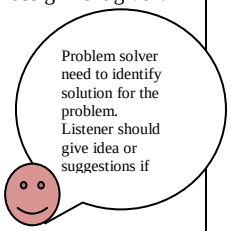
At the end of the lesson, student should be able to:

1. Choose an appropriate controls to design a graphic user interface through pair discussion.(C3/P1/A1)
2. Construct JAVA coding for the chosen controls manually through pair assignment. (C3/P5/A2)
3. Develop a simple application program to generate output by using appropriate software through group work. (C5/P5/A5)

TECHNIQUE : TAPPS-Thinking Aloud Pair Problem-Solving

Learning Outcome : To make students improve their skills and understanding by focusing on the learning aspect in which they share knowledge, experience and responsibility

STEPS : -

LECTURER	STUDENT	DURATION
1. Lecturer assign students in a group of four	1. Students move into their groups 	2 minutes
2. Lecturer distribute questions to students, and give time for them to read the questions silently 	2. Students read the question paper silently. **Using your creativity, you are required to design a GUI of a simple calculator by including these operators:** • **addition** • **subtraction** • **multiplication** • **division**	5 minutes
3. Instruct students to choose roles: • 2 students as problem solver • 2 students as listeners	3. Students choose roles. Problem solver Listener 	2 minutes
4. Lecturer gives briefing on the assignment given. 	4. Q & A session.	3 minutes
5. Lecturer monitor the class	5. Discuss the questions: • planning • analysis • design	10 minutes
6. Lecturer give comments on	6. Present manual sketch	5 minutes

students' work		
7. Lecturer guide students	7. Develop the program in group • implementation • testing 	15 minutes
8. Lecturer gives marks based on the outcome:	8. Present the output. • simple calculator program • Success or not? • conclude the question	10 minutes
Total Duration		50 minutes

V. CONCLUSION

The active learning pedagogy cycle is a way by which to visualize the many parts that need to be considered when designing a lesson for the student. Even though there are only six stages in the model each one requires thoughtful consideration to address the learning environment the student is placed in. The teacher is responsible for creating the activities the student will be exposed to and it is up to the teacher to monitor and evaluate the student's progress in every technique that is being used in the classroom. If all the stages are addressed simultaneously in The New-Generation of Teachers Project (Saengpassa 2009), then the ease to manage each stage will be made easier. The tools being developed are changing rapidly and knowledge accumulation is growing exponentially.

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Exploring the Learning Preferences and Use of ICT Among Engineering Undergraduates

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***Abstract*—The increasing student diversity in universities challenges academics to improve the learning environment and to show greater interest in how students learn. This study investigates the predominant learning preferences and use of ICT among 80 first year undergraduates at the Faculty of Manufacturing Engineering in a technical university. They completed the VARK Learning Preference Inventory Version 7.1 and a questionnaire. The VARK test shows preferences for one or more learning modes: visual, aural, read/write and kinesthetic. Results of the test indicate that 81.25% of the undergraduates are multimodal with a strong preference for kinesthetic (35.32%) and auditory (30.35%). The undergraduates' responses in the questionnaires reveal that their use of ICT is mainly for completing assignments based on internet resources, socializing online and using internet resources for entertainment. Besides, it is also evident that they use Web 2.0 technologies mainly for social networking services, file-sharing and blogging and they prefer their instructors to use applications like file-sharing and blogging in the classroom. This study recommends that instructors need to address the diversity of learning preferences among the students and integrate active learning strategies and student-centred pedagogy for students who are multimodal to make their educational experience more enjoyable and productive.**

Keywords- learning preferences; use of ICT; student diversitye;multimodal; social networking; student-centred

I. INTRODUCTION

The engineering undergraduates of today also known as the millennial generation are said to be different from previous generations as their world is driven up by technology and they are completely attuned to it. This has affected their minds, attitudes and preferences [1]. Literature supports this assertion and as such curriculum in engineering faculties needs to be devised such that it meets the demands of this new generation. Hence, it is axiomatic for instructors to identify the learning preferences of these undergraduates so as to increase training effectiveness and to ensure that they are not abandoned in the swirl of rapid technological advances. Hitherto, this has been an issue that has been considerably researched in academia and as such, his study aims to investigate the predominant learning preferences and use of ICT among the manufacturing engineering undergraduates. Information retrieved from past researches provide a solid foundation for this study.

II. LEARNING PREFERENCE

Learning preference or learning style is a concept derived from psychology. It refers to the complex manner and condition in which learners most efficiently and effectively perceive, process, store and recall what they are attempting to learn [2]. A dearth of past experimental studies and neurosciences research have revealed that significant increase in learning can be improved and students perform better when instructional methods cater to their predominant learning preference. Students are known to have preferences for the modes in which they receive information [3].

Researchers in the educational field contend that improved learning will result when instruction is adapted to accommodate the learning preference of a particular learner. Every individual has different learning styles and learning style models over the past 25 years bring to evidence that students learn in diverse ways [4]. Miller [5] postulates that in any student population, student diversity is apparent in their preferred style of learning or the mode in which they take information.

According to Terri [6], learners preferred mode of learning is related to the sensory modality or the neural system by which they prefer to take in the new information. Ramirez [7] too remarks that although no student is restricted to only one sensory mode for learning, a stronger preference for a particular mode may exist. Filimon [8] adds that the identification of the learning style according to the individual's sensory perception type is done based on the predominance of one of the receptor organs in the learning process which indicates how the individual acquires and transmits knowledge and skills. In this study, the learning preferences of the engineering undergraduates are identified through the VARK model. VARK is an acronym made from the initial letters of four sensory modal preferences that have

been classified by Fleming [9] for the purpose of learning information: visual, aural, read/write, and kinesthetic.

For individuals with a visual learning style (V), the information is collected most efficiently through the teaching aids containing diagrams, symbolic devices such as graphs, flow charts, hierarchies, modals, and other image-rich tools which have colours and designs. Those with an auditory/aural learning style (A) learn best when they are exposed to audio teaching aids or when they hear information. They process information best by listening to lectures, attending tutorials, debates, web chats and using tape recorders or CDs to play back learning sessions.

In the read/write learning style (R) the individual's preferences are directed towards reading and written text in every form be it text books, books, dictionaries, power point presentations or the internet These learners like to see written notes, take notes verbatim and reread it over and over again. Finally, the kinesthetic learning type (K) refers to learners who like to acquire information through experience and practical activities. It is a complex learning style as it mainly uses the kinesthetic sensory organ and complements it through other sensory modes like visual, auditory, tactile, gustatory and olfactory [10].

The individuals who belong to this type prefer physical activities such as manipulating objects, dramatizing, involving in lab activities, demonstrations, simulations, multimedia presentations and going for field trips. They prefer to learn information that has a connection to reality. In cases where learning preferences are mixed, the result is a multimodal perception (MM). These learners prefer using multiple strategies when learning information [11].

This study investigates the predominant learning preferences of 80 first year manufacturing engineering undergraduates by using the VARK inventory developed by Neil Fleming [12].

III. UTILIZATION OF ICT

Net generation students growing up in a rapidly evolving landscape of technologies have been the subject of much discussion today. This generation of students who are exposed to the ubiquitious use of information and communication technologies (ICT) are said to be tech-savvy. On the other hand, some researchers contest that this is an unsubstantiated claim. Beetham, McGill & LittleJohn [13] remark that these students need to move beyond using ICT for social purpose and gain an understanding of how ICT can be used to support learning.

ICT refers to forms of technology that are used to transmit, create, share or exchange information [14]. This broad definition of ICT includes various technological tools from videos, mobile phones, satellite systems, computers and network, hardware and software, video conferencing, electronic mails, blogs and wikis [15], online newspapers, skype, webcasts, podcasts, newsroom video clips, video-sharing websites like U-tube [16], forums, chats, instant messaging, white boards, iPods, interactive learning objects and audiovisual materials [17]. In short, ICT tools offer synchronous and asynchronous communication. A study by Kennedy, Judd, Churchward, Gray & Krause [18] on the first-year Australian University students' use of established and emerging technologies revealed that these students tend to view some technologies as 'learning technologies' specifically designed for learning purposes and others as 'living technologies' which are considered to be primarily for their social and personal use (e.g. SMS) and apparently these students are not comfortable in adopting these 'personal' technologies for educational purposes, contrary to many educators' expectations.

Ongori & Mburu [19] too conducted a study on the role of ICTs in information seeking among university students in Botswana. The major findings from their study indicated that there is high usage of ICT for information search which is related to their studies. This does not concur with the above-mentioned study. In the medical contexts, Sandars & Schroter [20] surveyed 3000 medical student's familiarity with the use of Web 2.0 technologies. They found that the students were highly familiar with the technology but lacked the experience in using them for learning. This has been a driving force for the researcher to implement the present study on engineering students so as to explore on their use of ICT.

IV. METHODOLOGY

80 first year undergraduates pursuing Diploma in Manufacturing Engineering participated in this study which was conducted at the Faculty of Manufacturing Engineering in Universiti Teknikal Malaysia Melaka. Purposive sampling was utilized based on the following criteria: these students were in the second semester of their study and as such were information-rich participants who have been exposed to teaching and learning in campus. Secondly, all of them belong to the millennial or net generation, so they could typically characterize their learning preferences and their use of ICT. Survey results too indicate that a majority of them (93%) possess fair ICT skills.

The hardcopy of the VARK inventory version 7.1 devised by Neil Fleming from Lincoln University, New Zealand [12] was administered to the respondents to determine their learning preferences. This inventory was selected because each question in the instrument places the respondents in a learning situation within their experience and enables them to enhance their leaning by identifying their preferred modes of information process. Besides, the 16 multiple choice questions in the survey comprise 3 or 4 answer selections and each of the choices represents a modal preference.

The respondents were advised to make a selection for each question but were permitted to omit a question or to choose two or more options if appropriate. They were given 15 minutes to complete the questions.

The respondents were also required to complete a questionnaire comprising of two sections. The first section of the questionnaire required them to read and circle their agreements to the given items which had two possible

responses, 'Yes'/'No'. These items were related to their use of ICT. In Section 2 of the questionnaire, they were required to read the list of Web 2.0 technologies provided and answer 2 questions by ticking the items that they were well-versed with and the items that they would prefer their instructor to use in their language class.

V. DATA ANALYSIS

The completed VARK survey instruments were collected and the selected VARK categories were transferred into the VARK Inventory Scoring Chart by circling each of the selected VARK letters into the respective categories. The VARK survey instrument and VARK Inventory Scoring Chart for every respective respondent was numbered and administrated on a student by student basis. Preference rankings were calculated by totaling all the Visual, Aural, Read/Write and Kinesthetic responses.

Next, the total number for each preference and the overall total number of preferences for every respondent is tabulated. A respondent who uses only one sensory modality is termed as having a unimodal preference. If the respondent uses two or more sensory modalities, he is termed as having multimodal preferences. The analysis of results were administrated based on the steps as advocated by Fleming & Bonwell [21]. Table I was employed in analyzing the preferences. Table II is an example of the choice of preferences based on the responses of the respondents in the study

TABLE I: TABLE FOR ANALYZING PREFERENCES

Total Number of responses	**Mild Preference indicated by a difference of**
Up to 16	2
17 – 22	3
23 – 30	4
31+	5

TABLE II: CHOICE OF PREFERENCES BASED ON RESPONSES OF RESPONDENTS

Respondent	**V**	**A**	**R**	**K**	**Total**
Puteri	9	3	2	10	24
Wong	7	7	4	9	27
Hilmi	2	4	2	8	15
Ashvina	8	8	7	10	33

The "mild preference" for each respondent was obtained based on the total number of responses. Then, the highest VARK score for each respondent was selected, e.g. in the case of Puteri as in Table II, her highest score of 10 was in the Kinesthetic category and her total number of responses was 24, which falls under the third row in Table 1 whereby her mild preference is indicated by a difference of 4. Next, her mild preference of 4 is deducted from her highest score of 10 which amounts to a score of 6. Thus, any category with a score of 6 or below is eliminated. In the case of Puteri, the Aural and Read/Write categories are eliminated. This indicates that Puteri has a predominant preference for the Visual and Kinesthetic category hence signifying that she has multimodal preference. The same procedure was administrated for every respondent and data retrieved were tabulated.

Next, the data in the questionnaire are analyzed by determining the percentages for every item in Section I and II to explore on their use of ICT, Web 2.0 technologies that they are well-versed with and the technologies that they would prefer their instructors to employ in class.

VI. RESULTS AND DISCUSSION

Figure 1 presents the percentages of students who favoured the multimodal and unimodal learning preferences. The majority of the undergraduates showed a preference for a multimodal learning style (81.25%) with the remaining (18.75%) being unimodal. This indicates that a majority of the manufacturing engineering undergraduates have a preference for receiving and delivering information in a variety of modes. This finding concurs with Fleming [22] that a majority of any population (approximately 60%) fit into the multimodal group. According to Fleming, multiple preferences are interesting and quite varied, allow the teacher flexibility in approaching the curriculum as well as to present things in different ways but requires more work on the part of the student. Fleming [23] asserts that a unimodal student may understand a concept after one presentation but on the other hand, a multimodal learner may require at least two or more teaching methods before fully comprehending the material.

Lujan [24], Rao & Dicarlo [25] affirm that this kind of learners may benefit from active learning strategies which would generate high levels of motivation and enthusiasm.

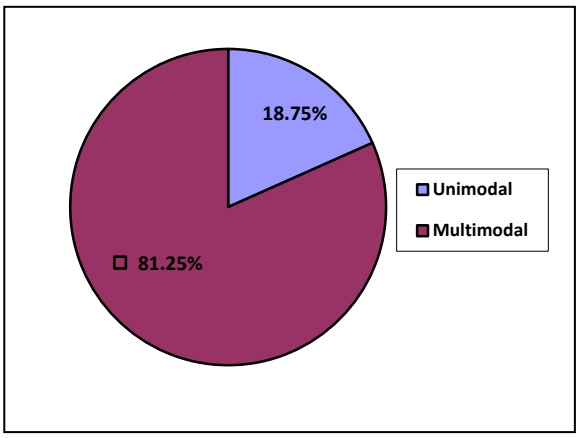

Figure 1. Percentages of undergraduates with multimodal and unimodal learning preferences

Figure 2 presents the percentage distribution of learning preferences revealed by the respondents. The 80 respondents had indicated a total of 201 learning preferences. Of these, the predominant learning preference is for the kinesthetic (35.32%). The second most common preferred learning preference is the aural mode (30.35%). This is followed by read/write (17.41%) and finally the visual (16.92%).

A kinesthetic preference suggest that students learn best when information is delivered through active learning activities which encompass hands-on and physical activities, large motor skill activities, field trips, real life experiences, demonstrations, role plays, working models, simulations, personal experiences, videos and movies of real things, case studies as well as practice and applications.

In short, their preference is related to the use of experience, practice or simulated reality. These kind of activities are indeed typically noteworthy for this respective cohort who are manufacturing engineering undergraduates who are generally ingrained with the hands-on kinesthetic discipline. In fact, the findings are consistent with Tierney and Brunton [26] who had affirmed in their previous study that science and engineering students were kinesthetic learners.

Driscoll & Garcia [27] too had advocated in their study that the results of the VARK student profiles for chemical engineering juniors and freshmen indicates a strong preference for kinesthetic input which includes the hands-on approach. The second learning preference, that is the aural mode can be achieved via discussions during collaborative learning events such as peer learning, debates, games, answering questions, lectures, recordings, tutorials and web chat [8]. Filimon [8] adds that individuals with a strong preference for the aural learning strategies will acquire information efficiently through the oral explanations of the lecturers and by listening to presentations supporting the learning process.

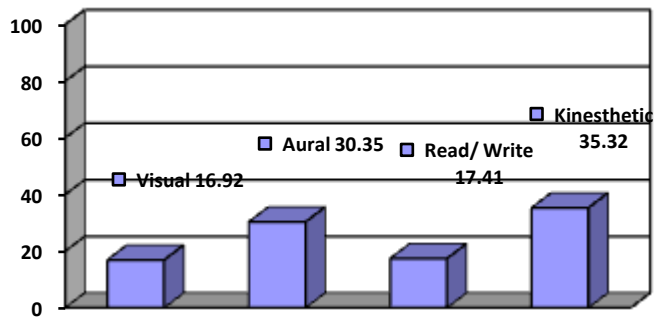

Figure 2. Percentage Distribution of Learning Preferences

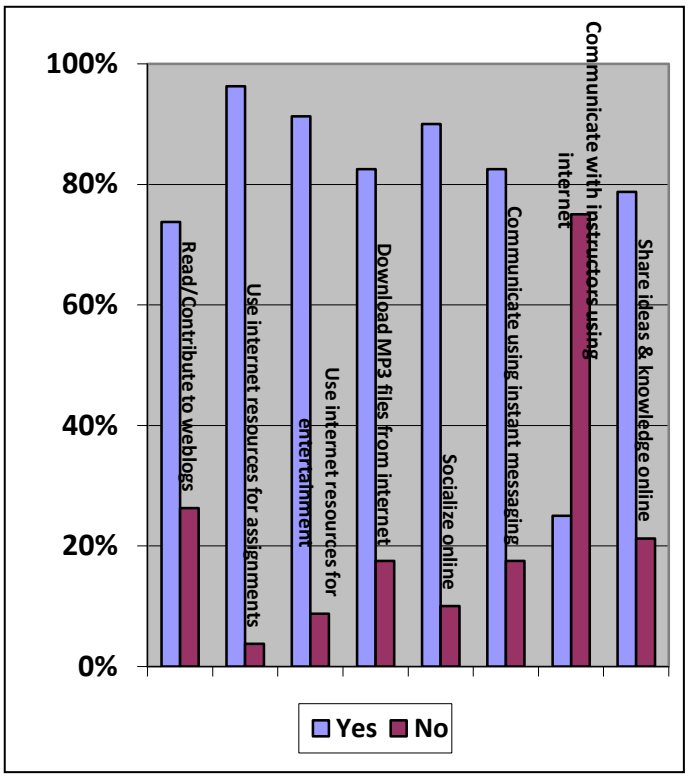

Figure 3. Use of ICT

The analysis of data as in Figure 3 reveals that the respondents' use of ICT is at a maximum of 96.25% for Use of internet resources for assignments followed by Use of internet resources for entertainment (91.25%), Socialize online (90%), Communicate using instant messaging (82.5%), Download MP3 files from internet (82.5%), Share ideas and knowledge online (78.75%), Read/Contribute to web blogs (73.75%) and Communicate with instructors using the internet (25%). This sheds light on the fact that online communication between the learners and their instructor is at a low level.

As for Web 2.0 technologies that they are well-versed with in order of preference includes social networking services (96.25%), file sharing (91.25%), blogging (90%), wikis (82.5%), RSS feeds (20%), social book-marking services (8.75%) and pod casting (1.25%). This reveals that they are generally not familiar with tools like pod casting, social book-marking services and RSS feeds. They seem to be very familiar with tools like social networking services, file-sharing and blogging.

The Web 2.0 tools that the respondents prefer their instructors to use include file-sharing (90%), blogging (82.5%), social networking services (66.25%), Wikis (45%), RSS feeds (8.75%), social book-marking services (5%) and pod casting (1.25%). The findings in this study indicate that the respondents generally use ICT for assignments, entertainment and social networking but rarely to communicate with instructors. They are also well-versed

with some Web 2.0 technologies like social networking, blogging and file-sharing. They prefer their instructors to use ICT tools like blogging and file-sharing but not so much of social-networking. This issue can be further researched.

VII. CONCLUSION

This study reveals that diversity in learning preferences, when properly understood by the undergraduates and instructors, can be converted into appropriate teaching and learning methods that would enrich the learners' learning experiences. Determining the learning preferences of the undergraduates is vital as it would enable the instructors to solve their learning problems too. More so, with the proliferation of ICT it has become increasingly important for instructors to determine every plausible factor that can be manipulated to enable these learners to become autonomous and active life-long learners. Truly, it is now crucial for instructors to shift to the connected scaffold of the networked world.

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Initial Experiences and Student Feedback from Lecturing with iPad

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Abstract— **An iPad, in combination with the whiteboard, could be used in place of notebooks in lectures of mathematically-intensive, basic engineering courses. The main attractiveness were the 70% cost reduction when compared to a tablet notebook and the ability to annotate on slide files in colors. The main drawbacks were the difficulty in making neat annotation and a low level of manual control. Students seemed to be moderately satisfied. For effective uses, much time and efforts were needed.**

Keywords-iPad; lecture; feedback, student opinions

I. INTRODUCTION

Traditional delivering of lectures of engineering subjects had been based on overhead/camera projectors, visualizers, PowerPoint© presentations and blackboards or whiteboards []. For more than a decade, modern trends on improving learning tended to focus on the multi-approaches, interactive and integrated outlook, frequently with computer-based media [] and much less emphasis on in-class lectures. Nonetheless, lecturing had been very effective in delivering a large amount of contents with the ease of achieving minimum requirements of the courses. Drawbacks, such as passive learning and lack of higher level of learning could be reduced with appropriate techniques [5]. There had been many approaches and innovations that could improve in-class activities and engage students, particularly active learning [6], augmented by technological innovations such as clicker voting system [7].

The computer-based presentation by PowerPoint© had been very popular for lecturing []. It provided the presentation sequences, presented the information and was even shown to help improving students' motivation and positive attitude even in the non-interactive format [8]. Compared to the whiteboard, it reduced the time required for lecturers to write down, and students to laboriously copy long derivation of topics or equations which were necessary in a majority of fundamental engineering courses. Yet, studies found that note taking improved the comprehensions and information retention [9].

Guided notes or slides bridged the gap between these approaches via hand-outs with blank spaces that had to be filled in-class. An active engagement window for students on top of traditional lectures [10] was opened. There were evidences that it might help the higher level of comprehension as compared to the completed notes [11] and reduced the gap on the note-taking ability [12].

Even though the guided notes could be used with many presentation tools, the tablet notebook had been very popular as an easily adopted technology [13]. The tablet notebooks or PCs also served in other capacities [14] such as material development, presentation, instructional tools [15] and collaborative learning [16] as well as note taking by students as it bypassed the shortcoming of laptops in which keyboards were not suited to note taking, particularly in engineering subjects with mathematically and graphically intensive nature [17].

For students, tablet notebooks could significantly generate positive impact [18] with proper introduction. However, students could be distracted as found in a study in which a spyware was resorted to gather data [19]. A recent work at the department [20] employed the guided slides with a tablet notebook for presentation and note filling by the lecturer. Using the questionnaire and focus group interview, the results showed much promises in terms of students' feedbacks.

However, the price of a proper tablet notebook, with a rotatable screen and fine-tip stylus, was very high, then around 70,000 Bahts. In just a few years, iPad had exponentially gained popularity with many uses in higher education [21-22], including online and mobile learning and accessibility to all sorts of documents and files, from lectures to research articles [23-27]. In Thailand, the cheapest model of an iPad was available at around 17,000 Bahts. Thus, it might be a much more cost-viable option than a fully-rigged tablet notebook for lecture presentation.

II. APPROACH AND METHODOLOGY

With the support of the Faculty of Engineering, a small group of participating lecturers experimented using iPad in lectures. Lecturers' uses of iPad were mainly a trial-and-error process as the first time users tried on different options that were available before comparing notes about personal experiences among peers.

Students were then inquired about experiences and their opinions. They were also asked about personal ownerships and uses for future consideration. Even though lecturers

used iPad in many courses, for the expedience of convenience the population for the questionnaire was limited to the undergraduate engineering students during the first semester of the academic year 2011 as shown in Table I.

TABLE 1. PARTICIPATING COURSES AND STUDENTS

Course		**Students**			
Title	***Section***	***Prog.***	***Year***	***Total***	***Answer***
Statics	1-4	ME+IE	2	38/22/50/40	37/14/19/37
Intro. Mechanics	1	AERO	2	12	9
Aircraft Structures I	1	AERO	3	20	10

The three subjects were (1) Statics with several sections for mechanical engineering (ME) and industrial engineering (IE) students, (2) Introduction to Mechanics (Statics and Mechanics of Materials) for second-year aerospace engineering (AERO) students and (3) Aircraft Structures for third-year aerospace engineering students. These courses were all mathematically and calculation intensive. Long derivations and details examples were attempted in-class. It was noted that the ME and IE programs were taught in Thai while the AERO was an international program and taught in English and the term started 2 months behind the Thai programs.

There were four different lecturers that lectured with iPad in Statics. Of these, those from sections 1 and 4, moved on to lecture a course each for the AERO program.

The students were asked to answer pertaining questions that were simply incorporated into the existing customized questionnaire at the end of the course in the process which had proved to be very successful in the participation rates [30].

III. LECTURERS' EXPERIENCES

During the trial, lecturers had to identify the appropriate apps and accessories for the lectures. These extra can be divided into 4 types, the hardware accessories, presentation apps, supporting apps, and spice-up apps. These apps and accessories incurred additional, but necessary, expenses that had to be included into the budget.

A. Hardware Accessories

For hardware accessories, the VGA cord for projector presentation and a stylus for annotation were needed. It was noted that no wireless projector was available in lecture rooms so this option was not pursued then.

The prices of VGA cords were fixed by retailers at 950 Baht. Even though the set-up was very simple plug-and-play, users could not exert much control over the signal transfer. Even though most projectors could detect the incoming signal automatically and smoothly, sometimes it could not and the set-up process could prolong significantly, involving rebooting or switching off and on. It was found that the set-up speed could be increased by closing down other apps, particularly the safari pages.

There were many choices of capacitive styli with varying prices between 120 to 1,500 Baths. Several brands, including Acase Ezswip©, SGP Kuel H10©, Just Mobile AluPen© and Jot Adnit©, were purchased and tested for smoothness during writing/drawing, responses, grips and useful life span.

Apart from the Jot Adnit© with ballpoint and transparent flat disc, all other styli had rubber-tipped capacitive heads. While it was easier to position the ballpoint, making writing and drawing easier, the hard head generated a distinctive hard impact feel between the pen and the screen such that the pen was not suitable to other functions such as command selection.

It was best to find the stylus that suite the personal writing, drawing and pencil gripping styles. Checking lists during purchase selection included the budget, weight, fully extended length, shape and sizes of the pen cross-sections. It would be best to try before purchasing, but this option was mostly not possible in shops.

There were also many reviews of these styli in the internet and our endorsement was not conclusive. From our limited experiences, a quick suggestion was to avoid the cheapest ones. Their rubber tips had too much friction that it felt as if they got stuck to the screen, literally. It was found that tested styli lasted for a semester or more as the rubber tips degraded, cover layer peeled out, gained friction and became flabby.

B. Presentation Apps

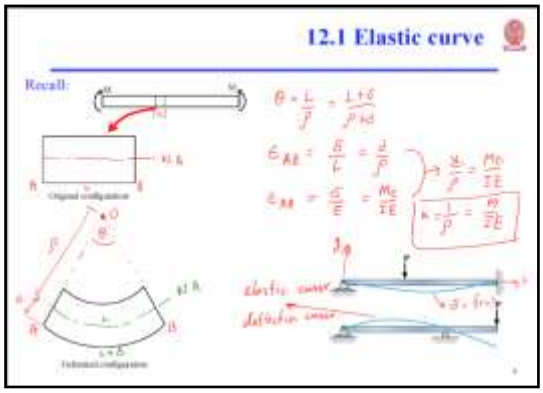
After some deliberation, it was concluded that the pdf format was still the best option as in the guided slides due to the portability over multitude of devices. The pdf-formatted notes for iPad were generated from PowerPoint© presentation slides such that it showed one slide per page in PCs with print quality resolution. It was found that it was far more difficult to annotate on an iPad than a tablet notebook (Figure 1), particularly so for drawings and equations. Hence, the new slides were initially more completed.

A few pdf annotation apps – including pdf-notes©, UPAD©, and GoodNotes©, etc. – were tried in-class. It was found that there were two vital aspects for apps selection: the control over VGA output and the writing aids.

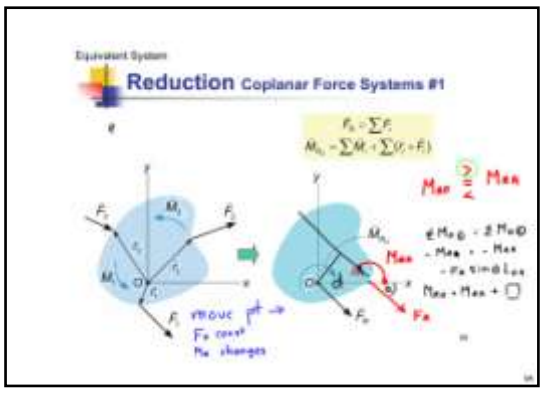
The apps selection rested on the control over the VGA output. Specifically, the apps should be able to present the file such that the VGA output displayed the whole page, i.e. screen locked, while lecturers could zoom in for easier writing and drawing. The mirror VGA option was also required as some drawings might contain many details that a zoom-in ability was needed. It was also preferable if the VGA signal did not simply mirror the iPad screen, but excluded the writing panels and commands so that the presentation would be less clustered. Ease of swapping between the two modes of display was also a factor.

Indeed, the skill of writing on a small screen using the rubber-tip stylus took some practicing. This was when the writing aids from apps came in handy. The writing aid came in forms of hand rest and text boxes. The hand rest feature neglected input from certain parts, usually the bottom section, of the screen such that some screen areas could be touch without accidentally draw lines. The text box was a versatile feature offered in GoodNotes©. It enabled ones to write anywhere in the page with different scaling from the input pane at the bottom of the page (Figure 1c). This feature allowed a much more comfortable writing posture as well as more even handwriting. Even then, some adjustment on writing posture was needed.

It was frequently found that the relative slow processor caused some annotations on previous pages to clog up in the next pages. After some struggles, it was found that the problem could be corrected by return to the previous page before going forwards again. In many instances, the lecturers did not know that there were some annotation overlays from the previous page on the new page in the VGA signal because there were none on the screen. In these situations, students had to inform the lecturers to correct the problems.



(a) Tablet notebook, first semester after system adoption



(b) iPad with pdf-notes©, first semester after iPad adoption

(c) iPad with GoodNotes©, third semester after iPad adoption

Figure1. Comparison of filled guided slides

Then, the quality of the writing on iPads was compared with the tablet notebook as shown in Figure 1. As the fine-tip smart pen was used for the tablet notebook, the zooming was not needed for writing and it was much easier to control the characters' sizes and drawing spacing. This resulted in a much better spaced out and filled guided notes with consistent font sizes and drawing shapes (Figure 1a). Nonetheless, the writing quality improved with practices as shown in the Figure 1b and Figure 1c which were written 1 year apart.

In short, the smaller touch screen area and blunt-tip stylus combined to make the guided slide completion on iPad much more difficult than in the tablet notebook. The presentation area on the projector screen was also slightly smaller than the power point presentation. However, all lecturers really liked that ability to annotate in multi colors which provided visual aid to the verbal descriptions and good visibility as compared to the whiteboard with very high reflection [1].

C. Supporting Apps

Supporting apps could be roughly grouped as file transfer, accessory and supplementary apps. As it was not convenient to use iPad for lecture note development, the lecture files had to be transferred from a notebook to the iPad and the annotated files out afterwards via internet. Several apps and means of file transfer were tested, including direct load with Safari©, emails, dropbox© and Google Drive©.

It was found that the choice was personal. Most found the preferred mean that they were quite satisfied with the ease of use. However, some lecturers reported problems when transferring large files in low-speed wifi environments. The files were preferably downloaded and pre-opened in the iPad before class to avoid erratic wifi access.

With several files for different classes, some lecturers found that accessory apps could smooth out the procedures.

It was easier for some to use the file management apps to help sorting out the stored files. Occasionally, the preview apps, such as GoodNotes©, was needed to preview the annotate notes before posting the after-class annotated files to course facebook© or web pages.

D. Spice-Up Apps

The previous sections were the basic requirements that the new users concentrated on during the first courses. With a year worth of practices and knowledge sharing in a wider groups (Figure 2), several lecturers started to liven up lectures with tools and tricks to hold students' attentions. The options were endless but required the careful course planning and practices, as usual.

For instance, the annotated notes could be voiced over in short clips using recording apps such as ScreenChomp© or Educreations©. Discussions could be recorded and summarized in real-time with Notability©, to give an example (Figure 3).

While iPad might be very versatile in presenting VDO clips, it could not readily be used to present live demonstrations of major engineering software, such as MATLAB© or CATIA©. Such presentation had to be reproduced into canned VDO clips or instruction notes/manuals for private practices. However, for lecturers with access to personalized servers, it was possible to access PCs or notebook via iPad.

Figure 2. iPad users' knowledge management session on 12 June 2012

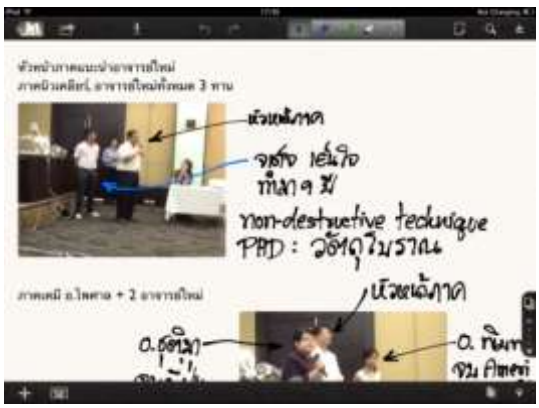


Figure 3. Real-time record by Notability©

IV. STUDENTS' FEEDBACKS

The students who attended first iPad classes (Table I) were asked about their learning experiences as well as their own uses with 5 simple questions. The provided choices of answer were given in square brackets. There was also space for open comments and suggestions.

1) *iPad annotation helped me to understand the concepts and/or study more effectively, as compared to the use of whiteboard [5=strongly agree, 4=agree, 3=no change, 2=disagree, 1=strongly disagree]*
2) *Lack of animation in iPad presentation, which was available in power point, adversely affected my understanding of the concepts and study [5=strongly disagree, 4=disagree, 3=no change, 2=agree, 1=strongly agree]*
3) *Slow response during iPad presentation, causing in annotations from previous pages appear in current pages, etc., adversely affected my concentration and line of thinking. [5=strongly disagree, 4=disagree, 3=no change, 2=agree, 1=strongly agree]*
4) *I loaded the annotated documents for reading [5=frequently, 4=sometimes, 3=never, 2=don't know about such documents, 1=documents were not provided]*
5) *For students with iPad or other tablets only: My iPad/tablet utilization for this course was [5=read & write & revise, 4=read & write, 3=read, 2=not used]*

For the first three questions with agree/disagree opinions on the effects of iPad on the personal perception of lecture quality, the answers were processed into a simple satisfactory parameter, % sat as

$$\%\ \text{sat} = \frac{[\text{No. of (5) \& (4)}] - [\text{No. of (2) \& (1)}]}{\text{No. of (5) \& (4) \& (3) \& (2) \& (1)}}. \quad (1)$$

The fourth question was about the availability of the annotated file. As these files were also available from tablet notebook, the iPad effects might not be so apparent. However, the scale of this iPad adoption was much larger than the previous study [20] and the answers from a larger population would be useful. At that moment, some uses of after-class notes were considered satisfactory as

$$\%\ \text{sat} = \frac{[\text{No. of (5) \& (4)}] - [\text{No. of (3) \& (2) \& (1)}]}{\text{No. of (5) \& (4) \& (3) \& (2) \& (1)}}. \quad (2)$$

The fifth question concerned the iPad ownership by students in order to check for the possible uses of privately-funded resources. Since the iPad could be a distraction, the utilization was also an issue. Then, if student used iPad for academic purposes, it were considered satisfactory for this preliminary study and processed with respect to the percentage of students with iPad as

$$\% \text{ sat} = \frac{[\text{No. of (5) \& (4) \& (3)}]}{\text{No. of (5) \& (4) \& (3) \& (2)}}. \quad (3)$$

Feedbacks from 135 students in Table II showed that the answers were not as good as in [1]. The low satisfactory percentage for the first question was due to the numbers of neutral responses. Students said that lecturing with iPad helped the learning to a certain extent. The lack of animation was not generally a drawback. From the results, the slow response was noticeable by was just a slight annoyance.

It was quite notable that in Statics in which iPads were used by 4 lecturers in 4 sections. The section 2 lecturer seemed to deliver a marked better performance than three others. It might be noteworthy that this lecturer personally owned and used an iPad for sometimes, unlike the lecturers of sections 1 and 4. However, these two lecturers seemed to catch up in the later AERO courses two months afterwards. This was probably due to the experiences that helped refining the lecturing techniques and glitches such that interruption could be dealt with promptly. It was also noted that the section 3 lecturer was an experienced iPad user who just adopted it for lecturing occasionally without much attempt to take advantages of the tool. As the answering percentage was much lower than other three sections, the answers from section 2 might not be very consistent.

It could be argued against the improvement due to the much lower numbers of students in the last two courses. But these international-program students were in general much more outspoken which could compensate for the lack of numbers.

Uses of after-class annotated notes were not widespread, particular in Thai programs. This topic might be further investigated. Concerning areas included students' preferences on note taking, revision and networking.

TABLE II.OPEN COMMENTS FROM STUDENTS

Question no.	**Course**	**Stdnt No.**	**Student Answers**					
			(5)	***(4)***	***(3)***	***(2)***	***(1)***	***%sat***
1)	Statics 1	37	3	19	15	0	0	59
	Statics 2	14	0	11	3	0	0	79
	Statics 3	19	1	8	10	0	0	47
	Statics 4	36	6	17	12	1	0	61
	Intro. Mech.	9	4	3	2	0	0	78
	Aircraft Struct.	10	1	6	3	0	0	70
2)	Statics 1	37	2	11	18	6	0	19
	Statics 2	13	1	6	6	0	0	54
	Statics 3	18	2	5	11	0	0	39
	Statics 4	37	5	11	17	4	0	32
	Intro. Mech.	9	1	3	4	0	1	33
	Aircraft Struct.	10	1	3	6	0	0	40
3)	Statics 1	37	2	11	16	7	1	14
	Statics 2	14	0	7	7	0	0	50
	Statics 3	18	2	5	11	0	0	39
	Statics 4	37	7	11	17	2	0	43
	Intro. Mech.	9	1	0	7	1	0	0
	Aircraft Struct.	10	0	3	5	2	0	10
4)	Statics 1	37	4	12	17	3	1	-14
	Statics 2	13	1	6	6	0	0	8
	Statics 3	18	2	6	9	1	0	-11
	Statics 4	37	7	11	17	2	0	-3
	Intro. Mech.	9	4	3	2	0	0	55
	Aircraft Struct.	10	1	6	3	0	0	40
5)	Statics 1	20	3	4	11	2		90
	Statics 2	13	2	3	7	1		92
	Statics 3	15	1	7	6	1		93
	Statics 4	25	7	4	8	6		76
	Intro. Mech.	5	4	0	1	0		100
	Aircraft Struct.	4	0	0	2	2		50

Concerning the students' iPad ownerships and uses, the answers came back startlingly high at 73% and 47% for Thai and International programs, respectively. Almost all of these students used iPad to assist their study to a certain degree. This opened another interesting question on the means and effectiveness as students used the iPad. A closer study would enable lecturers to take advantages of these resources.

The open comments, shown in Table III, were quite interesting. While the positive opinions were the readily available annotated slides and ease of reviewing before exams and the possibility of lecturer's mobility, the majority commented on unsatisfactory writing skills of new iPad users, expressed some reservation on the ease of following the lectures and the preferences for whiteboard writing. It was noted that there were no such unsatisfied comments in

the later courses as the satisfactory ratios increased as discussed in the previous sections.

TABLE III.Open Comments From Students

Course/Section	Comments
Statics, section 1	- Quite nice but it's better to use the whiteboard. - [The lecturer] should practice writing as the low proficiency hinder the teaching due to interupted concentration, slow pace and discontinuity.
Statics, section 2	- iPad generated short notes with highlights, which were useful for revision before exams
Statics, section 3	- It was best to use the whiteboard. - I do not recommend [iPad].
Statics, section 4	- It was sometimes faster to write on whiteboards. I didn't understand some free body diagrams that were drawn on iPad. - I prefered alternated uses of iPad and the whiteboard.
Intro. Mech.	- I would like to see animation in lectures. - Wireless receiver would allow lecturers to walk around the room.
Aircraft Structures	- E-books? [probably meant better or more files.]

V. CONCLUSIONS

In conclusions, the iPad, in combination with the whiteboard, could be used in lectures for presentation. The contents, materials and teaching techniques had to be carefully prepared and customized. The advantages to lecturers were the cost and ability to annotate on the files; the minimum cost for the fully rigged iPad with VGA cord, stylus and apps were about 18,500 Bahts. The main drawbacks were the required annotated skills and, to a lesser degree, VGA responses and control.

The most important tip before using iPad in lectures was to practice. With numerous options for presentation and tools, gaining proficiency in writing and operating tools took time, two months in this case. In-class glitches and problems were to be expected: low or interrupted wifi signal, no VGA output and slow responses, etc. It was also found that the efficiency and utilization could be vastly improved with knowledge sharing get-together (Figure 2) that could bring out many techniques, tricks and personally-testified recommendations.

In all, the use of iPad to annotate guided or complete notes was simply so irresistible to lecturers. For students, it might be beneficial in view of the frequent mismatch between the learning and teaching styles; most university students were visual learners for whom simple tricks such as point listing, chart or diagrams and color-coding could go a long way in the learning process [32].

The use of iPad by students, for preparation, during and after class which included the after-class annotated slides, had to be further studied. With astonishingly high ownership among students, it could be much more useful, both in terms of mobility for interactive activities [15] as well as real-time viewing [26] which would improve visibility which was found to be a major issue in lecture rooms [31].

For the last thought, even as the iPad was potentially a useful tool in lecturing, users had to constantly aware that it was just that, a tool. Even for this simple task in lecturing by experienced lecturers, effective uses required careful study, apps and much practices as well as appropriate supporting infrastructure and servicing [22], [28]. It also brought about sobering reflection on the introduction of tablets to all first grade students in Thailand in August 2012 [33].

This experience supported the theoretical view that placed emphases on the pedagogy and people, not technology [7]. The iPad, however hyped, was not an exception [32-34]. New tools could be beneficial but had to be carefully studied for the best, or at least appropriate, approaches. Ensuring users' competency usually required significant time and efforts [17]. Training and motivation for lecturers were strongly recommended as required in an introduction of any new tools [14]. Otherwise, they might hindered or even harmful to the students' learning [].

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The Study on Virtual Reality for Acrophobia

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Abstract– **This paper presents the study on Virtual Reality (VR) approach in learning process. A VR application called Virtual Reality for Acrophobia was developed and used as an experiment instrument in understanding the effectiveness and acceptance level. The idea to develop this project is to help people who have Acrophobia. Acrophobia is a term of afraid in open high places. In this project, VR will create 360 degree environment that can simulate high places in real world as well as in imaginary world. In this project, to make it looks more real as in real world, Acrophobia people will be the user, and they will experience it with the environment at the top of building which is at level 20. It will start at the top of building at level 10. Users could look left, right and also turn down to see all the environment. Furthermore, users also can walk through narrow bridge at the top of building to go to another building and at the same time, they are going up to level 20 of the building. Most of Acrophobia people usually feel uncomfortable, want to fall down and feel not safety being in high places. However, by creating this virtual reality surrounding at level 20 of the top of building, Acrophobia people can feel safe because this imaginary system can be used at any safe places that they want to use it. By this virtual reality project for Acrophobia people, hope it is really useful for them to use it to againsttheir fear because a lot of research shows they must face their fear to be cured.**

Keywords: Virtual Reality, Acrophobia, 3D visualization, teaching and learning

I. INTRODUCTION

crophobia is a term of afraid in open high places [2]. It is one of common phobias that experience by a significant number of people. However, most of Acrophobia people have no idea how to cure it. Research shows that, people who always face their fear will cure their phobia even though not totally being cured [2]. However, a lot of Acrophobia people really afraid to go to the high places especially women. The feeling is like falling down, breathlessness, shaking, excessive sweating, crying and also some of them can lose control when at high places [3]. In this project, Virtual Reality (VR) will create 360 degree environment that can simulate high places in real world as well as in imaginary world.

At the moment, treatment for Acrophobia syndrome is only traditional treatment such as hypnotherapy, Neuro-Linguistic Programming (NLP), energy psychology and mind set [3]. Psychologists always suggest Acrophobia people need to tell themselves that high places are safe, but unfortunately most of the simply just cannot.

Virtual reality for Acrophobia plays the users emotion by made some interaction with the user to being at high places. Most of Acrophobia people usually feel uncomfortable and insecure being in high places.

Based on few case studies reported a virtual reality could be the effectiveness treatment for some phobia such as fear of flying, acrophobia, claustrophobia, spider phobia and agoraphobia [4].

II. PROJECT DEVELOPMENT

The project entitle "Virtual Reality for Acrophobia" is developed to help people who have Acrophobia.

The project of Virtual Reality for Acrophobia is a computer simulation of a real imaginary system that could be really useful for Acrophobia people. They realized that they are at lower ground and safe but at the same time, they could experience it in virtual reality like they are at 10^{th} or 15^{th} floor of the building.

In this project, Acrophobia people as a user will experience being at high places with the environment at the top of building which is at level 10, 15 or 20. The simulation will start at ground floor. Users could use the mouse to navigate the environment that has been developed in the project. Users could look down, left, right and also turn up to see all the environment. Furthermore, users also can walk through narrow bridge at the top of building to go to another building and at the same time, they are going up to level 20 of the building. Besides, the interaction button provided in the Virtual Reality for Acrophobia application project will allow users to feel the experience like they are walking through the narrow bridge. The camera animation could make users feel some fear with the sounds that plays during the animation. The simulation could give some meaningful experiences for users especially for whose never try to be at high places even though at level 10 of the buildings. Some of Acrophobia people afraid to go further even though at 2^{nd} level of the building because could not adapt their self in high places.

However, by creating this virtual reality surrounding at level 20 of the top of building, Acrophobia users could feel

safe because this imaginary system could be used at any safe places that they want to use it.

By having this virtual reality project for Acrophobia users, it is really useful for them to use it to against their fear because a lot of research shows they must face their fear to be cured.

The objectives of this project are:

i) To develop a Virtual Reality (VR) surrounding which represent high building as the Acrophobia users testing environment.
ii) To create feelings and emotions for Acrophobia people by using mouse and keyboard as device.
iii) To produce a VR application that is standalone and semi-immersive.

The main scope of this project is to help Acrophobia people to face their fear of afraid being at open high places. 3D environments with 360 degree surrounding were developed, so that Acrophobia people will experience it like in real world.

In the Virtual Reality for Acrophobia project, the 3D environments are maximum at level 20at the top of building. The project starts with the surrounding at ground level. At this point, it will makes Acrophobia users feel comfortable and not too shocked being at high places and they also could prepare their self to go to the next level. Acrophobia users will take a look of their surrounding before they proceed to walk through the narrow bridge to go to the next building. Slowly walk through the narrow bridge, the narrow bridge will lead them to the top of 20th floor of the next building.

Even though the environment is simple, it could give meaningful and valuable experience for Acrophobia people to overcome their fear. They will feel safe at the lower ground and at the same time could experience to be in high places. The target user is for Acrophobia people and also for children to get experience to be at high places. This project is simple but really meaningful for needed people.

This project will be benefited for Acrophobia people to feel the experience of being at high places. Some of Acrophobia people who is really afraid at high places even though at 2nd floor, now will feel safe being at high place because this imaginary system could be used at any safe places that they want to use it.

System architecture determines the overall of the project flow and how it works. For this project, user will interact with mouse and keyboard. The system will appear on the monitor screen that will be viewed by the user.

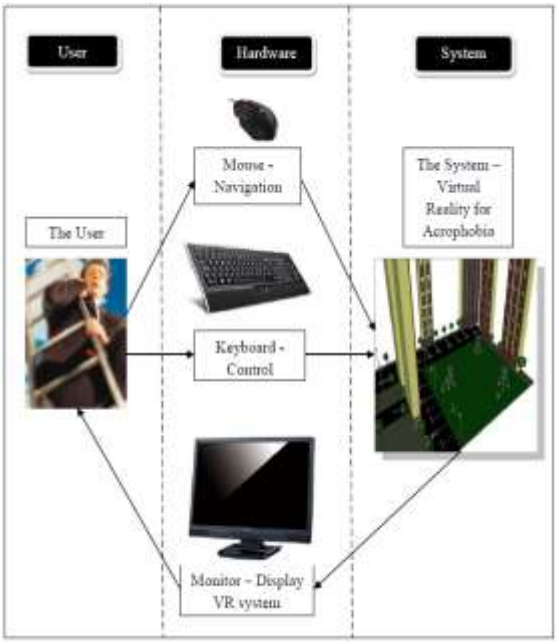


Figure 1: System Flow Design

i. Requirement Gathering

This Virtual Reality of Acrophobia project is purposed to create imaginary system to be at high places. The 3D environment as at top of buildings at level 10th, 15th and 20th will be creating as being at high places. The surrounding of 3D apartment models will try to simulate a real environment apartment to give experience for users like being at high places in real world.

For the gathering the information, it could be survey, observation, visit site and many more. However, in this project, the information was gained through site visit and some observation through pictures from the internet. In this Virtual Reality for Acrophobia project, the scenery of the apartments was inspired by buildings at Emerald Park, Ixora Apartment and Regal Park in area Bukit Beruang, Melaka. In order to produce the 3D modeling building as high as in real world, some pictures from the internet was be as references based on the view of height.

In order to give a sense of being at high places, the camera view will focus from the top, therefore the users will experience it likes being on that top of building. The surrounding of the apartment area, it has parking, field, tree and lamp to make it more similar as in real world.

The user could use mouse and keyboard to navigate the application such as zooming in and out, rotating and moving anywhere. Besides, there are some interaction buttons that users could choose to experience the camera moving like they were walk through the narrow bridge.

ii. Camera Animation

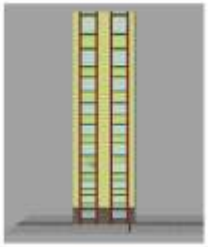
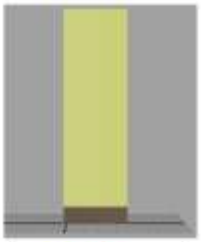
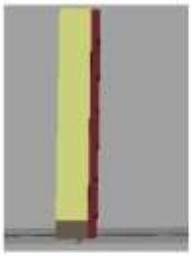
Camera animation is one of the important part to give immerse to users and make them feel fear and like really being at high places. The different type of orientation and position of the camera will make the project become more real.

iii. 3D Modeling

3D modeling is important to create imaginary object. The 3D models that be created was using polygonal modeling to make it easier to import in EON Studio 7.0.0.3000. The area of the model was based on the grid at Autodesk Maya 2010 as a guide not make it to bigger until could not view in EON.

Table 1 shows the character view covering front view, back view, side view and perspective view.

TABLE 1. IMAGE AND DESCRIPTION

Character	View
	Front View of the building
	Back View of the building
	Side View of the building
	Perspective View of the building

Graphic that be used in this project is 3D modeling object. The 3D object in this application was created by using Autodesk Maya 2010. After modeling the buildings, park, car park and more over through Autodesk Maya 2010, the object was export as a 3D geometry file format (.obj) and then imports it into EON 7.0.0.300.

In Table 2, it shows the texture of the buildings and its surroundings. The table also gives some explanations the function of those textures to give some feeling for user as being at high places. Furthermore, the texture of buildings from the EON Studio 7.0.0.300 also is included in this table.

TABLE 2. IMAGE AND DESCRIPTION

Index	Texture	Function
1	 **Picture description:** Texture of wall building that design in Autodesk Maya 2010	The green color indicates the level of the buildings
2	 **Picture description:** Window of the building that design in Autodesk Maya 2010	The window is transparent with light blue color to make more real as in reality
3	 **Picture description:** Texture of tree leaves that design in Autodesk Maya 2010	As trees that make the housing area more beautiful
4	 **Picture description:** Texture of hut in the park that design in Autodesk Maya 2010	One of the elements that make the housing area more beautiful
5	 **Picture description:** Car park area that design in Autodesk Maya 2010	Shows the parking area

III. PROJECT STRENGTHS

Every application must have its own strengths and weaknesses. It is normal in developing a project. To determine the strengths and weakness of the application project, the testing of the product must be done to gain the

feedback from the test users. The strengths of the application that has been determined are as following:

i) Interesting and suitable audio for the application

The sound of heartbeat when users interact with the application could give some fear feelings. Users could feel immerse in the application while the camera of the application brought them to the higher level of the buildings. Furthermore, in the helicopter view, the sound of helicopter also suitable as the users could feel like they were in helicopter.

ii) Good camera angle for the animation

The camera angle for the animation is good and suitable to give fear feelings for the users. The camera plays the big role in this application to give views to be at high places from the bottom until the top of the buildings.

6	 **Picture description:** Narrow bridge that design in Autodesk Maya 2010	Narrow bridge that connect from one building to another building
7	 **Picture description:** Texture of walk plain from EON Studio 7.0.0.300	Walk plain is useful to connect the 3D modeled object with the town that provided in EON 7.0.0.300

IV. TESTING AND RESULTS

After the design completed, the implementation is done and the application is developed well, then the application must be tested for the usability, user interface and the functionality of the application for getting know the benchmarks of the application project. Furthermore, testing process is important to identify the errors of the application and measure the quality performance of the developed computer software. In evaluation, it will analyze the testing result to find the weakness, correctness and measure the objectives of the whole application project are being met or not.

For this project, the testing phase only involves one type of user. The test users were the university students that have taken or learn subject virtual reality in a way to give good comment about the development of project in virtual reality. The amount of test user for alpha testing is three people and beta testing is about ten people to get more variety feedbacks about the system. Some of the testing users have Acrophobia, so they could more experience the feel while using this application.

The main focus for test user was the university students that have learn Virtual Reality subject. It is because, they were more skilled about the software EON 7.0.0.300 and the limitation of that software. Therefore, the expected outputs of this application project from the test users were simultaneously with the software limitation.

Those of the target users are students from Faculty of Information and Communication Technology, Universiti Teknikal Malaysia Melaka (UTeM) in Bachelor Degree of Computer Science (Media Interactive). They are the perfect target user because they also have learned Virtual Reality subject and also familiar with the software EON 7.0.0.300 and expert in modeling using Autodesk Maya 2010.

There is no specific age of the students but most of the students were from age 21 until 24. Age is not a big issue to test the Virtual Reality for Acrophobia project. However, it is also important to know as prove they were the third year students that has learn subject virtual reality.

The test has been done in a peace and quiet place such as in library and in small comfortable room. The test users have been explained about the purpose, objectives, navigation, flow of the application and also some demo using the application of Virtual Reality for Acrophobia. The time taken for each of the tester to explore the application is around ten to fifteen minutes.

The test users will explore the application by their own and interact with the button provided in the application. After that, they could give their level of satisfaction of the application based on the usability, user interface, functionality and also could give some comments to enhance the application in the future. Table 3 shows the user's level of satisfaction for each question given in the survey questionnaires.

TABLE 2. LEVEL OF USER SATISFACTION

Strongly disagree	Disagree	Not Sure	Agree	Strongly Agree
1	2	3	4	5

The survey questionnaires are already categorized the question based on three main sections which is usability, user interface and functionality to make the analysis phase become easier.

Test strategy is important to tackle the test users to enjoy the testing and make the schedule worked smoothly according to the plan. For this application project, alpha testing and beta testing was done. Alpha testing was done among the team members which are also developer of application in virtual reality for users. It was done with three expert peoples. The application was tested also based on the usability, user interface and lastly functionality before the application could be tested on targeted testing users.

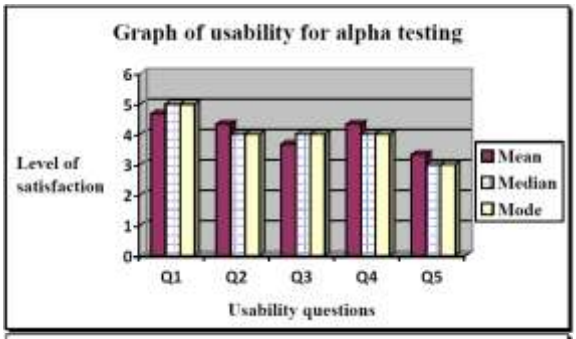
After done the alpha testing and repair some malfunctioned on the application, then the testing could be done for beta testing. The strategy of this Virtual Reality for

Acrophobia to the testing users was firstly explained about the purpose and objectives of the project. It is really important to explain the purpose and objectives of the project to make it clearer.

Table 3, 4 and 5 show the testing form for usability, user interface and functionality testing.Figure 2, 3 and 4 shows the result for the usability, user interface and functionality testing.

TABLE 3. USABILITY TEST

No.	Question	1	2	3	4	5
Usability						
1.	It is easy to use this application.					
2.	I feel comfortable using this application.					
3.	This application is user-friendly.					
4.	This application is simple and attractive					
5.	I could easily adapt and expert to use this application.					



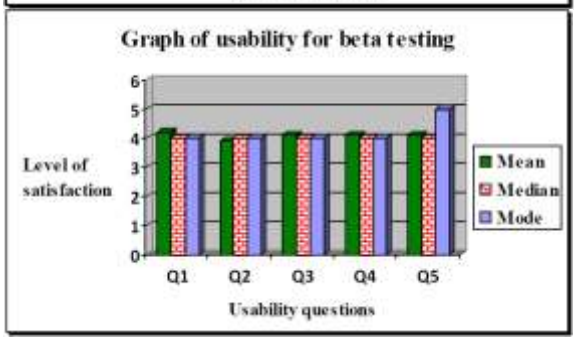
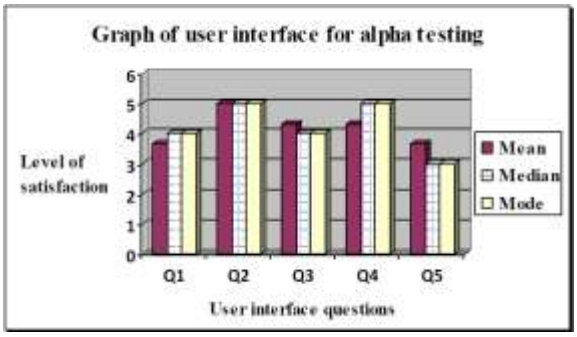


Figure 2: Graph of Usability Testing

TABLE 4. USER INTERFACE TEST

No.	Question	1	2	3	4	5
User Interface						
1.	The information guideline is clear and helpful.					
2.	The audio used in this application is suitable with the situation.					
3.	The interface of this application is pleasant.					
4.	The usages of colors for this application are suitable.					
5.	The design could give me experience of being at high places.					



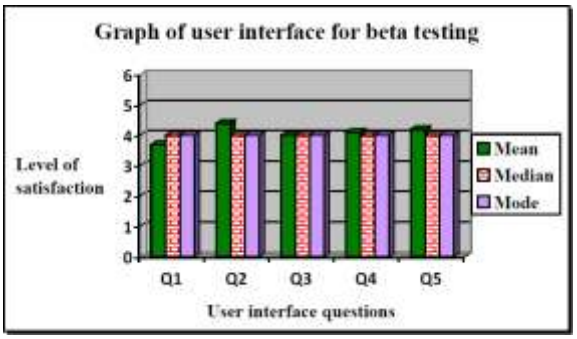


Figure 3: Graph of User InterfaceTesting

TABLE 5. FUNCTIONALITY TEST

No.	Question	1	2	3	4	5
Functionality						
1.	I could easily understand the flow of this application.					
2.	The application is functional as the way it should be and as what I expect it to be.					
3.	The keyboard and mouse are easily used while navigating this application.					
4.	I like using this application to give me experience being at high places and also could feel comfortable at the same time.					
5.	I am satisfied with the whole functionality of this application.					

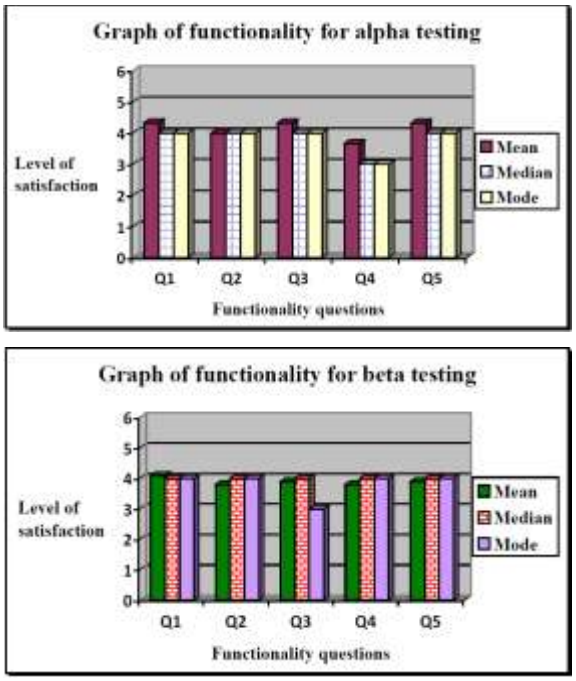


Figure 4: Graph of FunctionalityTesting

Figure 5 is a graph of percentage for users' level of satisfaction on both alpha testing and beta testing. In usability category, percentage of user level satisfaction from alpha testing is 81.3 % while from beta testing is 81.6%. For user interface category, percentage of user level satisfaction from alpha testing is 84.0 % while from beta testing is 81.6%. Lastly in the category of functionality, percentage level of satisfaction from alpha testers is 82.6% while beta testers are 78.0%.

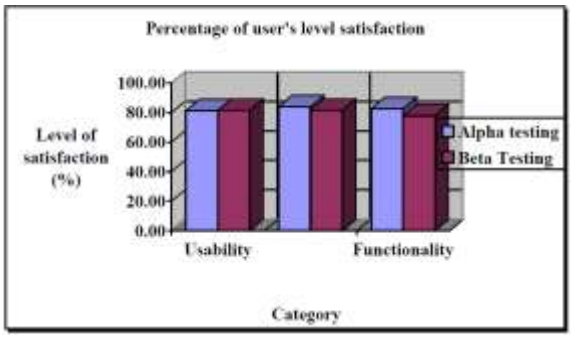


Figure 5: Percentage of User's level Satisfaction

V. CONCLUSIONS

In conclusion, the projects have been successfully developed to achieve certain objectives. This project gives a contribution to the people who have Acrophobia which is afraid of being at high places. Hope with this project, it could helps Acrophobia people against their fear by giving them an experience being at high places. This project also could be useful for students who are learning the Virtual Reality subject to be as references in their study.

This project will help Acrophobia people to against their fear by giving them some scenery and experience being at high places. The main reason of this project is to giving Acrophobia people some experience being at high places because there is some of them could not go even more than 2nd floor of the buildings.

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The Learning Style ofMechanical Engineering Students

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Abstract—The learning style is one of the most important elements in the teaching and learning considered in order to ensure the students are able to learn well. In this point of view, by using an assessment instrument of the "Index of Learning Styles" descriptive which was built by Richard M. Felder and Barbara Soloman (1999), the study is carried out to observe the learning styles of Mechanical Engineering students at Polytechnic Merlimau, Melaka. The questionnaires was formed into 44 items inquired about the learning styles; which is comprising an active rather than reflective, sensing and intuitive, visual and verbal as well as structured and globally. There are 110 students were involved in this study as the respondents where the analysis of data is then carried out using SPSS v.19. The study found that mostly students are Active and Visual type dimension of learning styles. This study is expected to give some ideas in teaching and learning which will also benefit to the students, lecturer, and third party in order to achieve the academic excellence.
Keywords-component: Learning Style, Active & Visual Learning, Mechanical Engineering.

I. INTRODUCTION

The learning style refers to the way of how the individuals are interacted with the system in which the intimation as a stimulus is processed and analyzed in the brain to become the knowledge (Burton *et al*,, 2009; Felder & Silverman, 1988) . In the teaching and learning concept, this is why that each of individual has its owned style of learning where each person begins to process, internalize and concentrate on new material and, in facts, they are differed, such like the thumbprint (Gremli,1996:24). This is due to the learning styles are performed as a set of attitudes and behaviors that determine how the learning approaches favored by an individual (Honey & Mumford, 1992). As examples, Grasha (1990:23) considered about particular types of classroom environments and experiences, Cornett (1983:9) argued about individual variability, etc.

Considering on this reason, Duff (2000) briefly concluded that learning style is a combination of factors characterized by cognitive, affective, and psychology. Thus, each individual is generally perceived that the attitudes and views have differed in what circumstances, it may be said that manner or style of learning they are differing. This is means, according to Karim (2005) that the tendency of individual learning styles in a way intended to receive and process the declaration which is a factor of individual distinction. In this case, each student has their own style of learning where teaching requires the learning concept to conform to various learning styles of students. This is as what previously Felder and Silverman (1988:674) underlined that " *students learn in many ways – by seeing and hearing; reflecting and acting; reasoning logically and intuitively; memorizing and visualizing and drawing analogies and building mathematical models; steadily and in fits and starts*."

Banks *et al*, (2007) and Nasir (2002) stated that whatever the model considered for teaching and learning, as long as there are connectivity of cognitive, affective, and psychology aspects as guidance for individual interaction and response to environment, there are surely the impact for individual learning existed. On this, Felder (1993) argued, that one student who has their own learning styles and teaching styles corresponded with his/ her lecturers edict is likely to keep longer, use it more memorable, and be more positive about the course that followed, compared to their friends who have learning styles that are contrary to his/her lecturers teaching style. Dunn and Dunn (1978) stated that the teaching would be

more impressive if educators implement the suitable and appropriate teaching style to the learning style of students.

Anyhow, there are any possibility of the students learn to deal with conflict if it does not have the appropriate learning style. The problem is occurred if the student learning styles can't be adapted to the style of teaching activities. As a result, students lost their concentration and become bored; cause they failed to get a high markup in exam, less interested in a particular subject and beyond despair (Felder & Silverman, 1988; Craddock & Mathias, 2009). Accordingly, the study of learning styles among students needs to be recognized as a process for enhancing of students' learning achievement.

II. LITERATURE REVIEW

The students need a systematically learning style in order to have a brilliant decision on the subject. Especially, since the learning system at higher education institution, according to Bloom (1956), are more imposing on levels of difficulty which is focused on something in-depth knowledge and comprehensively integrated as education system towards the real life.On this, refers to Schwartz and Lederman (2002:206), "*the translation of one's views into practice is influenced by a variety of contextual and personal factors including classroom management, constraints of curriculum or institution, time, concerns for student motivation and ability, and teaching experience.*" Based on this reason, theassessment of the student learning styles is therefore necessary since it will helpful in knowing learning styles of the most widely practiced by the students and to increase student interest in the subject and something to help them in learning to give up the achievement of impact academic student. In other hand, academic staffs also, therefore, need to increase awareness of the learning needs of all students, particularly those with specific learning difficulties (Hall& Tinklin 1998; May *et al*. 2006).

Table 1: Dimensions of Learning and Teaching Styles (Felder & Silverman, 1988:675)

Preferred Learning Style		Corresponding Teaching Style	
Sensory	Perception	Concrete	Content
Intuitive		Abstract	
Visual	Input	Visual	Presentation
Auditory		Verbal	
Inductive	Organization	Inductive	Organization
Deductive		Deductive	
Active	Processing	Active	Student Participation
Reflective		Passive	
Sequential	Understanding	Sequential	Perspective
Global		Global	

Based on this reason, the monitoring and observation related to leaning style is carried out in Semester 1 of Mechanical Engineering at Polytechnic Merlimau, Melaka (Table 1) which is interpreted in Table 2.

Table 2: The Index of Learning Style Survey (Felder & Soloman, 1999)

PROCESSING	
Active learners:	**Reflective learners:**
• Learn best by doing • "Let's try it out and see if it works" • Like group work • Lecture classes are challenging • May have difficulty when they always act before they think • Should try to work and study in groups or with a partner	• Like to process information before trying it out • "Let's think through it first" • Like to work alone • May have trouble getting started if they think too long before acting • When learning new information, should stop periodically and try to apply it in new ways
PERCEPTION	
Sensing learners:	**Intuitive learners:**
• Like to learn facts • Like to use established methods to solve problems • Resent being 'thrown curves' (i.e. being tested on something that hasn't been 'covered') • Are patient with detail work and are good at memorizing • Like hands-on work • Like learning things that have a direct connection to the 'real world' • Should ask for specific examples when task is unclear	• Prefer to discover new ideas and connections • Like abstract problems • Prefer to work quickly • Don't like to memorize or do routine calculations • Should try to discipline themselves to check work to make sure careless mistakes haven't been made
INPUT	
Visual learners:	**Verbal learners:**
• Remember what they see—timelines, demonstrations, flowcharts • Create timelines for projects, papers, tests • Color code tasks	• Prefer written or spoken instructions • Should write summaries of tasks in own words • Should try to work in groups or with a partner whenever possible
UNDERSTANDING	
Sequential learners:	**Global learners:**
• Like to follow steps in learning and in finding solutions • May know a great deal about each step of process, but have a hard time understanding 'the big picture' • Should try to fill in missed steps by asking instructor or supervisor • Should try to think ahead to end product, even if he/she is not sure what it might be	• Tend to learn in large leaps, without necessarily processing all steps • Have many "A-ha!" moments • Sometimes have difficulty explaining how they reach conclusions • Are not detail-oriented • Should find out as much as possible about a new project, task, or topic before tackling assignment

III. METHODOLOGY

This study is quantitatively carried out by which data obtained in the form of quantitative is presented in statistical form and analyzed using SPSS. The assessment instrument used in the study is the Index of Learning Styles (Felder & Soloman, 1996) which contains of two set questions, that are A (demography of the respondents such as age, sex, and fields of study) and the B (set inquired about the Index of Learning Style or ILS) which comprises 44 items questions that need to be answered by the respondents. The questions includes 4 test and 4 sub-scale dimensions, namely: Processing (Active / Reflective Learners), Perception (Sensing / Intuitive Learners), Input (Visual / Verbal Learners) and Understanding (Sequential / Global Learners). Index of Learning Style (ILS) is used to examine the dimensions of respondents in the bilingual option, namely 'a' and 'b'. All of the data were then analyzed descriptively in the form of correlation relationships. In this study, the 110 samples are taken from mechanical engineering students which study in semester 1 of December 2011 session. The study conducted is to observe the condition as follows:

a) What is the type of student learning style of mechanical engineering student at Polytechnic Merlimau, semester 1 of December 2011 session.

b) Is there any correlation between learning styles dimension such as active and reflective, sensing and intuitive, visual and verbal as well as structured and globally towards the class of the courses.

Based on above reason, the study hypothesis is:

- Ho: There is a significant trend of learning styles in terms of active learning and reflective, sensing and intuitive, visual and verbal as well as structured and globally in the first semester students of mechanical engineering students at Polytechnic Merlimau.
- H1: There is no significant trend of learning styles in terms of active learning and reflective, sensing and intuitive, visual and verbal as well as structured and globally in the first semester students of mechanical engineering students at Polytechnic Merlimau.

IV. RESULT & DISCUSSION

4.1. Overall Dimension of Learning Style Figures

Table 1 shows a distribution number of respondents toward the learning styles among mechanical engineering student where the students preference for “Active” style is 84.55%, “Sensing” is 57.27%, while towards the “Visual” and “Sequential” is 80% and 51.82% respectively.

- This is means that the class is dominated (>75%) by the processing and input learning style dimension of “Active” and “Visual”.
- The domination of all learning styles dimensions are occurred on all levels of “Moderate” and “Strong”, while for “Fairly” only occurs on “Active”, “Sensing”, and “Visual”.

Table 3: Data (Finding of Survey)

Learning Style	Fairly	Moderate	Strong	Total
Active	**56**	**33**	**4**	**110**
Reflective	13	4	0	
Sensing	**41**	**20**	**2**	**110**
Intuitive	39	8	0	
Visual	**40**	**34**	**14**	**110**
Verbal	21	1	0	
Sequential	36	**19**	**2**	**110**
Global	**42**	11	0	

4.2 The Correlation of Learning Style Dimensions

Based on correlation among the learning style dimension (Table 4 in Appendix), by using correlation level of Baba (1997) as described in Table 5, we can conclude as follows:

a) The correlation between learning style vs. class is weak and no significant correlation found. The significant at the level ($p< 0.05$) occurred between the "Class" and the learning style of "Global", but according to table4 is weak(the value is 0.194).

b) The table 4 shows that the four dimensions of learning style are as a pair function aspect (example: “Active vs. Reflective”, and so on). It is known that the learning styles for the "Visual" and "Verbal" is symmetrical construction where they are both have a negative value (-). This is means that the learning style dimension of "Visual" and "Verbal" is supported each others. The opposite (reverse) of this learning style construction is like "Active vs. Reflective "," Sensing vs. Intuitive"and"Sequence vs. Global". In addition, this finding can be interpreted that learning style perceived by the respondents is as the opposite or reverse of what is asked in the study.

Table 5 : Correlation Value vs. Correlation Level

Correlation Value	Correlation Level
0.00 – 0.20	Weak
0.21 – 0.40	Low
0.41 – 0.60	Moderate
0.61 – 0.80	Strong
0.81 – 1.00	Very Strong

c) The correlation values between Active vs. Sensing vs. Visual vs. Sequentialare positive. The same positive value which is symmetrical can also be seen from

Reflective vs. Intuitive vs. Verbal vs. Global. This is means that 4 dimensions of learning styles through Index of Learning Style (ILS) in the case of Processing (Active / Reflective Learners), Perception (Sensing / Intuitive Learners), Input (Visual / Verbal Learners) and Understanding (Sequential / Global Learners) of the Index of Learning Style (ILS) which developed by Felder and Soloman (1999) is in a form of dichotomy pairs. The symmetry of four dimensions learning styles may also be known through Active vs. partner. Reflective vs. Intuitive vs. Verbal vs. Global or Reflective vs. Sensing vs. Visual vs. Sequences which are all negative values.

d) The relationship of the learning styles dimensions are as following:
   i. The relationship of all pair dimensions have a significant correlation ($p < 0.01$) with the level relationship "High - Reverse" (Table 6).
   ii. The inter-relationship of all these dimensions has a significant correlation ($p < 0.01$) with the phase relationship "Low - Identical", "Low - Reverse", and "Weak - Reverse" (Table 7)

Table 6: The Pair Relationship of Learning Style Dimension

DIMENSION			Corr. Value	Corr. Level
PROCESSING	Active	Reflective	-.686(**)	Strong - Reverse
PERCEPTION	Sensing	Intuitive	-.774(**)	Strong - Reverse
INPUT	Visual	Verbal	-.661(**)	Strong - Reverse
UNDERSTANDING	Sequential	Global	-.776(**)	Strong - Reverse

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

iii. Processing Dimension

- There is no significant correlation between the processing dimensions against understanding dimensions. The correlation values are very small or it can be said that the value is 0.
- There is a significant correlation between the processing dimensions of "Reflective" against "Input" where the relationship level is "Low", while the processing dimension of "Active" have a significant correlation to the input dimension of "Visual" where the relationship level is "Low".
- There is a significant correlation between processing dimensions of "Perception", even though all the level relationship is "Low".

Table 7: The Interrelationships of Learning Style Dimension

DIMENSION		Vs. DIMENSION		Corr. Value	Corr. Level
PROCESSING	Active	**PERCEPTION**	Sensing	.310(**)	Low - Identical
PROCESSING	Active	**PERCEPTION**	Intuitive	-.266(**)	Low - Reverse
PROCESSING	Active	**INPUT**	Visual	.235(*)	Low - Reverse
PROCESSING	Reflective	**PERCEPTION**	Sensing	-.252(**)	Low - Reverse
PROCESSING	Reflective	**PERCEPTION**	Intuitive	.249(**)	Low - Identical
PROCESSING	Reflective	**INPUT**	Visual	-.307(**)	Low - Reverse
PROCESSING	Reflective	**INPUT**	Verbal	.249(**)	Low - Identical
PERCEPTION	Sensing	**UNDERSTANDING**	Sequential	.293(**)	Low - Identical
PERCEPTION	Sensing	**UNDERSTANDING**	Global	-.198(*)	Weak - Reverse
INPUT	Visual	**UNDERSTANDING**	Global	-.250(**)	Low - Reverse

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

iv. Processing Dimension

- There is no significant correlation between the processing dimensions against understanding dimensions. The correlation values are very small or it can be said that the value is 0.
- There is a significant correlation between the processing dimensions of "Reflective" against "Input" where the relationship level is "Low", while the processing dimension of "Active" have a significant correlation to the input dimension of "Visual" where the relationship level is "Low".
- There is a significant correlation between processing dimensions of "Perception", even though all the level relationship is "Low".

v. Perception Dimension

- There is no significant correlation between the perception dimensions of input. The correlation value against "Verbal" is too small or it can be said is 0.
- There is a significant correlation between the perception dimensions of "Sensing" towards the understanding dimension, even though the level of relationship is "Low", while for perception dimension of "Intuitive" does not have a significant correlation against the understanding dimension.

vi. Input Dimension

- There is no significant correlation between the input dimensions of "Verbal" against the understanding dimension.

- The significant correlation applied only for input dimensions of "Visual" against the understanding dimension of "Global" , although its value is "Low - Reverse"

4.2. Dominator Occurred in Learning Style

a) Table 8a shows that by majority, it is known that students for the processing dimension of "Active" against input dimension of "Visual" (see 4.1) occurs on the "Fairly". On this, the maximum is occurred on "Visual-Fairly"and "Visual-Moderate", which are 19 students respectively. Based on this finding, it can be concluded that the class is dominated by "Active-Fair" for "Visual-Fair" and 'Visual-Moderate" (38 out of 77 students).

Table 8a: The Relationship of Active vs. Visual vs. Class

CLASS * ACTIVE * VISUAL					
		VISUAL			
ACTIVE	CLASS	FAIRLY	MODERATE	STRONG	TOTAL
FAIRLY	DKM1D	5	5	3	13
	DKM1B	3	5	3	11
	DKM1A	4	3	1	8
	DKM1C	4	1	1	6
	DTP1	3	5	1	9
Total		19	19	9	47
MODERATE	DKM1D	2	5	2	8
	DKM1B	3	4	0	8
	DKM1A	1	1	1	3
	DKM1C	2	2	0	3
	DTP1	3	0	1	5
		11	12	4	27
STRONG	DKM1D	0	1	0	1
	DKM1B	1	0	0	1
	DKM1A	0	0	1	1
		1	1	1	3

b) Table 8b shows the processing dimension of "Active" towards the input dimensions of "Verbal" is with the maximum on "Fairly" ("Active-Fair" for "Visual-Fair") that is 9 out of 16"Active-Verbal" students.

c) Table 9a shows that by majority of students for the processing dimension of "Reflective" against input dimension of "Visual" is in "Fairly" level, which is 9 of 10 students.

d) In table 9b, it shows that processing dimension of "Reflective" towards the input dimensions of "Verbal" is only 3 students.

Table 8b: The Relationship of Active vs. Verbal vs. Class

CLASS * ACTIVE * VERBAL					
		VERBAL			
ACTIVE	CLASS	FAIRLY	MODERATE	STRONG	TOTAL
FAIRLY	DKM1D	4			4
	DKM1B	4			4
	DKM1A	0			0
	DKM1C	1			1
	DTP1	0			0
Total		9			9
MODERATE	DKM1D	1			1
	DKM1B	1			1
	DKM1A	2			2
	DKM1C	2			2
	DTP1	0			0
		6			6
STRONG	DKM1D	0			0
	DKM1B	0			0
	DKM1A	1			1
		1			1

Table 9a: The Relationship Reflective vs. Visual vs. Class

CLASS * REFLECTIVE * VISUAL					
		VISUAL			
REFLECTIVE	CLASS	FAIRLY	MODERATE	STRONG	TOTAL
FAIRLY	DKM1D	0	1		1
	DKM1B	3	0		3
	DKM1A	2	0		2
	DKM1C	2	0		2
	DTP1	2	0		2
Total		9	1		10
MODERATE	DKM1D	1	0		1
	DTP1	0	1		1
Total		1	1		2

Table 9b: The Relationship Reflective vs. Verbal vs. Class

CLASS * REFLECTIVE * VERBAL					
		VERBAL			
REFLECTIVE	CLASS	FAIRLY	MODERATE	STRONG	TOTAL
FAIRLY	DKM1D	1	0		1
	DKM1B	0	1		1
	DKM1A	1	0		1
	DKM1C	1	0		1
	DTP1	0	0		0
Total		3	1		4
MODERATE	DKM1B	0			0
	DTP1	2			2
Total		2			2

- Based on processing dimension, it can be concluded that type of "Active" is dominant learning styles towards input dimension. However, there are none for moderate and strong level of "Verbal" type (Table 10).

$$\text{Active} \cup \text{Visual} = \{56+33+4\} \cup \{40+34+14\}$$
$$= \{19+11+1+19+12+1+9+4+1\}$$
$$= 77$$

It can be concluded, that the majority of respondents are "Active" type (93 out of 110 students) and "Visual (88 out of 110 students). The students with both of characteristics (type "Active-Visual" is 77 persons (70%).

- Based on processing dimension against perception dimension, there are found that "Active" type dominant against "Sensing" and "Intuitive" type(Table 11).

□[Active ∪ Sensing] > [Reflective ∪ Sensing]
□[Active ∪ Sensing] > [Reflective ∪Intuitive]
□[Active ∪ Sensing] > [Reflective ∪ Intuitive]

Active∪ Sensing $_{(Fairly-Moderate)}$= {21+13+2}+{6+11+2}
=55

or

Active$_{(Fairly)}$∪Sensing∪ Intuitive $_{(Fairly+Moderate)}$ =
{21+6+2}+{22+5} =56

- Based on processing dimension against understanding dimension, there are found that "Active" type dominant against "Sequential" and "Global" type of learning styles (Table 12).

□[Active ∪ Sequential] > [Reflective ∪Global]
□[Active ∪ Sequential] > [Active∪Global]
□[Active ∪ Sensing] > [Reflective ∪Sequential]

Active$_{(Fairly+Moderate)}$∪ Sequential$_{(Fairly-Moderate)}$ =
{18+12+2+9+7} =48

Active$_{(Fairly+Moderate)}$∪Global$_{(Fairly-Moderate)}$ =
{23+9+6+4} =42

□Active $_{(Fairly+Moderate)}$) ∪Sequential $_{(Fairly-Moderate)}$+
Active $_{(Fairly+Moderate)}$∪Global $_{(Fairly-Moderate)}$ =
{18+12+2+9+7}+{23+9+6+4} = 90

It can be concluded that the "Active" type is dominant against understanding dimension, although there are none for Global Strong.

V. CONCLUSION & RECOMMENDATION

The result shows that this study provides an overview of learning styles among mechanical engineering students in semester 1 of Polytechnic Merlimau. Based on data presented, the student responses clearly indicate that the dominant characteristics of student towards learning styles are "Active" type of processing characteristics. Therefore, first, since the common lectures are more delivered by class session, the lecturers have to take notes that this way will give the "Active" types the difficulties to absorb the knowledge delivered by lecturers. This situation are certainly giving the implications for the management of Mechanical Engineering Dept. the Polytechnic Merlimau to give fully attention towards conducively environment, such as how to deliver and plan the teaching courses which enable the students to carry out the group or class discussion and/or application by forming the group in order to let them to study and learn through the teamwork.

Second, due to the "Active" types are mostly dominated by "Visual" types, on how material of courses are provided and delivered to students, lecturers have to consider visual characteristics such as try to find diagrams, sketches, schematics, photographs, flow charts, or any other visual representation of course material that is predominantly verbal. Viewing on this reason, lecturers are suggested to consult reference books which provide any videotapes or CD-ROM displays. Felder and Soloman (1999) suggested "*they should prepare a concept map by listing key points, enclosing them in boxes or circles, and drawing lines with arrows between concepts to show connections. Color-code your notes with a highlighter so that everything relating to one topic is the same color*."

Based on aforementioned, in order to improve the effectiveness of teaching and learning process, there are several suggestion given such as:

a) It is need alternate efforts for exploring the advantages of every learning styles which is implemented in the class for improving the teaching and learning by gathering detailed materials as an education referral.
b) During the process of teaching and learning, the communication aspects formed by educators should be produced with a clear articulation and explanation, as well as firm to the courses context even though the flexibilities can be used (depend of lecturers creativity for teaching and learning) in order to make the classroom environment as real life and make them interest to what they will study.
c) The implementation of educational should triggers the students to find their own solution where the students face it as an opportunity for ideas sharing and/or new discoveries of the knowledge.

Since the study carried out is on semester 1 of mechanical engineering students, any further study are required to validate this finding for teaching and learning, such as the involvement of larger respondents (students semester 3 and 5), the study of lecturer's preferences styles in teaching, the using of other learning style measurement(*i.e.* Dunn & Dunn, feeling's Vark), etc. This is as what highlight by Curry (1991) about the failure to identify the style characteristics that most relevant to learners and instructional setting as a major concern in the field. This is due to, according to Cassidy (2004:441) , there are needs a deliberation and documentation the choice model which reflects a broad awareness of the field and which allow for results and outcomes to be dealt with within a clear conceptual framework.

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Table 4: Pearson Correlations of "Learning Style"

	ACTIVE	*REFLECTIVE*	*SENSING*	*INTUITIVE*	*VISUAL*	*VERBAL*	*SEQUENCE*	*GLOBAL*
CLASS	-0.06	0.134	-0.156	0.156	-0.097	-0.004	-0.13	.194(*)
ACTIVE	1	-.686(**)	.310(**)	-.266(**)	.235(*)	-0.12	0.183	-0.106
REFLECTIVE		1	-.252(**)	.249(**)	-.307(**)	.249(**)	-0.099	0.071
SENSING			1	-.774(**)	0.125	-0.031	.293(**)	-.198(*)
INTUITIVE				1	-0.131	0.019	-0.15	0.086
VISUAL					1	-.661(**)	0.182	-.250(**)
VERBAL						1	-0.142	0.174
SEQUENCE							1	-.776(**)
GLOBAL								1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 10: Processing Dimension vs. Input Dimension
[Class vs. Active-Reflective vs. Visual Verbal]

[VISUAL-VERBAL] vs. [ACTIVE-REFLECTIVE]

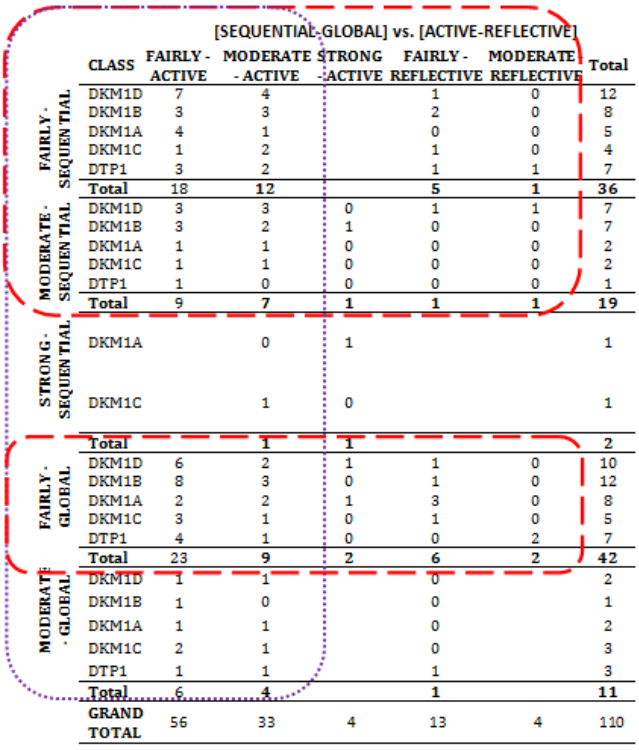
	CLASS	FAIRLY - ACTIVE	MODERATE - ACTIVE	STRONG - ACTIVE	FAIRLY - REFLECTIVE	MODERATE - REFLECTIVE	Total
FAIRLY - VISUAL	DKM1D	5	2	0	0	1	8
	DKM1B	3	3	1	3	0	10
	DKM1A	4	1	0	2	0	7
	DKM1C	4	2	0	1	0	7
	DTP1	3	3	0	2	0	8
	Total	**19**	**11**	**1**	**8**	**1**	**40**
MODERATE - VISUAL	DKM1D	5	5	1	1	0	12
	DKM1B	5	4	0	0	0	9
	DKM1A	3	1	0	0	0	4
	DKM1C	1	2	0	0	0	3
	DTP1	5	0	0	0	1	6
	Total	**19**	**12**	**1**	**1**	**1**	**34**
STRONG - VISUAL	DKM1D	3	2	0			5
	DKM1B	3	0	0			3
	DKM1A	1	1	1			3
	DKM1C	1	0	0			1
	DTP1	1	1	0			2
	Total	**9**	**4**	**1**			**14**
FAIRLY - VERBAL	DKM1D	4	1	0	1	0	6
	DKM1B	4	1	0	0	0	5
	DKM1A	0	2	1	1	0	4
	DKM1C	1	2	0	1	0	4
	DTP1	0	0	0	0	2	2
	Total	**9**	**6**	**1**	**3**	**2**	**21**
MODERAT - VERBAL	DKM1B				1		1
	Total				**1**		**1**
	GRAND TOTAL	**56**	**33**	**4**	**12**	**4**	**110**

Table 11: Processing Dimension vs. Perception Dimension
[Class vs. Active-Reflective vs. Sensing-Intuitive]

[SENSING-INTUITIVE] vs. [ACTIVE-REFLECTIVE]

	CLASS	FAIRLY - ACTIVE	MODERATE - ACTIVE	STRONG - ACTIVE	FAIRLY - REFLECTIVE	MODERATE - REFLECTIVE	Total
FAIRLY - SENSING	DKM1D	5	3	1	1	0	10
	DKM1B	6	4	0	2	0	12
	DKM1A	2	1	1	0	0	4
	DKM1C	3	3	0	1	0	7
	DTP1	5	2	0	0	1	8
	Total	**21**	**13**	**2**	**4**	**1**	**41**
MODERATE - SENSING	DKM1D	1	5	0	0		6
	DKM1B	3	3	1	1		8
	DKM1A	0	1	1	0		2
	DKM1C	1	2	0	0		3
	DTP1	1	0	0	0		1
	Total	**6**	**11**	**2**	**1**		**20**
STRONG - SENSING	DKM1D	1					1
	DKM1A	1					1
	Total	**2**					**2**
FAIRLY - INTUITIVE	DKM1D	8	2		1	1	12
	DKM1B	5	1		1	0	7
	DKM1A	4	3		2	0	9
	DKM1C	3	1		1	0	5
	DTP1	2	2		1	1	6
	Total	**22**	**9**		**6**	**2**	**39**
MODERATE - INTUITIVE	DKM1D	2			0	0	2
	DKM1B	1			0	0	1
	DKM1A	1			1	0	2
	DTP1	1			1	1	3
	Total	**5**			**2**	**1**	**8**
	GRAND TOTAL	**56**	**33**	**4**	**13**	**4**	**110**

Table 12: Processing Dimension vs. Understanding Dimension
[Class vs. Active-Reflective vs. Sequential-Global]



[SEQUENTIAL-GLOBAL] vs. [ACTIVE-REFLECTIVE]

	CLASS	FAIRLY - ACTIVE	MODERATE - ACTIVE	STRONG - ACTIVE	FAIRLY - REFLECTIVE	MODERATE REFLECTIVE	Total
FAIRLY - SEQUENTIAL	DKM1D	7	4		1	0	12
	DKM1B	3	3		2	0	8
	DKM1A	4	1		0	0	5
	DKM1C	1	2		1	0	4
	DTP1	3	2		1	1	7
	Total	18	**12**		**5**	**1**	**36**
MODERATE - SEQUENTIAL	DKM1D	3	3	0	1	1	7
	DKM1B	3	2	1	0	0	7
	DKM1A	1	1	0	0	0	2
	DKM1C	1	1	0	0	0	2
	DTP1	1	0	0	0	0	1
	Total	9	**7**	**1**	**1**	**1**	**19**
STRONG - SEQUENTIAL	DKM1A		0	1			1
	DKM1C		1	0			1
	Total		**1**	**1**			**2**
FAIRLY - GLOBAL	DKM1D	6	2	1	1	0	10
	DKM1B	8	3	0	1	0	12
	DKM1A	2	2	1	3	0	8
	DKM1C	3	1	0	1	0	5
	DTP1	4	1	0	0	2	7
	Total	23	**9**	**2**	**6**	**2**	**42**
MODERATE - GLOBAL	DKM1D	1	1		0		2
	DKM1B	1	0		0		1
	DKM1A	1	1		0		2
	DKM1C	2	1		0		3
	DTP1	1	1		1		3
	Total	6	**4**		**1**		**11**
	GRAND TOTAL	56	33	4	13	4	110

TRACK 2: TECHNOLOGY AND CREATIVE CONTENT

3D Approach in the Development of Chemistry Subject at UTeM: Atom Cubic

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I. INTRODUCTION

This project will research about the design, development and effectiveness of the 3D animation for the teaching and learning of chemistry. This learning courseware project to assist students to a better and easier learning environment. This learning courseware will derive from the syllabus and the technique chosen in presenting the content is mind mapping. Teaching and learning based on computer had grown since fourty years ago and the latest innovation is multimedia field [1]. Multimedia technology has expended the usage of computer from information processing tools to teaching tools. Multimedia technology has ability in delivering text, video, sound, animation and high resolution graphic. An information delivery effect created by combination of images, texts, and sounds has shown the significance everlasting compared to listened or read [2]. Combination of these elements will create an interesting presentation and make the information conveying more meaningful. Teaching media that using multimedia technology are able to get the student's attention, get the idea, and gain the complex information and help to prevent lack of time, size and space. Computer-based teaching media that has interactive can able the user to access the information from one segment to another without following the flow.

A. Objectives

There are several ideas on the reason of developing this courseware. The objectives that included are:

- To develop interactive 3D approach for easy visualizing in the teaching of mechanical engineering Chemistry topic of Properties of matter.
- To choose suitable methodology for learning development
- To evaluate the effectiveness of teaching by using interactive 3D approach in the subject of mechanical engineering Chemistry through a case study with engineering students of University Technical Malaysia Melaka, UTeM.

B. Scope of Study

The target user of this courseware is for first year student from faculty of Mechanical Engineering. Lecturer and

students can use the courseware in helping them understand better in this topic.

The scope of this project is to develop an interactive learning application using computer. Computer is the most common device technology in the world now. It has become the most important gadget to human and we can say every single house and school should have computer. The application also has a few modules, which are notes, quizzes, simple games and past year questions.

C. Problem Statements

One of the problems when student learn chemistry is students do not understand the topic well because it needs students to imagine the formation of the structure and their arrangement. By developing this courseware, it is use to stimulate student's interest in some content of the learning and as a supplement in class teaching, the graphics and animation make the subject come alive, so that learning the subject is much easier, animation, voice and video clips are used to implement various teaching strategies such as tutorials, activities and games. Besides that, the simple animation can be use in this courseware to make the learning of content in the class more interactive.

II. LITERATURE REVIEW

Multimedia courseware is believed as the most appropriate way to encounter the problem of student in visualizing [3]. The covalent bonding molecular structure stimulating program definitely assists learners to gain more understanding in molecular structures [4]. 3D environments in a conventional academic course can be engaging and beneficial in improving learning capabilities. Traditional learning to 3D environments has improved the quality of student learning through effective integration of current module design. Beside that 3D model can be rotate around any axis, and panned or zoomed in any direction.

A. Multimedia Courseware

Multimedia courseware is a computer application for learning that combines several media such as text, image, audio, video and animation. Students sees the courseware as the other perspective towards common instruction, can support flexible learning pace, provide extra materials apart from being delivered in class and have sense of fun compared to formal learning process.

B. Courseware for visualization

Student‘s ability to learn is varied and inconsistent with one another. Some students capture better information and knowledge with specific presentation methods like audio and visual. The different ability of people to learn and capture the information is actually related to their learning style which is defined as the way a person takes and processes the knowledge. As for this project, 3D model atom in way of animation style is using to present the subject. Visualization is the ability to view and utilize an image of partial form into another appearance. Hence, the courseware for this project must be able to support student’s visualization ability. Multimedia courseware will be used as the tool for assisting students in visualizing. The ability to visualize has enabled the students to understand the topic better. The concept used in this courseware will helping students who is having difficulties in visualization.

III. RESEARCH METHODOLOGY

The methodology used to develop a courseware is ADDIE (Analyze, Design, Develop, Implement and Evaluate) model. The ADDIE instructional design model is a basic model that holds true for any type of learning, including Web-based (Hall, 1997). ADDIE is a simple and includes all the components found in all other instructional design models. ADDIE is five-phase systematic model used to create sound instructional products for a variety of educational settings. Each phase represents a series of tasks that help to ensure development efforts stay on tract, on time, and on target. Completing each phase satisfactorily increase the chance that the information presented ultimately remains relevant to the needs of the audience. Each phase of the ADDIE model is an important element of the instructional design process. In each phase, the instructional designer makes decisions that are critical for ensuring the effectiveness of the instructional experience.

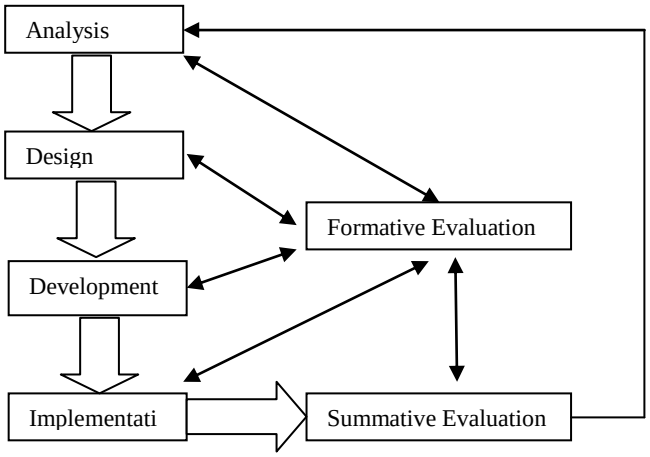

Figure 1. The ADDIE Model

IV. PRELIMINARY ANALYSIS

A. Interview Result and Discussion

The result of interviewed with chemistry lecturer and the students from the faculty of mechanical engineering, University Technical Malaysia Melaka (UTeM), shows that the topic of properties of matter is slightly difficult in visualizing the arrangement of the atoms in the cubic cells. Learning in conventional approach often use the whiteboard and textbook that only shows text and graphic to show the arrangement of the atoms in cubic cells. The arrangement of the atoms in the cubic cells are required learners’ knowledge and metal image, so by using 3D technology approach is possible to applied to assist learners in the topic. This research addresses the impact of using 3D approach in teaching and its advantages over current approach. Besides, 3D model can be rotated around any axis, panned or zoomed in any direction. With 3D viewing also, students are able to position and recognize the object with relation to others scene, enabling a better and more complete visualization and interactive learning process.

Most Difficult Topic in Chemistry Subject	**Mean (Student, n= 35)**
Chapter 1 - Chemistry The Study of Change	1.57
Chapter 2 - Atoms, Molecules & Ions	2.14
Chapter 3 – Chemicals Reaction	2.26
Chapter 4 – Structure of Atoms	2.14
Chapter 5 – The Periodic Table	1.80
Chapter 6 – Chemical Bonding	2.26
Chapter 7 – Properties of Matter	**2.94**
Chapter 8 - Thermo Chemistry	2.63

Figure 2. Most Difficult Topic in Chemistry Subject

Based on the survey, almost of the student were identified was having problems in the topic of using visualization. As shown in above Figure 2, most of the students having difficulties in chapter 7 with the highest mean is equal to 2.94 which is the subject is about how to visualize the arrangement of the atoms in a cubic cell and how to create formula of the atomic radius and the edge of the length.

V. SCREEN DESIGN DEVELOPMENT

This learning courseware consists of 4 main modules, which are concept module, visualizing module, exploring module, mind test module and searching module. The following section elaborates on the screen design of each module based on the flow of the system architecture.

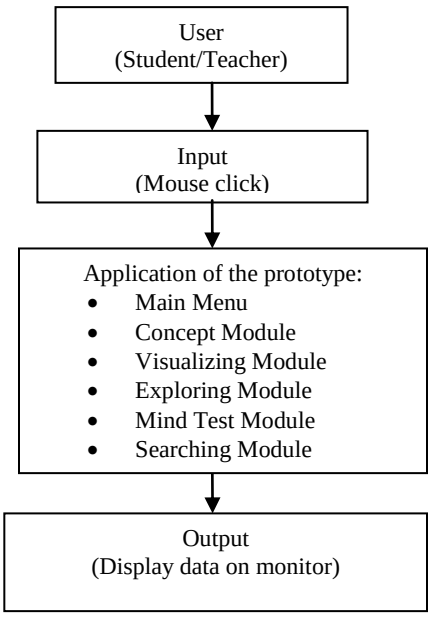

Figure 3 System architecture of the Learning

A. The Storyboard

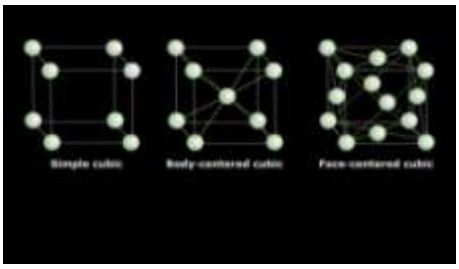

Figure 4. Arrangement of the atoms

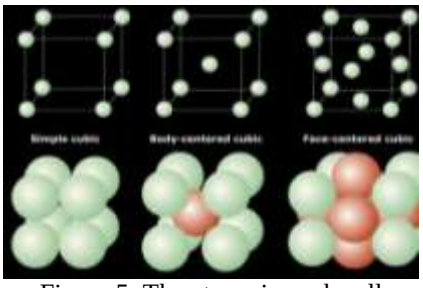

Figure 5. The atoms in each cell

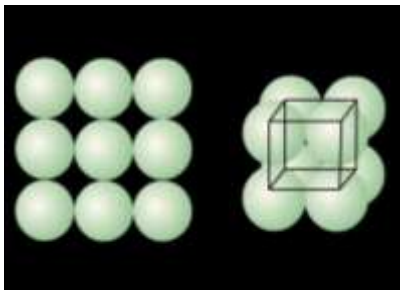

Figure 6. Arrangement of the atoms in a cubic cell

B. The Development of the Atom

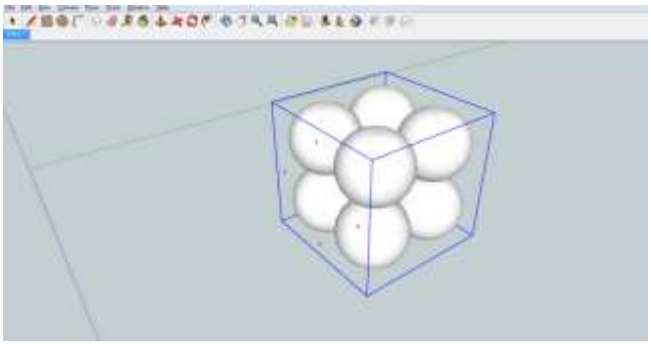

Figure 7. Atoms in the Simple Cubic Cell

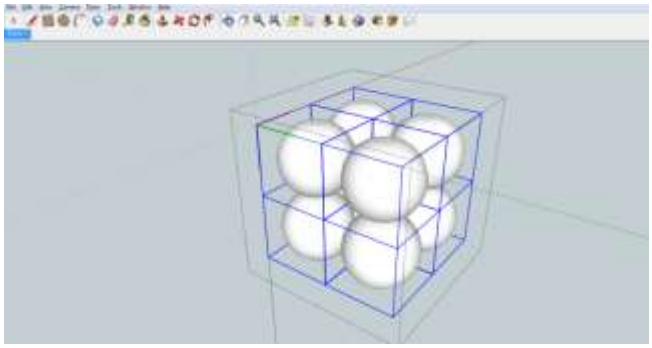

Figure 8. First View of Simple Cubic Cell

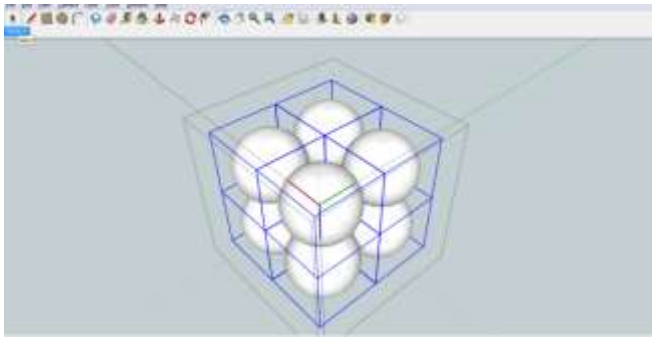

Figure 9. Second View of Simple Cubic Cell

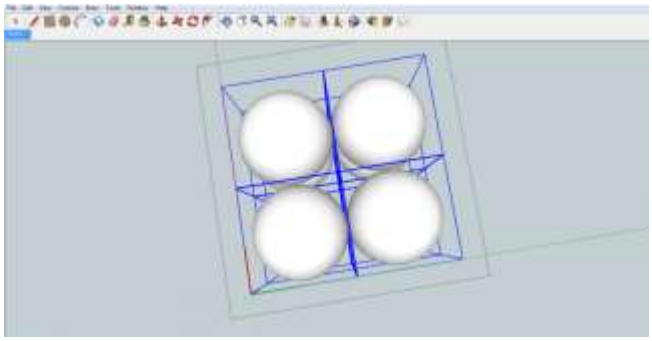

Figure 10. Third View of Simple Cubic Cell

The development of this Atom Cubic courseware only covers Properties of matters topic. All subtopic will be divided into several categories to make it easy and user friendly. All multimedia elements such as color, graphics, animations, sound, the model of 3D atoms, and suitable voice over need to be planned before it being transferred into digital form.

VI. CONCLUSION

Therefore, learning based computer is build to increase the efficiency the student ability of visualization with the aid of multimedia elements. Beside, 3D model atom assists learners to gain more understanding in molecular structure.

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Analysis of Online Dictionary System

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Abstract—**In this global era, having technology at our fingertips has made people really rely on their high performance gadgets such as mobile phone, PDA, laptop and tablet to help them complete their daily tasks. One of the most common software used by the users is the online dictionary system. Compared to dictionary book, online dictionary system is preferred by users especially students and academics because it is easy to carry anywhere, more practical and easy to use. However, this system has its own weaknesses for its users. One of the flaws is they might not know the right features in the dictionary that is compatible with their works and this will result difficulties. In this paper, the entire existence online dictionaries will be analyzed before being compiled into a website. From this website, users can choose the right dictionary that really fits their work, hence it will save time. It also will provide the comparison between parameter of all dictionaries in all categories to the user. In addition, users also will gain some information about all online dictionary systems as there are various online dictionaries with diverse languages and functions.**

Keywords: online *dictionary system*

I. INTRODUCTION

In new era of technology, online dictionaries are really important to all people in the world. Dictionaries are important to translate any difficult words for people works. As we know, today technology have created the online dictionary system which is all people around the world can access any online dictionary system through web based, free sources and also from any devices such as I-Phone or PDA's. There are so many system of online dictionary but some of the systems are not freely used by user. Furthermore, a normal user didn't know how to find the better online dictionary system and need to search the best online dictionary to suit their works. There are so many comparison need to be done and need to implement a system that can show all the information about accuracy, size of words, type of language using by all online dictionary systems, how many search algorithm being used and what type of user interface of the online dictionary used.

In this paper, an online system is created by compiling all the online dictionary system and implements it on simple HTML that involves some PHP databases. A dictionary is a collection of words in a specific language, often listed alphabetically, with definitions, etymologies, phonetics, pronunciations, and other information or a book of words in one language with their equivalents in another, also known as a lexicon. According to Nielsen 2008 a dictionary may be regarded as a lexicographical product that is characterized by three significant features.(Wikipedia, 2009)

(1) It has been prepared for one or more functions
(2) It contains data that have been selected for the purpose of fulfilling those functions
(3) Its lexicographic structures link and establish relationships between the data so that they can meet the needs of users and fulfils the functions of the dictionary

According to the *Manual of Specialized Lexicographies* a specialized dictionary (also referred to as a technical dictionary) is a lexicon that focuses upon a specific subject field. Following the description in *The Bilingual LSP Dictionary* lexicographers categorize specialized dictionaries into three types. A multi-field dictionary broadly covers several subject fields (e.g., a business dictionary), a single-field dictionary narrowly covers one particular subject field (e.g., law), and a sub-field dictionary covers a singular field (e.g., constitutional law). For example, the 23-language Inter-Active Terminology for Europe is a multi-field dictionary, the American National Biography is a single-field, and the African American National Biography Project is a sub-field dictionary. In terms of the above coverage distinction between "minimizing dictionaries" and "maximizing dictionaries", multi-field dictionaries tend to minimize coverage across subject fields (for instance, *Oxford Dictionary of World Religions*) whereas single-field and sub-field dictionaries tend to maximize coverage within a limited subject field (*The Oxford Dictionary of English Etymology*). See also LSP dictionary. (Wikipedia, 2009)

This online dictionary system is basically help people to get the meaning and solved their problems with request the desired words into the existence online dictionary system. There are too many online dictionary system that have being implement in many ways such as web-based system, CD-ROM application, word processor (word, excel) and also

devices (I-Phone, ECTACO jetBook eBook Reader Graphite).

Generally, this paper is organized as follows. Firstly, the literature review about types of online dictionary will be described in section II. Then we will show how the implementation of the online dictionary system in section III and the analysis of the results in section IV. Lastly, section V will present concluding remarks.

II. LITERATURE REVIEW

Online dictionary systems are widely used in web-based system, CD-ROM application and word processor software such as Microsoft Word and Microsoft Excel. There are many other devices that provide online dictionary system but different configuration and languages. Comparisons have been made between this application respect to their functions and features. There are not many differentiations between web-based systems for online dictionary system and their functions. Most of their goals are same and have similar functions.

A. Online Dictionary in Web-Based System

Examples of the online dictionary system in web-based system that popular being used by public user are Merriam-Websters Open Dictionary, Oxford English Dictionary, Community Dictionary, Online Dictionary English and Malay, Yahoo! Kids Dictionary, and etc. The examples that have been given are using same languages such as HTML, PHP and etc for the interface and background of the system. All of these systems provide the same function which help user to solve their problem by finding the meaning of the desired words. It has all of the basic functions like translation of the desired words such as English to Malay, Malay to English, Chinese to Indian, Arabic to Malay and etc.

1) Webster's Dictionary

Webster's Dictionary is the most common used by user. Noah Webster's is the name of the author for the popular readers and spelling books for schools published his first dictionary, A Compendious Dictionary of the English Language, in 1806 (Wikipedia, 2009). Noah Webster was one of the first dictionary writers to buck convention and define (even spell) words according to common usage, especially American usage - accepting *color* as used in the United States versus *colour* as used in Britain(Philip M. Parker, 2009). In year 1828, Noah Webster already 70 years old but still can published American Dictionary of the English Language in two quarto volumes containing 70,000 entries (Library of Congress, 2009). The Merriam Company issued a complete revision in 1909, Webster's New International Dictionary, edited by William Torey Harris and F. Sturges Allen. Vastly expanded, it covered over 400,000 entries, and double the number of illustrations. A new format feature, the divided page, was designed to save space by including a section of words below the line at the bottom of each page: six columns of very fine print, devoted to such items as rarely used, obsolete, and foreign words, abbreviations, and variant spellings. Notable improvement was made in the treatment and number of discriminated synonyms, comparisons of subtle shades of meaning. Also added was a twenty-page chart comparing the Webster's pronunciations with those offered by six other major dictionaries.(Wikipedia, 2009). A Webster's Dictionary Online are the first online dictionary that have being invented and follow by others such as Oxford, Cambridge, and American Heritage.

Phil M. Parker is the creator of the Webster's Online Dictionary which is a professor from INSEAD, the European business schools. He reckons it is among the top ten sites used to search Arabic words in Arabic script, since the whole hoard has been programmed for Unicode. And because the Webster word is a synonym for 'dictionary' for Americans (as Kodak once was for cameras or Google is for search engines) WODranks between 5 and 7 on, well, Google for 'Webster' out of about 150 'Webster' sites on the web these days. Probably the best way to appreciate the ambition of Phil Parker's site is to search the term Webster itself, and see the degree of encyclopedic potential – words, images, statistical findings from corpora, sign language versions, et alia multa – that he is trying to pack into what he calls a hobby. But the definitions don't include a more recent decomposition - web + ster (as in napster) - a linguistic peer to peer resource. (Péter's Digital Reference Shelf , April 2005)

According research that have being done by Phil Parker in year 2005, he as discover that Webster's Online Dictionary mission are to create a largest online dictionary of modern language usage which equivalent to 500 of encyclopedias. The dictionary will soon consist of over 400 modern languages, and 10 ancestral languages, with some 30 million individual entries across languages (including expressions, technical terminologies, and words). The languages included are read or spoken by over 95 percent of the world's population. The world's largest dictionary should be free to consult by all persons of the world, via the Internet (Philip M. Parker, 2009).

2) Oxford English Dictionary

Second online dictionary system that common used by user is Oxford English Dictionary. According to the publishers, it would take a single person 120 years to type the 59 million words of the OED second edition, 60 years to proofread it, and 540 megabytes to store it electronically.As of 30 November 2005, the *Oxford English Dictionary* contained approximately 301,100 main entries. Supplementing the entry headwords, there are 157,000 bold-type combinations and derivatives; 169,000 italicized-bold phrases and combinations; 616,500 word-forms in total, including 137,000 pronunciations; 249,300 etymologies; 577,000 cross-references; and 2,412,400 usage quotations. The dictionary's latest, complete print edition (Second Edition, 1989) was printed in 20 volumes, comprising 291,500 entries in 21,730

pages. The longest entry in the OED2 was for the verb *set*, which required 60,000 words to describe some 430 senses. As entries began to be revised for the OED3 in sequence starting from M, the longest entry became *making* in 2000, then *put* in 2007 (Wikipedia, 2009). First edition of Oxford English Dictionary was proposed size 4 volumes, 6,400 pages (with provision for 'a larger dictionary containing not fewer than 10 volumes, each containing not less than 1,600 pages'). But for the actual sizes are 10 volumes and pages are around 15,490 pages.

The total of entries on this dictionary on first edition was 252,200 entries. The word that have being defined or illustrated in the Oxford Dictionary are 414,800 words. There are 7 authors that collaborate to work hard to produce Oxford English Dictionary successfully. The 7 author's names are (Oxford University, 2009):

- James Murray (1837-1915)
- Henry Bradley (1845-1923)
- William Craigie (1867-1957)
- C.T. Onions (1873-1965)
- Robert Burchfield (1923-2004)
- Edmund Weiner (b. 1950)
- John Simpson (b. 1953)

B. Online Dictionary in CD-ROM application

In year 1755, Samuel Johnson produced his famous Dictionary and issued a significantly revised Fourth Edition in 1773. This CD-ROM has being produced before the OED CD-ROM published. Each Edition has previously been available only in expensive print facsimile. Now, a CD-ROM makes accessible these two main Editions alongside each other, fully transcribed and searchable, in addition to digitized images of all of the original printed pages. Fast retrieval software allows the user to search both Editions of the Dictionary for words, phrases, headwords, quotations, and source-authors. The Dictionary is not only the first great work of English lexicography but also a literary and historical resource of immense value, and this electronic edition has been prepared to the highest standards by a team of scholars at the University of Birmingham (John Naughton The Observer, March 1996).

The CD-ROM contains a complete transcription of the text of the First Edition of Johnson's Dictionary of 1755 (c. 40,000 entries), with full SGML coding and page breaks following the original. A complete transcription of the text of the Fourth Edition of Johnson's Dictionary of 1773 (c. 40,000 entries), with full SGML coding and page breaks following the original. Digitized images of the original printed pages of both First and Fourth Editions. A DynaText search and retrieval engine with user-friendly screen design. System requirements are (John Naughton The Observer, March 1996):

- The CD-ROM runs identically on PC Windows and Macintosh systems.
- All necessary search and display software and fonts are provided on the CD-ROM and do not need to be acquired separately.
- The following equipment is recommended: PC: 386 or later; Windows 3.1+; 8 Mb of RAM; double-speed CD-ROM drive. Macintosh: system 7 or later; 4 Mb of RAM; double-speed CD-ROM drive.

1) Oxford English Dictionary

Oxford English Dictionary also involved in invention of Dictionary to the CD-ROM software. The current and only edition of the OED on CD available for purchase from Oxford University Press, Version 3.1.1 (2007), includes a return to the less restrictive nature of Version 1, with support for hard disk installation, so that the user does not have to insert the CD to use the dictionary. It has been reported that this version will work on operating systems other than Microsoft Windows, using emulation programs. Version 4.0 of the CD, scheduled to be available June 2009, will work with Windows 7 and Mac OS X. This version will use the CD drive for installation, running only from the hard drive (Wikipedia, 2009).

On 14 March 2000, the Oxford English Dictionary Online (OED Online) became available to subscribers. The online database contains the entire *OED2* and is updated quarterly with revisions that will be included in the *OED3* (see below). The online edition is the most up-to-date version of the dictionary available. Whilst the OED web site is not optimised for mobile devices, they have stated that there are plans to provide an APIwhich would enable developers to develop different interfaces for querying the OED (Wikipedia, 2009).

2) Cambridge Advanced Learners Dictionary CD-ROM, Collins COBUILD Advanced Learner's English Dictionary CD-ROM, and Random House Webster's Unabridged Dictionary CD-ROM.

It has quite same basic functions like the first online dictionary system in web-based system. Also solved and translate the desired words from the users. Unlike the first systems which are translate the words through the internet only. The CD-ROM advantages are the system can be used without or with the internet because they provide the hardcopy (CD) to install into the computer. Below are the screen shot of the online dictionary system in CD-ROM application.

Below are the pro and cons of one of the online dictionary system in CD-ROM application which is Collins COBUILD Advanced Learner's English Dictionary CD-ROM (*Collins COBUILD Advanced Learner's English Dictionary, 2009).*

a) Pro

- friendliest, easiest-to-understand definitions on the market (see book review)
- definitions show you how to use a word naturally, not just what it means

- plenty of example sentences (especially if you consider the integrated Wordbank)\

b) Con

- few American recordings
- occasionally gives incomplete or incorrect information on American English
- some phonetic transcriptions can be misleading

C. Online Dictionary in Word Processor Software and Devices

1) Word Processor Software

The first word processors were being created on year 1979. WordStar are the name of the first word processor. It released by Micropro International that was successfully commercial the word processing software program. This software program produced for microcomputers and the best selling program during the early eighties. Word processing can be defined as the manipulation of computer generated text data including creating, editing, storing, retrieving and printing a document. The first computer word processors were line editors, software-writing aids that allowed a programmer to make changes in a line of program code. Altair programmer Michael Shrayer decided to write the manuals for computer programs on the same computers the programs ran on. He wrote the somewhat popular and the actual first PC word processing program, the Electric Pencil in 1976 (The New York Times Company, 2009).

Other early word processor programs worth noting were: Apple Write I, Samna III, Word, WordPerfect and Scripsit (The New York Times Company, 2009). A word processor (more formally known as document preparation system) is a computer application used for the production (including composition, editing, formatting, and possibly printing) of any sort of printable material. Word processor may also refer to an obsolete type of stand-alone office machine, popular in the 1970s and 80s, combining the keyboard text-entry and printing functions of an electric typewriter with a dedicated computer for the editing of text. Although features and design varied between manufacturers and models, with new features added as technology advanced, word processors for several years usually featured a monochrome display and the ability to save documents on memory cards or diskettes. Later models introduced innovations such as spell-checking programs, increased formatting options, and dot-matrix printing. As the more versatile combination of a personal computer and separate printer became commonplace, the word processor as a stand-alone office machine disappeared (Wikipedia, 2009).

Word processors are descended from early *text formatting* tools (sometimes called *text justification* tools, from their only real capability). Word processing was one of the earliest applications for the personal computer in office productivity. Microsoft Word is the most widely used computer word processing system; Microsoft estimates over five hundred million people use the Office suite, which includes Word. There are also many other commercial word processing applications, such as WordPerfect, which dominated the market from the mid-1980s to early-1990s, particularly for machines running Microsoft's MS-DOS operating system. Open-source applications such as Abiword, KWord, LyX and OpenOffice.org Writer are rapidly gaining in popularity. Online word processors such as Google Docs are a relatively new category (Wikipedia, 2009).

Word processing typically implies the presence of text manipulation functions that extend beyond a basic ability to enter and change text, such as automatic generation of (Wikipedia, 2009):

- batch mailings using a form letter template and an address database (also called mail merging);
- indices of keywords and their page numbers;
- tables of contents with section titles and their page numbers;
- tables of figures with caption titles and their page numbers;
- cross-referencing with section or page numbers;
- footnote numbering;
- New versions of a document using variables (e.g. model numbers, product names, etc.)

Other word processing functions include "spell checking" (actually checks against wordlists), "grammar checking" (checks for what seem to be simple grammar errors), and a "thesaurus" function (finds words with similar or opposite meanings). In most languages grammar is very complex, so grammar checkers tend to be unreliable and also require a large amount of RAM. Other common features include collaborative editing, comments and annotations, support for images and diagrams and internal cross-referencing (Wikipedia, 2009).

Most current word processors can calculate various statistics pertaining to a document. These usually include (Wikipedia, 2009):

- Character count, word count, sentence count, line count, paragraph count, page count.
- Word, sentence and paragraph length.
- Editing time.

Errors are common for instance; a dash surrounded by spaces like either of these may be counted as a word (Wikipedia, 2009). The term *word processing* was invented by IBM in the late 1960s. By 1971 it was recognized by the *New York Times* as a "buzz word". A 1971 *Times* article referred to "the brave new world of Word Processing or W/P. That's International

Business Machines talk... I.B.M. introduced W/P about five years ago for its Magnetic Tape Selectric Typewriter and other electronic razzle-dazzle.

2) Devices

An electronic dictionary is either a small handheld computer with integrated reference materials, or a PDA or a smart phone with a dictionary program. Electronic dictionaries are also programs that can be downloaded from the Internet or purchased on a CD-ROM or DVD and installed on a desktop computer or on a laptop, such as an Apple Macintosh or a Windows PC. Other electronic dictionaries can be searched and consulted online on the Internet. The computer-installed dictionaries can often be consulted directly from within any application that uses editable text. The term may be used in a broader sense to refer to the features of a machine-readable dictionary or spell checker. (Wikipedia, 2009)

The content of this electronic dictionary usually only for a corpora single language(monolingual), but others are bilingual dictionaries and translation dictionaries and may also include, medical or legal dictionaries, thesauri, travel dictionaries, dictionaries of idioms and colloquialisms, a guide to pronunciation, a grammar reference, common phrases and collocations, and a dictionary of foreign loan words (Wikipedia, 2009). The electronic dictionary databases can include up to 500,000 headwords and definitions, verb conjugation tables and a grammar reference section. Hand held electronic dictionaries is one of the standard features in electronic dictionary. Some of the features of both hand held dictionaries and software dictionaries include stroke order animations, voice output, handwriting recognition for Kanji and Kana, language-learning programs, a calculator, PDA-like organizer functions, encyclopedias, and time zone and currency converters, and crossword puzzle solvers. Dictionaries that contain data for several languages may have a "jump" or "skip-search" feature that allows users to move between the dictionaries when looking up words, and a reverse translation action that allows further looking up of words displayed in the results (Wikipedia, 2009).

As for the writing system in this electronic dictionary, Roman Script is available on it. But it also available for non-Roman Script, logographic, and right-to-left scripts, including (but not limited to) Arabic, Chinese, Devanagari, Greek, Hebrew, Japanese, Korean, Russian Cyrillic, and Thai. PDAs such as the Palm and the Pocket PC, are small, often pocket-sized personal organizers that can accept various software programs and databases. Full-featured dictionary programs and complete suites of dictionary databases are available. Some models offer stylus or touch screen entry, while others, especially models destined for Asian markets or customized for learners of Asian languages, allow the user to enter complex Asian characters by writing on the screen. It's usually possible to find PDAs, Cellphones, and software optimized for use in the user's native language, which can make them easier to use and more useful than dedicated devices optimized for native speakers of the language the user is trying to learn (Japanese tools, 2009).

III. RESULTS AND ANALYSIS

The system was implemented by using PHP, MYSQL, HTML, JAVASCRIPT and also some CSS coding. The database was connected to localhost in wamp server. Below are the results and analysis to the outcome of the system.

A. Choice of Dictionaries by Users

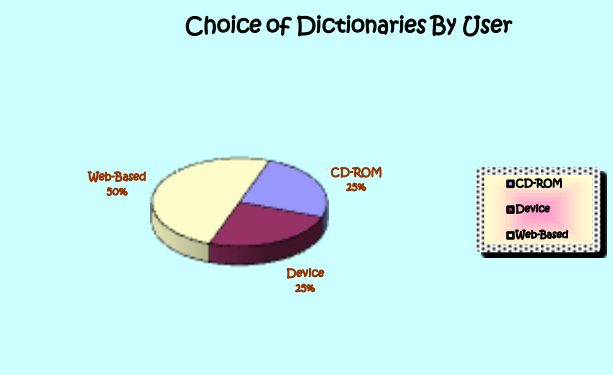

Figure 1 Choice of Dictionaries by Users

As for the analysis part, for the first phase of this stage are I have analyze all the existence dictionaries. As shown in figure 1, 50% of users are used online dictionaries based on web-based system. It is because, online dictionary are easier to be used and some of the system are free to use. Another 25% goes to CD-ROM and 25% goes to Device are used by users. Some of the CD-ROM need to install and not really user-friendly. Same goes to Device which is expensive to buy and some of the software are not common to users.

B. Common Dictionaries Language

Figure 2 Common Dictionaries Language

Figure 2 described the percentage of languages used in the web-based system. We notice that, English language is the most used language of all language by 50% followed by Chinese by 20%. Other languages are Spanish, Italian, and German, all by 10%.

C. Summary of Popular Syntax

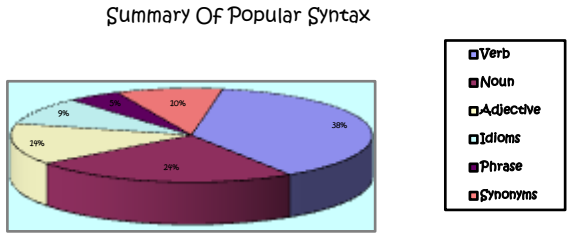

Figure 3 Summary of Popular Syntax

Figure 3 are the summarization of popular syntax that has been used by users. We noticed that verb is the highest percentage that provided in online dictionaries. Follow by noun, adjective, idioms, phrase and synonyms.

IV. CONCLUSION

As a conclusion, the main objective which is to develop a web-based system that will ease users to search dictionaries that meet their requirements has been successfully accomplished. A function to ease users to find the dictionaries that can help them or meet their requirements. Users can only search any dictionaries by enter the specifications or parameter in web-based system that have been created. So, this can save users time to search dictionaries through internet. The system is designed to be a simple and easy to understand even for people who are not quite familiar with technologies nowadays. In this system, the interfaces are design as a user-friendly for users.The major thing that I learned is how to develop working system and web-application. I learned how to manage the work and time for this project for effective outcomes. PHP and HTML is very new for me and I learned how to write a code for some basic functions.Although this system is done, but it is still can be improved for future plans. It can be an
efficient system and more functions can be add into this web-based system to become more interactive.

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Analysis on using 3D approach in learning for Electromagnetic Theory (3D-EmT)

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Abstract— **3D-EmT is an type of courseware developed especially used by engineering students and lecturers. It is an interactive courseware provided with three dimensional (3D) method to help students enhance their imagination and understanding of the electromagnetic theory subject. It is also believed will help them to create high imagination. The discussion of this paper is to explain about analysis data of using 3D approach in using courseware for engineering student and focus on Electromagnetic Theory subject.**

Keywords-component; Courseware, Electromagnetic Theory, 3D approach, constant coordinate surfaces

I. INTRODUCTION

Courseware is always used in teaching and learning environment because of its function and attraction in helping student's gaining more knowledge in learning. When users get a better result in academic while using courseware, the courseware can be categorized as excellent courseware. However, some of courseware is not fulfill the requirement by user as user using the courseware, but level of knowledge is not increased especially in engineering subject or more specific, physics. The discussion of this paper is to explain about analysis data of using 3D approach in using courseware for engineering student and focus on Electromagnetic Theory subject. The product of this research is known as 3D-EmT courseware. The test have been done to the UTeM's engineering students, number of samples that have been used is about 60 students which is 10% of the overall students that took EMT subject. To test the learning session, the group was divided by two which are conventional group and experimental group. Besides that, the courseware also has been tested for the usability term, so samples are given with questionnaires to test the usability of the courseware. Subject matter expert also involved in this analysis, they are from education background which are EMT's lecturers to test the learning content, 3d expert to test the 3d, and multimedia expert to test the multimedia elements in the courseware. The results gathered will show the level of effectiveness by using 3D approach that has been applied to the courseware for the learning session. This system is delivered thru network which is internet so that it can easily browsed by user anytime and anywhere. Only one chapter was covered using 3D approach. The rest of the chapter is using 2D elements. Contribution of this research hopefully can enhance student's performance in electromagnetic theory besides increasing their ability for high imagination.

II. PROBLEM STATEMENT

Some interview and questionnaires have been done with a few EMT lecturers, and the results shows that this subject is the most difficult subject for student to score. It is provided with the statement by Sadiku which he said that student cannot imagine on their learning and they cannot imagine how to apply it in the future [1] which it refers to EMT subject in his book. Besides that, this subject needs high imagination by students to imagine the theory part. By using this 3D Virtual Environments (VEs) can help people in learning through direct experience by visualizing concepts and performing tasks in a reproduction of the real world or in completely fictional worlds that are suited to the learning task [2]. From the research that have been done, it is found that learning using 3D environment approach have high potential to situate learner within a meaningful context to a much greater extent than a traditional interactive multimedia environment [3].
Besides that, the used of the technology gadget also make students becomes more successful because it is really helpful in generating ideas and developing creativity. Generally,

technology helps in making teaching and learning become more fun, learning competing and full of information [4]

III. Multimedia And 3D In Education

Multimedia is a combination of two differences words which multi means many and media is come from word medium that refers to tools for delivering something in terms of mass communication such as papers, magazines and television, (Dewan Bahasa dan Pustaka). According to Vaughan, multimedia can be defined as any combination of digitally manipulate text, art, photograph, sound, animation, and video delivered by computer or other electronic or digitally manipulated means [5]. According to mediacollege.com (2012), 3d can be define as an object that have depth (length), height and width. From the research that have been done, most of the 3d application have been used in anatomy, biology and astronomy however there are some used widely in engineering field because this 3d analysis makes possibility to model the full geometry of the device [6] [7].

Combination of multimedia and three dimensions (3D) is believed can make learning environment become more interesting. Some topics are easier to teach by using this technique because students or learner can visualize it in 3D. The application that incorporate 3D manipulation and 3D object viewing will become increasingly prevalent [8].

IV. 3D-EmT Courseware

The development of 3D-EmT courseware is based on ADDIE model. There are many good models that can be customized to meet specific needs, but ADDIE is a commonly used approach that can be effective in almost every situation (17). There are five phases involved in the model which are: analysis, design, development, implementation and evaluation. Figure. 1 show the ADDIE model that has been implementing while doing this project. For the first phase, which is analysis, preliminary analysis have been done, and as a result hardest subtopic and suitable method have been identified. For the second phase, which is Design, Instructional model (IDM) and conceptual model been created and developed. Interface of the courseware also determined, on the next phase is development. In this the integration of interface development and content development, then prototype is done.

The most important part on this report is implementation which is the fourth phase in ADDIE model. In this phase Formative evaluation will be done to gather feedback or responses from the subject matter expert and users, then some modification will be done on the prototype. Last phase is Evaluation, which to measure objectives of the research have been achieved. To determine the result, summative evaluation is taking part in this phase.

Figure1. ADDIE Model

Instructional Design Model

ID model for the development of 3D-EmT courseware in educational for the EmT subject based on technology integration. The core of teaching and learning process based on teaching theory and pedagogy. The purpose of the model to increase the knowledge of Constant Coordinate and Transformation high level thinking skills and scientific skills within the student of the Physics science. The ID model for 3D-EmT courseware is showed below.

The development of the model based on educational environment such as:

a. Physics approach for this subject.

b. Learning modules includes in the courseware.
c. Learning sequence.
d. Teaching and learning through multimedia as delivery.
e. Learningapproach

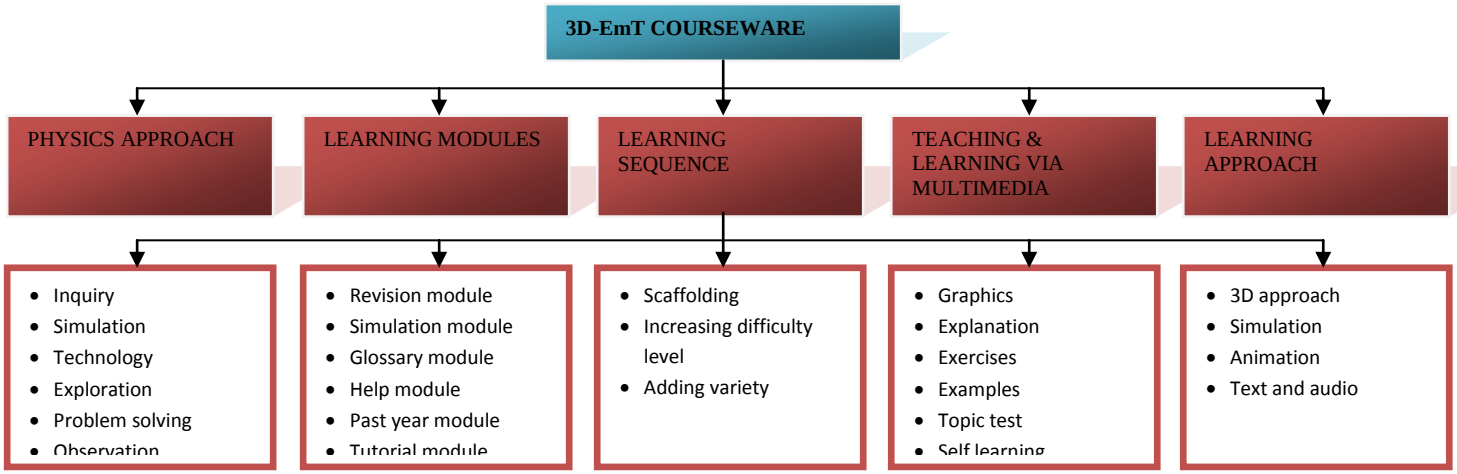

Figure 2. ID Model for 3D-EmT cCourseware

Courseware Modules

Learning content that have been added in the courseware are Revision modules that include Notes and Mind Map, Help module, Simulation module, Glossary module, Past Year module, and Tutorial module. Below are the details about each module.

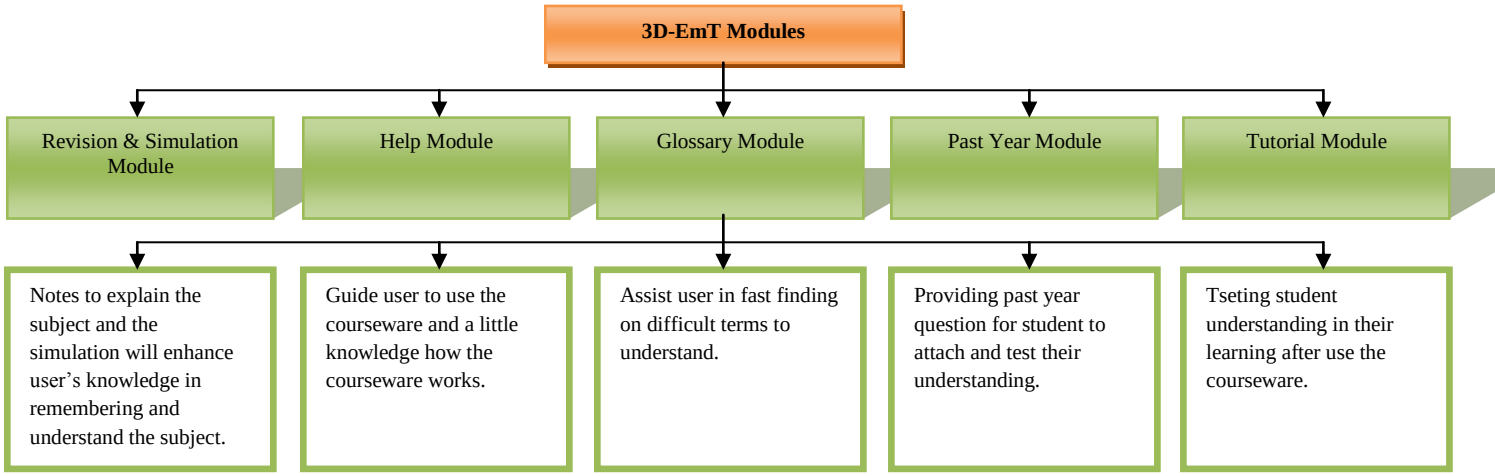

Figure3. Courseware Module in the 3D-EmT Courseware

Prototype

The prototype applied the media usages namely images, sound and text in all screen. Figureure below show some screen shots of the courseware. The audio instruction guide users to use the courseware besides text provided. The images, animation and video will support for the visual explanation so that use can be more understand about the topic. The note interface consists of three parts of note which locating notes content for Pre-Calculus subtopic, Coordinate System & Transformation subtopic, and Calculus in Electromagnetic Application subtopic in the courseware which is the first interface user will be shown when using the courseware. Besides that, on the left of screen, it provide static button which means it will appear in all screen so that navigation will become much better and easier. It is static to the whole interface in the courseware.

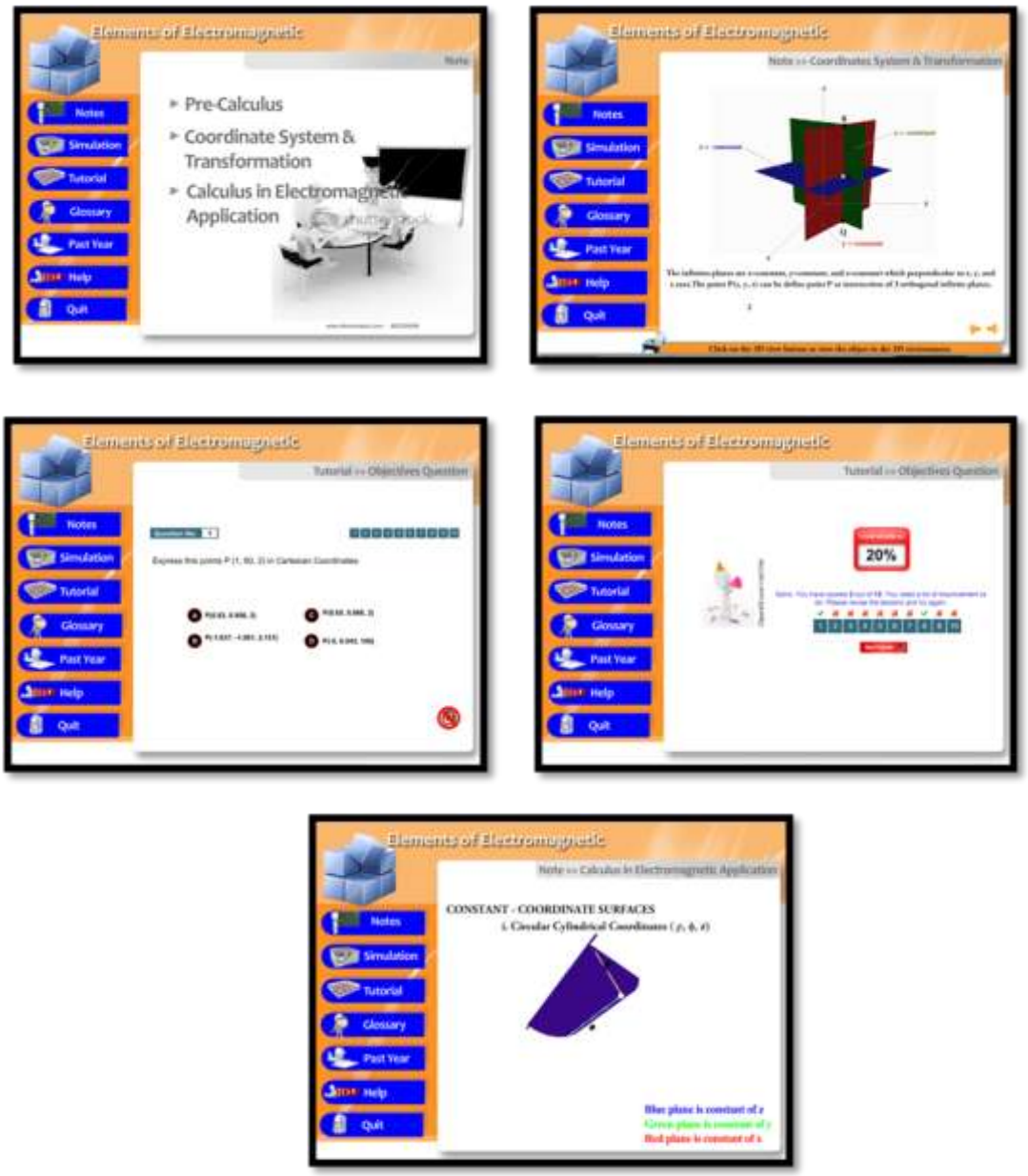

Figure 4. Some screen shot of the courseware

V. RESULTS AND ANALYSIS

In order to answer research question number three, a set of questionnaire have been distributed to 30 students from experimental group. The questionnaire is consists of three parts which are usability of EmT Courseware, perception on courseware and perception on worksheet. Each item in the category was accompanied by a 5-point Likert scale, with 1 denoting the most disagreeable and 5 denoting the most agreeable. This result is important to answer the research question that had been developed. Every results will be discuss below.

Learnability

From the data shown in

, based on the frequency of the participants, it shows that almost all of them chose 'Agree' for all the question. The total score reflects the percentage of learnability scope with the courseware are easy to handled and help in learning process are 80%, the courseware can be used without any problem is

73.3%. This is then followed by courseware can be handled based on learning process from the beginning to the end which are 80% and standard and Learning activities such as printing helps students in sharing knowledge for EMT subject is 76.7%. The mean of Percentage, 77.5% is a strong indication that the courseware is able to have learning value.

Table 1. Frequency of participants and percentage of Learnability

	1	**2**	**3**	**4**	**5**	**Percentage (%)**
1. This courseware are easy to handled and help in learning process.		1	5	19	5	80
2. The courseware can be used without any problem.		2	6	19	3	73.3
3. The courseware can be handled based on learning process from the beginning to the end.		1	5	19	5	80
4. Learning activities such as printing helps students in sharing knowledge for EMT subject.		1	6	16	7	76.7
Mean of Percentage						77.5

Effectiveness

In terms of Effectiveness, the prototype can be said effective because the mean of the criteria is about 73.3% and most of the criteria in this field are agreed by the user. However there are two criteria that show low percentage which are 63.3%, it might be because the simulation world is new to them and also they are newly exposed to the courseware concept as their learning method.

Table2. Frequency of participants and percentage of Effectiveness

	1	**2**	**3**	**4**	**5**	**Percentage (%)**
1. EMT courseware makes me easy to understand the subject learned effectively.			13	11	6	56.7
2. The simulation inside are easy to be followed.		1	10	14	5	63.3
3. The courseware makes me to think.		1	10	14	5	63.3
4. Integration of media such as audio, graphic, animation, video and simulation are suitable with the topic and help me easy to learn.			2	18	10	93.3
5. Tutorial module is suitable and realistic with simulation module and helps me to gather knowledge.		2	3	18	7	83.3
6. The used of EMT courseware are easy and help me to understand the concept of EMT subject		1	5	18	6	80
Mean of Percentage						73.3

Ease of use

In terms of ease of use, it shows that the frequency of the participant who selected the scale 'Agree' and 'Strongly Agree' is less than shown by learnability. The prototype is full with multimedia elements and interactivity and simulation as it will help students to use the courseware. The interface part shows that 70% said that the graphic is clear, suitable, consistence, easy and attractive. Meanwhile highly core is text which is 80% said that the text is easy to read and explanation easy to understand. Then followed by graphics which is 78% agree that the graphic is good and suitable. Next is Interactivity and simulation which shows the low percentage which are 62% and 65.8%. However the mean of the ease of use still can be accepted which are 73.3%.

Table 3. Frequency of participants and percentage of ease of use

	1	**2**	**3**	**4**	**5**	**Percentage (%)**
1. Interface		1	8	15	8	70
2. Text		1	5	17	8	80.7
3. Graphics		1	6	13	10	78
4. Interactivity		3	8	12	7	62
5. Simulation		1	6	17	6	65.8
Mean of Percentage						73.3

Flexibility

Table

Table 4 shows that the lowest mean percentage among all of the criteria, there are 53.3% for rate saying that the courseware easy to crash and hang, however they still can do the test on the courseware with their own ability with the percentage is 73.3%. The mean for the flexibility is 60%. Improvement still have to made to make sure that the problem should be solved, one of the reason identified the system easy to hang and crash is because the file size for the 3D model implements is big, and internet connection is slow.

Table 4.Frequency of participants and percentage of Flexibility

	1	**2**	**3**	**4**	**5**	**Percentage (%)**
1. The courseware is not easy to crash			14	11	5	53.3
2. There is no problem with the courseware and is not easy to hang.	1	2	12	12	4	53.3
3. Users are easily do test based on their ability with the courseware.	1	2	6	19	3	73.3
Mean of Percentage						60

Attitude

Table 5 illustrates the percentage of attitude. As overall conclusion the mean of the percentage for attitude can be accepted as it shows 76.3% agree and strongly agree with the courseware that can give them positive impact and feeling.

Table 5. Frequency of participants and percentage of Attitude

	1	**2**	**3**	**4**	**5**	**Percentage (%)**
1. The courseware can motivate me.		2	3	22	3	83.3
2. There is no problem with the courseware and is not easy to hang.			4	22	4	86.7
3. Users are easily do test based on their ability with the courseware.			7	16	7	76.7
4. Presentation in the courseware is suitable and not hurt students feeling.		1	9	14	6	66.7
5. The courseware is suitable with my achievement.		3	7	17	3	66.7
6. The courseware can stimulate and develop students mind.			7	18	5	76.7
7. The courseware makes me learned in collaborative way and i'm happy while learning.		1	6	15	8	76.7
8. The courseware makes me more responsible while learning with the printing section.		3	6	18	3	70
9. It helps students become more creative.			5	16	9	83.3
10. The courseware can enhance my interest in EMT subject, and make the subject learned become more happily.		1	6	11	12	76.7
Mean of Percentage						76.3

Perception on worksheet

The last result can be shown in the Table 6 which shows the perception on worksheet. The worksheet can be accepted because 78.9% mean agree that the worksheet is suitable with the syllabus.

Perception on software

Table Table 7 presents perception on software, and overall percentage is about 80.5% which means the user are satisfied and with the courseware. However there is one part that shows user is less happy while using the courseware, it might be because of the new exposure using standalone technique while learning in their learning session.

Table 6. Frequency of participants and percentage of perception on Software

	1	**2**	**3**	**4**	**5**	**Percentage (%)**
1. Software is easy to understand.		1	4	11	14	83.3
2. The software attracts student's interest in leaning EMT subject.			6	14	10	80
3. Students can understand the concept better with the software.			6	14	10	80
4. Students can apply EMT concept with their surroundings.	1		4	14	12	86.7
5. EMT's learning become more easily with the software.			3	20	7	90
6. The used of the software is happily.		1	9	14	6	66.7
7. Activities done are easy and happy.	1		2	20	8	93.3
8. The software allowed students to learn according to their ability.			6	16	8	80
9. Students interest on EMT subject increases after use the software.	2		9	13	8	70
10. Activities done with the software helps students to understand the important of EMT in life.	1	1	6	20	3	76.7
11. The software stimulates student thinking skills.	1	1	5	16	8	80
12. The software stimulates the use of ICT as knowledge source.		1	5	16	8	80
13. The software helps students in conquering scientific skills.			6	15	9	80
Mean of Percentage						80.5

Table 7. Frequency of participants and percentage of perception on Worksheet

	1	**2**	**3**	**4**	**5**	**Percentage (%)**
1. Questions are followed EMT syllabus.		1		21	8	96.7
2. Graphics and Figureures easy to follow.			6	17	7	80
3. Question arrangements are suitable.		3	4	17	6	76.7
4. Question need high critical thinking (made application and differences).		2	6	18	4	73.3
5. Worksheets help me in better understanding about constant coordinate concept.		2	5	19	4	76.7
6. Worksheets help me implementing EMT in daily life.		1	8	19	2	70
Mean of Percentage						78.9

VI. CONCLUSION

Implementing 3D approach in the courseware for learning is one of the key to achieve a usable ad well accepted system. The use of the 3D is to help student on visualizing their learning and they will easier on memorizing any topic covered. The variety of 3D object while learning will make learning session become more interesting and attractive. To prove this, evaluation should be done on testing the effectiveness of the courseware so that it can be accepted. Hence, the contribution of this project is to suggest the usage of 3D approach can be as one of the visualization tools.

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AR + 3D: An Unconventional Method in Teaching Language Skills for Dyslexic Children

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Abstract— **Dyslexia is described as a combination of abilities and difficulties which affect a learning process. It is genetically inherited and has no cure. However, early detection and treatment may reduce the level of dyslexia in a person. In the past, multisensory approach has proven to give positive learning outcome to dyslexics. Using technology such as augmented reality (AR) and 3D animation technologies was deemed as one of the approaches in helping children with dyslexia to engage and learn language skills. AR uses marker tracking to project the 3D object to viewer. The main goal of this study is to use AR combined with 3D animation as another multisensory learning approach to help children diagnosed with dyslexia in understanding Bahasa Malayu syllables approach.**

Keywords-*dyslexia, augmented reality, single marker*

I. INTRODUCTION

Dyslexia is a concerning issue resulted from a biological difference in the brain. Dyslexia can occur regardless of a person's age. A person with dyslexia does not affect their intelligence and creativity. There are not many tools in teaching kids with dyslexia in Malaysia. 3D animation with AR is one of the less explored methods in teaching dyslexic children. With the application of AR and 3D animation, it allows dyslexic children to be familiar with the environment and objects. It also allows an informal learning that is easily accessible which may prove particularly effective in engaging dyslexic students.

II. BACKGROUND

A. Dyslexia

There is no universally agreed definition of dyslexia. It is a disorder manifested by difficulty learning to read, despite conventional instruction, adequate intelligence and socio-cultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin. It affects up to 10 per cent of the population to some degree and is most commonly characterised by difficulties with the acquisition of reading, spelling and writing skills.

Early research involving post-mortem examinations revealed differences in the structure of the brains of dyslexic individuals, particularly in the language areas, from those of non-dyslexic individuals as mentioned in A Framework of Understanding Dyslexia guide book. A recent theory found that a difference in structure or dysfunction in the cerebellum (the 'hind brain', thought to be responsible for dexterity and automaticity) offers an explanation for all the symptoms of dyslexia. It affects speech processing, as well as more general motor controlprocesses including time estimation and balance. Information from the language area of the brain and the magnocellular regions of the brain is processed through the cerebellum, and weaknesses in any or

all of these areas could account for the different types and degrees of dyslexia.

There is no single approach or teaching methods that will work with every dyslexic. Individual dyslexics have different level of difficulties and have different responds to every kind of approach. One of the ways of teaching is by using multi-sensory approach with touch, movement, audio and visual. Computer technologies may provide improved learning environments for many students.

B. Dyslexia in Malaysia

It is estimated that 1 in every 20 Malaysian students are dyslexics (Kuala Lumpur Dyslexia Association, 2006). It is supported by the figures from Ministry of Education that there are roughly 315,000 primary school children in Malaysia are potentially dyslexics.

Malaysia has quite the number of dyslexia associations. Dyslexia Association of Malaysia (DAM) is one of the handful numbers of association in Malaysia. DAM focuses in using multisensory approach where a child is taught using more than one of his or hers senses as it has come out with positive feedback from the children.

Dyslexia program was initiated by the Education Ministry in 2004 where "Sekolah Kebangsaan Taman Tun Dr. Ismail" was the first school. At present, it is estimated around 5% or 314,000 of school going children in Malaysia are dyslexic (New Straits Times, 2009). The number of schools and trained personnel addressing the problems are relatively small; there are only about 30 schools that offer special programs for the dyslexic and 100 trained teachers in this field (Devaraj & Roslan, 2006; New Straits Times, 2009). Furthermore, due to the lack of knowledge, dyslexic children are left behind and often misjudged as being lazy and slow learners (low ability children with low IQ). Malaysia still lacks materials and experts in the field (Lee, 2008; Devaraj & Roslan, 2006; Gomez, 2004).

The Standard Curriculum for Primary Schools (KSSR) has been implemented in early 2011 as a new curriculum for primary schools by the Malaysian Ministry of Education. The main objective is to ensure the capability of the Malaysian nation in gaining knowledge, skills and competencies; and value. The six main areas in KSSR are (i) communication; (ii) spiritual attitude and values; (iii) humanitarianism; (iv) literacy in science and technology; (v) physical and personal development and physical appearance.

III. AUGMENTED REALITY

AR is also known as an innovative tool (Azuma et al, 2001). It is a variation of a virtual reality (VR). While VR completely immerse a user in a virtual world, the AR environment allows a user to see both real and virtual objects.It offers a lot of benefits in education, including the cost for hardware and software; user experience and satisfaction; and the potential of AR in education. AR allows user to interact with the virtual content. It combines real and virtual objects in real environments, run interactively in real time and register objects in the two environments simultaneously (Azuma et al, 2001).

AR is an empower tool for education that makes learning fun and attractive to everyone. It is a spontaneous, user friendly interaction, and able to bring a better understanding in the teaching and learning process. The suggested technique to teach dyslexic is by applying the multisensory method in teaching (Learning Disabilities Association America, 1998).

There are three types of markers that are available for tracking. Single marker, multiple markers and markerless.

A. Markers

A single marker is the most basic way of tracking. In single marker tracking, one unique marker is scanned at one time. Multiple markers use two or more markers at one time during tracking. The camera detects both markers and project objects on each marker. Another type of marker is markerless. Markerless detection uses hand gesture interfaces to be able to project the object.

B. Advantages and Disadvantages

- A single marker is the easiest marker to be detected. It does not require high processing unit to enable it to appear. But with only single markers, we may only create an animation that is not interconnected with another animation. This might cause problems where by some information needs to be delivered with the collaboration of more than one marker.
- Multiple markers allow two or more markers to be used at once. Multiple markers are suitable to make animations between different markers but require higher processing unit and time.
- Markerless is the most advance type of tracking. It is ubiquitous. Markerless tracking allows the camera to detect any other object other than black square type markers that has been set. Markerless is the latest finding and it still has problems in terms of calibration.

IV. PROTOTYPE

A prototype was created to test the effectiveness of AR to be used in teaching children with dyslexia syllables in Bahasa Melayu. The famous 'Bapaku Pulang' nursery rhyme was chosen for this prototype where it matches the consonants and vocals that built up the syllables.

There are not many tools in teaching kids with dyslexia in Malaysia. 3D animation with AR is one of the less explored methods in teaching dyslexic children. With the application of AR and 3D animation, it allows dyslexic children to be familiar with the environment and objects. It also allows an informal learning that is easily accessible which may prove particularly effective in engaging dyslexic students.

The use of single marker and multiple markers are applied. Each subject or section has its own unique marker/s. When the markers are scanned, the image will be

generated on screen. A few tools are used to create an augmented reality world such as FLARManager, FLARToolkit and Papervision3D.

This prototype is one of the initiatives in helping dyslexics process information in a multisensory way by combining an auditory, visual and psychomotor skills. To assist students with the image recognition, the markers used for tracking have reference to the 3D objects shown (Fig.1). In this example, the use of car as a marker was linked to the phrase of *"Bapaku belikan kereta"*.

Fig. 1: One of the AR markers used for tracking

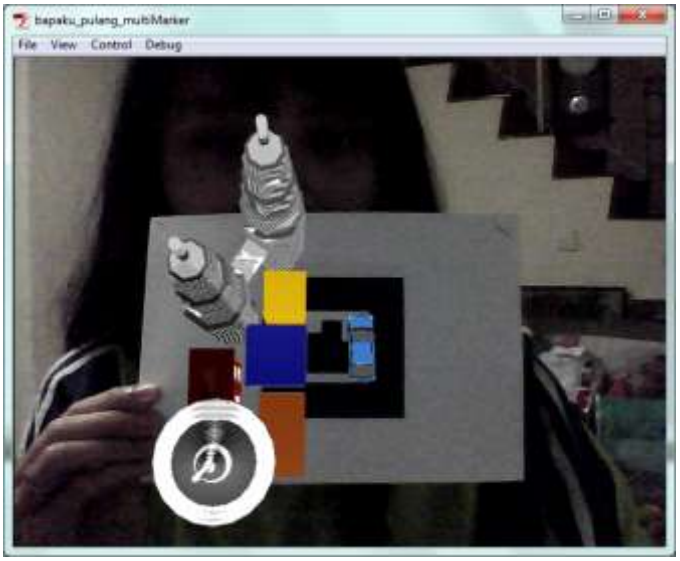

Fig. 2: An example of 3D + AR : Bapaku Pulang Scene

V. CONCLUSION

Dyslexia is a common learning disability that most citizens of Malaysia are not aware of. Dyslexics have problems in differentiating alphabets or words because it looks the same in their eyes. There have been a lot of tool developed by other countries in helping dyslexic learns syllables but there are only a few in Malaysia.

Augmented reality is a multi sensory tool just like virtual reality. While virtual realities really immerse users into their world, augmented reality uses both real and virtual objects. This ongoing study will look more into the usefulness of an augmented reality tool in helping dyslexic children understand syllables compared to other conventional methods.

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Case Study of Using GSP in Creating Concept Image on Topic "Circle"

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Abstract— **The purposes of this research are to develop imaginative concepts and to study the achievement test as well as the attitudes towards acquiring knowledge regarding the Geometer's Sketchpad Program (GSP) on topic "Circle". The research samples are forty students majoring in Mathematics who register "Computer Assisted Instruction in Mathematics" offered by Valaya Alongkorn Rajabhat University under the Royal Patronage in the second semester of the 2011 academic year. Fifteen-hour lesson plans, proficiency paper tests and an attitude-acquiring questionnaire are employed as research instruments. Before doing the activity in studying with GSP, students have to do their pre-test. They also have to do post - test and give their attitude test after finish their class. It is found that students have their knowledge before learning in an "Unsatisfactory" range and between studying in an "Excellent" range. However, after studying, their knowledge is in "satisfactory" range. The average of the achievement of students after studying is higher than before at the level of significance .01. Students have preference for the GSP program application in a "moderate level". Furthermore, students' action conceptual understanding is satisfactory, but their process conceptual understanding and structural conceptual are unsatisfactory. That means they have some basic knowledge but they are not able to apply their knowledge to solve some advance problems.**

Keywords: GSP; Circle; Concept Image; Action Conceptual; Process Conceptual; Structural Conceptual

I. INTRODUCTION

Mathematics contents are abstracted by their natures and they are communicated with symbols that are not so easy to learn and to understand instantly. Thus, in Mathematics teaching, the students must be instructed so that they have reasonable, systematic and creative thinking abilities in solving problems. To induce such skills in class, it is necessary for students to know and understand the original of each topic. For the topic "Circle", its contents involve circle components including central angle, inscribed angle, chords, and tangent to the circle. Formerly, teachers usually tell the properties of circle and ask students to remember such properties. This teaching did not help students to understand and to memorize the concept; therefore students were not able to apply their knowledge in solving problems. Hiebert & Lefevre [1], referred that both procedural and conceptual knowledge are considered as necessary aspects of mathematical understanding.

In creating mathematics concept, it is necessary for students to have the "concept image", because students cannot solve various problems well by only attempting to memorize the "concept definition". The concept definition differs from the concept image: the concept definition is to define mathematical meaning in form of words or messages whereas the concept image compose of more components stimulated by corresponding stimuli; Visual Representation, Mental Pictures, Experiences, and Impressions. Tall and Vinner [2] wrote that "The concept image consists of all cognitive structure in the individual's mind that is associated with a given concept". The procedure of creating the concept image based on the "Action-Process-Structure Theory" which was developed by Heingraj has five steps: Interiorization, Coordination, Reversal, Generalization, and Encapsulation [3]. Students can apply these five steps in creating their own understanding for solving mathematics problems and link to new knowledge.

GSP is software that can be used in teaching geometry, algebra, trigonometry, and calculus. It was found from many resources that the GSP software can efficiently improve mathematical thinking skills and learning attitudes of the learners. However, for last 10 years, there are only 14 GSP-based reports in Thailand's databases and all appeared in geometry-area. The amount of researches is very few when compare with research in field of educational technology.
The authors are interested in studying and developing the concept image in order to improve the learning achievements of mathematics students and their attitudes on topic "Circle" by using GSP. This research is an

experimental research which used the procedure for creating concept image developed by Heingraj [3].

II. TOOLS AND PROCESSES

Tools used in this research are pre-test, lesson plan which compose of activity document, instruction document, practice document, attitude-acquiring questionnaire and achievement test. Activity and instruction documents were used during learning in class, where as practice document was used out of class. Problems in instruction document and practice document and achievement test are resemblance, but problems in achievement test are more complicated. There are three groups of questions in all documents except in activity document. Such questions are used to evaluate level of knowledge associated with the concept image as follows:

1. Action conceptual understanding

In this level, the students can describe what are given in the problems and what are the questions of the problems.

2. Process conceptual understanding

In this level, the students can step-by-step manipulate the given information in form of imaginative image in order to make proper solutions and know possible relationships among the information.

3. Structural conceptual understanding

In this level, the students can give the correct answers to the problems.

A sample group is forty mathematics students from education department who have registered subject "Computer Assisted Instruction in Mathematics" at Valaya Alongkorn Rajabhat University under the Royal Patronage in the second semester of the academic year 2011. The students were asked to perform pre-test before class. In the class, students have to do the activity according to the concept image creating steps as follows:

Step 1 (Interiorization). This step involves explanation, comparison, and reflection of students' thinking that related to the given information. The students should have the ability to find out the conclusions from the given information and use them to create any corresponding images.

Step 2 (Coordination). In this step, the students should be able to create new information from existed information by creating possible connections between available information and created images in order to make new conclusions. This means, the students should be able to explain relationships between the created images and the given information.

Step 3 (Reversal). In this step, the students should be able to write down results obtained from the images that created under the given instructions.

Step 4 (Generalization). In this step, the students should be able to generate their conclusions or create new images in imaginative forms.

Step 5 (Encapsulation). This step is the explanation of the imaginative images in message forms. The students should be able to write down new corresponding conclusions in concept definition.

There are cooperative-learning between teacher and students during the activity. Some of students can chair their idea to others on each subtopic by presenting in front of the class.

Two examples of problems in activity document are illustrated. In each example, students were asked to do step by step and gave the answers of each question.Students were asked to explain "What do they learn from this activity", and to give the conclusion in concept image and concept definition.

Example 1

In step 1,students have to do along the given processes.

- Draw a circle which has center O and radius r.
- Draw points A, B, andCon circumference of circle respectively.
- Draw $\overline{AC}$, $\overline{BC}$, $\overline{AO}$ and $\overline{BO}$.
- Measure $A\hat{C}B$ and $A\hat{O}B$.

$A\hat{C}B$ is called inscribed angle and $A\hat{O}B$ is called central angle.

- Move a point C along the circumference of circle and observe the value of $A\hat{C}B$.

Question: What is the relationship between $A\hat{C}B$ and $A\hat{O}B$.

In step 2 and step 3, students have to report the results from the above processes.

In step 4, students have to write the conclusion in concept image.

In step 5, students have to write the conclusion in concept definition.

From example 1, students learned that the central angle equals to two times of the inscribed angle which have the same intercept and serve on the same arc.

Example 2

In step 1, students have to do along the given processes.

- Draw a circle which has center O and radius r.
- Draw points A, B, C, X,andYon circumference of circle respectively.
- Draw $\overline{AX}$, $\overline{AY}$, $\overline{BX}$, $\overline{BY}$, $\overline{CX}$ and $\overline{CY}$.
- Measure $X\hat{A}Y$, $X\hat{B}Y$ and $X\hat{C}Y$.

Question: What is the relationship between $X\hat{A}Y$, $X\hat{B}Y$ and $X\hat{C}Y$?

- Suppose $X\hat{A}Y$, $X\hat{B}Y$ and $X\hat{C}Y$ are on major arc of the circle. Move point A to minor arc of $\overset{\frown}{XY}$.

- Measure $X\hat{A}Y$. Find $X\hat{A}Y + X\hat{B}Y$ (or $X\hat{A}Y + X\hat{C}Y$).

Now AXBY (or AXCY) is rectangle inscribed in a circle.

Question: What is the relationship between $X\hat{A}Y$ and $X\hat{B}Y$ (or $X\hat{C}Y$)?

In step 2 and step 3, students have to report the results from the above processes.

In step 4, students have to write the conclusion in concept image.

In step 5, students have to write the conclusion in concept definition.

From example 2, students learned that any inscribed angle which have the same intercept and serve on the same arc are equals. Moreover, the summation of the opposite angle of rectangle inscribed in a circle equals to 180 degree.

After that, each student was asked to apply his/her concept image to solve 28 problems given in an instruction document. In each problem, students must give the answer of the following questions:

1. What is the given information?
2. What is the question in the problem?
3. How to use the information to solve the problem?
4. What is the solution of the problem?

Example of problems in instruction document is illustrated as follow.

LetObe a center of circle. See Fig. 1. $A\hat{D}B$ and $A\hat{C}B$ are inscribed angles with the same intercept. $A\hat{D}B = 38^{\circ}$. Find $A\hat{C}B$ and $A\hat{O}B$.

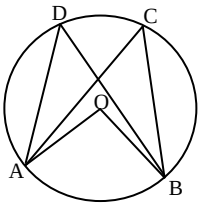

Figure 1.

In this problem, students could use the properties of the angle that they learnt in activity problems and were able to find $A\hat{C}B$ and $A\hat{O}B$ easily.

Students used fifteen hours for learning in class. After that, they had to do the achievement test in 3 hours and also to complete a multiple choices satisfaction questionnaire. The achievement test has 20 problems with total scores 120. Each problem has 4 questions. Question number 1 and number 2 measures the action conceptual understanding, Question number 3 measures the process conceptual understanding, and Question number 4 measure the structural conceptual understanding. The score in question number 3 are three times of others questions.

Example of problems in the achievement test is illustrated as follow.

LetObe a center of circle. B and E are points on the circle. Draw $\overline{EO}$ and diameter $\overline{BF}$. A line passes E and parallel to $\overline{BF}$; a line passes B and parallel to $\overline{EO}$. Suppose these two parallel lines intersect at A as show in Fig. 2. If $B\hat{A}E = 48^{\circ}$, then how many degrees of $C\hat{B}D$?

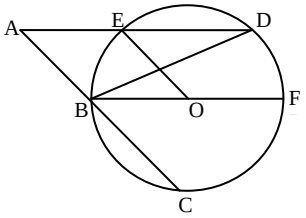

Figure 2.

It was seen from this example that the problem is a little bit difficult than others in the instruction document. Students have to use the knowledge that they learnt from activity document and also their previous knowledge about the angle between the parallel lines.

For evaluating the students in the aspect conceptual understanding, learning achievement, learning behavior and attitude towards the topic "Circle" and GSP utilization, we use the following criterions:

- Level of knowledge associated with the concept image from achievement test

TABLE 1. LENGTH OF SCORES FOR EVALUATING THE CONCEPT IMAGE.

Action conceptual understanding		Process conceptual understanding	Structural conceptual understanding	Range of knowledge
Q.1	*Q.2*	*Q.3*	*Q.4*	
16– 20	16– 20	46– 60	16 – 20	Excellent
11– 15	11– 15	31 – 45	11– 15	Good
6 – 10	6 – 10	16 – 30	6 – 10	Satisfactory
0 – 5	0 – 5	0 – 15	0 – 5	Unsatisfactory

- Level of learning achievement

TABLE 2. LENGTH OF SCORES FOR EVALUATING STUDENTS' KNOWLEDGE

Pre-Test and Achievement Test	Instruction document	Range of knowledge
91 – 120	127 – 168	Excellent
61 – 90	85 – 126	Good
31 – 60	43 – 84	Satisfactory
0 – 30	0 – 42	Unsatisfactory

- Level of learning behavior

3.26-4.00 : very often practice;
2.51-3.25 : often practice;

1.76-2.50 : occasionally practice;
1.00-1.75 : rarely practice.

- Level of attitude towards the topic "Circle" and GSP utilization.

4.21-5.00 : highest satisfactory;
3.41-4.20 : high satisfactory;
2.61-3.40 : moderate satisfactory;
1.81-2.60 : low satisfactory;
1.00-1.80: lowest satisfactory.

III. CONCLUSION

The average of the achievement of students after studying is higher than before at the level of significance .01. From total scores 120, the average score in pre-test is 7 where as in the achievement test equals to 48.10. The learning achievements scores before and after class, of 40 students, are shown in Fig. 3.

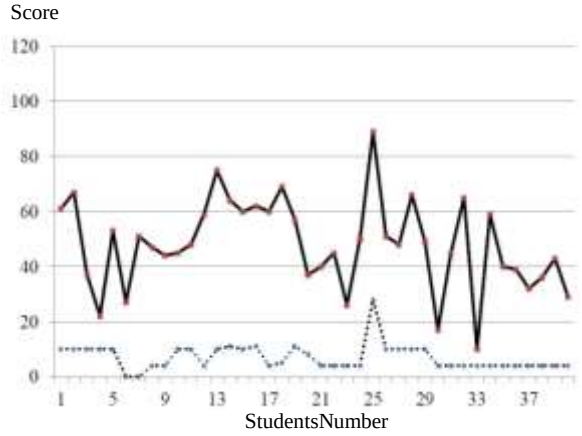

Figure 3.
..... represents Pre-test scores
——— represents Post-test scores

From analyzing the various understandings, it was found that the average score of answering questions number 1 and 2 equal to 13.35, which means that students had "Good" in Action conceptual understanding. But the average score of answering questions number 3 and 4 equal to 17.18 and 4.23 respectively, which mean that they had "Satisfactory" in Process conceptual understanding and had "Unsatisfactory" inStructural conceptual understanding. This indicated that the students are able to describe the information given in the problems and know what the problems ask for, but cannot express their thinking process; therefore they cannot give the answers. Percentage scores of achievement test, classified by image concept understanding of 40 students, are shown in Fig. 4.

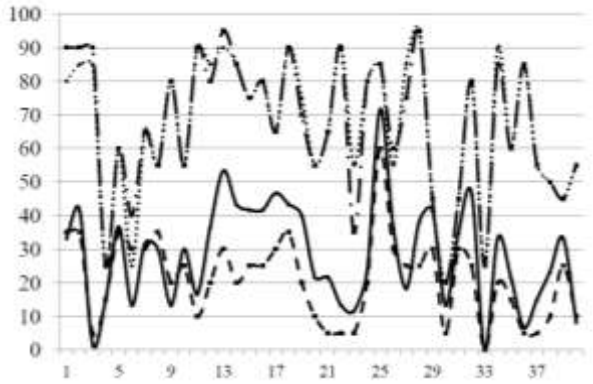

Figure 4.
.....represents answer correctly to question number 1
— represents answer correctly to question number 2
– – represents answer correctly to question number 3
——— represents answer correctly to question number 4

The average score from doing in instruction document equals to 131.05 or 78.01%, which means that the knowledge of students during engagement with instruction is in "Excellent" range as shown in Fig. 5. Therefore, the effect from learning activity can support the students to do their work in instruction document.

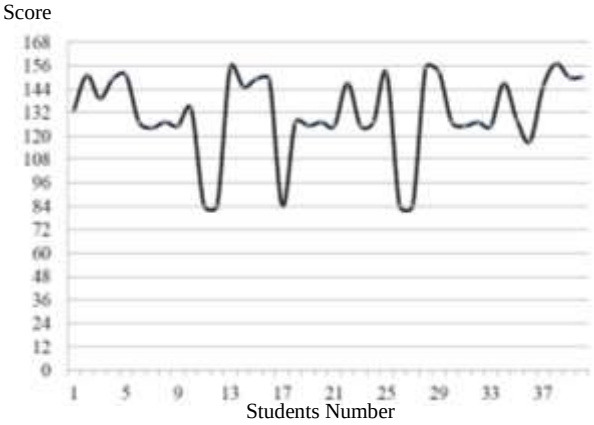

Figure 5. Scores from instruction document engage during class period

It was found from students' answering questionnaire about learning behavior that thirty one students spent their time approximately 1-5 hours per week for repeating the lesson; most of students arrived in class on time and pay normal attention during study in the class. However, before doing the examination, they group themselves to repeat the lessons. Their attitude toward learning Mathematics is in "high satisfactory" range and toward using GSP is in "moderate satisfactory". Moreover, students requested instructor to provide additional period for teaching this topic.

IV. DISCUSSION

Four issues for discussion are considered.

1. Learning achievement before, during, and after class.

It was observed that the average score of pre-test is in "Unsatisfactory" range, the average score during class is in "Excellent" range, and the average score in the achievement test is in "Satisfactory" range. This may be due to:

- The problems assigned in instruction document are not too hard and not complicate. Most students can immediately give the answer after finished reading each item. The problems in the examination paper are difficult and complicate. Therefore, the students did not know how to use their formerly knowledge to build the concepts for analyzing and solving the problems. Such problems are very hard for students who have range of basic mathematics knowledge in an intermediate and weak level.

- Time spent for studying in instruction document is longer than that one spent in examination. During the class, the students can relax and exchange their idea to each other, but for examination period, students have pressure from such given time. However, 15 hours for studying in class were not enough for the students to understand the lessons, because they have to learn about using GSP software and to study in new form of learning activity that they were not familiar with. This may be hard for the students to study both things simultaneously.

- The students were formerly weak in basics mathematics, and lacked of systematic thinking skills. This is accordant to previous work of international team, "The Third International Mathematics and Science Study Repeat (TIMSS)" and "Program for International Student Assessment (PISA)". It was found that mathematics learning achievement and problem solving of the students at lower secondary school level were low and continuously decrease annually.

From the result of the achievement test, students are considered into two groups; the first one was a group that has the improvement in the level "Good", and the second group has the improvement in the level "Satisfactory". Students in first group understand the process associated with the concept image, they can illustrate their thinking and calculate for the solution correctly. Students in the second group also understand in the same manner but did not completely correct. Some knew the way to think but did not know how to explain.

2. Learning behavior

Although students had good learning behavior both in class and out of class, but the performance was still lacked in intensity and continuity because of friend influences. Students should intend to practice exercise by themselves and to understand the content instead of remembrance, so that they are able to solve other problems differing from the given examples. If the behaviors are changed in proper way and are always done both inner and outer class, the students will gain more learning achievements.

3. Attitude in learning mathematics

It was clear that third years mathematic students majoring of education department can understand the nature of mathematics and appreciate to its values and advantages. However, the students still require more learning time which needs to be served. Additional period provision may be an appropriate way in helping students for better understanding the contents and increasing their self-confidence.

4. The GSP usage

From using GSP in studying topic "Circle", it was found that students were able to understand the relationship between "concept definition" and "concept image", but some of them were not able to use the software properly; they did not know how to use command and when one should use that. Using computer software in learning process will help learners to have an idea in solving problem. Enhancing of learning activities by technologies is a good idea; mathematics teachers should apply computer software as a tool for creating learning media of other topics in the future. However, the most importance thing is the preparation of teachers. Teachers should have the ability both in using the context and choosing the suitable technology.

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Form 5 Biology Subject Content: A Concept Paper for 3D animation of Transpiration in Plants

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Abstract—**Three dimensions (3D) would describe any object that occurs on a three-axis Cartesian coordinate system. This concept paper presents the study of the usage of multimedia elements such as audio, video, text, animation and graphics in delivering an effective 3D animation which will cover about one of the topics in secondary school biology subject. The animation can help students to get a better view of the actual process happening in plants rather than just reading text book with static diagrams. The 3D animation application is Form 5 Biology Subject Content: 3D animation of Transpiration in Plants which will cover about the process of transpiration, movement of water from soil up to leaves and types of transpiration.**

***Keywords* – 3D animation, multimedia elements, transpiration in plants**

I. INTRODUCTION

Like animals, plants also lose water. Most of the water is lost through a process called transpiration. It is replaced by the absorption of water from soil through roots. Transpiration is the loss of water vapor from a living plant due to evaporation. A large tree can absorb water at a rate of 1 dm min. However, only 1% of this water is used by its cells for photosynthesis and for turgidity. The remaining 99% evaporates from the leaves and is lost to the atmosphere through transpiration. In most plant, about 90% of transpiration takes place through stomata which are small pores in the epidermis of the leaves. Transpiration also takes place through lenticels [2]. Lenticels are small pores broader by parenchyma and are present in the woody stems [3].

Basically, transpiration is one of the chapters in Biology subject learnt by Form 5 students. In this chapter students will learn about translocation and transpiration. Though textbook remains as the main reference for this topic, it is hard to describe a process when using only images. To deliver the information, animation will be used as it is an alternative to book. Animation is the rapid display of a sequence of 2 Dimensional (2D) or changes of position in 3 Dimensional (3D) artworks or models to create an illusion of movement. For this proposed project, we will be using 3D animation as it is able to visualize the process that is invisible from the naked eye. However, the development of 3D animation has its constraint such as it took long time to develop the models and also for rendering. This animation that will be developed will be focusing on Transpiration only. This 3D animation will take a visual and meaning-based approach to deliver the topic that is much easier for students to understand. The characters used in this animation are leaf, plastic bag, cells and many more. The viewers would be able to see how the characters are moving to make them understand about how transpiration happens. By watching this 3D animation, viewers are able to understand better than just reading textbook because the animation helps to visualize the transpiration process using multimedia elements. For the animation, principle of animation and multimedia elements that will be applied such as audio, video, image and text will be put in studies in details.

II. LITERATURE REVIEW/EXISTING SYSTEM

The existing system that will be reviewed are 3D animations short video which is Biology Form 5: Teaching Courseware, a short animation of Transpiration in Plants and a Form 5 Biology textbook. These related contents are using different approaches to develop and demonstrate the same topic, so that target user can get the info easily. These existing system will be used as a reference and guide in order to develop a better quality of 3D animation.

A. Biology Form 5: Teaching Courseware

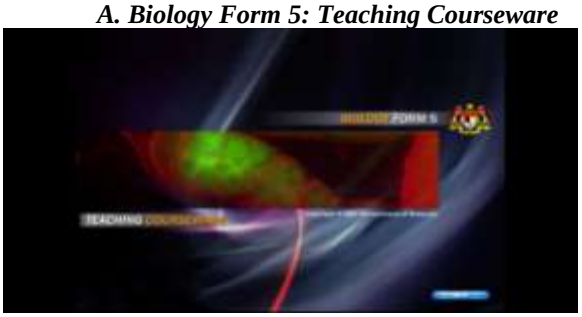

Figure 1 : Biology Form 5 : Teaching Courseware

Biology Form 5: Teaching Courseware is an interactive animations produced by Ministry of Education [4], Government of Malaysia. It is called interactive animations because user need to respond to the animation and then it will give feedbacks. The medium used to deliver the courseware is CD, where it has 25 lessons. Each lesson is based on the textbook. While students are watching the animation, they can refer to textbook. The animation also provides exercises so that students can practice with the teachers.

B. Transpiration in Plants (short animation)

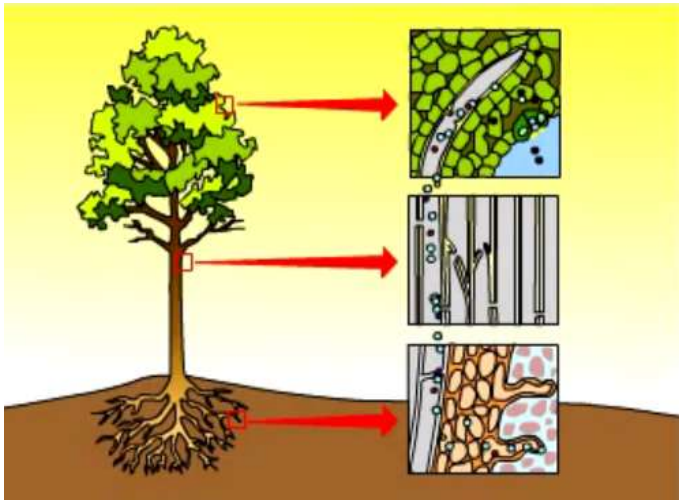

Figure 2 : Transpiration in Plants (Short Animation)

Transpiration in plants is a short video animation produced by Pearson Education .Inc [5]. 2D animation does not look real as it only has 2 dimension which is x-axis and y- axis[4]. In this animation not all subtopics of transpiration were covered as it only covers about the movement of water from the roots to the leaves. This animation has lack of information on transpiration, for example, the importance of transpiration and types of transpiration. In addition, this is not a courseware as it does not have any interactivity in the animation. Students only be able to watch the animation. Also, there was no camera movement as it only shows one scene.

C. Form 5 Biology Textbook

The textbook was released by Kementerian Pelajaran Malaysia (KPM) only for Form 5 students who are taking Biology subject [6]. This textbook provides the details of certain topics using figures. For example, in *Chapter 1 : The Transport of Organic Substances and Water in Plants*, there is a diagram about the movement of water from roots to the leaves. However when it comes to movement, it should be presented as an animation as it can show how the water is moving rather than just a picture which is static. The static picture could not visualize the process of water flowing inside the plant.

TABLE 1 : COMPARISON OF EXISTING SYSTEM

Comparisons	**Biology Form 5 : Teaching Courseware**	**Transpiration in Plants (Short Animation)**	**Form 5 Biology Textbook**
Medium	CD	Website	Book
Approach	Course-ware	Animation	Text-based
Linear/Non-Linear	Non-Linear	Linear	Linear

III. PROPOSED STORYLINE

The proposed animation is in 3D linear animation. The title is Transpiration in Plants. Basically the animation starts with a montage which will show the title of proposed storyline. Camera movement will be emphasized in this animation.

The storyline of the animation begins with a plant in a jungle setting on a rainy day. The process of water flowing from its root to the leaves is visualized using cross section of root, stem and leaf. Additional information on types of transpiration in plants will be included in the animation. The animation would also shows how water vapours happen and being release from the leaves to the atmosphere. The animation will then ends with credits. Figure 3 shows the flow of the story for the animation.

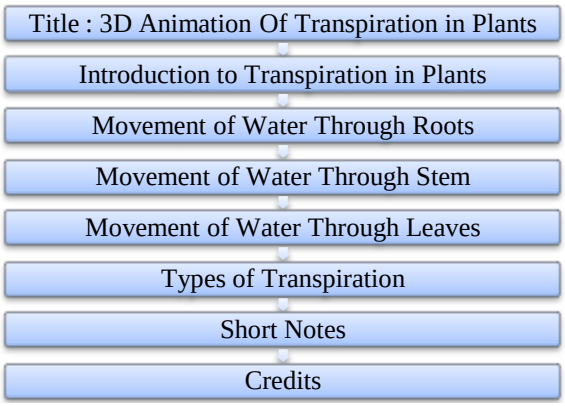

Figure 3 : Animation Flow of 3D Biology Subject Content : Transpiration in Plants

IV. METHODOLOGY

Method that is being used in developing this 3D animation is Multimedia Production Process. There are 3 main stages in the methodology which are Pre-Production, Production and Post-Production.

Figure 4 : Multimedia production process

This paper focuses on the pre-production of the animation where initial interview with a Biology teacher at SMK Bukit Baru has been carried out to identify the requirements for the proposed 3D animation. The textbook is used as the main reference however additional information will be provided in this animation such as the types of transpiration.

Meanwhile the production will involves modeling and animating the scene in selected software while post-production will look into preparing the animation for distribution in DVD platform. The platform has been selected in order to make it playable in the classroom during class in session.

V. PROJECT SPECIFICATION

This 3D animation will be titled as *"Form 5 Biology Subject Content: 3D animation of Transpiration in Plants"*. The main focus of the animation is to visualize the process involves in roots, stems and leaves during the transpiration. Besides the 3D objects, the animation uses audio to narrate the process of the transpiration. Simultaneously, subtitles of the narration will also be displayed at the bottom of each scene. Text is also used to point out the important information in the cells. The combination of audio and text would increase the chance for the students to understand the process described. To create a realistic animation, camera movement and timing are adopted in the animation. Camera angles and movement are used to zoom into the internal cells structure of a plant and also to create interesting point of view. Meanwhile, timing is important to visualize the suction motion of water from roots to the leaves and to show the action happens at the cell's level.

This project will be rendered using Autodesk Maya software with 24 frames per second (fps). This is because it is the standard rate used in commercial animation production and ensures that the animation will run smoother. The animation will be rendered to Audio Video Interleave (.avi) format. AVI file is a container of audio and video data that allows synchronous audiovisual playback. It is the oldest video format. The reason to render into .avi format is because, it has an excellent fidelity of the audio, can be used as a starting point to create playable DVDs, and widely used.

Adobe Premiere Pro CS4 will be used to compile all the rendered video and do the editing to add subtitles and audio.

The complete animation will be delivered in Digital Versatile/Video Disc (DVD) format and the duration is 6 to 7 minutes. The output will be displayed in PAL video format and the screen aspect ratio is 4:3. It will be burned into a DVD-ROM. The cover of the DVD is designed using Adobe Photoshop CS5. Figure 5 to 11 show the scenes and characters that have been developed for the animation.

Figure 5 : Forest

Figure 6 : Plant

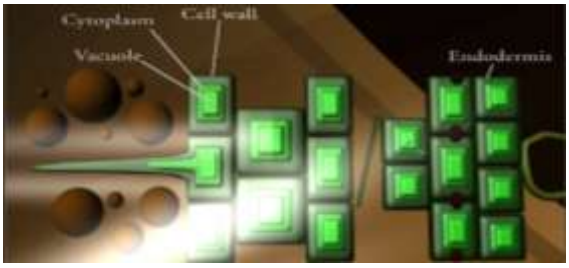

Figure 7 : Cell in Roots

Figure 8 : Cell in Stem

Figure 9 : Cell in Leaves

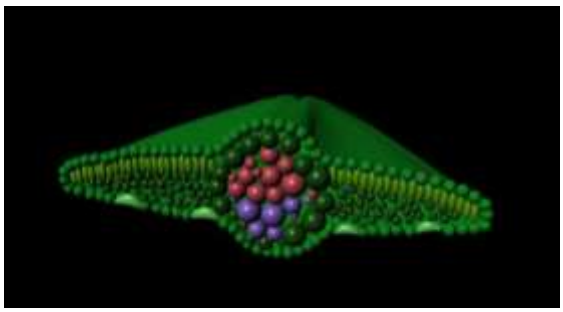

Figure 10 : Leaf's cross section

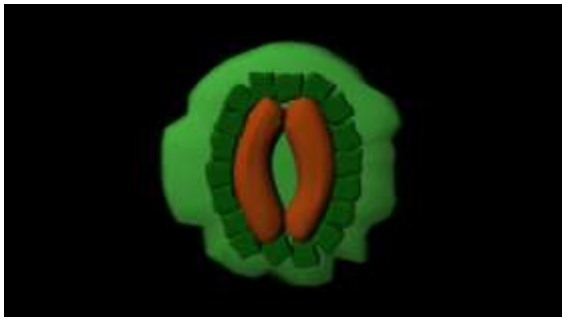

Figure 11 : Stoma

VI.CONCLUSION

This paper demonstrates on effective use of 3D animation and multimedia elements to visualize complex topic, which traditionally requires student's imagination to understand the topic. Based on the initial interview with Biology teacher and the reviews on existing systems, it is agreeable that animation does helps to improve teaching and learning session.

Future work will mostly on the development of this project. This paper covers analysis and design phases. This Form 5 Biology Subject Content: 3D Animation of Transpiration in Plants is going to be developed for students, especially those who are in SPM level. Through the 3D animation, the viewers would be able to see the actual process of transpiration and also identify various types of transpiration.

ACKNOWLEDGMENT

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I AM Elit: Affective Literacy Tool for Challenging Young Children in Rural Schools

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Abstract—**This paper proposes the idea of using I AM ELit, an interactive tool, to teach English language in primary schools for challenging young children between 6 to 8 years old. Challenging young children are often disengaged in traditional classroom environment and need one-to-one attention from teachers. Hence, this proposed interactive tool could potentially be used as an alternative to teaching and learning that provides one-to-one assistance thus creating a more dynamic and interesting environment where children could enjoy and learn. The interactive tool prototype is made available by automatic speech recognition (ASR) technology and intelligent conversational agent that employs text-to-speech (TTS) technology. I AM ELit is designed to model affective mediation to build children's confidence in learning English language in a fun and interesting way. I AM Elit can also be considered as an environmental mediation for learning to take place so that the children are engaged in the learning process through the use of technology. Designed and developed by considering the affective component in learning through mediation model and using rapid application prototyping as the development method, I AM ELit emphasizes how technology can be used to promote affection in an environmental mediation for teachers to enhance teaching and learning of the children. In a pre-testing of the prototype tool, seven primary school children whose literacy level ranges from good to poor participated in the process. The prototype's pre-testing observation were positive and encouraging as the children responded positively towards the use of the tool in learning English.**

Keywords-affective mediation; interactive educational tool; automatic speech recognition.

I. INTRODUCTION

The introduction of the new reformed curriculum for Malaysian primary schools, which is Kurikulum Standard Sekolah Rendah or known as KSSR, emphasises on the importance of literacy. Viewed as the fundamental of future learning, the importance of literacy resonates with National Key Result Area (NKRA) and UNESCO Charter. Thus, there is a need to ensure that all our children, regardless of their academic backgrounds and social status, are able to read and write by the age of 7. However, challenging learners, usually those from lower social economic background, struggle when dealing with literacy activities. Challenging learners in relation this study relates to children who have limited time of attention span, have little exposure to literacy activities both at home and in school and struggle with literacy in the first language (Malay) as well as the target language (English). In a class of learners with limited access and exposure to literacy may be daunting for any teacher to deal with an individual child's problem and difficulties and yet the only remedy to rectify this problem is if the challenging learner is attended to on an individual basis.

Therefore, one of the aims of this work is to help teachers by providing a tool capable to provide immediate intervention to the child on an individual basis while learning the essential literacy skills. In order to capture the children' interest and engage them in learning English, this computer mediated tool, called I Am ELit (Interactive Affective Mediation for English Literacy Development) conveys the concepts of affective mediation in an interactive environment. The key technology implemented to enable interactivity of I Am ELit is automatic speech recognition technology (ASR) and an intelligent conversational agent to 'speak' to the children using text-to-speech (TTS) technology. The ASR enables this mediated tool to actually 'listen' and 'understand' the children spoken responses and immediately give feedback in the form of praises, encouragement, and affective gestures like smiling and nodding through TTS.

The main objective of this work is to develop an intelligent prototype tool capable to assist teachers to 1) capture the interest of the children and engage them in learning English; 2) still provide immediate intervention to support learning even though they do not have to physically attend to the children themselves. Teachers need to be physically present in the classroom environment in order to facilitate the children using the tool correctly, whilst monitoring the usage of the tool and the behaviour of the children using it. This paper first explains the theoretical perspective of designing I AM ELit, then moving on to describe its development and implementation. Next, the prototype is being tested with real users whose literacy skills vary from the lowest to the best and future implementation are being addressed and finally a conclusion.

II. THEORETICAL PERSPECTIVE OF THE DESIGN

In constructing the design, few theories are being considered – core-affect theory (psychological) and learning model (educational). The core-affect theory [1, 2] concerns on how we could transform our state, in this case using I AM ELit as a mediator/tool to change the learning state of the children, from deactivated-displeasure state (causing them to disengage from the learning process) to activated-pleasure state (engaged and participated in the learning process).

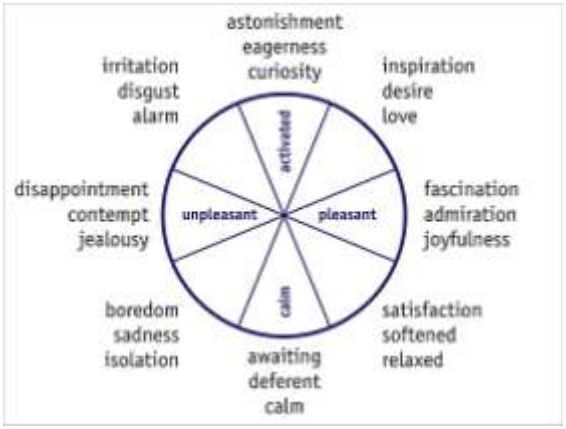

Figure 18. Core affect theory's two hedonic dimensions; activated-deactivated and pleasure-displeasure (source: adapted from [1,2]).

To support core affect theory, learning theory that encapsulates four types of mediation – environmental, cognitive, affective, and metacognitive (ECAM), is also considered [3,4]. A more detail description of ECAM model of mediation is as illustrated in Table 1.

TABLE XI. ECAM MODEL OF MEDIATION [3].

Types of mediation	***Description***	***Techniques***
Environmental (E)	Encompasses the establishment of an environment and context that challenges and promote learning	o Task design – for collaboration, for various levels; challenge; task regulation o Materials and equipment – learning materials, use of technology, visual aids o The learning environment – physical setting of the classroom, setting for discussion, o Resources and rules
Cognitive (C)	Attending to and supporting the learning of a concept through challenging and promoting learners' thinking	o contingent responsivity, questioning, reciprocal teaching, modeling, demonstration, hints, prompts, providing help, alerting another's attention to a concept or skill by providing and offering explanations, eliciting explanation, providing
		suggestion, help seeking, referencing, meaning, intentionality*, analytical thinking
Affective (A)	Relates to emotion, warmth and affective involvement of the mediator when intending to enhance learners' motivation in the classroom; raising self esteem and promoting moral values	o global values – building confidence, gaining trust, use of humour, caring, showing warmth, encourage to motivate oneself, value o Use of feedback/praising – emotive feedback, accepting praise, emotional peer support, encourage creativity and element of fun, informal approach*
Metacognitive (M)	Promoting self and other regulation, being aware of their cognition and developing competence while promoting strategic and planned thinking	Self planning, group planning, checking self and others, monitoring self and others, evaluating self and others, change

Mediation is defined as challenging yet supporting learning to learners in order to achieve their true potential [3]. The notion of mediation originates from sociocultural theory [5,6] which places great emphasis on the interaction between the expert (usually the teacher in school context) and the novice (the learner). ECAM model of mediation, which can be divided into types and techniques, is an extension of previous work that focuses on cognitive and metacognitive mediation [4]. The types of mediation that is related to this study is environmental and affective mediation. Environmental mediation relates to the provision of a learning environment that challenges yet promotes learning. This includes the task design, materials and equipment use, the physical setting of the environment as well as rules and resources. As suggested by the model, the use of technology can be a form of environmental mediation which the main purpose is to provide a learning environment that not only is stimulating and interesting but is also able to engage children's learning. Affective mediation which is key in this study, emphasises on enhancing learner's self esteem and motivation and inculcating moral values in the classroom through emotion, warmth and affective involvement of the mediator when dealing with the learners. However, in this study, the use of technology i.e. I AM Elit provides an alternative role of the mediator, albeit technology, to promote learning through affective mediation by ensuring that the design and the development of the tool takes into account the fundamental component of this type of mediation. However, computers are not able to express warmth and so justifies the reason for the role of the teacher to remain significant in the classroom in order to further facilitate learning when the need arises.

To stimulate their learning in order to arrive to activated-pleasure state in core affect dimension, we focus more on the design of the tool itself, which is the environmental mediation, but highly embedded with affective mediation to instill interest and promote engagement among children to learn. As affective mediation has found to be able to build confidence among the children [3], it could be used to stimulate learning for challenging children as well as normal children. Thus when designing the tool, we take into consideration properties of a system that need to be included in the tool for all children regardless of their academic level, aiming to provide equal access to this technology for all.

Apart from creating just an alternative tool to learning English (a subject that most children dislikes, especially those in rural schools with less exposure to English), I AM ELit offers immediate intervention by an intelligent conversational agent to keep the children engaged. Immediate intervention is made possible by using ASR that enables the intervention by automatically detecting the children's spoken responses (answers), thus making ASR one of the useful technology to help children learn literacy [7]. Immediate intervention is considered as an important element that mediate the children so that they are aware of their current situation in learning, thus be able to improve accordingly [8].

II. DEVELOPMENT AND IMPLEMENTATION

Starting out as an undergraduate intelligent system project, I AM ELit, is now being tested in schools for its functionalities and its real usage with real users prior to evaluation. The target users of this interactive tool are challenging children from the age of six to eight years old, whose English literacy level is low. However, it could also be used to facilitate learning and make the process more interesting for other children as well. Thus, the content of I AM ELit ranges from the very basics - the alphabets to phonics, up to word level, simple sentences, and children poems and songs.

Using CSLU Toolkit's component called Rapid Application Developer (RAD) to develop the application and rapid prototyping as method, I AM ELit is developed to cater the needs for intermediate intervention with affect. It is a simple tool that enables drag-and-drop of its objects (or built-in functionalities that could perform TTS, speech recognition, include media files/objects, lists builder to enable multiple elements to be displayed and recognized, etc.) so that the desired flow or functionalities of the system could be defined and developed. Designed to capture the children's interest and attention as well as to provide them with affective gestures/responses, some of I AM ELit prototype's interface are as depicted in Figure 2.

The following features are introduced to encapsulate the design:

- an intelligent conversational agent that acts like a teacher to mediate learning;
- ASR component that recognizes students' spoken responses;
- interactive features enabling interactions between children and I AM ELit;

Figure 19. Some of the interfaces designed with an intelligent conversational agent that constantly 'listen' and mediated.

- the content covers alphabets, phonics, pronunciation of words, short sentences, short stories, rhymes, and children's songs. I AM ELit is designed to teach children the basics of literacy.

The core affect theory is translated into the development by creating an exciting experience to use computers for an interactive learning. Instead of the usual presentation of the same classroom setting, where teachers conduct most of the activities, children can use computers that could respond back to them i.e. to give them feedback, praises, and motivation. Besides, using computers is already exciting enough by these 'digital natives' to motivate them to be engaged in the learning process and has been proven in the 90s by researchers as demonstrated in [9,10,11]. Thus, the first quarter of Figure 1 can be triggered to ensure the children are in the activated-pleasure state, psychologically.

To ensure students engagement, affective gestures given by the intelligent conversational agent makes the session more interesting to children as they now are interacting with the computers in an *affective* manner. Affective gestures (in the form of visual and audio) provided by the intelligent conversational agent provides emotive feedbacks to users' spoken responses, for example 'you're brilliant', 'you've almost got it'. Songs, colours and graphics as well as animations in the tool also provides the element of fun which is one of the essential techniques in providing affective mediation. Thus, when children work on the activities in I AM Elit, not only they can be stimulated by the audio (including their own voice) and visual but also by the immediate feedback they received in order for them to learn how to improve. By doing this, it is hoped that children become engaged in their learning especially if they are able to see the progression that they have made in completing the tasks in I AM Elit.

III. TESTING AND FUTURE IMPLEMENTATION

I AM ELit is being tested at a school to test the prototype with real users that vary in terms of their literacy level. The main objective of this prototype testing is to investigate any weaknesses of the prototype when handled by real users - in terms of 1) the children's verbal responses; 2) the conversational agent's feedback; and 3) the prototype system's flow. For testing, seven children are chosen by their teacher with literacy level (taking into consideration their ability to read, attitude towards learning, with or without learning disability) ranges from the lowest to the highest level, from the weakest group/class to the best class in the school. Each child spent about ten to fifteen minutes using I AM ELit. Prior to using I AM ELit, the children are explained on how to use it and when to start speaking to respond to prompts asked by the intelligent conversational agent. The usage is simple - all they need to do is to respond to prompts asked by the agent verbally. I AM ELit is interactive and involves very minimum mouse clicks and removes typing burden for children, especially challenging children. The children are only required to speak to the agent and learn. While using it, teachers are encouraged to monitor their usage and provide additional assistance when necessary.

Each children is observed while they are using I AM ELit. From the observation, some advantages and a few limitations have been identified. It has been found that the advantages are more towards its interactivity and ease of use of the tool as well as the positive sign for affection and engagement of the children towards learning using the tool. Most importantly, it is observed that automatic mediation provided by the prototype is good for normal children as well as challenging children too. All seven children participated in the prototype testing showed positive engagement and it is positively encouraging to see the interest to learn using I AM ELit shown by the less able or challenging children. They could just sit in front of the computers and respond to every prompt asked by the conversational agent. From the preliminary observation, it is noted that the level of learning presented by I AM ELit, from learning the alphabets to simple sentences, is suitable as they cater for all the levels of the children who are the potential end users. It is also noted that the alphabet level is useful for challenging children to learn the alphabets - the conversational agent will say the word and ask the child to say the alphabet; the agent then 'listen' to the child response and give feedback. It seems that the children enjoy talking to the computer (the agent) and often provide responses to the agent and be able to learn at the same time. Even though this method is not something new, i.e. teacher say the alphabet/word and children respond accordingly, it seems that using I AM ELit and be able to talk to its conversational agent is much more interesting thus enables the children to engage more in the learning process. It could be that it offers one-to-one teaching and learning environment as one agent talks to only one child at one time. Thus, in can be concluded that the prototype testing, not only testing on the system flow and functions, but gives an important discovery that these children, especially the challenging ones can actually engage themselves in learning - that, by changing the environment itself to make it more interesting to facilitate learning.

The prototype testing also presents some limitations as listed and briefly described in Table 2. The properties or functions of the prototype are as listed in the table, which also include suggestions for future improvement, which is currently an ongoing process.

TABLE II. PROPERTIES AND FUNCTIONS OF I AM Elit FOR IMPROVEMENT.

Property/Function	**Limitation**	**Suggestion for Improvement**
Fault tolerance	Cannot tolerate wrong answers/unrecognized spoken responses - keep on prompting the same until recognition succeed.	Set for Tucker-Maxon setting in CSLU Toolkit's RAD or find other means to increase fault tolerance.
Alphabet level	No mediation given for wrong answer.	Include mediation by the agent in this level.
Intelligent conversational agent	The children can only hear the agent's voice.	It could be more interesting if the children can see to whom they are talking too.
Spoken responses/mediation	Only available in English.	Should include mediation in Bahasa Melayu for those who has less ability to understand English.
Phonics level	The phonics pronounced by the agent is too fast - difficult for the children to listen and follow.	Include recorded phonics pronunciation spoken by human - more user-friendly voice and prolong pronunciation.

Overall, every child responded positively towards using and interacting with the computers in that all of them responded to the questions asked by the intelligent conversational agent. The design of I AM Elit that is meant for affection, which later triggers engagement to the task at hand could be considered successful as initially observed. For tasks such as singing the alphabet songs, saying aloud the alphabets and repeating the words spoken by the agent, all children responded to the agent. I AM ELit provide a transcription panel that displays all the words that the children need to say aloud in order to respond to the agent, including the words/sentences spoken by the agent. That way, they could practice reading the words and sentences as they go along. The tool facilitate the learners to read by highlighting the words

the agent is currently saying so that they can see the orthographic representation and pronounce accordingly.

The positive outcomes revealed that using I AM ELit would trigger the children's interest and engage them in learning thus putting them in the activated-pleasure state of Russell's psychological core affect theory as discussed previously. This happens because I AM Elit provide not only environmental but affective mediation for the learners to engage in learning.

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Implementation of 2D Animation for Interactive Storybook "Reading for Fun with Anna"

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Abstract—**"Reading for Fun with Anna" is an interactive storytelling learning method for children to develop their vocabulary knowledge by exploring many things using their imagination. This project is to unlock their creativity by giving them various activities that relates to each stories. These activities are good for children who are just starting to read because children learn through examples and participating. They are mostly good for reluctant readers, who always run away when books are brought out.**

Keywords-component; Interactive storytelling

I. INTRODUCTION

Reading is very important for children to develop their reading skills. It can be an interesting and imaginative activity for children if they have the proper source of reading books. For some children, they will naturally pick up a book and read, while others need activities, encouragement to attract them into the wonderful world of books.

"Reading for Fun with Anna" is an interactive storytelling learning method for children to develop their vocabulary knowledge by exploring many things using their imagination. This project is to unlock their creativity by giving them various activities that relates to each stories. These activities are good for children who are just starting to read because children learn through examples and participating. They are mostly good for reluctant readers, who always run away when books are brought out.

Nowadays, children have difficult time learning through traditional methods of teaching in class. There is no children involvement in class especially in kindergarten. This happened when teacher reading story book to their student and the student only hear what the teacher read without having two way conversation among them. To overcome this problem, this project provides interactive reading that is more interactive and effective than just simply reading the book. Reading lessons that contain daily listening and speaking activities can benefit children that can develop their listening and speaking skills in children to make them understand and to express themselves to others. (Bentham, 2008).

II. PROBLEM STATEMENT

Children passion in reading books has become an issue nowadays (Carolee Drake, 2000). In kindergarten, there will be storytelling activity where teacher will read book to their children. There is lack of student involvement at kindergarten because when teacher read them a story, they only hear and follow what teacher say. Children involvement in classroom learning is connected by classroom acknowledgement, ensuring relevancy for educators and significance to children. A meaningful student involvement is not a strategy for educators hence it must be included during their daily activities and it should be consists of service learning activity.

This problem will make children feel boring and do not want to hear what teacher say in front of class. To avoid this problem, this interactive storybook project, will bring multimedia element to attract children to read book. The uses of sound that will be used in this project are music background, voice of storyteller and sound effect, which can bring children the story mood. Besides that, this interactive storybook also has graphics and animation to bring imagination for children from the story as well as to make children feel like they in the story.

Most children learn a new word every day, but not all of them remember the new word unless it is included into their communication with people. Mostly a child's vocabulary is

influenced by the conversation they have at home or in school. (Elizabeth Kennedy, 2011) Children do learn a new word every day, however, not all of them remember the new word. To overcome this problem, this project will help student who are just starting to read. Through this interactive storytelling, children will recognize objects and this will indirectly help them to develop their vocabulary knowledge. The use of words in this storybook is objects that children will use in their everyday live.

A children's storybook with fancy drawings, animation and sound can tell its story in various ways than ever before. The story will become more alive by bringing the entire multimedia element in one story. Storybook developer should not be thinking on word and text on paper. The technology have changed and the only way to attract children to read books is by putting the story in graphics, audio, video and imagination for children that can bring readers feel the story.

III. OBJECTIVES

This interactive storybook is developed to accomplish the objective, which are:

ii. To develop interactive storybook that focus on vocabulary - helps children recognize vocabulary by giving them graphics to imagine.
iii. To identify multimedia elements that can attract children intention - encourage student interest in reading by putting graphics, animation, sound and picture.
iv. To design a storybook using multimedia element - attract children with animation, graphics, text, sound and video.

IV. SCOPE

Target user for this project is children who are around five to seven year old and to children who are just starting to read. This interactive storybook is good for them to learn new word with graphics examples so that they can easily imagine what the objects looks like and easy for them to remember the words. They also will learn objects that have animation and sound to attract their intention to read.

The module scope for this project will be covered on discovering objects, animals, food and occupation. This is because all of these things are based on things that happened in their everyday live. It is not just children can learn new words, they also can recognize the object by looking at the graphics, animation and sound effects.

Language that will be using in this interactive storybook is English because by teaching children English at the young age, it is the first step for them to learn this language so that they can easy to learn English for the next level during school. Besides learning simple word, they also can hear the voiceover how to pronounce the word and follow what the voiceover say.

V. LITERATURE REVIEW & PROJECT METHODOLOGY

A. Existing System

The domain for this project is Education and Reading Learning using interactive learning CD application. This project is a 2D animation that contains interactivity storytelling and vocabulary learning that suitable for children who are around five to seven years old and also can be used for children who just starting to read English. This section is on the subject of the facts and findings that have searched out after collecting all the data by analyzing different type of resources that relates to this project. The purpose of this section is to find the comparison between other resources regarding teaching so that it can know what is good and ban about other resources to improve this project development.

Case Study 1: Ipad interactive storybook application: Thomas and Friends

Apple Company has discovered the first steps in its production for stepping into the world of digital publishing. The interactive storybook in Ipad has been popular among children. The reading practice will be expectedly user satisfaction, using the already culturally embedded motions of flicking, tapping and swiping to turn pages, switch titles and adjust font size. Fig. 4 shows the main interface for storybook application in iPad. The story is based on children popular television called Thomas and Friends. This application has two modules, which are storytelling, and some fun exercise.One of the activities that contains in this application is puzzle that shown. This storybook application is a good reference for this project because it uses all multimedia elements. The interactive storybook that will develop supposed to be similar to this application but this project will be more interactive learning by providing more character animation instead of static graphic. Besides that, there also will be variety module of learning.

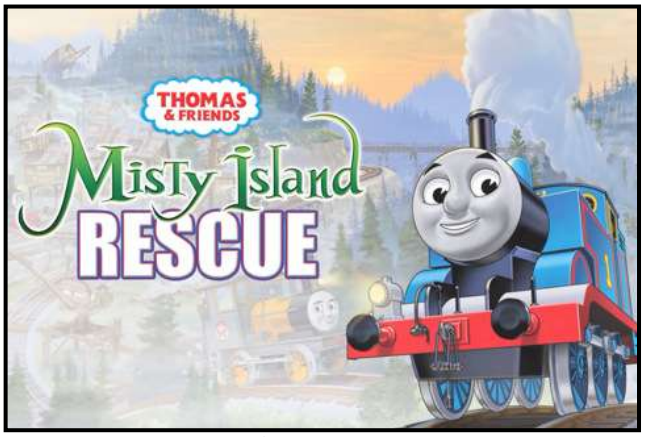


Fig. 4 Ipad main interface in existing application

Case Study 2: Web based storybooks online.

This children's storybookonline**,** magickeys.com, was created in 1996. In this website, contains original stories with color illustrations for three generation, which are for young children, older children and young adults. This websitelooks forward to make education and entertainment as one combination to entertain and connect children's imagination.This web based storybooks online will be used as a findings for this project analysis. Fig.5 shows the main interface of the website where user choose any story that they want to read either by clicking the book thumbnail or the link beside the thumbnail. User can use whether they are young children, older children and young adults.

Fig.5 Main interface in existing application

Case Study 3: Web based storybooks online.

Funbrain.com is an online web based that created for kids at the age of preschool. It offers various interactive learning games that can develop skills in math, reading, and literacy. One main thing to discuss about in this finding is the variety of books that provided in this website. Fig.6 shows the main interface for Funbrain.com. User can choose whether to read books or to do some activities. The activity is about learning adjective, verb and noun. User need to understand what is different between them.

Fig.6 Funbrain.com main interface

B. Comparison of the study cases

The purpose of comparison between existing systems in this section is to tell what the theory is, how the research was carried out and the gap that this research tends to fill. Table 1 shows the comparison from 3 case study cases above. The comparison will include the functionality and convenience, and multimedia elements that used in each method.

Table 1 The comparison of the study cases

Study Cases	**Text**	**Graphics**	**Animation (2D Element)**	**Audio**	**Video**
Ipad Interactive Storybook (Thomas and Friends)	✓	✓	✓	✓	-
Web based storybooks online. (magickeys.com)	✓	✓	-	✓	-
Web based storybooks online. (funbrain.com)	✓	✓	-	-	-
Interactive Storybook: Reading for Fun With Anna	✓	✓	✓	✓	✓

Most of the research findings do not have the animation, which is 2D element in existing system. However, they have other multimedia element to cover the weaknesses in order to attract children intention such as audio, graphics and text. Most of the activity that provide in the existing system is not relate to the story. It is just another section for children to learn new word, solve mixing puzzle, mathematics and coloring book.

Ipad Interactive storybook is a good comparison for this research because the use of color is very attractive. The unique thing about this application is the user-friendly screen touch. The structure of interface in this application is well organized where user can easily understand the concept of the structure flow. This application still has its own weaknesses where it has lack of using character animation in the story.

Interactive storybook, "Reading for Fun with Anna" that will develop for this project will be based on the Ipad storybook application. The concept is still the same but there will be more animation involve in this project. The main

purpose of this project is to tell a story to children and teach them new word. The new word in this storybook is something that happened in their everyday live. The combination between learning new word and storybook is to make them more understand about the flow of the story. Besides that, this project indicates sound effect to make create character that is more realistic. It is also indicates audio for each text so that children can hear the correct pronunciation and they can as well follow what the audio says.

VI. DESIGN

Once the project is properly analyzed and defined, the Design step is the next process. This phase can be known as the early prototype phase. The basic design idea will be the first look at your project's possibilities. Design can be categorized into two types which are conceptual and physical design. It is an abstract description for system architecture in system elements and its user interaction. Storyboard structure illustration will be Fig.d in the preliminary design. User interface is for user control using this system. It contains all the design of input, output and navigation. Input design describe as the user interaction in the application. All the multimedia element that use in this prototype can be define as output design that contains the flow of the application.

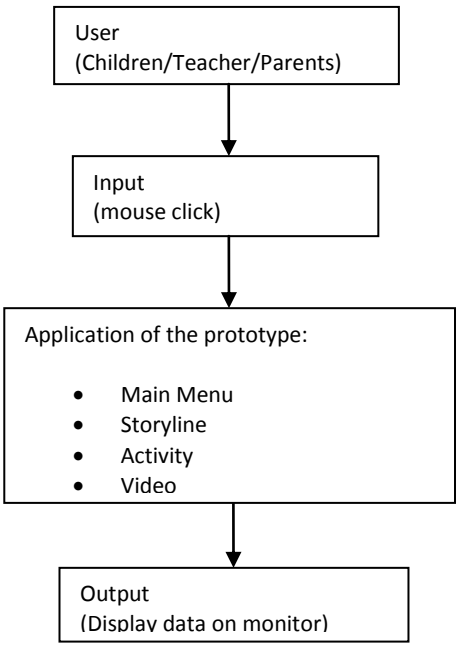
C. System Architecture

System architecture is a set of link between the components of a system. System architecture will define the design and content of the project. Basic flow of the project will be Fig. and explained. Fig.7 below shows system architecture of an interactive storybook – *Reading for Fun with Anna.* There are 4 main menus in this interactive storybook which are story, activity and video.

- **Story** – This module will include 4 main elements which are things, animals, food, transportation and occupation. All of this element is for each story scene and combining all of them as a one story. There will be user interaction between user and the character in the story where user can click any available character and it will give feedback such as audio and animation. Each of the object character will have text to describe the object. This is for learning purpose to teach English among children and kids whom just starting to read. The story will be lots of animation in order to attract children.

- **Activity** – Activity that provide in this project is relates to each story to make user understand more about the story. There will be 3 activities which are word exercise, puzzle picture and coloring book. Word exercise is a drag and drop concept to match the word with the object. This is to test users IQ about word recognition. Puzzle picture will be based on picture for each story where user needs to complete the missing piece of the picture. Lastly is coloring book where user can choose color to paint the picture.
- **Video** – This module will be as an entertainment for user where user can watch video that is about singing. This video provides a music video that summarizes the entire story in one music video.

Fig.7: System architecture of the Learning



D. User Interface Design

User interface design is about the interface design which player has through contact with and which they interact to carry out those activities. Fig. 8 below shows brief flow of this project.

After the user enters the main menu, they will go to the first scene of the story. Each interface of the story has three main buttons, which are activity, puzzle and coloring book. All of these elements is relates with each of the story content. The purpose of the 3 elements is to participate children in the story to do some task or activity. In the exercise page will be contained drag and drop game that ask user to match word and object. Button exit will provide in this page and same goes to puzzle and coloring book page. If they click the exit button, they will go back to the story scene. This structure is same with the other two elements, which are puzzle and coloring book.

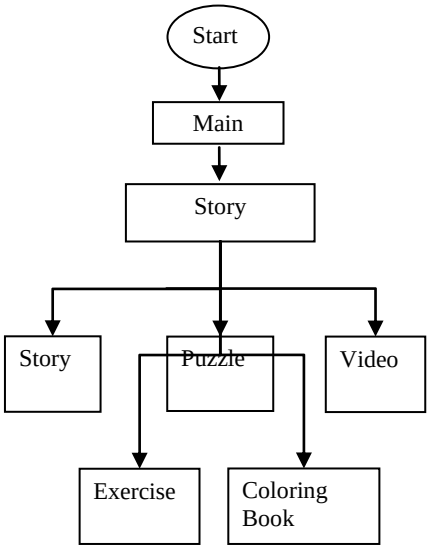


Fig. 8 Interactive Storybook content- Reading for Fun with Anna

Fig. 9 shows interface of *story* module. The first scene of the story is about the introduction of the character named Anna. It contains story that include character interactive where user can click the character or object. After listen to the story, they can do some exercise or activity.

Fig. 9 Interface story for Introduction Scene 2

Fig. 10 the introduction scene that is about the characteristic of Anna that loves to read books. User can click the object that glow and the description will appear along with the sound of voice over.

Fig. 10 Interface story for Introduction Scene 2

What happened in Anna in Fig.11 is, she found a magic book and her adventure start from there.

Fig.11 Interface story for the beginning of book adventure

Fig.12 shows the adventure of Anna inside the books where she suddenly goes to another place where full with weird looking animals. The main subject for this section is for learning purpose for user to recognize different types of animal.

Fig.12 Interface story for Animals

Fig.13 shows another subject about learning different types of food. User can click at the food and the text description will appear along with the voiceover.

Fig.13 Interface story for Food

Fig.14 shows interface about transportation. User can learn different types of transportation by clicking the selected transport and the description will appear along with the voice over.

Fig.14 Interface story for Transportation

Fig.15 shows interface about occupation. User can learn different types of occupation by clicking the selected people and the description will appear along with the voice over.

Fig.15 Interface story for Occupation

Fig. 16 shows interface about planet. User can learn different types of planet by clicking the selected planet and the description will appear along with the voice over.

Fig. 16 Interface story for Planet

Fig. 17 shows interface about the ending of the story where the journey of Anna and the magic book end.

Fig. 17 Interface for End of the story

Fig. 18 shows interface about exercise for the first scene of introduction where user has to drag the letters over the box.

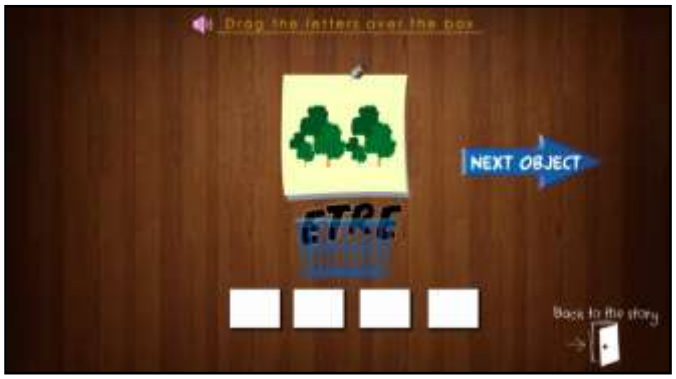


Fig. 18 Exercise Activity for Introduction Scene 1

Fig.19 shows interface about exercise for the second scene of introduction where user has to drag the word to the correct object.

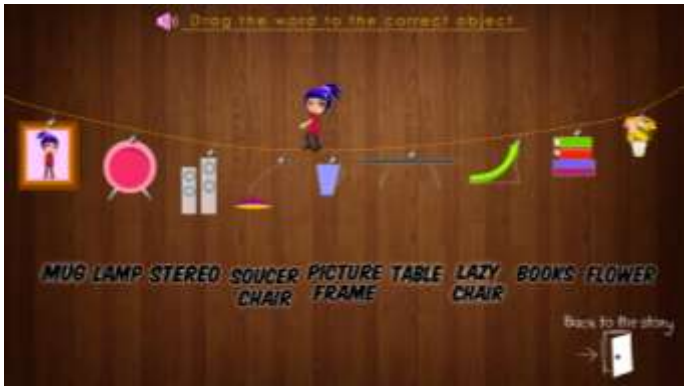


Fig.19 Exercise Activity for Introduction Scene 2

Fig. 20 shows interface about exercise for animals where user has to match the animals.

Fig. 20 Exercise Activity for Animals

Fig. 21 shows interface about exercise for planet where user has to drag the flag over the planet according to the matching colors.

Fig. 21 Exercise Activity for Planet

Fig. 22 shows interface about exercise for transportation where user has to find the hidden word to the correct transportation.

Fig. 22 Exercise Activity for Transportation

Fig. 23 shows interface about exercise for occupation where user has to drag the characters to the correct box.

Fig. 23 Exercise Activity for Occupation

Fig. 24 shows interface about exercise for food where user has to Anna to ask her what she wants.

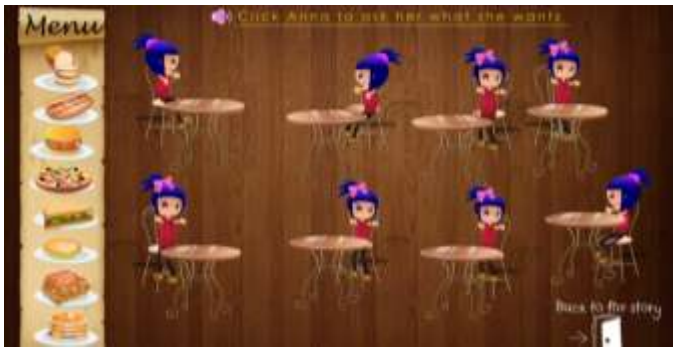


Fig. 24 Exercise Activity for Food

VII. ITESTING AND EVALUATION

Analysis testing is a process where all the data information from the result will be combined as a graph so that the data easier to analyze. The graph will be based on user's response and tested according to alpha and beta testing.

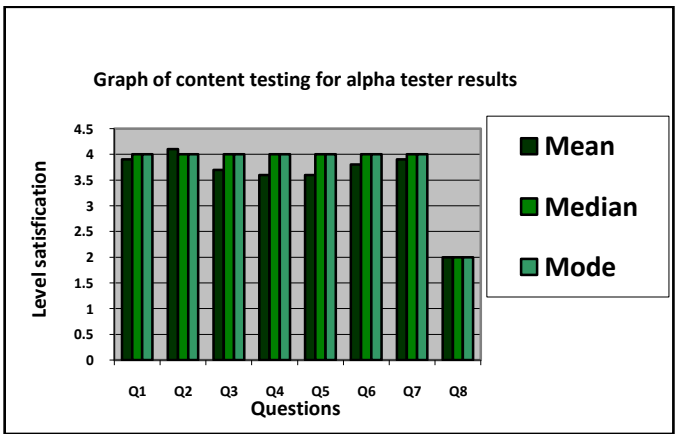


Fig. 25 The Graph Content Testing for Alpha Tester Results

Fig. 25 is the graph result for content testing for alpha tester. Most of the testers agree that this storytelling learning concept is more effective learning method. For the second question, most of the testers agree that the story is easy to

understand. For the third question, most of the testers agree that the animations in the application are easy to follow and easy to understand. For the fourth question, most of the testers agree that this courseware really helps their English. For the fifth question, most of the testers agree that they can answer the entire exercise. For the seventh question, most of the testers agree that they can finish reading the story without any difficulties. For the seventh question, most of the testers agree that this application is not complex for student. For the last question, most of the testers disagree that they feel bored when using the application.

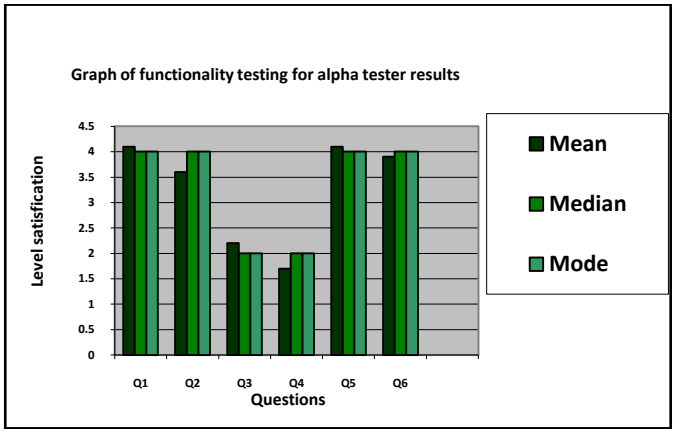


Fig. 26 The Graph Functionality Testing for Alpha Tester Results

Fig. 26 the graph result for functionality testing for alpha tester. For the first question, most of the testers agree that they can use the application without any help. For the second question, most of the testers agree that all of the elements in the application are well integrated. For the third question, most of the testers disagree that they need to learn a lot of things before they using the application. For the fourth question, most of the tester disagrees that they need to spend about 20 to 30 minutes to finish using the application. For the fifth question, most of the tester agrees that they get a quick response when they click the menu. For the last question, most of the tester agrees that they think the application is easy to use.

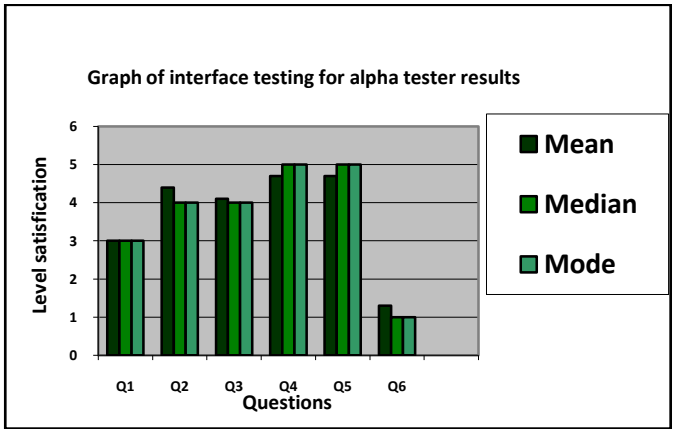


Fig. 27 The Graph Interface Testing for Alpha Tester Results

Fig. 27 is the graph result for interface testing for alpha tester. For the first question, the testers only satisfy that they were learned about screen design when using the application. For the second question, most of the tester agrees that the sound makes the application more interesting. For the third question, most of the tester agrees that the fonts are easy to read and they are very clear. For the fourth question, most of the tester strongly agrees that the combinations of color are pleasant. For the fifth question, most of the tester strongly agrees that the navigations in the application are not complex. For the last question, most of the tester strongly disagree that the interface design are too crowded.

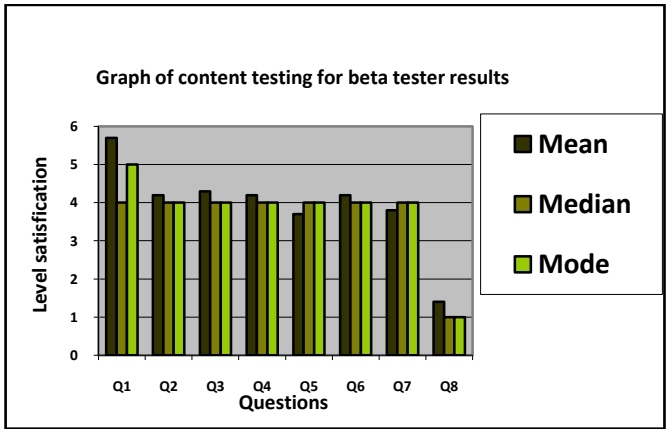


Fig. 28 The Graph Content Testing for Beta Tester Results

Fig. 28 are the graph content testing for beta tester. For the first question, most of the tester strongly agreesthat this courseware is more effective for learning method. For the second question, most of the tester agrees that the story is easy to understand. For the third question, most of the testers agree that the animations in the application are easy to follow and easy to understand. For the fourth question, most of the testers agree that this courseware really helps their English. For the fifth question, most of the testers agree that they can answer the entire exercise. For the seventh question, most of the testers agree that they can finish reading the story without any difficulties. For the seventh question, most of the testers agree that this application is not complex for student. For the last question, most of the testers strongly disagree that they feel bored when using the application.

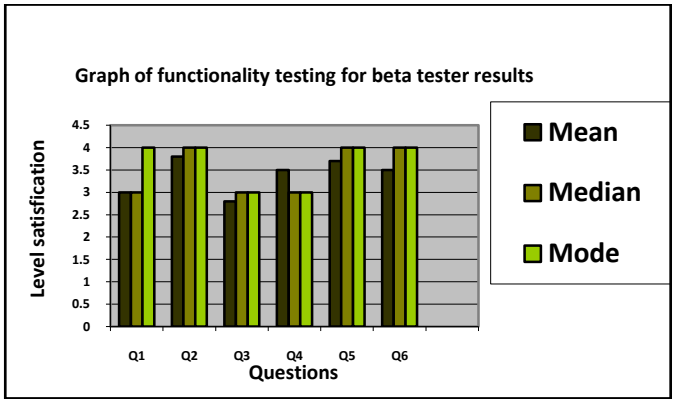


Fig. 29 The Graft Functionality Testing for Beta Tester Results

Fig. 29 is the graph result for functionality testing for beta tester. For the first question, most of the testers agree that they can use the application without any help. For the second question, most of the testers agree that all of the elements in the application are well integrated. For the third question, most of the testers only satisfy that they need to learn a lot of things before they using the application. For the fourth question, most of the tester satisfy that they need to spend about 20 to 30 minutes to finish using the application. For the fifth question, most of the tester agrees that they get a quick response when they click the menu. For the last question, most of the tester agrees that they think the application is easy to use.

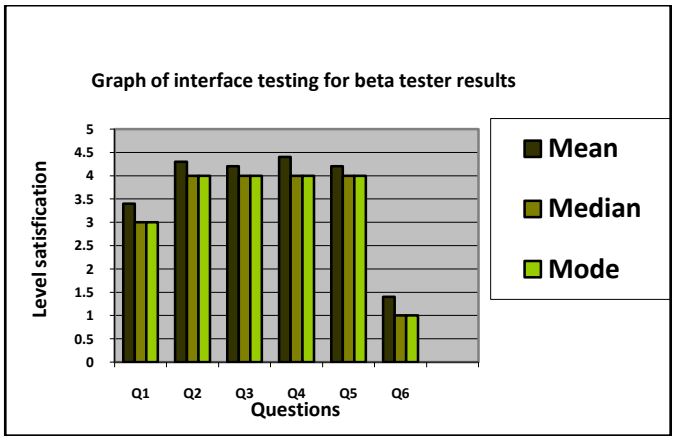


Fig. 30 The Graft Interface Testing for Beta Tester Results

Fig. 30 is the graph result for interface testing for beta tester. For the first question, the testers only satisfy that they were learned about screen design when using the application. For the second question, most of the tester agrees that the sound makes the application more interesting. For the third question, most of the tester agrees that the fonts are easy to read and they are very clear. For the fourth question, most of the tester agrees that the combinations of color are pleasant. For the fifth question, most of the tester agrees that the navigations in the application are not complex. For the last question, most of the tester strongly disagree that the interface design are too crowded.

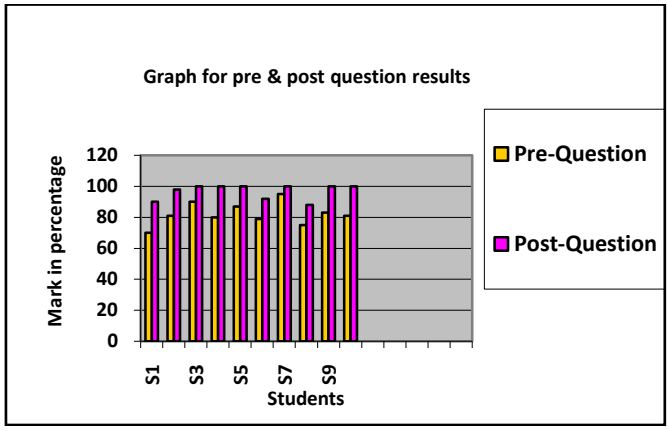


Fig. 31 The Graph for Pre Test and Post Test Results

Fig. 31 is the graph result for pre-post question. It is obviously showed that students get lower mark before the use the application than after they use the application. This means that this application really helps them reading and identify objects in English. Using a lot of picture than text really helps student memorize what they see. Student also feels happy and enjoys using the application because the use of animation, sound and the combinations of color that is pleasant. From the testing result, most of the tester strongly agrees that this application system is more effective for leaning method than the actual method.

VIII. CONCLUSION

As a conclusion, this project can help children to learn new vocabulary especially for children whom are just starting to read. The main purpose of this project is to make reading book as a fun thing to do among children besides providing a story that is simple and easy to understand with the activity that relates to the story. This project also provides all the multimedia elements make the interactive story more alive and interesting.

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Informal Learning of English via Online Games

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Abstract— **In today's digital age, vocabulary learning is often perceived as boring by learners if they only learn it through formal learning in classes. Students nowadays are more interested in edutainment or also known as various forms of entertainment that educate. They are also more interested by learning in an informal setting outside the classroom. This paper tends to look at how the students consider online games to be an educational resource with regard to English vocabulary and general communication skills. In accordance with reported statistics, online computer gaming is the preferred pastime of many people worldwide. What impact does gaming have in general on people, and more important is how can teachers take note of the knowledge and experience that is collected through online computer gaming? The aim of this paper is to explore the view towards online games and how they can contribute to enrich the vocabulary of English Language in an informal learning, which is made up of unstructured lessons and activities that are captivating, fun and self-paced. In order to find answers to the questions, seven online game players who were playing at various cyber cafes were interviewed. Apart from being a source of entertainment, the players considered online games to be an educational resource with regard to English vocabulary and general communication skills. It is hoped that this study will contribute in raising the awareness of online gaming as a tool for informal learning and can give ideas to teachers of English Language in triggering the correct source via online games to enrich the students vocabulary.**

Keywords: Informal Learning, Online Games, English Vocabulary.

INTRODUCTION

Online games are one type of entertainment oriented and Internet-based Information Technology (IT) sources. With the rapid diffusion of broadband Internet services and high-end graphic cards for computers, online games have become more popular and attractive than ever before. Online games represent the leading technological edge of the entertainment sector. Such games now attract many thousands of players, often collaborating or competing in a lag-free and visually rich environment while simultaneously using an array of data manipulation and online communication tools (John Kirriemuir, 2005). The players also spend a lot of their time involving in the virtual world. Within Massive Multiplayer Online Games (MMOG), the average amount of weekly game play ranges from 12 to 21 hours. Much of this time is spent communicating – nearly 30 percent of MMOG players spend their in-game time with "beyond-game" friends (Seay, A.F., Jerome, W. J., Lee, K. S., & Kraut, R. E. 2004).

Since so much time is spend involving in this virtual world, there must be some benefits that the players gained through online games as learning could take place in informal situation and be put into different contexts. Hence, language learnt from playing online games, could be applied outside of the game. For example, they have to use English when communicating with other players and the vocabulary gained can be applied on settings outside of the game. Also, social skills learnt from the structure of a game like World of Warcraft can be used when they communicate in the real world. These are the factors that this paper intend to look at. In fact, the past years have seen a rapid growth in academic interest in computer and video games, especially online games. Conferences, peer-reviewed journals, bodies and academic organisations such as DiGRA (Digital Games Research Association) have sprung up and matured (John Kirriemuir,2005). This interest crosses many academic fields, including psychology, economics, sociology, computer science, geography, history, media and cultural studies, and also education. This paper also share the same interest by looking at how the players consider online games to be an educational resource with regard to English vocabulary and general communication skills.

In short, online gaming has swiftly emerged as a popular and successful source of entertainment and play for people of all ages, but the important question here is how it can contribute to enrich the vocabulary of English Language in an informal learning situation outside the classrooms, as Hyacinth Gaudart (1996) in her article Games as Teaching Tools for Teaching English to Speakers of Other Languages, stated :

> *using simulations and games are two of the most effective techniques for a teacher when he or she wants to allow second or foreign language learners practice in the target language. Both simulations and games allow*

learners not only to practice forms that they have already learned, but also allow them to experiment with new structures. All this is done in non-threatening situations (Gaudart , 1996)

2 Informal Learning

What is informal learning? According to Donald A. Norman, an expert in cognitive science, informal learning is made up of unstructured lessons and activities that are captivating, fun and self-paced. This approach to learning is based on observations of children doing things they enjoy like playing arcade games and sports. Norman believes that if the characteristics of the examples mentioned above were applied daily, students would get more out of their education, but how many of us as educators really understand and inculcate this informal learning habit? For most of us, when we think about learning, we often tend to think about schools. If we go a little further and think about learning outside school, we might begin to consider museums, galleries and science centres. What we often tend to overlook, however, is the sort of learning that goes on as part of our normal day-to-day activities when we don't even think we are learning. Today, however, anyone who has an interest in how children learn with digital technologies needs to look beyond institutional contexts to consider the implications of children's use of computers, mobile phones, online applications and so on as part of their informal day-to-day lives (Julian Sefton, 2004). This is related to my interest in looking at how are the online gamers learning when playing games? What are they learning when they create their own networking while playing ? Why are they interested and engaged in the virtual world, and most important is how can we learn from these activities that can help us in designing our approaches to formal education?

2.1 Attributes of Online Games

According to the International Game Developers Association (IGDA 2003), the term 'online game' may be used to refer to games across a range of media, including PC, console, wireless (e.g. mobile phones) and interactive television. Online games can be played via several means, including browser-based, downloadable from the Web, PC CD-ROM, and console with online features (IGDA 2003; Spohn 2003). In addition to playing alone, online gamers often interact with others in a simultaneous multiplayer experience in a combat or role-playing game. Multiplayer online games allow a user at one computer to enter an online world and network with objects and other players through a Web connection. Because thousands of gamers can play simultaneously, the games are often called Massively Multiplayer Online Role-Playing Games (MMORPGs).

Compared to traditional video games, online games have several distinguishable characteristics at both the technical and play levels. On a technical level, perhaps the most critical aspect of online games is that many people can play them through different online networks (Kim, Park, & Kim, 2002). Online games allow play between thousands of gamers located around the world simultaneously via the Internet and they just have to log in from any broadband Internet connection to play. Massive multi-playability is one of the advantages of online games, hence online games are actually a virtual world where players can meet, communicate, interact, create and manipulate virtual content.

Today there are many online games available but the more popular games are like Second Life, Maple Story, World Of Warcraft , Fifa ,Crazy Shooter, Sudden Attack and also Mosiang which are played world wide. The games mentioned are all examples of MMOG (Massive Multiplayer Online Game). This is a computer game that enables hundreds or thousands of players to simultaneously interact in a game world. A wide range of genres are represented in MMOGs, including fantasy, science, fiction, historical, and authentic war settings. Some MMOGs are played on a mobile device, typically a phone, and are thus called Mobile MMOG or MMMOG or 3MOG (John Kirriemuir, 2005). The next part of this paper will discuss on some examples of MMOGs which are in great demand among online players now.

2.1.1 World of Warcraft

Figure 1 : World Of Warcraft.

Undertaking grand questsand heroic exploits in a land of fantastic adventure.World of Warcraft is an online role-playing experience set in the Warcraft universe. Players assume the roles of Warcraft heroes as they explore, adventure, and quest across a vast world. World of Warcraft is a "Massively Multiplayer Online Role Playing Game" which allows thousands of players to interact within the same

world. Whether adventuring together or fighting against each other in epic battles, players will form friendships, forge alliances, and compete with enemies for power and glory. As a massively multiplayer online game, World of Warcraft enables thousands of players to come together online and battle against the world and each other. Players from across the globe can leave the real world behind and undertake grand quests and heroic exploits in a land of fantastic adventure. Unlike other MMORPGs, World of Warcraft allows players to play the game at their own pace, whether it be a few hours here and there or entire weeks at a time.

The quest system also provides an enormous variety of captivating quests with story elements, dynamic events, and flexible reward systems. World of Warcraft also features a faster style of play, with less downtime and an emphasis on combat and tactics against multiple opponents. World of Warcraft draws heavily upon the lore of the Warcraft universe. Long-time fans of the Warcraft games are finally able to step into the world from a player's perspective, and experience the universe firsthand. People, places, and units from the strategy games are brought to life in World of Warcraft.

Players can visit such places as the Burning Steppes, where Grom Hell scream fell in battle against the demon lord Mannoroth, and Ironforge, where the dwarves make their home below the mountain. Legendary heroes, such as Thrall, Cairne Bloodhoof, and King Magni Bronzebeard, are also in the game, presiding over their respective peoples as leaders in their race's capitals. When choosing a character to create in World of Warcraft, there are many choices before the players. There are ten races and nine classes available, but the game's primary choice when it comes to character creation is the faction you wish to fight for. Players can join the Horde or the Alliance, and their choice here has an impact on what you can and cannot accomplish in the world.

Players can only group and talk to players in their own faction. They also can only view and befriend players in their faction when using the in-game social commands. The intent is to make them feel like a member of one enormous team, while at the same time setting up the other faction as an enemy or, at best, a rival. Thus, if they wish to play with their friends, they should all join the same faction. Other content, such as the zones they can visit and the quests they can accomplish, are also organized by faction. Some quests can only be completed by Horde players and others can only be completed by Alliance players. Some zones offer cities and interactive NPCs for one faction, but are completely hostile to the other.

After they create their character, they will enter the world in their race's starting area. All the races except trolls and gnomes begin in a unique location. Those two races have to share starting locales with the orcs and dwarves, respectively. After watching a brief in-game cut scene introducing their race, they are set loose upon the world. It won't be long before they encounter their first monster in the travels. World of Warcraft is home to a huge array of creatures of all shapes, sizes, and of varying threat levels to their character's well-being. These creatures can be found everywhere, from roaming the countryside, residing in their own camps, or populating vast dungeons. There are wandering beasts, which will range from forest creatures such as bears, spiders, and wolves, to more exotic creatures such as giant phosphorescent moths and six-legged crocodiles called crocolisks.

They'll soon encounter more intelligent, dangerous enemies as well. Humanoid foes of every kind, such as murlocs, gnolls, and furbolgs, join more unnatural monsters like undead, oozes, and elementals. And, should they dare, they'll find more spectacular enemies like demons, infernals, dragonspawn, and mighty dragons stalking the dungeons and high-level areas of the world. While they're exploring the lands of Azeroth and Kalimdor, they will be treated to a multitude of different regions, each with its own visual style. Vast, varied, and beautiful, many of the regions were recreated from their appearances in prior Warcraft games, while others introduce heretofore uncharted lands in the Warcraft universe.

Quests are a big part of World of Warcraft. Like most other role-playing games, World of Warcraft lets the players advance in level as they gain experience. Experience can be gathered by killing monsters, exploring new destinations, and completing quests. Unlike in other games, quests are a significant tool for level advancement. Players who try to level up through combat alone will likely not advance as fast as those who combine questing with defeating monsters.

2.1.2 MapleStory

Figure 2 : The world's first side-scrolling 2D online game, MapleStory offers cute, adorable graphics, a huge variety of items, and cool-looking avatars.

MapleStory is a free-of-charge, 2D, side-scrolling massively multiplayer online role-playing game developed by the South Korean company, Wizet. Several versions of the game are available for specific countries or regions, and each is published by various companies such as Wizet and Nexon. Although playing the game is free, character appearances and gameplay enhancements can be purchased from the "Cash Shop" using real money. MapleStory has a combined total of over 50 million subscriber accounts in all of its versions. MapleStory North America (Global), for players mainly in North America and outside of East Asia, Southeast Asia and Europe, has over three million players.

In the game, players travel the "Maple World", defeating monsters and developing their characters' skills and abilities as is typical in role-playing games. Players can interact with others in many ways, such as through chatting, trading, and playing mini games. Groups of players can band together in parties to hunt monsters and share the rewards. Players can also join a guild to interact more easily with each other.

Like most MMORPGs, game play centers on venturing into dungeons and combatting monsters in real-time. The players combat monsters and complete quests, in the process acquiring in-game currency called "Mesos", experience points (EXP), and various items. Players can kill monsters alone, or they can form a party with up to six total characters. Loot is shared based on relative damage and level of characters in the party, more being awarded to the higher-level members.

New players are sent to Maple Island, a floating island specifically designed to be beginner-friendly. Unlike in many other MMORPGs, players in MapleStory cannot choose a job when they create a character. Rather, every character starts with the "Beginner" job. When characters meet certain requirements, they can complete the first job advancement and become a Warrior, Magician, Bowman, Pirate, or a Thief. Further class progression is only allowed within the scope of the first class advancement chosen. There are four class advancements available progressingly throughout the game. Some players chose not to get jobs and experience the Maple world in a permanent beginner state. Others chose to isolate themselves in Maple Island, these players are called Islanders.

In Maplestory there are over a hundred available quests, each with varying prerequisites; most quests may require the player to have attained a certain level or to have completed another certain quest. Most available quests require the player to retrieve a certain amount of spoils attained from monsters or to traverse an obstacle course. Some quests can be repeated, although the reward(s) and given EXP may be different from those attained during their first completion.

2.2 Layout and Vocabulary Of Online Games

Before moving on, it is necessary to look at the layout and vocabulary of the online game. As discussed in the above paragraphs, often the online games takes place in a fantastical virtual world. Enemies like dragons, trolls, and other monsters present obstacles that players must overcome in order to succeed in the game. When starting out, players get to design their character, selecting from different preset races, such as human and elf, and classes, such as warrior and priest. Depending on one's race and class, one has access to different skills, such as the ability to cast spells (needed in battle to subdue one's opponent or heal wounded players) and develop trade skills such as blacksmithing or tailoring. These skills allow players to make money by selling goods or trading with other players. A player can have multiple characters in the game, but may play only one of them at a time. The heart of most online games is mission. When players complete these missions, they receive prizes such as items, skills-training, or gold (the in-game money). The types of missions range from killing a certain number of stray wolves, a solo mission, to fighting a dragon in a type of mission called a "raid," which requires team cooperation of up to thirty players. For every enemy killed, a character gets a certain amount of "experience points" (XP), and the number of XP accumulated determines a character's level. "Leveling up," as online players call improving one's level, has rewards beyond pride: players gain access to new items (such as swords and armor) and the ability to learn new skills. Leveling up is thus a critical activity if players wish to access more challenging parts of the game where a lower level character would quickly perish.

Players must bond together to complete many of the game's missions and acquire certain items. Grouping is done in two ways. First, players can group temporarily into a "party" to tackle a mission or series of missions. Membership in a party continues until a player voluntarily leaves the group, gets kicked out by the party leader, or signs off. Party membership means that all accumulated XP is split between the players. The second type of group is a guild. Guilds are groups of players that form to give one another a more permanent "support system." Unlike temporary parties, one's membership in a guild can last between playing sessions; even when one logs off, one's guild affiliation persists. At any time, however, a player can be kicked out of a guild by a guild manager, or they can choose to leave. Guilds have special chat channels reserved for members of the guild, the size of which varies from a few characters to over one hundred characters. The importance of grouping suggests the roles of trust and reputation in social interaction within online games.

Having discussed the layout and vocabulary of the online games, we can clearly see that in order to get seriously involved in the virtual world, the online gamers somehow or

rather need to understand the language used in the games which is definitely English where the context in Malaysia and most other country is concerned. In order to communicate they have to use the English vocabulary. Communication among players is important in leveling up, maintain group cooperation, develop trade skills and many other tasks. Thus this paper is looking at how the players consider online games to be an educational resource with regard to English vocabulary and general communication skills.

3 The Online Gamers

Decision to play online games may involve choosing types of games that are appropriate for the gamers' time constraints, financial capacity and supported computer hardware. A survey conducted by PC Data Online showed that female online gamers tend to enjoy playing simple web games and less violent online games (Laber 2001), such as card games and board games.

Such games come under the category of the online casual games , where gamers have low commitment to the virtual life (Krotoski 2004). This refers to gamers who are unwilling to devote hours to play never-ending multiplayer online games. According to a survey by Neilsen Netratings (2004), female gamers aged between 35-49 years spend more time playing non- multiplayer online games, mostly web games, than any other demographic.

A web survey sponsored by Intel (Kompas Cyber Media 2003) reports on the profile of Asia-Pacific gamers, including their countries of origin, behaviours and their favourite places for playing the games. The participants of the study were gamers who played online games as part of their daily routine. The convenience sample had 2000 gamers in Australia, China, Korea, Malaysia and Taiwan. Each country was represented by 400 gamers. Conducted by Synovate in June to August 2003, the survey revealed that approximately 97% of those gamers sampled were males and about 54% of them were students. The average age of gamers in the China sample was older than those in its neighbour countries (Kompas Cyber Media 2003). More than half the Chinese gamers were 21 to 25 years old, while 59% from the other countries were less than 21 years old. About 83% of gamers surveyed in the Asia Pacific played games at home.

However, in Malaysia and China, Internet cafes were the favourite places; while about 57% of the Australian gamers sampled preferred to play using Local Area Network (Kompas Cyber Media 2003). According to the study, older people were less likely to play games in Internet cafes, with only one-third of these gamers being over 25.

A survey about the habits of 680 online gamers found that online games were not popular with inexperienced Internet users (Game Research 2002). This was shown in the fact that 75% of gamers had been playing online games for one to five years, and that 95% kept themselves technology-informed by using computers or hardware that were less than three years old (Pedersen 2002). The survey also found that 6% of participants played online games more than 30 hours per week. Among these players were professional gamers (people who play for prizes) who spent an average of 27 hours per week playing games, with 17 hours out of the total being online (Pedersen 2002).

3.1 Language In The Virtual World

The language in the majority of onlinegames realms is English, therefore it is essential for players to some extend knows their way around English. Dialogues with the characters are all carried out in English. The menus, information, and everything readable in the games are also in English. When interacting with other players English is the most common language, even if the language used between players in the virtual world creates a special kind of communication with friends from a handful of languages. It is not uncommon to encounter English with nuances of Swedish, German, Arabic, and so on. The language in most online games is very versatile and mixed, but the base language is still English, and most communication is carried out in English, especially when meeting new players for the first time. Without basic, and sometimes intermediate, skills in the English language a player might have a hard time discerning what he is supposed to do next, or which road to follow and so on.

3.2 Gaining From Online Games

Online games provide an immense learning environment that could promote the development of deep, conceptual knowledge of a particular domain, such as vocabulary, by allowing the players to experience the virtual world through sight, sound, participation, and imagination. Context is an important part of the learning process. Role-playing fantasy games might help motivate learners, as they are creating a virtual world as a context for foreign language learning. This will help learners to concentrate on correct and coherent use of English, to communicate intent and to assist other players/learners with completing game tasks and quests. Furthermore, computer games emulate a different approach to second language acquisition by providing an immersive learning experience. This might in turn help create an active learner.

Online games are also accessible. With more than 10 million registered players world wide, and with 2 million in

Europe (Blizzard Entertainment: 2008), it is a medium most likely already used, or at least recognized, by some of the pupils in our school. An important part of being a teacher is to be able to view things from your pupils' perspective and to incorporate them into the teaching. This is one way of achieving this goal.

4 Method

This study is mainly of a qualitative nature, as it is based on literature on the subject as well as on interviews. In order to gain insight in this subject I have through the interviews collected the views and thoughts of seven boys who are frequent gamers, and who are all around 10 to 17 years old. My intention with the interviews was to connect the player's engagement, enthusiasm and time spent on video games with any possible learning. The aim was also to try to find a connection between possible learning situations and their virtual characters in their virtual everyday gaming habits, as well as to find connections with their world outside of the game.

In the book Doing Qualitative Research in Education Settings (2002), Hatch describes the qualitative interview process as "special kinds of conversations or speech that are used by researchers to explore informants' experiences and interpretations" (Hatch 91). Furthermore, Hatch also states that the interviews are used in order for the researcher to structure and interpret the meanings of the informants' answers from the interview, that is to "make sense of their worlds" (Hatch 91).

4.1 Data Collection

The interviews were carried out on two different occasions. The first group interview with three players was conducted on 10th of October 2009 and the second group interview with another four was carried out on 14th October 2009. The interviews were based on an interview guide based on the following three typologies:

- Background and gaming habits
- Language use and exposure to English during gaming sessions
- Possible benefits from playing video games

5 Results

In this section I will present the results of the interviews. The results that focused on the connection of the player's engagement, enthusiasm and time spent on video games with any possible learning will be presented here in three subsections. The first consists of the findings regarding the gamers playing background and gaming habits. The second subsection presents the findings on the language they use and also the exposure to English during their gaming sessions. The third consists of the findings on the possible benefits the players can get from their gaming session.

5.1 Findings Regarding Background and Gaming Habits

This section presents findings regarding the gamers playing background and gaming habits. The online games players vary from age and years of playing . They also differed in the games they like to play and also the time spent playing. Table 1 summarise the players characteristics.

Table 1 : Players summary (N = 7)

Name (Pseudonym)	Age	Years Of Playing	Favourite games
Adam	13	4	World Of Warcraft, Action Quake
Salleh	18	5	World Of Warcraft
Eric	10	3	World Of Warcraft Maple story
Cheah	16	7	World Of Warcraft Maple Story
Ben	17	4	Battlefield 2
Shamsul	17	5	World Of Warcraft Fifa
Danial	15	6	World Of Warcraft Fifa

I asked the boys to tell me how they first came into contact with online games, what they were playing when they were younger, and how they would describe their gaming habits today. Many of the players started playing when they were quite young . Some of them have their parents supervised their newly found interest.

> *I first started playing games online when I followed my friend to the cyber café. I asked money from my parents and my father sometimes followed me to the cyber café to see what I am playing.* (Adam)

> *Last time I played only for one or two hours because my parents always control me and they do not allow me to go to the cyber café frequently. Now I have my own money because I am working and I will spend around three to four hours a day playing my favourite game World Of Warcraft*. (Salleh)

Erik cannot really remember how old he was when he started playing, but describes that he had a brother that introduced him to playing video games. This was also the case with Cheah, as he was also introduced to video gaming by his older brother.

> *I started playing games quite early. My brother had online games on his laptop and I learn from him*. (Eric)

> *My brother always played at home with his friends. I sometimes borrowed his laptop and log in to play but when I start playing my brother does not want to teach me many things, so I go to the cyber café and learn from my friends.* (Cheah)

On the questions regarding the informant's gaming habits today, most of the players explain that they play between two and fours hours per day, and that they play many types of game but the most popular is the game World of Warcraft.

> *I always play around two to four hours at the cyber café depending on the money I have .I like to play Action Quake and also World Of Warcraft.* (Adam)

> *I have been playing the game Battlefield 2 since it came out in 2005, and I played in a community with 150 members, from all over the world. The oldest member is 55 years of age in my community*. (Ben)

One of the players, Shamsul tells me that he played on all the Nintendo consoles when he was younger, but that he switched to computer games, and he started playing World of Warcraft when it came out in 2004. He played the game intensely for a couple of years but then he suddenly stopped playing. The main reason for this was that his friend that he played with switched server and Shamsul did not want to start all over again.

> *I first started with Nintendo when I got it as my birthday present from my parents. When I was 12, I started playing at the Cyber Café till now. My favourite game is Fifa and I like to be the manager and managed my team. I also played World Of Warcraft but I stopped because my friends changed the server and I don't want to start from the beginning level again. Now I play Fifa and I like it so much*. (Shamsul)

Danial started playing when he was around nine years old. Now he is fifteen and still hooked on Fifa and World Of Warcraft.

> *I played online games since I was nine years old but that time the games were not as interesting as today. Less colourful and graphic not very sharp like today. I like playing at the cyber café because the internet is faster than at home. If I played at home my mother always come and look at what I do with the computer, so I play outside. Now I keep my pocket money and I can play around two to three hours a day whenever I am free. I played Fifa and World Of Warcraft now*. (Danial)

5.2 Findings Regarding Language Use and Exposure to English During Gaming Sessions

This section describes how the players come into contact with English language when they are playing games. In both interviews, many of the players usually chat through the games they played. They use the built in chat program in the games.

Adam discusses how he uses English, even though many of his friends on the server are
from Hong Kong and India where English is also not their first language .

> *I chat with my friends from Hong Kong and also from India and many other places .They also use English but not so perfect just like me. So we can chat without worry making mistakes . If I do not use English then I cannot trade my things in the game and I cannot move up my level. Then I only waste my time.So I have to chat with them although my English is not very good.*(Adam)

Salleh, who played World Of Warcraft says that he also used English when preparing for the great battles. He played in groups of forty players, a few days per week, but he did not meet his group until evening. Until then he played together with random persons, and spoke English constantly.

> *If I play in the morning, most of my group members will not be there. They will be online only in the evening maybe because of the time difference . We chat in English to change ideas or strategies and also to trade things in the games. They are from Singapore, Taiwan, Scandinavia and everywhere else, but we all use only English. Usually there are like forty players in my group*.(Salleh)

Here, Shamsul and Danial added to the discussion that it would feel awkward to meet players whose mother tongue is English, but they still have to communicate because they have no choice but to proceed in their gaming sessions and stay in their level.

> *I have friends from United States Of America and also United Kingdom and they speak very good English. My English is not very good but they are very helpful and kind. They understand what I mean in out chat and there is no problem for me to get things I want from them. At first I am afraid that they would laugh at my language but its ok for them*. (Shamsul)

> *I chat with my friends from the English speaking contries and I feel quite awkward at first. But as I played with them and get to know them better through the chat in the games, we communicate using English to do many things together for our group and to get to higher level*.(Danial)

Eric, who mainly plays the game Maples Story online, describes how he plays the game and
how he uses English when playing.

> *I band together with my group in parties to hunt monsters and share the rewards. We also join a guild to interact more easily with each other. To do all this I have to use English. Many of my group members are from Korea and their English also not very good. We combat monsters and complete quest to get currency called "Mesos", experience points (EXP), and various items*. (Eric)

Cheah, who mainly plays World Of Warcraft tells me that he is part of guild, a group of people in a community within the game, which consists of people from around the world, but mostly from England. English is used in communication and to be consistent in his activities in his community. He will also look up for words he does not understand and refer to friends and also dictionary.

> *I am a part of my guild and many of my friends in the guild are from England because I join their server. Of course I have to chat in English if not they will not understand me. Lucky my English is not that bad and I have no problem to communicate. If I have words that I do not understand I refer to the dictionary or ask other friends*. (Cheah)

Ben plays battlefield 2 for almost five years . In Battlefield 2, players will choose to fight for one of three military superpowers: the United States, the Chinese, or the newly formed Middle East Coalition. Armed with the latest modern weaponry, players can take control of any of the game's 30+ vehicles to engage in major conflicts with over 64 players in some of the largest online battles on the PC. Additionally, persistent character growth allows players to rise through the ranks and attain the ultimate rank of General.

> *I like to play Battlefield 2 and had been in the group for almost 4 years. Now imm in a quite high rank but I aim to get to the General ranking. To communicate I have to use only English. We buy weapons and trade things we have to move in the battle. I fight for the United States Military and never changed to other group. I have good friends in the group although I do not know them in real world but we meet online almost everyday if we play together.(*Ben)

5.3 Possible Benefits From Playing Online Games.

In connection to their language use and exposure to English during their gaming sessions, I was also curious about their thoughts on any possible benefits from playing online games Without explicitly asking for any language-connected benefits, all of them agreed that their English has been improved because of their gaming. Many of the boys mention their time playing the online games as one factor for improving their English.

> *If I do not play these online games I will not use English daily because my friends in school speak Chinese and they seldom use English to ask for things or to ask help for example. I think since I played games seven years ago I get many new words in English and I am brave to use the words when I chat with my friends in the games.* (Cheah)

> *I do not read English books but only when I play online games I have to use English if not I will not get to the higher level.. I do not want to waste my time. I played for 6 years already and I am in a high level now. My English is better because I know many words from the games. Sometimes I have to read many instructions and all the instructions are in English. Indirectly I read in English although I do not read many English books during my free time.* (Danial)

Both Ben and Shamsul agreed with what Danial and Cheah said , and added that they can also improve their writing skills.

> *When we chat online we composed sentences to express our feelings, needs,or just to share ideas. Some players are very polite and they do not use bad language in the games. They are just like normal friends we meet everyday although we do not know them in the real world. The way they requested for things and how they support the groups with motivational sentences can be applied in my essay in school.* (Ben)

> *I think when I started playing games 5 years ago I know more English words than before. I am more confident to talk in English with my teachers and friends. I can also write better now because of my confidence and I have more vocabulary to express my ideas when writing.* (Shamsul)

Apart from language skills, Adam and Eric discuss the positive feeling of success when they complete their mission in a group and also when they win in the games.

> *When our group complete any mission together, which sometimes takes three to four hours of playing, we will all fell to happy and we share our success together in our chat.We will thank our leader who leads the mission and making it a success*.(Adam)

> *I feel so glad if I win in a battle or in completing any mission with my group. We will chat and share how we feel to defeat other groups. The feelings are hard to describe but onbly players that had work hard together know how it feel*. (Eric)

6 Discussion and Conclusion

This section presents discussion of the results gained from the interviews. Each subsection is discussed separately.

6.1 Background And Gaming Habits

Most of the informants started playing when they were around nine years old. One started playing when he was seven years old. All of them are still playing the online games games till today but some of them change their favourite game because of their friends changing their servers and they do not want to follow. This reason goes well in hand with what Linderoth and Bennerstedt (2008) found in their report, regarding possible causes to quit playing . Furthermore, it is interesting to see how almost all the informants had similar "training" in video gaming, as they all started playing when they were very young. This can be related to what Gee (2007) points to regarding semiotic domains: not all of the players in this study have the same preferences regarding what type of game they are playing, but they are well trained within online games in large, i.e. the semiotic domain of online games. Gee describes a semiotic domain as, "an area or set of activities where people think, act, and value in certain ways" (Gee,2007).

6.2 Language Use And Exposure To English During Gaming Sessions

In the interview, many of the players agreed that they meet a lot of English in the games that they are playing, as all the missions and tasks they perform in the games. They also agree that they understand the games better now, compared to when they were younger. This result underlines the fact that there is some form of learning going on – both in understanding the structures of the games and also of the English language that the games are presented through. This is valuable knowledge that needs to be taken care of. However, through constantly playing games and new games, the informants may keep their learning up to date, and at the same time apply earlier knowledge learnt prior to the new game.

This is closely linked to tacit knowledge. The gained language skills described by the players, are skills that they have learnt unintentionally or implicit, as the main purpose of their gaming is not actually linked to any formal learning. This type is of interest for the purpose of this study, as I stated earlier that online games could be a source of knowledge. However, it is probably hard to evaluate the quality of the learnt skills.

6.3 Possible Benefits From Playing Online Games.

In the interviews, the players also agreed that their language proficiency had increased because of their gaming. This, they say, is highly connected to the fact that they have to be able to communicate in the game, in this case mostly World of Warcraft, to be able to be successful. As MMORPG games connect people from around the world, English becomes a natural choice of language for most players. Gee (2007) argues, through the "Committed Learning Principle", that if you put enough effort into your gaming, you can apply your learnt knowledge on latter parts of the game . In connection with the discussion of semiotic domains, this could probably be applied on the world outside of the game as well. I believe that good learning could and should take place in different domains and be put into different contexts.

Hence, language learnt from playing online games, could be applied on domains outside of the game. Most players in the interview say that they have noticed an increased proficiency in English in school, and thus they have taken their knowledge that they have learnt in one domain, and applied it on another domain. This also goes hand in hand with Gees' "Transfer Principle" that suggests that you in the games are given opportunities to transfer knowledge learnt earlier in

the games to later problems (Gee, 2007). Again, in extension, this should be available between different domains as well, for example from online games to the real world.

Apart from the discussion about better language proficiency in relation to gaming, the players also discuss the feeling of satisfaction when accomplishing something in the game. This can be compared to Gees theory about "amplification of input principle". This principle, says Gee, is highly motivating for the player, and a sort of mark for what level of mastery you have of the game, which could be compared to the system of your characters' level in World of Warcraft. Based on Gees theories, I think the players describe a situation where "good learning", as Gee describes it, has occurred: you have learnt something within the game, and you feel proud when you can apply that knowledge and accomplish something that rewards you, for example through gaining a new item or rise a level for your character.

Gee argues that online games are particularly good at this, because in a limited space and time, you learn and apply your knowledge and you are able to try out new things and put

your effort into becoming better and better at the game (Gee 2007).

Another aspect of the games has to do with what Hylén (2005) refers to as social software. The players describes how they together with up to forty persons completed different tasks in the game, and in fact, all the players in this study playing World of Warcraft describes situations where they in one way or another are reliant on other players in the game. Such examples, given by the players, indicate the value of involving gaming in formal education with aim of emphasizing social skills and co-operation.

7. Conclusion

The main question for this study reads: what are the players' thoughts about their gaming habits and possible learning situations in connection with their gaming? From the findings of the interviews I can conclude that learning could take place in different domains and be put into different contexts. Hence, language learnt from playing online games, could be applied on domains outside of the game, i.e. implicit learning in terms of using English language when communicating with other players can become tacit knowledge that the learner can apply on settings outside of the game. Also, social skills learnt from the structure of a game like World of Warcraft can be used in a formal educational setting and also in their everyday tasks. Besides positive language effects, another benefit of multiplayer online games lies in its role-playing, helping people who are shy or have trouble forming social relationships to be more active, try new things and train themselves in leadership skills in online communities. All these skills will be useful to our children when they grow up and face the real world later.

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Interactive Multimedia Education: The Comprehensive Way on Teaching and Learning Networking Subjects

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I. INTRODUCTION

Networking is one of the subjects in the area of Information Technology (IT) which concerns more on technical approach and connectivity. Since it required problem solving and troubleshooting skills, it invites fear for the people to learn more about network even for simple network configuration, from configuring internet network connection to setup the network printer. Network is the subject that required students to visualize the concept of data communication. Informal survey and random observation among the IT students have been made at Kulliyyah of Information Science and Technology, Kolej Universiti Insaniah. Students basically claim that they cannot visualize the process in networking for example of how data being transferred. Even there was so much video tutorial online (for example from Youtube) about the process of each step in networking, the video is not interactive and did not have any module to enhance the understanding of the students on that particular subjects in networking. Plus, it was only one way communication and lack of interactivity. Hence, we cannot fully rely on that kind of resources and start to find the more interactive and module base solution.

There was very little commercial courseware developed to help students mastering networking subject. One of the examples is CompTIA Network from CBT Planet [1] but it is specialized on training for test like Cisco and Microsoft which has advanced features and design for higher level user and did not cater with the level of the students. If we can personally develop the courseware which fits the level of the students on the specific subject syllabus, the impact of students understanding will increase. The research on developing networking subjects' courseware has been started at the kulliyyah and our goal is to produce networking courseware which is module base that consist the topics in the particular subjects. Hopefully, this will increase students understanding and interest in networking subjects. Network in reality is not a tough subject if we cater it through the correct method. Furthermore, students can learn and understand better trough visualization and image animation compared to traditional way which is stressful that will lead to frustration. In this paper, we proposed a design for the networking courseware which is more interactive and fun.

II. DESIGN OF NETWORK LEARNING SOFTWARE

This courseware consists of several modules available to simplify and enhance the teaching and learning process of networking subjects. For the beginning, we start from the Computer Network Technology subject. Through a quick survey, most of the students taking that subject stated that they need a courseware for multiplexing topic. So, as a trial, we start with one topic in that subject which is multiplexing. Figure 1 below indicates the first page of the courseware. We call it as courseNET.

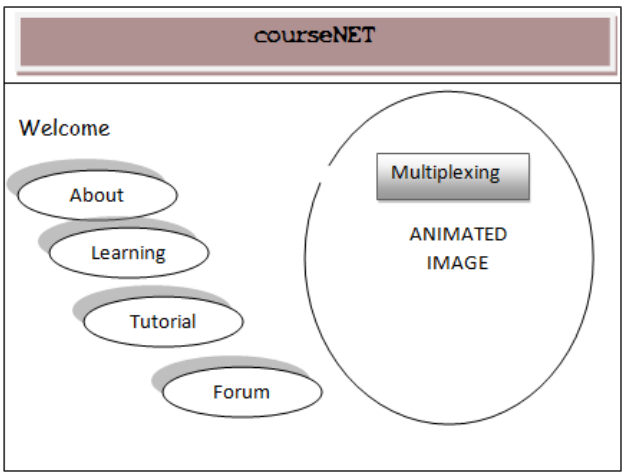

Figure 32. courseNET

The interfaces for courseNET will have four colors; purple, yellow, black and white which is the institution color (take note that the figures provided in this paper is the basic illustration and may not have fill color). There are four modules in courseNET; 'About', 'Learning', 'Tutorial' and 'Forum'. 'About' is the brief introduction for courseNET. Figure 2 is the interface for 'About' module. 'Learning' is the module which provides the teaching and learning materials regarding the subject. It is in chart form as a map to which the subject headed that helps user to navigate from topics to subtopics inside the module. Each of the topics and subtopics has the navigation links so that user can directly jump to the specific topics and subtopics. Figure 3 denotes the 'Learning' module.

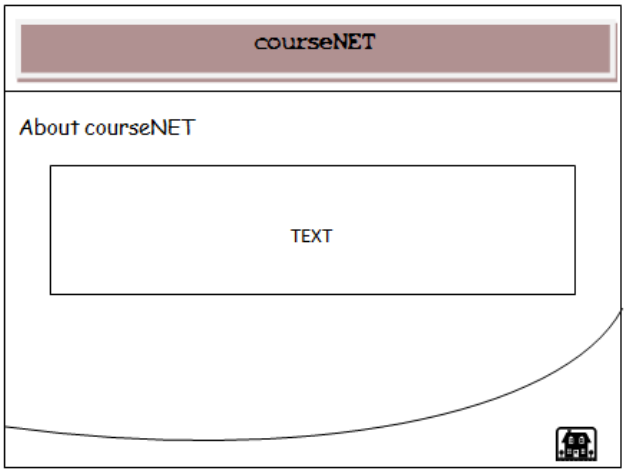

Figure 33. 'About' module

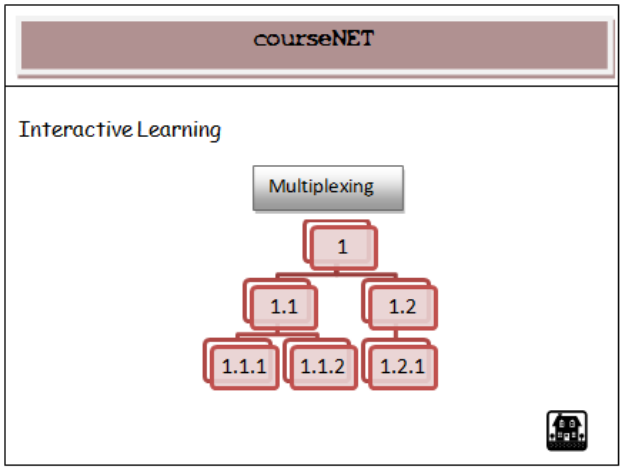

Figure 34. 'Learning' module

Figure 4 is one of the example pages of the 'Learning' module. According to [3], successful learning activities are based on 4P's which is Presentation, Practice, Performance and Purpose. Practice is when learners have the information they need, they have to understand it and 'work it' so that they internalize it, that the more ways we can find to involve students imaginatively in this phase the better. Based on this principle, in courseNET we also stress on the practice itself which is through 'Tutorial' module. This module will give the user the chance to test their understanding of the subject. Tutorial will be divided into the subtopics and user can repeat the exercise until they can master that topics. There will also test inside this module and it is also repetitive. User can take the exam repeatedly to improve their current score. Figure 5 shows 'Tutorial' module and Figure 6 is the Test page (extension for 'Tutorial' module). Each topic in Test will have the link available.

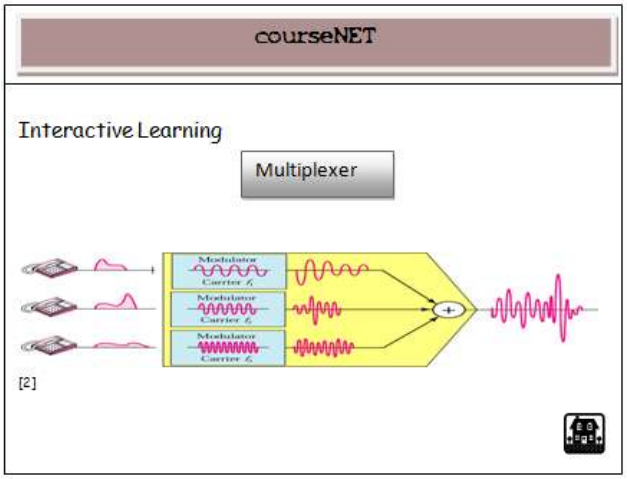

Figure 35. 'One the topic in 'Learning' module

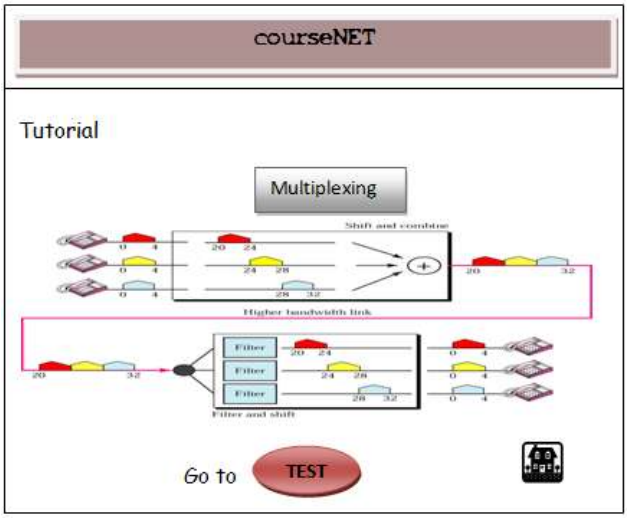

Figure 36. 'Tutorial' module

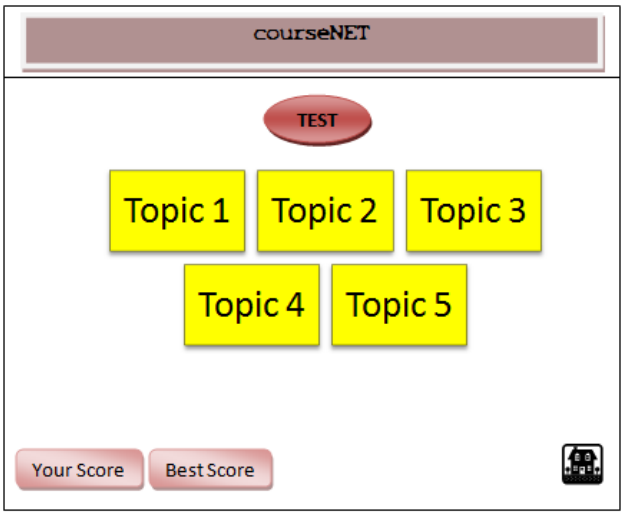

Figure 37. Test in 'Tutorial' module

Finally, there will be 'Forum' module which provide the platform for interactive questions and answer session. If the

users have any questions regarding the topics, they can post their question to the forum by creating new post or search using the searching tools provided. Answer will be reply by the advanced user that know the answer or by the lecturer. This module also provides chatting facilities so that users can communicate directly among themselves. We plan to classify the user into two groups that indicates newbie (student) or the advanced user (lecturer). Figure 7 is the 'Forum' module.

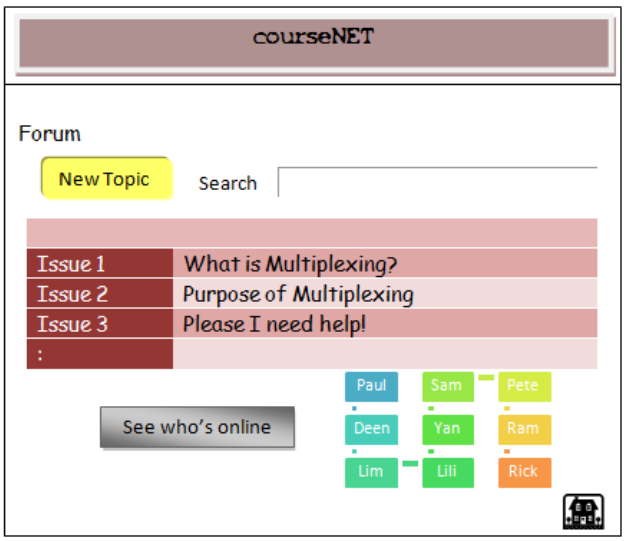

Figure 38. 'Forum' module

Each of the interfaces inside the modules will have 'Home' button at the bottom right corner for the purpose of navigation.

III. HARDWARE AND SOFTWARE

To develop a system, both hardware and software are essential. For the hardware, we use laptop with the requirements as stated in Table 1 (the basic requirements for system development). This courseware will be available online to support dynamic features. It is easy to control the changes in the contents compared to compact disk (CD). Therefore, the software use must support the web content. For the courseNET development, we tend to use Adobe Flash CS5. Flash adds animation and dynamic interaction to the web site which is perfect for dynamic website [4]. Basically, we use Flash for the interface and simple features for the courseNET. Flash will be integrated with the Joomla [5].

TABLE II. LAPTOP REQUIREMENTS

Model	Compaq Presario CQ40
Processor	Intel Pentium Dual Core Processor T3400
RAM	2GB
Hard disk capacity	250GB
Display	4.1" WXGA BrightView

IV. DISCUSSION AND FUTURE WORK

courseNET is an interactive way of learning the subject for example networking subjects. Basically, the tutorial online just show how multiplexing works [6] but it did not provides interactivity with the students since it is just a basic video. There was also no question and answer session and no practical exercise. At the other side, courseNET provides all the features stated above and it suits well with the content of the syllabus.

In the future, we tend to includes more topics in the subjects (Computer Network Technology) and expand it to other subjects for example Advanced Networking, Routing and Switching and Network Security. This courseware wills helps in improving teaching and learning in networking subjects. The courseNET is a web-based application which enables dynamic content. Therefore, it is our intention to enable courseNET to the registered user. User can register as a lecturer or student. The lecturer will be given some privileges for example certain modules can be administer by them. For example, lecturer can update the contents of the notes to keep it up to date. Hence, the dynamicity of courseNET can be ensures and students can actively involved in teaching and learning activities.

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Mathematics Courseware for Children with Hearing Disabilities

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Abstract— **This project describes an interactive learning courseware that has been developed to assist teachers with an effective approach to teach mathematics to special students in particular hearing impaired students. As such it overcomes the limitations of current e-learning systems that tend to ignore marginalised groups such as the hearing impaired. A courseware module has been introduced to teach numbers and counting to deaf students aged 7 to 10 years old. It also teaches the simple mathematical operations. Unlike traditional method of teaching; which tends to be teacher-centred and student remain as passive recipients; students are kept actively involved in the learning process. The teacher then acts as a guide to facilitate their learning. Interactive activities and games are among the extra features that are employed allowing teachers to measure their students' comprehension. It is a CD-based delivery method where sign language is used together with other multimedia elements, such as graphics, animations, audios and videos. This courseware has been adopted for teaching Mathematic in Sekolah Kebangsaan Pendidikan Khas (P) Kota Samarahan, Kota Samarahan, Sarawak, Malaysia. The courseware has tremendous potential to be used as an interactive tool for this special group of students as this will focus on student's comprehension and improvement.**

Keywords- Courseware, hearing disabilities, interactive learning.

I. INTRODUCTION

Access to education for the deaf and hard of hearing is no longer possible, as more students attend school that provides special education to cater their learning needs. Thus educators felt there is a need to have an access to interactive teaching materials in order to encourage effective learning. However interactive education requires a great deal of creativity from teachers to develop interactive approach. Therefore the integration of multimedia elements into the teaching material believe to be more effective compared to traditional teaching methods [1].

To promote interactive teaching and learning environment, a computer based learning such as courseware, educational software and e-learning are powerful tools that could change in which students consume education. It is also shift how students opt to learn based on their learning needs [2]. In order to increase the accessibility of teaching software for hearing impaired people, these characteristics must be put into account [3]; a) provide visual form of all audio information, b) prepare captions in all multimedia presentations, c) ensure all visual cues are made aware to user although user does not see it on the screen, d) attract user by emphasize the significant information.

Multimedia elements and environments can provide multiple representations of concepts that are more meaningful to students who are deaf or having difficulties on hearing [4].

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Interactive education is important as it provide more understanding to deaf and difficulties on hearing students. This can be achieved by integrating it with the experiences of the students or by using actual practice. Animation is deemed the most enjoyable features for younger age deaf students [5]. Other studies found that usage of multimedia technology can increase student's motivation, self-esteem, and achievement as well as receive teacher and parent's satisfaction [6, 7].

In Malaysia, non-government organisations (NGOs) such as Malaysian Association for the Deaf and The United Nations Children's Fund (UNICEF), Asia Pacific Institute of Information Technology (APIIT) and Malaysian Federation of the Deaf (Persatuan Orang Pekak Malaysia) had published CD/VCDs or accessible on-line materials from the Internet as teaching and learning aids for the deaf community [8]. However, the material contents were in video format which is not interactive enough and only focusing on cued speech. On the other hand, most existing coursewares available in the market are targeted only for the normal student [9, 10, 11]; and courseware developed for hearing impaired student based on Malaysian education system nearly none existence.

Learning mathematics is another area in which deaf student often underperform compared to their normal peers and for which special signs are required. The mathematics skills exhibited by deaf student are well below of normal student, although their mental capabilities are basically the same [12].

This project focuses on the development of a CD based courseware for learning Mathematics specifically for the hearing impaired primary school students aged from 7 to 10 years old based on local contents. Instead of using video alone, other multimedia elements such as animations, graphics, audios and text were used in the courseware. English is used as the medium of instruction. The courseware has been experimented for teaching in a local special school for the hearing impaired, Sekolah Kebangsaan Pendidikan Khas (P) Kota Samarahan, Sarawak, Malaysia.

The paper is organised as follows. Section I introduces the education for disabled students specifically hearing impaired students and learns mathematic by integrating with multimedia elements, while Section II explains the methodology that been used and Section III discusses on the implementation of the system. Results and analysis as well as Conclusion and Future Work could be found in Section IV and Section V, respectively.

II. METHODOLOGY

The research works are based on Multimedia Project Development Life Cycle adapted from [13, 14] integrated with the ADDIE model [15] which is specific for prototype development. ADDIE model involved five processes such as analyse, design, develop, implementation and evaluation or testing. This paper is focused on assisting primary school student learning mathematic by developing interactive courseware. In the early stage, the project goal needs to be defined. Through the understanding of the project goal, the type of data that need to be collected can be identified. During the data collecting phase, research on the existing and similar courseware in Malaysia was carried out [8]. The interview and questionnaire had been done to gather the information needed for the courseware as well as the observation of the target users using the current courseware. The contents involved in the courseware are based on the national primary school syllabus. The analysing of data collected was done during the analysis and design phase. The specification of instructional courseware module structures also carried out during this phase together with the Graphical User Interface (GUI) designs. In spite of that, a proper design will give guidelines for the implementation of the proposed courseware based on the requirements needed. Fig. 1 shows the general methodology conducted for this project.

In the development phase of this courseware, it is only focusing on deaf students, aged between 7 to10 years old and it only providing contents on the very basic introduction of mathematical operations; for instance how to start counting, introducing numbers and basic mathematical operations such as addition, subtraction and two other additional features; multiplication and division. Courseware developed was integrated with multimedia elements such as video, graphics, text and animation. Once all elements were integrated, the courseware was implemented during the implementation phase. The complete implementation phase for this courseware was discussed in Section III. Macromedia Flash CS3 is fully utilised in developing the courseware. All tutorial and scripting language regarding the development of application has been collected earlier. Overall, during the testing phase, the development of the courseware gained positive feedbacks from the teachers and students. However, upgrading the contents, functionality and usability are needed in order to make the courseware more useable and interactive. In order to test the courseware, the qualitative and quantitative testing was used. The purpose of using qualitative testing is to evaluate the quality of the proposed courseware while the quantitative testing is to measure the specific amplitude, level, or quantity of a material or output, to evaluate the operational characteristics of an item. As the existing courseware is mostly developed for normal student without catering the hearing impaired student's learning experience, it is hoped that it can be a starting point in providing and standardising teaching materials in all primary school with hearing impaired student. Finally, to ensure the courseware is accessible to the disabled, so that they can use the product where by the accessibility could make the user-interface perceivable, operable and be understood by users with different capabilities [16].

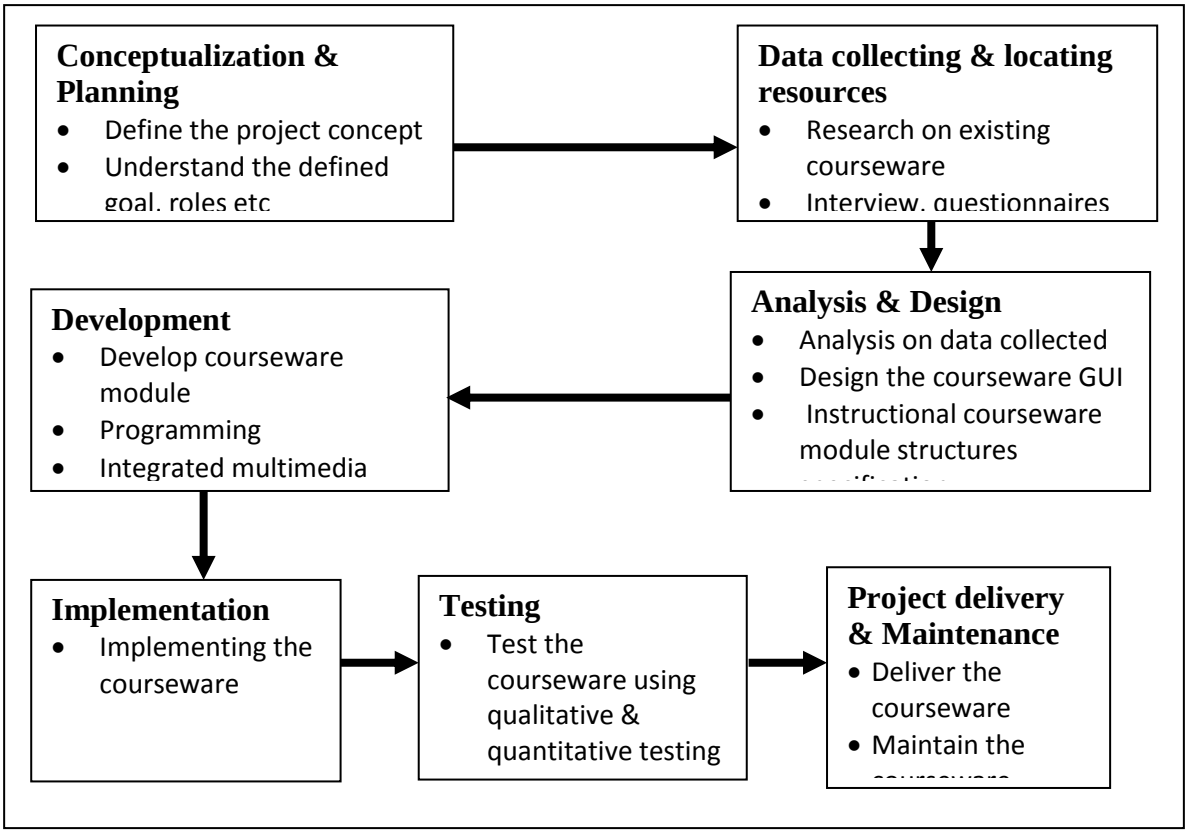

Figure 1. Development model

A. Multimedia Components

In developing a courseware, multimedia components must be applied so that good, effective and interactive application can be created. The multimedia elements that are applied into this courseware were including the text, graphics, audio, video and animation together with user friendly graphical user interface (GUI) [17]. Therefore deaf people do not face any problem using the courseware.

Text is a very important element because it is used to convey necessary information to the students. Different text sizes and font are used for various purposes. Graphics are designed to add better appeal to the interface of the developed courseware. Quality of graphic is important in order to ensure the outlook and learning is continuous. Graphics is manipulated to make sure it is more interesting and appealing to the students.

Animation element is applied in order to make the content looks more dynamic. With the use of animated graphics and texts, a message can be delivered to the student in a more effective way. In this courseware, animation element is the most applied element as it is the most suitable approach to this special student with disability.

Video is used in this courseware as an instructional to the user. It guide user through sign language that been implemented together with video as the medium to deliver the information or instruction. Audio is one of the important elements in the multimedia courseware. Hence, for this courseware, the audio should be clear and concise in order to make sure that the learners; hearing impaired disabilities and normal students have accessed to the full range of speech sounds. An increase in the level of multimedia interactivity can enhance participation, communication, exploration, creativity and satisfaction. All modules developed in the courseware required the interaction between users (teacher/student) with the courseware. On other hand, it allows student to enjoy their learning. These interactivity features were created and supported by functions and components of multimedia authoring tools.

In addition to the navigational tools, the module's built-in learner activities provide students the opportunity to interact and implement their learning of the concept in Mathematics. It is to enhance their understanding and learning. At the same time, it also can engage them to their learning process.

III. COURSEWARE IMPLEMENTATION

Fig. 2 shows the flowchart of this courseware which has been produced in order to have clear view on the courseware navigation. Apart from the three basic mathematics operations: knowing number, addition and subtraction, two additional features were added to the courseware: multiplication and division operations.

First, this courseware will start with montage preview. Then the main page will be appeared. At the main page, there are six main buttons which include Introduction, Knowing Number, Level 1, Level 2, Quiz and Exit. In *Introduction page*, information regarding content of courseware will be briefly explained. In *Knowing Number page*, the basic introduction of

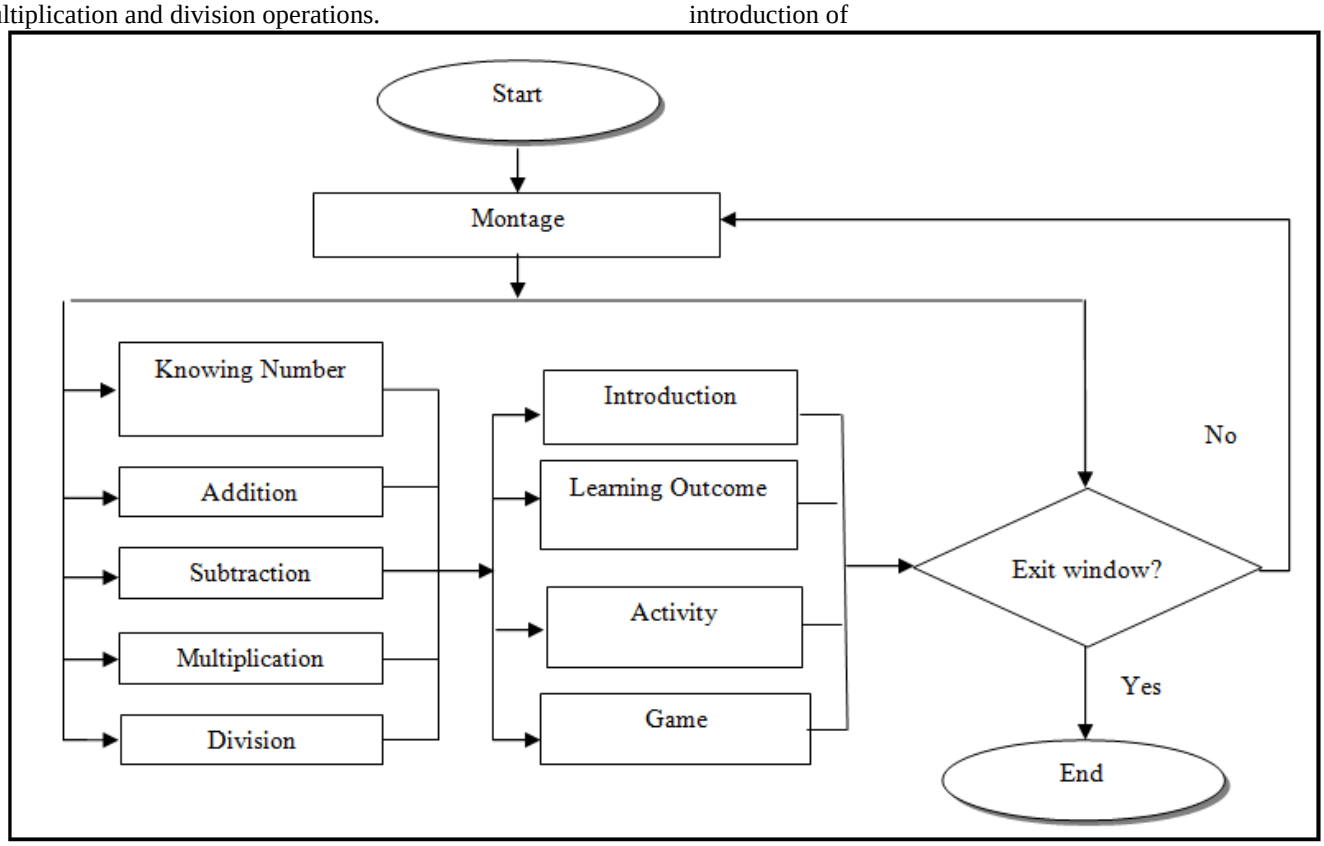

Figure 2. Lesson flowchart

number will be introduced to the student. In *Level 1* and Le*vel 2* pages will contain the lessons that are modelled according to the specific learning objective. In *Quiz* page, there are opportunities for the user to participate in activities such as exercise and game. Moral values are incorporated where appropriate. Last but not least, the *Exit* button to end the navigation within this courseware.

For the purpose of this paper, the interfaces in this courseware will only be discussing on two selected Unit of learning: Number and Addition. It is because the content flows basically similar to each other. The main menu of this Courseware consists of five main units which are *Unit 1 Number*, *Unit 2 Addition*, *Unit 3 Subtraction*, *Unit 4 Multiplication* and *Unit 5 Division*. Every unit will bring user to the specific learning unit. Fig. 3 shows the main menu of the courseware.

Fig. 4 displays learning unit 2 (Addition). In every Learning Unit Section (1-5), it consist another four sub menus which are *Introduction*, *Learning Outcome*, *Activity* and *Game*. The four sub menus will navigate user through different stages of courseware contents. There are also three extra metaphor buttons which is *Help*, *Main Menu* and *Exit*.

Figure 3. Main Menu

Figure 4. Learning Unit 2 (Addition)

Figure 5. Learning Outcomes for Unit 1 Number

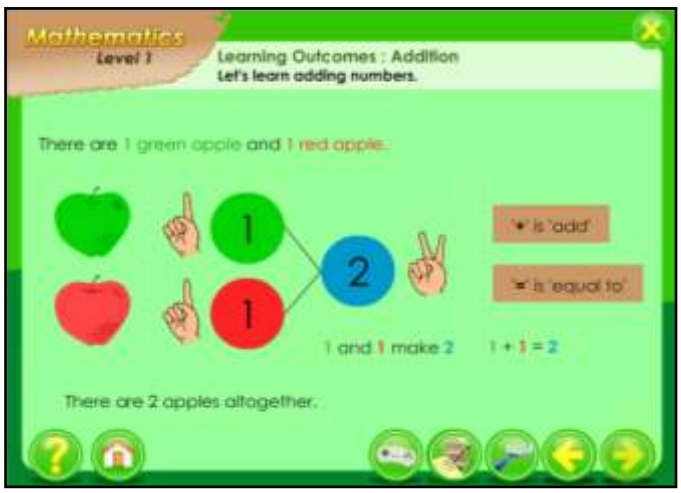

Figure 6. Learning Outcomes for Unit 2 Addition

Figure 7. Menu at Activity page

Figure 8. Game Learning Unit 2 Addition

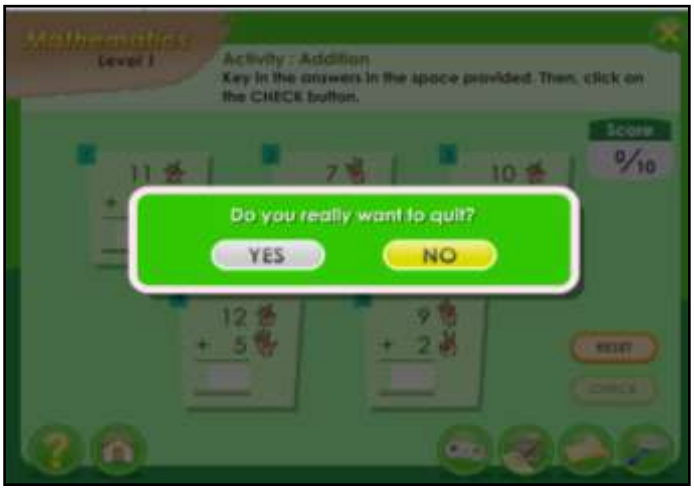

Figure 9. Exit interface

Fig. 5 and Fig. 6 are illustrating the Learning Outcome section. It will determine the learning concept of each Learning Unit operation that contain in the courseware. In this learning section, multimedia images such as graphics and animation were used to present the instructional content. It is aim to help student visualize concepts and ideas. With animation included in the module, students were able to see examples of how the principle of each operation was applied in animated sequences. The visualization of the concepts enhanced their understanding of the content.

Fig. 7 displays Activity menu, which contains selection to three different type of activity through link of Activity 1, Activity 2 and Activity 3. Those three activities will navigate user to the different stage of activities. For example in Activity 1 the activity will implement the objective concept, Activity 2 used the drag and drop concept and Activity 3 will require user to key in the answer in the space provided. All this method is applied at the other four Unit of learning.

Fig. 8 shows the game activity where user can drag the spider on any answer provided. Once the spider placed on any number, system will regard is as an answer.

Fig. 9 show the situation when the user clicks 'No' then the application will terminate the exit request. If user clicks 'Yes', then the exit page will appear around ten second before the application terminates.

IV. EXPERIMENTAL RESULTS AND ANALYSIS

The need analysis conducted prior to courseware development in order to determine the requirement and problems faced by the children in learning Mathematic. Four methods have been adopted: literature review, interview, observation and questionnaire. First, background study on education for deaf community especially children with hearing impaired in Malaysia were reviewed. Existing courseware for teaching/learning that provided by Malaysian government and tools available on the market were analysed to determine and identify the suitability and effectiveness the existing courseware as a teaching aid. To have further understanding on current problem in using courseware as an interactive approach, interview was conducted with the teachers. Hence for the enhancement, the propose courseware will focuses on the critical area that highlighted by the teachers. The target users were asked to use the courseware they currently use in the classroom in order to observe the real problem in the system. Two set of questionnaires were developed targeted for teachers at Sekolah Kebangsaan Pendidikan Khas (P), Kota Samarahan and lecturers and students from Multimedia Computing, UNIMAS. These questionnaires were intended to evaluate existing courseware used as the learning aid and to rate them based on the systematic content, efficiency, ease of use and attractiveness.

For the purpose of this paper, we are going to describe the student's score based on topics and its activities in order to evaluate their learning outcome. There are 3 topics; *Number*, *Addition* and *Subtraction*. Each topic includes 3 activities that need to be completed by the respondents. Each respondent will be evaluated using a score with a scale of 1 to 10; with 1 being the lowest mark and 10 is a perfect score. For analysis purpose, Fig. 10 shows the average score by respondents for each topic and its activities.

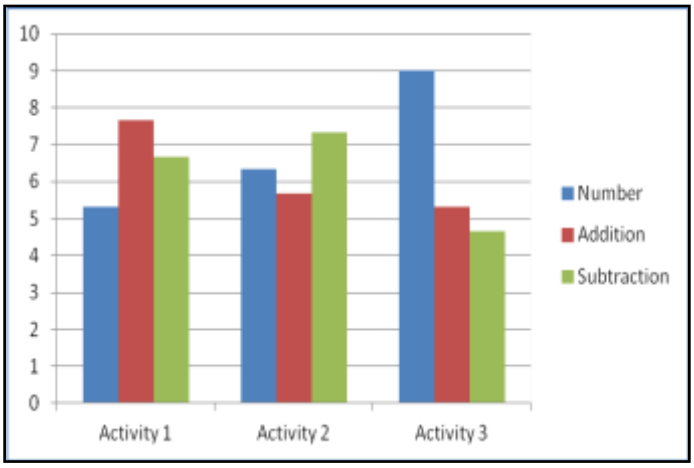

Figure 10. Average Score for Respondents for Each Topic and its Activities

For Topic 'Number', the average score for Activity 1, 2 and 3 are 5.33, 6.33 and 9.0. This shows more than 50% of the intended learning outcomes are able to be imparted by the respondents.

For Topic 'Addition', the average score for Activity 1, 2 and 3 are 7.67, 5.67 and 5.33. This shows the same pattern as previous topic, whereby more than 50% of the activities' intended learning outcomes were able to be completed by the respective respondents.

For Topic 'Subtraction', the average score for Activity 1, 2 and 3 are 6.67, 7.33 and 4.67. The trend is similar compared to previous topics for Activity 1 and Activity 2, but slight drop in Activity 3 with only 4.67 average score is obtained. This is due to a number of reasons. 1 main reason is the difficulty of the activity. Activity 3 difficulty level is a little bit higher, due to the nature of subtraction itself, where addition is easier compared to subtraction [18]. Another reason contributing to this trend is student's inability to catch up specific instructions due to the fact that the designed courseware partially applied with the animated sign language.

The reverse trend can also be seen in Topic 'Number', Activity 3 where the average score is 9 out of 10. This clearly proves that difficulty of the topic and activity does play a role in contributing towards the score achieved by the respondents.

However, in relation to the statistical data obtained, a survey and questionnaire has been distributed to the respondents and their teachers. The students showed more interest to learn and their attention span increased while using the courseware. It shows incremental in students' ability to understand, at the same time student can memorise numbers and learn basic mathematics operations. Meanwhile, the teachers commented that the courseware brought a new approach of teaching and learning even it looks better, interesting and much more fun compared to traditional method (sign language).

V. CONCLUSIONS AND FUTURE WORK

In this paper, the courseware has been presented as well as the methodology used. The experimental results shown the courseware has the potential to be improvised especially on its functionality by adding more extra subjects and also advanced syllabus as long as the suitable approaches been applied for these special group students with disabilities. In addition, the courseware is interactive tool for this special group as this will improved usability and functionality of the existing courseware and learning style in this school, especially for mathematics subject.

As for future work, further study can be done in analysing the students' learning behaviour towards the courseware, including suitable selection of colours and designs, with inclusion of 3D images and animated rotational view. Thus, it can enhance and make the courseware more useable in term of user-interface perceivable, operable and easy to be understood by all users not only for hearing impaired but also normal students.

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Penerapan E-Pemasaran Buku Terbitan Penerbit Universiti MTUN: Satu Kajian Keberkesanan

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Abstrak— **E-Pemasaran adalah proses untuk memberi maklumat, berkomunikasi, mempromosi dan menjual produk dan perkhidmatan melalui internat. Kesan dari revolusi internat adalah penyebab perubahan drastik terhadap kaedah pemasaran tradisional. Sesebuah organisasi menerapkan kaedah baharu ini untuk kekal berdaya-saing. Di Malaysia, terdapat empat universiti berasaskan teknikal digabungkan di dalam sebuah majlis yang dikenali sebagai MTUN. Keanggotaannya adalah Universiti Teknikal Malaysia Melaka (UTeM), Universiti Malaysia Pahang (UMP), Universiti Malaysia Perlis (UniMAP) dan Universiti Tun Hussein Onn Malaysia (UTHM). Misi MTUN adalah untuk melahirkan graduan yang tertumpu pada bidang teknikal mengikut modul dan sukatan pelajaran yang terkini. Terdapat unit penerbitan di setiap anggota MTUN. Fokus Penerbit Universiti adalah untuk menyediakan bahan bacaan yang sesuai mengikut sukatan pelajaran. Namun begitu, Penerbit Universiti menghadapi beberapa masalah seperti tahap jualan buku yang rendah, kekurangan staf, dan sebagainya. Kertas kerja ini: mengulas dan mengkaji tentang masalah yang dihadapi oleh Penerbit Universiti MTUN, melihat tahap penerapan e-pemasaran untuk buku terbitannya dan potensinya untuk diterapkan secara mutlak, membincangkan bagaimana strategi pemasaran buku boleh ditingkatkan. Hasil dari kajian ini mendapati bahawa e-Pemasaran mampu memberikan input yang besar kepada penerbit universiti MTUN dari satu saluran tunggal pemasaran kepada pemasaran secara besar-besaran.**

Kata Kunci: e-Pemasaran, Penerbit Universiti MTUN, Kebolehpasaran buku

I. PENGENALAN

Rangkaian Universiti Teknikal Malaysia (MTUN) adalah rangkaian empat universiti teknikal terdiri daripada Universiti Teknikal Malaysia Melaka (UTeM), Universiti Malaysia Perlis (UniMAP), Universiti Malaysia Pahang (UMP) dan Universiti Tun Hussein Onn Malaysia (UTHM). Misi universiti ini pada awal penubuhan adalah untuk melahirkan jurutera yang trampil di dalam bidang teknikal mengikut sukatan pelajaran sejajar dengan perkembangan teknologi terkini. Fokus universiti MTUN tidak sama dengan universiti lain di negara. Ia menjurus kepada kajian dalam bidang teknikal dan kejuruteraan untuk melonjak kemajuan perindustrian negara. Rangkaian MTUN lebih dikenali dengan jolokan *Industry-Focused Universities*.

Terdapat cabaran bagi universiti MTUN yang baharu menubuhkan unit penerbitan, iaitu bagaimana untuk memasarkan hasil terbitan bidang teknikal serta bersaing dengan Penerbit Universiti (PU) yang bukan di dalam rangkaian MTUN. Selain terlibat di dalam proses memurnikan struktur organisasi, pengurusan, pengajaran dan pembelajaran, rangkaian ini sedar bahawa untuk mengekalkan prestasi, mereka perlu imbangkan kadar pengeluaran terbitan di dalam penulisan akademik dan penyelidikan.

Penerbitan buku ilmiah adalah di antara aktiviti utama bagi PU. Bagi PU MTUN kadar penerbitan buku ilmiah adalah kecil, maka penerbitan biasanya dilakukan menerusi pemberian peruntukan tahunan oleh universiti atau berdasarkan penyelidikan yang mungkin diterima secara tahunan atau berdasarkan projek-projek tertentu. Oleh kerana jumlah bantuan yang diberikan ini tidak konsisten, ia menyebabkan penerbitan untuk jangka masa panjang sukar dilaksanakan apatah lagi dijangkakan. Malah, perubahan dan peredaran masa serta adanya penemuan-penemuan baharu dalam sesuatu disiplin akademik turut memendekkan jangka hayat buku sedia ada. Meskipun data-data dan maklumat yang terdapat di dalam sesebuah buku itu masih relevan dan boleh digunakan, namun buku tersebut tetap dianggap ketinggalan sekiranya ia telah diterbitkan selama tiga atau empat tahun.

Masalah yang dinyatakan adalah di antara penyebab mengapa buku-buku ilmiah PU MTUN kurang mendapat tempat di pasaran selain pemasarannya terbatas. Di dalam pemasaran penerbitan, terdapat lima elemen penting: penulis, penerbit, pencetak, pengguna serta penjual runcit. Kesemua elemen ini mempunyai peranan dan kepentingan tersendiri.

Jika salah satu tidak memainkan peranan, sesuatu terbitan akan gagal di pasaran.

Kini, bidang pemasaran semakin inovatif. Dengan merujuk kepada kemajuan di dalam bidang teknologi, terbukti bahawa kebanyakan syarikat penerbitan telah beralih arah dengan menggunakan internat sebagai medium baharu di dalam saluran pemasaran. Kaedah e-Pemasaran, contohnya, semakin giat diusahakan oleh penerbit buku di seluruh Malaysia termasuk IPTA yang telah lama berkecimpung di dalam bidang penerbitan. Tidak mustahil pada suatu hari nanti kaedah pemasaran secara konvensional akan pupus. Justeru itu, kajian ini penyelidik mengupas persoalan tentang bagaimana PU MTUN menggunakakan kaedah e-Pemasaran untuk memasarkan buku-buku yang diterbitkan. Ia dijangkakan mampu untuk memberikan input yang besar dari satu saluran tunggal kepada pemasaran secara besar-besaran.

II. OBJEKTIF KAJIAN

Kajian ini dijalankan adalah untuk mencapai objektif berikut:

1. Untuk melihat faktor yang mendorong PU MTUN untuk mengaplikasikan e-Pemasaran sebagai keadah pemasaran baharu.
2. Unutk mengetahui bagaimana strategi pemasaran buku secara konvensional boleh ditingkatkan melalui e-Pemasaran.

III. PRESTASI PENERBIT MTUN

A. Organisasi Pentadbiran Penerbit Universiti MTUN

Sejarah penubuhan PU MTUN bermula pada tahun 2002. Walaupun umurnya hampir 10 tahun, bilangan stafnya masih kecil berbanding PU lain. Bilangan staf pentadbiran PU MTUN tidak melebihi 20 orang. Ini dapat dilihat pada Jadual 1. Ia menunjukkan bilangan staf PU MTUN bagi tahun 2010 hingga 2011. Struktur pentadbiran PU diketuai oleh Pengarah Penerbit atau Ketua Penerbit dan dibantu oleh Penolong Pendaftar. Manakala Pegawai Penerbitan dikhususkan di bawah sebuah unit yang memasarkan produk penerbitan disampingkan menyelia penerbitan bahan ilmiah. Pada umumnya, pegawai ini menjalankan dua tugas iaitu menerbitkan dan memasarkan buku.

JADUAL 1 BILANGAN STAF PENERBIT MTUN DAN BAGI TAHUN 2010 HINGGA JUN 2011

PENERBIT UNIVERSITI UTeM			
Jawatan & Gred	***Bil Staf***	***Unit***	***Jumlah***
Pengarah (DS52)	1	Pentadbiran	17
Penolong Pendaftar (N41)	1		
Setiausaha Pejabat (N32)	1		
Pem. Tadbir (N17)	2		
Pem. Am Pejabat (N1)	1		
Pegawai Penerbitan (N41)	1	Editorial	
Pen. Pegawai Penerbitan (N27)	1		
Pem. Penerbitan (N17)	1		
Pegawai Senireka (B41)	1	Penerbitan Elektronik	
Pen. Pegawai Senireka (B27)	2		
Pereka (B17)	1		
PENERBIT UNIVERSITI A			
Jawatan & Gred	***Bil Staf***	***Unit***	***Jumlah***
Ketua Penerbit(DS52)	1	Pentadbiran Kewangan & Latihan	14
Pen. Peg. Tadbir(N27)	1		
Pem. Tadbir (N17)	3		
Pem. Am Pejabat (N1)	1		
Pegawai Penerbitan (N41)	1	Penerbitan / Pemasaran	
Pen. Pegawai Penerbitan (N27)	2		
Pem. Penerbitan (N27)	3		
Pereka (B17)	1	Penerbitan Elektronik	
Pen. Pegawai Seni reka (B27)	1		
PENERBIT UNIVERSITI B			
Jawatan & Gred	***Bil Staf***	***Unit***	***Jumlah***
Pengarah Profesor Kunjungan	1	Pentadbiran	7
Pem. Am Pejabat (N1)	1		
Pegawai Penerbitan Kanan (N44)	1	Penerbitan	
Pegawai Penerbitan (N41)	1		
Pegawai Teknologi Maklumat (F41)	1		
Pembantu Promosi (N17)	2		
PENERBIT UNIVERSITI C			
Jawatan & Gred	***Bil Staf***	***Unit***	***Jumlah***
Ketua Penerbit (DS52)	1	Pentadbiran	5
Penolong Pendaftar	1		
Pegawai Penerbitan (N41)	1	Penerbitan	
Pen. Pegawai Penerbitan (N27)	1		
Pem. Penerbitan (N27)	1		

Sumber: Punca Sebenar Penerbit Universiti adalah SULIT dan maklumat diperolehi daripada UTeM dan universiti di dalam rangkaian MTUN, 2011.

Setiap organisasi yang menempatkan pekerja untuk pelaksanaan aktiviti kerja mempunyai matlamat dalam mementingkan untung maksimum yang berteraskan kepada *competitive advantage* dalam mereka bentuk, kecekapan kos, aktiviti pengeluaran dan pemasaran [1]. Bagi PU MTUN, ia memerlukan sumber manusia mencukupi sekiranya ingin menjalankan kaedah pemasaran secara konvensional. Ini kerana pemasaran secara konvensional melibatkan bilangan sumber manusia yang ramai. Jika dilihat di PU USM, UTM dan UUM, perbezaan bilangan staf yang amat ketara

dibandingkan PU MTUN. PU ini mampu memasarkan produk dengan kaedah pemasaran konvensional. Ini dapat dilihat di dalam Jadual 2 yang menunjukkan jumlah keseluruhan staf di setiap PU USM, UTM dan UUM. Keperluan untuk memiliki bilangan sumber manusia seperti Penerbit USM,UTM dan UUM adalah dilihat mustahil kerana PU MTUN masih lagi baharu yang rata-ratanya berusia sekitar 10 tahun.

JADUAL 2 JUMLAH KESELURUHAN STAF PENERBIT USM, UTM DAN UUM.

Penerbit	***Jumlah***
Penerbit USM	63
Penerbit UTM	42
Penerbit UUM	47

Sumber Penerbit USM,UTM dan UUM 2011

B. Peruntukan dan pendapatan tahunan Penerbit Universiti MTUN

Peruntukan dan pendapatan tahunan yang diperoleh dalam tempoh tiga tahun bagi penerbit ini adalah berbeza mengikut keperluan universiti masing-masing. Di dalam Jadual 3 jumlah peruntukan yang diberikan oleh universiti masing-masing tidak membawa pulang keuntungan. Penerbit UTHM sahaja yang memperoleh keuntungan sebanyak 5% pada tahun 2010. Ini disebabkan peningkatan bilangan buku modul pengajaran dan pembelajaran seperti yang dapat dilihat pada Jadual 4.

JADUAL 3 PERUNTUKAN DAN PENDAPATAN TAHUNAN

PENERBIT UNIVERSITI UTeM			
Tahun	***Peruntukan Tahunan (RM)***	***Tahun***	***Peruntukan Tahunan (RM)***
2010 2009 2008	766,995.90 638,809.00 510,134.00	2010 2009 2008	124,754.30 112,645.35 35,102.00
PENERBIT A			
Tahun	***Peruntukan Tahunan (RM)***	***Tahun***	***Peruntukan Tahunan (RM)***
2010 2009 2008	207,615.37 239,042.07 Di bawah Canselori	2010 2009 2008	234,611.08 139,246.70 233,232.07
PENERBITAN B			
Tahun	***Peruntukan Tahunan (RM)***	***Tahun***	***Peruntukan Tahunan (RM)***
2010 2009 2008	108,710.00 94,093.50 78,128.00	2010 2009 2008	33,257.22 18,982.60 14,460.55
PENERBITAN C			
Tahun	***Peruntukan Tahunan (RM)***	***Tahun***	***Peruntukan Tahunan (RM)***
2010 2009 2008	200,000.00 350, 200.00 335,000.00	2010 2009 2008	82, 967.90 82, 930.90 76, 615.90

Sumber: Punca Sebenar Penerbit Universiti adalah SULIT dan maklumat diperolehi daripada UTeM UTHM, UniMAP dan UMP, 2011

C. Jenis Bidang Penerbitan Buku Penerbit Penerbit Universiti MTUN yang terhad

Berdasarkan kepada misi penubuhan Universiti MTUN iaitu menumpukan kepada bidang-bidang teknikal baharu mengikut modul dan sukatan pelajaran yang terkini sejajar dengan perkembangan teknologi, maka dapat dilihat di mana penerbitan buku terbitan PU MTUN lebih berfokuskan kajian dalam bidang sains teknologi dan kejuruteraan berbanding bidang sains sosial. Ini dapat dilihat di dalam Jadual 3. Perbandingan penerbitan buku mengikut bidang; peningkatan penerbitan buku bagi setiap universiti adalah penerbitan buku berbentuk modul pengajaran dan pembelajaran. Salah satu faktor peningkatan penerbitan modul ini adalah untuk memupuk asas penulisan bagi penulis yang baharu menceburkan diri di dalam bidang penulisan.

JADUAL 4 JUMLAH PENERBITAN BUKU PENERBIT UNIVERSITI MTUN MENGIKUT BIDANG SAINS TEKNOLOGI DAN SAINS SOSIAL

PENERBIT UNIVERSITI UTeM		
Tahun	***Bidang Sains Sosial***	***Bidang Sains Teknologi & Kejuruteraan***
2010 2009 2008	16 12 25	26 23 10
JUMLAH KESELURUHAN	53	59
PENERBIT A		
Tahun	***Bidang Sains Sosial***	***Bidang Sains Teknologi & Kejuruteraan***
2010 2009 2008	31 21 22	79 72 89
JUMLAH KESELURUHAN	74	240
PENERBITAN B		
Tahun	***Bidang Sains Sosial***	***Bidang Sains Teknologi &Kejuruteraan***
2010 2009 2008	8 5 1	29 36 24
JUMLAH KESELURUHAN	14	89
PENERBITAN C		
Tahun	***Bidang Sains Sosial***	***Bidang Sains Teknologi & Kejuruteraan***
2010 2009 2008	13 17 16	9 10 3
JUMLAH KESELURUHAN	46	22

Sumber: Punca sebenar Penerbit Universiti adalah SULIT dan maklumat diperolehi daripada UTeM UTHM, UniMAP dan UMP, 2011

IV. PEMASARAN BUKU UNIVERSITI MTUN

Umumnya, penerbit MTUN tidak mengamalkan konsep pemasaran moden iaitu memberi penekanan kepada aspek

produk, harga, pengedaran dan promosi. Sebaliknya, mereka menumpu kepada aspek pengeluaran dan editorial semata-mata. Kebanyakan penerbit lebih mementingkan aspek keluaran atau *product-oriented* berbanding kecenderungan pasaran. Dalam kajian yang telah dilakukan ke atas PU MTUN, didapati bahawa kaedah pemasaran yang digunakan adalah kaedah konvensional seperti:

1. Melantik pengedar/peruncit/kedai buku
2. Jualan terus kepada pembeli
3. Jualan terus kepada institusi
4. Pameran

Pemasaran dan pengedaran buku biasanya diuruskan sendiri oleh penerbit ini dengan cara melantik wakil dan ejen jualan di seluruh negara. Wakil jualan ini biasanya terdiri daripada kedai KOPERASI universiti, kedai buku dan pemborong. Kaedah pemasaran secara konvensional memerlukan modal yang tinggi lebih-lebih lagi apabila melibatkan penyediaan ruang iklan di majalah, surat khabar dan melantik pengedar buku lebih-lebih lagi melibat konsultan penerbit yang mempunyai pengalaman yang luas. Satu kajian telah dilakukan oleh PU UteM; penerbit ini telah mengambil inisiatif dengan membuat penyewaan ruang iklan sempena Pesta Buku Antarabangsa 2011 dengan memperkenalkan dan mempromosikan hasil terbitannya kepada ahli pustakawan, golongan profesional dan orang awam. Kos yang diperlukan untuk membiayai penyewaan ini ialah sebanyak RM 3,675.00 hanya untuk satu keluaran sahaja. Manakala modal yang diperuntukkan untuk melantik pengedar buku luar melibatkan kadar diskaun sebanyak 55% yang mana kadar kebiasaannya diskaun hanya diberikan sebanyak 30% kepada pengedar buku yang lain mengikut Dasar dan Garis Panduan PU masing-masing.

V. FAEDAH E-PEMASARAN

Dalam industri pembukuan, teknologi sesawang membolehkan para penerbit baharu membina laman sesawang (LS) untuk meningkatkan imej syarikat. Konsep ini bermula pada pertengahan tahun 1990-an; beberapa buah syarikat penerbitan seperti Hyperion, Simon & Schuster dan Houghton Mifflin memasuki ruang perniagaan siber menerusi LS mereka. Laman ini berfungsi sebagai sebuah platform untuk memasarkan buku-buku terbitan mereka, [2].

Potensi pemasaran buku di internat disedari oleh pihak yang terlibat dalam industri perbukuan di Malaysia, terutama dengan kehadiran *world wide web* sejak 1990-an dan pengenalan Koridor Raya Multimedia. Sejak itu, banyak LS dibangunkan dan ia bukan sahaja boleh berfungsi sebagai alat periklanan dan komunikasi pemasaran, malah turut digunakan sebagai saluran penjualan bagi produk yang ditawarkan. Kejayaan yang dinikmati oleh Amazon.com yang mula membuka pintu mayanya pada Julai 1995 dilihat menjadi perintis kepada pemasaran buku dalam talian, [3].

Laman sesawang bukan sahaja digunakan untuk tujuan promosi dan komunikasi pemasaran semata-mata malah ia boleh juga digunakan untuk tujuan jual beli. Secara tidak langsung LS yang dibina itu boleh juga berfungsi sebagai kedai buku. Senario pemasaran buku menerusi internat yang semakin berkembang turut melanda penerbit buku tempatan yang selama ini cenderung menggunakan saluran pemasaran secara konvensional. Kewujudan teknologi ini membolehkan para penerbit mengurangkan peranan pemborong, pengedar dan kedai buku. Dengan itu, syaraikat penerbitan dapat mengelakkan proses pemberian komisen kepada mereka, [3]. Ini membolehkan urusan jual beli dan promosi yang biasanya dilakukan oleh orang tengah boleh diuruskankan oleh para penerbit menerusi laman web yang dibina. Di samping itu, menawarkan akses terus kepada pengguna melalui senarai terbitannya.

A. Peningkatan Prestasi Rantaian Nilai

Melalui e-Pemasaran peluang baharu dapat dihasilkan melalui prestasi rantaian nilai. Asas keuntungan penggunaan internat dalam Rantaian Nilai adalah kecepatan, penurunan kos, fleksibiliti dan potensi untuk memendekkan rantai bekalan. Melalui penggunaan internat, proses Rantaian Nilai dapat meningkatkan lagi kepuasan pelanggan, mengurangkan kos, memperhalus arus pengeluaran dan memendekkan masa kitaran, [4]. Keunggulan kompetitif boleh dihasilkan tetapi ia memerlukan pembangunan yang menerapkan prinsip strategi yang berkesan. Perniagaan syarikat boleh mendapatkan keunggulan kompetitif melalui keberkesanan operasinya. Hal ini dinikmati para pesaing yang melakukannya dengan lebih baik. Mereka menggunakan kedudukan strategik disamping menerusi inovasi serta mewujudkan nilai tambah yang unik bagi pelanggan. Posisi strategik pula bertujuan untuk membawa pulangan jangka panjang bagi pelaburan, rantaian nilai khas, keunikan dalam pasaran serta strategi yang sesuai mengikut kesinambungan syarikat, [5].

Penyataan ini juga merupakan kesinambungan kajian yang telah dilakukan; untuk berjaya, syarikat perlu melaksanakan strategi inovatif bagi memanfaatkan kekuatan dari internat dan perubahan pada konsep tradisional dan pasaran elektronik [6]. Bagi syarikat yang menjalankan perniagaan melalui e-Pemasaran memerlukan hubungan rantai bekalan yang erat dengan pelanggan, pembekal, dan pengedar. Selain itu, rantaian bekalan syarikat dalam e-Pemasaran; perniagaan perlu memastikan bahawa pelanggan dan pembekal boleh mengakses kepada LS mereka untuk mendapatkan maklumat penting tentang produk sebelum membuat keputusan.

Objektif utama pengurusan rangkaian bekalan adalah bagi meningkatkan nilai produk dan perkhidmatan kepada pelanggan. Ia mestilah menyediakan perkhidmatan pelanggan yang baik dan berkualiti dengan kos inventori yang rendah. Nilai dicipta oleh pengurusan rangkaian bekalan sebuah syarikat dengan menyokong usaha strategik organisasi. Pengurusan rangkaian bekalan yang berjaya akan menghasilkan sistem inventori dengan kos yang lebih rendah,

mewujudkan satu rangkaian firma-firma yang bertindak terhadap perubahan pasaran dengan pantas dan produk yang mencapai tahap melebihi jangkaan pelanggan [7].

B. Meningkatkan Keberkesanan dan Kecekapan Staf dalam Proses yang melibatkan Sistem Perhubungan Pelanggan (CRM)

Sistem perhubungan pelanggan (CRM) merujuk kepada strategi perniagaan yang berfokuskan pelanggan. Konsep ini bukanlah suatu yang baharu. Ia sebenarnya wujud secara semula jadi dan telah diterima sebagai sebuah konsep di dalam e-pemasaran [8]. Ia melihat sikap staf terhadap para pelanggan luaran dan dalaman bagi sesebuah organisasi. Bagi organisasi yang dinamik, integrasi bagi jualan, pemasaran dan perkhidmatan dan penjagaan pelanggan boleh mencipta dan menambah nilai bagi syarikat dan pelanggan-pelanggan.

Tambahan lagi, definisi CRM juga merujuk kepada satu proses perniagaan dan dasar secara keseluruhan yang direka untuk menguasai, menyimpan dan menyediakan perkhidmatan kepada pelanggan [9], atau proses yang jelas dan berteknologi untuk menguruskan hubungan semasa dengan pelanggan yang berpotensi menggunakan pemasaran, jualan dan jabatan-jabatan perkhidmatan, tanpa mengira saluran komunikasi [10]. Menerima pakai dan melaksanakan sistem CRM dalam talian mempunyai kelebihan yang tidak terkira banyaknya. Pengurangan dalam kos perkhidmatan pelanggan, mengeratkan hubungan pelanggan, mesej peribadi, pemasaran dan peluang pengubahsuaian besar-besaran adalah beberapa manfaat yang ditawarkan kepada pelanggan melalui aplikasi e-CRM [11]. Penemuan penyelidikan menunjukkan bahawa pelanggan menyifatkan amat penting untuk berpuas hati semasa dan selepas proses jualan berbanding dengan kepuasan daripada tawaran harga yang dibuat [12]. Dengan itu, meningkatkan pelaburan dalam e-CRM dan pengalaman mengurus boleh menjayakan proses mendapatkan pelanggan [13].

Terdapat perbezaan yang besar antara kos mendapatkan pelanggan baharu berbanding untuk mengekalkan pelanggan semasa dalam persekitaran dalam talian [14]. Diketahui bahawa e-Pemasaran mempunyai kelebihan pulangan dari pelaburan dalam suasana hubungan pengurusan dengan pelanggan. Pelanggan siber lebih bersedia membeli-belah dalam talian; usaha untuk mengurangkan risiko membeli-belah dalam talian mewujudkan keyakinan pelanggan. Oleh itu, kebarangkalian bahawa mereka akan setia dan berurusan dengan penjual tertentu adalah lebih tinggi sebaik sahaja mereka berpuas hati [15]. Dengan menganalisis definisi ini, ia boleh disimpulkan bahawa Sistem CRM pada dasarnya membuat tiga perkara [16]:

a) Menganalisis pandangan tunggal pelanggan.

b) Menguruskan perhubungan pelanggan dengan cara yang tunggal, tanpa mengira saluran komunikasi.

c) Meningkatkan keberkesanan dan kecekapan proses yang terlibat dalam perhubungan pelanggan.

1) Untuk membina pangkalan data pelanggan

Rangkaian pangkalan data secara tidak langsung dapat mengumpul maklumat pelanggan. Setiap maklumat seperti sasaran korporat pelanggan dan pelanggan berpotensi dalam pangkalan data komputer dapat disimpan. Dan sebagai tambahan beberapa maklumat asas, setiap rekod pelanggan mengandungi pelbagai maklumat pemasaran seperti statistik bagi rekod perundingan dan maklum balas pelanggan. Ia akan mengenal pasti keutamaan membeli-belah setiap pelanggan dan kadar nilai sumbangan perusahaan.

2) Untuk meletakkan pemasaran ke dalam pelaksanaan

Semasa proses pelaksanaan e-pemasaran, membina pangkalan data pelanggan perlu mengambil koleksi penuh maklumat tertentu bagi setiap pelanggan, membuat pengelasan pelanggan dengan memahami kepuasan pelanggan masing-masing. Dengan maklumat ini, ia boleh merujuk produk, keutamaan pengguna dan tindak balas terhadap produk baharu.

3) Untuk meningkatkan nilai kesetiaan pelanggan selepas jualan

Merujuk kepada sifat dan nilai pelanggan yang dinamik dan subjektif, reka bentuk pangkalan data mestilah boleh diselaraskan pada bila-bila masa untuk merekodkan suasana permintaan pelanggan. Berdasarkan penyelidikan tentang kepuasan pelanggan selepas jualan dalam talian, sesebuah organisasi perlu membuat perubahan dengan mudah atau mewujudkan kepelbagaian dengan tujuan untuk memenuhi kepuasan pelanggan. Adalah perlu memperkukuhkan jenama produk selepas jualan kepada pengguna melalui pelaksanaan dalam LS, forum dan blog.

VI. KESIMPULAN

Melalui kajian yang telah dilakukan, dapat dirumuskan bahawa pemasaran buku melalui e-Pemasaran boleh memberi peluang perniagaan serta potensi keuntungan yang besar kepada PU MTUN. Penerapan e-Pemasaran mampu mengekalkan situasi dan pelanggan yang sedia ada di samping untuk meneroka pasaran yang lebih besar dan bersifat global. Selain itu, PU MTUN berpeluang untuk mewujudkan jalinan kemesraan yang lebih erat dengan para pelanggannya tanpa perlu menggunakan khidmat pengedar sebagai perantara. Malah promosi atau pengiklanan yang selama ini dilakukan oleh pihak lain dapat diuruskan sendiri, sekali gus dapat menjimatkan kos promosi serta meningkatkan hasil jualan. Tidak mustahil pada suatu hari nanti PU MTUN menjadi pengeluar dan pembekal utama buku-buku ilmiah bidang teknikal di seluruh negara sekiranya kerjasama yang sedia ada serta kesungguhan untuk meneroka pasaran antarabangsa terus dilakukan.

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Rekabentuk Sistem Memori Pengurusan Pengetahuan Disiplin di Sekolah

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Abstrak— **Kajian ini bertujuan menilai tahap penggunaan aplikasi Sistem Salah Laku Murid (SSDM) oleh guru-guru disiplin di sekitar Zon Benut, Pontian. Soal selidik yang dijalankan mengkaji pengalaman menggunakan sistem disiplin yang digunakan di sekolah di kalangan guru-guru disiplin. Kajian ini juga menentukan keperluan membangunkan reka bentuk yang baharu berdasarkan soal selidik yang telah dibuat. Responden yang menjawab soal selidik adalah terdiri dari guru-guru disiplin sekitar Zon Benut, Pontian. Hasil kajian turut mendapati tidak semua responden pernah menggunakan aplikasi SSDM yang disediakan. Walaubagaimanapun kajian ini berjaya mencadangkan penambahbaikkan yang diperlukan oleh aplikasi SSDM supaya masalah disiplin dapat ditangani dengan lebih baik dan lancar. Kerjasama antara guru – guru, ibu bapa dan murid-murid itu sendiri amat penting dalam menangani masalah disiplin ini. Kajian ini memberikan maklumat berguna dan berpotensi dalam mewujudkan integrasi antara guru , ibu bapa dan murid serta dapat melihat cadangan reka bentuk aplikasi yang baharu yang telah dikemaskini.**

Kata kunci; SSDM, Disiplin, Murid-murid,Sistem Memori

I. PENGENALAN

Peningkatan jumlah kejadian disiplin yang dilakukan oleh pelajar sekolah, seperti kes menghisap rokok, ponteng, kumpulan samseng, buli, merempit, berjudi dan dadah telah menimbulkan kebimbangan ibu bapa khasnya dan masyarakat umumnya. Sayangnya kita sering melihat kebanyakan guru disalahkan atas perkara yang telah berlaku kerana tidak dapat mendisiplinkan pelajar mereka di sekolah. Ada yang menyalahkan ibu bapa kerana dianggap cuai mendidik anak-anak mereka di rumah.

Banyak kajian telah dilakukan ke atas masalah – masalah sosial dan disiplin di sekolah namun begitu tiada suatu himpunan data yang telah dibuat yang akan menjadi rujukan untuk merancang tindakan bagi membasmi atau mengurang kesan sosial dan disiplin pelajar**.** Oleh itu, Rekabentuk Sistem Pengurusan pengetahuan disiplin sebagai memori sistem maklumat Sekolah amat diperlukan dalam menangani masalah disiplin yang amat mendesak sekarang.

Banyak repositori pengetahuan mengenai pengurusan disiplin ini kurang terurus dan hubungan antara pelbagai repositori yang melibatkan kakitangan tidak mempunyai akses ditakrifkan secara jelas [1]. Hal ini kurang terurus kerana sebahagian besar pembangunan repositori pengetahuan sistem kurang digalakkan dan pengetahuan fokus hanya pada pengetahuan jelas tidak memelihara pengetahuan tersirat.

Pengurusan memori yang sedia ada hanya melibatkan satu sumber sahaja iaitu daripada guru disiplin. Isu utama pengurusan memori sistem maklumat sekolah ialah ia akan melibatkan pelbagai sumber yang terdiri daripada pihak PIBG, pelajar, guru-guru dan pihak yang berkaitan yang mana akan digabungkan untuk dijadikan memori sistem maklumat sekolah. Sistem yang diguna pakai sekarang di sekolah – sekolah ialah Sistem Salah Laku Disiplin Murid (SSDM) atas talian.

II. MASALAH KAJIAN

Secara umumnya di Malaysia, masalah di sekolah di tangani oleh guru-guru disiplin sahaja dengan setiap data disiplin hanya dapat dicapai oleh mereka sahaja. Kebanyakan pelajar, guru-guru, ibu bapa dan masyarakat amnya tidak tahu masalah disiplin yang berlaku di sekolah itu sendiri dengan tiada rujukan untuk dicapai dan digunakan. Sehinggakan terdapat laporan berita yang menyalahkan guru disiplin di atas perbuatan yang tidak wajar mereka lakukan [2].

Walaupun masalah ini berpusatkan kepada pelajar, mereka sepatutnya sentiasa diingatkan dengan hukuman atau kesalahan yang telah dilakukan. Dengan wujudnya kajian ini diharap, pembangun sistem boleh mengubah sistem yang sedia ada dimana bukan pelajar sahaja boleh melihat dan mengenalpasti kesalahan yang telah dilakukan mereka supaya mereka tidak melakukan kesalahan lagi, tetapi bagi ibu bapa dan guru- guru pula dengan adanya kajian ini, diharap dapat melihat, menasihati pelajar dan mengingatkan mereka agar tidak melakukan perkara yang melanggar peraturan sekolah.

Kajian yang akan dijalankan ini akan menentukan keperluan ibu bapa, murid-murid, guru kaunselor dan

beberapa faktor lain yang boleh digunakan dalam perubahan penggunaan sistem sedia ada sekarang.

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III. OBJEKTIF

Terdapat beberapa objektif dalam menjalankan kajian ini. Antara objektif kajian ialah.

1. Mengkaji kelemahan sistem disiplin sedia ada yang digunakan di sekolah.
2. Mencadangkan penambahbaikan yang sesuai dengan sistem sedia ada.
3. Merekabentuk sistem pengurusan sistem disiplin untuk diintergrasikan dengan sistem disiplin yang sedia ada.

IV. KAJIAN LITERATUR

Disiplin membawa maksud kepatuhan kepada peraturan yang telah ditetapkan [3]. Sementara itu Laporan Jawatankuasa Kabinet 1979, menjelaskan disiplin bermakna kesanggupan seseorang untuk melakukan sesuatu dengan tertib, menghormati hak orang lain, mengamalkan tingkah laku yang baik dan tidak mengganggu kepentingan orang lain.

Tiap-tiap individu itu bertanggungjawab di atas perlakuan sendiri. Murid-murid berkemungkinan menjadi tidak berdisiplin kerana mengikuti kehendak-kehendak diri mereka sendiri tanpa sebarang pengaruh dari luar, iaitu apa yang dikatakan sebagai *'the potential influence of the student's free will'* [4].

Terdapat juga pelanggaran-pelanggaran peraturan yang dilakukan oleh murid - murid yang mempunyai masalah emosi. Jenis kanak-kanak ini dipanggil 'neurotic' atau 'psychotic', Mereka dapat dikenali dengan gaya kelakuannya yang jahat, selalu membuat salah, melawan, ingkar, tidak dapat dibentuk dan tidak stabil [5].

Kemiskinan serta kekurangan kemudahan di rumah juga menjadi punca kepada masalah disiplin murid. Kajian [6] mendapati bahawa masalah besar yang dihadapi oleh pelajar-pelajar adalah masalah-masalah yang berkaitan dengan rumah dan keluarga. Ini pula ada kaitannya dengan masalah disiplin kendiri dan mungkin dengan masalah psikologi. Kurang kasih sayang daripada ibu bapa penyebab kepada masalah disiplin yang makin meruncing ini.

V. DAPATAN

Hasil dari kajian secara keseluruhan, iaitu mengkaji kelemahan sistem disiplin sedia ada mengikut persampelan Penggunaan Aplikasi SSDM adalah sederhana iaitu 3.25. Walaubagaimanapun, hasil kajian menunjukkan 4 daripada 13 item yang disoal selidik berada pada tahap yang tinggi dimana item untuk min "Capaian selalu terganggu" sebanyak 3.80, min bagi item " Ibu bapa perlu terlibat" sebanyak 3.60, min bagi item "murid-murid perlu mengetahui disiplin" sebanyak 3.92 dan item "kaunselor perlu terlibat dengan disiplin" merupakan min tertinggi dengan min sebanyak 4.36. Responden bersetuju dengan soal selidik yang menyatakan ibu bapa, murid-murid dan guru kaunselor perlu terlibat dengan sistem sedia ada.

Bagi dapatan untuk pengurusan jabatan pula adalah tinggi dengan min sebanyak 3.78. kelima – lima soal selidik ini menunjukkan min purata yang tinggi yang melebihi 3.60 yang telah ditetapkan oleh penyelidik. Walaubagaimanapun terdapat 2 item yang berada di tahap sederhana iaitu item "Aplikasi secara komputer mudah digunakan dan diurus (user friendly)" dan "Penggunaan aplikasi membantu memberi ketepatan dalam membuat keputusan" dengan min 3.64. Hal ini tidak menjadi masalah kerana terdapat perbezaan yang kecil untuk ke tahap tinggi. Ini menunjukkan responden bersetuju pentadbir dan jabatan banyak membantu dalam menguruskan supaya aplikasi ini dapat dilakukan dan dilaksanakan. Di sini dapat dianalisa tiada kelemahan daripada segi pengurusan jabatan. Secara ringkasnya dapatan soal selidik boleh di lihat di jadual 1.1

JADUAL 1 : TABURAN MIN KESELURUHAN SETIAP KONSTRUK YANG DIKAJI

Bil	**Konstruk yang dikaji**	**Min**
1	Penggunaan Aplikasi SSDM	3.25
2	Pengurusan Jabatan	3.78
3	Tahap Kepuasan Pengguna	3.55
Purata Min		3.52

Daripada nilai peratus konstruk Penggunaan Aplikasi SSDM yang telah dikaji di atas, kita boleh membuat beberapa penambahbaikkan berdasarkan daripada item – item yang dikaji. Antara item yang mempunyai peratus yang tinggi ialah item yang melibatkan "Capaian selalu terganggu" sebanyak 76 peratus yang melibatkan setuju dan sangat setuju, "Ibu bapa perlu terlibat" sebanyak 72 peratus, item "murid-murid perlu mengetahui disiplin" sebanyak 88 peratus dan item "kaunselor perlu terlibat dengan disiplin" merupakan peratus tertinggi iaitu sebanyak 92 peratus.

Peratusan yang ditunjukkan oleh item – item yang telah dianalisa di atas membolehkan beberapa penambahbaikkan atau penaiktarafan ke atas aplikasi SSDM sedia ada sekarang. Penyelidik mencadangkan supaya antaramuka hadapan aplikasi diubah suai supaya ibu bapa, murid dan guru kaunselor boleh menggunakan aplikasi mengikut keperluan masing –masing. Ibu bapa dan murid – murid boleh di berikan id atau kata laluan untuk mereka melihat kesalahan disiplin yang telah dilakukan. Ibu bapa boleh membuat temujanji dengan Guru Kauselor apabila menggunakan aplikasi ini, guru kaunselor boleh menyelaras waktu untuk bertemu ibu bapa. Dengan ini mereka akan terdedah secara langsung dengan peraturan dan disiplin di sekolah.

Di dalam borang soal selidik yang telah diberi juga, responden memberikan cadangan agar ibu bapa ini dapat melihat kesalahan disiplin anak – anak mereka di dalam sistem agar mereka boleh melihat, memantau dan menasihati murid – murid. Selain daripada dapat mencegah, silaturahim antara

guru dan ibu bapa akan terjalin dan diharap akan bertambah erat.

VI. KAJIAN MASA HADAPAN

Kajian ini boleh dikembangkan lebih mendalam lagi dengan menambah bilangan responden yang terdiri daripada ibu bapa, pihak pentadbir dan pejabat pelajaran atau jabatan pelajaran untuk disoal. Soalan – soalan boleh menjurus kepada kepelbagaian fungsi aplikasi yang digunakan dan kepuasan pengguna setelah aplikasi atau sistem dinaiktarafkan.

Selain daripada itu, kajian yang telah dijalankan ini hanya melibatkan guru – guru disiplin sekolah menengah dan sekolah rendah sekitar Zon Benut, Daerah Pontian, Johor sahaja. Penyelidik seterusnya boleh mengembangkan lagi kawasan kajian kepada lebih besar untuk responden yang lebih ramai dan data yang lebih lengkap dan analisa yang diperolehi lebih tepat dan baik.

Sementara itu, kajian ini juga hanya merekabentuk aplikasi berdasarkan soal selidik yang telah dijalankan. Kajian hanya mereka dan memaparkan antaramuka pengguna akhir sistem SSDM yang ditambahbaikkan. Ia tidak melibatkan rangka kerja rekabentuk sistem yang lebih teratur dan terperinci. Diharap penyelidik seterusnya boleh menambahbaikkan kajian sedia ada dengan menunjukkan reka bentuk yang lebih baik berserta prototaip yang baharu agar pengguna lebih jelas dengan perubahan yang telah dilakukan.

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Sikap Dan Persepsi Pelajar Terhadap Penggunaan Sistem Pengurusan Pembelajaran

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Abstract— **Dalam bidang pendidikan kini, e-pembelajaran merupakan salah satu coral pembelajaran di abad ke-21 dan menjadi semakin popular dikalangan pusat pengajian tinggi dan tidak ketinggalan di peringkat sekolah menengah dan rendah. Bahagian Teknologi Pendidikan Negeri Johor telah melaksanakan satu projek rintis, dimana Sistem Pengurusan Pembelajaran berasaskan Moodle telah diperkenalkan pada pertengahan tahun 2011 yang melibatkan matapelajaran Sejarah tingkatan 4. Tujuan kajian ini adalah untuk menilai sikap dan perspektif pelajar terhadap Sistem Pengurusan Pembelajaran Berasaskan Moodle yang telah digunakan oleh 3 buah sekolah terpilih di daerah Batu Pahat bagi mata pelajaran Sejarah tingkatan 4. Soal selidik telah diedarkan kepada 60 responden bagi aliran Sains dan Sastera yang dipilih secara rawak. Hasil kajian ini telah menunjukkan sikap pelajar terhadap sistem pengurusan pembelajanran ini adalah sederhana. Walau sederhana tetapi sebenarnya ianya menampakkan penerimaan yang baik pelajar terhadap sistem ini kerana sistem ini baru berusia 1 tahun dan merupakan projek rintis yang dilaksanakan oleh pihak Bahagian Teknologi Pendidikan Negeri Johor. Hasilan kajian ini akan digunakan untuk tujuan penambahbaikan sistem dan mengembangkan kepada matapelajaran lain selain matapelajaran Sejarah.**

Keywords: pengurusan pembelajaran, e-pembelajaran

I. PENGENALAN

Abad ke-21 merupakan abad yang berorientasikan kepada sains dan teknologi. Abad ini jugatelah menyaksikan kepesatan perkembangan teknologi maklumat dan telekomunikasi (ICT)dalam pelbagai bidang dan tidak ketinggalan juga dengan bidang pendidikan. Justeru itupelbagai istilah wujud contohnya, untuk menggambarkan betapa pentingnya penggunaankomputer dalam pengajaran dan pembelajaran istilah yang digunakan ialah Computer Assisted Instructin (CAI). Kemudiannya istilah Intelligent Computer Assisted atau Intelligent Tutoring System juga diperkenalkan. Semua istilah yang diperkenalkan ini tidak lain dan tidak bukan adalah untuk memberi penegasan tentang keperluan pengajaran dan pembelajaran yang berasaskan kepada komputer, teknologi maklumat dan komunikasi (ICT).

Konsep sistem pengurusan pembelajaran telah diperkenalkan selari dengan perkembangan pesat teknolgi internet, yang mana ianya telah memberi satu deminsi baru dalam pendekatan pembelajaran di sekolah pada masa kini.

Sistem Pengurusan Pembelajaran merupakan proses pengajaran dan pembelajaran yang menggunakan rangkaian elektronik (LAN, WAN atau Internet) untuk menyampaikan kandungan, maklumat dan juga untuk berinteraksi melaluinya. Internet, intranet, satelit, interaktif TV dan CD-ROMmerupakan sebahagian dari media elektronik yang digunakan untuk mempraktikkan Sistem Pengurusan Pembelajaran [1].

Kementerian Pelajaran Malaysia melalui Bahagian Teknologi Pendidikan (BTP) telah memainkan peranan yang penting dalam pelaksanaan e-pembelajaran dalam pengajaran dan pembelajaran (P&P) dengan memperkenalkan Sistem Pengurusan Pembelajaran atau dikenali sebagai Learning Management System (LMS). Sistem ini memberikan tumpuan kepada pengurusan perkhidmatan pembelajaran untuk pengguna akhir iaitu pelajar. Ia juga sebagai salah satu platform e-pembelajaran yang penting bagi mewujudkan talian, pengurusan dan pengagihan bahan-bahan pembelajaran disamping memudahkan komunikasi yang lancar antara komuniti yang berbeza termasuk pentadbir, guru, pelajar dan ibubapa.

A. Penyataan Masalah

Seperti yang diketahui umum, masalah dalam pembelajaran Sejarah bukanlah satu perkara yang baru. Matapelajaran Sejarah menjadi satu matapelajaran yang susah bagi pelajar apabila mereka tidak dapat memahami fakta-fakta Sejarah dengan baik. Sejarah adalah satu ilmu yang berkaitan dengan apa yang berlaku pada masa lalu sama ada bagi keturunan atau salasilah kerajaan lalu atau sebagainya. Pada asasnya ianya akan menjadi mudah untuk difahami apabila pelajar dapat mengaitkan tahun-tahun tertentu dengan fakta sedia ada. Ini memerlukan usaha guru untuk menyediakan satu proses pengajaran dan pembelajaran (P&P) yang berkesan melibatkan pembelajaran aktif di kalangan pelajar. Guru tidak boleh lagi hanya bergantung kepada kaedah pengajaran tradisional yang hanya menggunakan “chalk and talk’’ sahaja. Untuk

menyediakan satu proses pengajaran dan pembelajaran yang berkesan, bahan-bahanbantu mengajar yang menarik dan bermakna perlu digunakan supaya pelajar mudah memahami isi pelajaran yang diajar. Secara tidak langsung, ia juga akan dapat menarik minat pelajar untuk belajar Sejarah.

Bagi memudahkan pelajar mencari dan mendapatkan bahan pengajaran yang menarik dan bermakna. Bahagian Teknologi Pendidikan Negeri Johor telah menyediakan sebuah sistem pengurusan pembelajaran berasaskan Moodle akan digunakan dalam kajian ini. Ia bertujuan sebagai pentas untuk guru mendapat memberikan bahan pengajaran asas dan tambahan yang menarik serta sebagai satu medium untuk guru-guru Sejarah berinteraksi dan bertukar idea antara satu sama lain sama ada dengan pelajar atau antara guru. Dengan adanya sistem ini, sekurang-kurangnya ia dapat membantu memudahkan proses pembelajaran Sejarah dengan bahan pengajaran tambahan yang disediakan. Pelajar dapat menggunakan kemudahan dari sistem pengurusan pembelajaran berasaskan Moodle secara optimum bagi meningkatkan kreativiti pembelajaran Sejarah di dalam dan luar bilik darjah bagi pelajar.

B. Tujuan Kajian

Kajian yang akan dijalankan ini adalah untuk menentukan tahap keberkesanana pelajar dalam menggunakan Sistem Pengurusan Pembelajaran atau Learning Management System (LMS) disekolah terpilih dalam melaksanakan proses pengajaran dan pembelajaran berasaskan Moodle untuk pelajar bagi matapelajaran Sejarah yang telah dibangunkan oleh Bahagian Teknologi Pendidikan Negeri Johor. Disamping itu, kajian ini menilai sikap dan persepsi pelajar tentang pelaksanaan Sistem Pengurusan Pembelajaran ini. Kajian ini cuba mencadangkan langkah-langkah sesuai bagi memberi kesan yang lebih optima dalam penggunaan LMS berasaskan moodle untuk tujuan pembelajaran sama ada disekolah atau diluar sekolah tanpa mengira masa.

C. Persoalan Kajian

Persoalan yang ditimbulkan ialah:

1. Apakah kecekapan diri pelajar terhadap Sistem Pengurusan Pembelajaran
2. Sejauhmanakah sikap pelajar terhadap Sistem Pengurusan Pembelajaran dari segikegusaran, keyakinan, kesukaan dan persepsi terhadap faedah Sistem Pengurusan Pembelajaran.

D. Objektif Kajian

1. Mengenalpasti kecekapan diri pelajar terhadap Sistem Pengurusan Pembelajaran.

2. Mengenalpasti sejauhmanakah sikap pelajar terhadap Sistem Pengurusan Pembelajaran dari segi kegusaran, keyakinan, kesukaan dan persepsi terhadap faedah Sistem Pengurusan Pembelajaran.

E. Skop Kajian

Kajian ini bertujuan untuk menganalisis kecekapan diri pelajar dan mengenalpasti sejauhmana sikap pelajar terhadap Sistem Pengurusan Pembelajaran. Penumpuan kajian ini bagi kecekapan diri ialah kecekapan diri pelajar terhadap Sistem Pengurusan Pembelajaran manakala tentang sikap akan melihat terhadap 4 aspek iaitu keyakinan, kegusaran, kesukaan

dan persepsi pelajar terhadap Sistem Pengurusan Pembelajaran. Terdapat tiga buah sekolah yang dipilih iaitu Sekolah Menengah Kebangsaan Datuk Sulaiman, Parit Sulong, Sekolah Menengah Kebangsaan Banang Jaya dan Sekolah Menengah Kebangsaan Perempuan Temenggong Ibrahim, Batu Pahat. Pelajar tingkatan 4 sekolah tersebut pelbagai aliran telah dipilih menjadi responden bagi kajian ini.

F. Batasan Kajian

Kajian ini dijalankan terhadap pelajar di 3 buah sekolah menengah kebangsaan di daerah Batu Pahat. Dimana sekolah-sekolah ini telah menggunakan Sistem Pengurusan Pembelajaran atau Learning Management System (LMS) berasaskan MOODLE. Sistem pengurusan pembelajaran ini telah menggunakan infrastruktur sedia ada yangdisediakan oleh pihak Kementerian Pelajaran Malaysia seperti pelayan server. Pelayan server merupakan peralatan utama dalam penggunaan sistem ini selain talian internet dan juga teknologi rangkaian. Pelayan server sedia ada dimasukkan dengan pelbagai bahan pembelajaran Sejarah oleh Guru Penyelaras Bestari. Guru Penyelaras Bestari merupakan pendaftar sistem ini. Pelajar dan guru akan mendapatkan bahan pembelajaran melalui *internet protocol address* yang sedia ada didaftarkan pada pelayan server tersebut. Pelajar atau guru akan masuk ke dalam sistem hanya menaipkan *internet protocol address* yang ditetapkan dan menggunakan kata pengguna yang didaftarkan oleh pihak pentadbir sistem.

II. KAJIAN LITERATUR

A. Apa Itu E-Pembelajaran

Secara umumnya, e-pembelajaran dianggap sebagai penggunaan teknologi dalam pembelajaran untuk tujuan menyampaikan maklumat. Dimana konsep e-pembelajaran ini juga akan berubah mengikut peredaran zaman atau masa. Perkataan e-pembelajaran pada tahun 2000 merujukkepada pembelajaran berasaskan kepada komputer khususnya terhadap internet dan intranet [2]. Isi kandungan e-pembelajaran harus mengambilkira objektif pembelajaran, kaedah pembelajaran

untuk tujuan membantu pembelajaran disamping elemen media yang berlainan untuk menyampaikan isi kandungan dan mencuba membina pengetahuan baru dan kemahiran yang berhubung dengan matlamat pembelajaran secara individu [3].

Pakar industri telah mendefinisikan bahawa e-pembelejaran ialah satu teknologi untuk mencipta, menyebar dan menghantar sesuatu termasuk data bernilai, maklumat, isi pembelajaran dan pengetahuan bagi menunjukkan perkembangan diri[4]. Dalam menghayati penggunaan e-pembelajaran, skop e-pembelajaran telah diperluaskan oleh pihak yang menguruskan dan memperkenalkan alat pengurusan dalam bentuk sistem pengurusan isi kandungan, bilik darjah maya, perisian Power Point, kursus dalam talian, portal dan sistem penyokong persembahan *(performance support system).*

B. Perkembangan E-Pembelajaran Dalam Sistem Pendidikan Di Malaysia

Kerajaan Malaysia melalui Rancangan Malaysia ke-9 telah mensasarkan pembangunan modal insan sebagai teras utama dalam pembangunan negara untuk mencapai Wawasan 2020. Justeru itu, e-pembelajaran telah diberi penekanan untuk memainkan peranan yang penting supayamencapai matlamat tersebut. [5].

C. E-Pembelajaran Di Peringkat Sekolah

Pelaksanaan e-pembelajaran dalam sistem pendidikan negara melalui pengenalan komputer dalam sekolah. ianya bermula dengan tertubuhnya kelab komputer di sekolah-sekolah menengah yang mana ianya sebagai salah satu aktiviti ko-kurikulum untuk mengajar pelajar tentang kemahiran komputer dan segala perbelanjaan bagi tujuan pengurusan dan penyelenggaraan ditanggung oleh Persatuan IbuBapa dan Guru (PIBG) atau pun melalui yuran yang dikutip daripada ahli persatuan. [6].

Projek Sekolah Bestari telah dilancarkan pada tahun 1996, yang mana dibawah projek ini fokus utama ialah teknologi maklumat. Teknologi maklumat digunakan dengan meluas dalam sekolah sebagai alat bantu mengajar. Di Sekolah Bestari, ianya dilengkapi dengan sumber yang sesuai seperti komputer dan internet ialah bahan pengajaran, yang dapat digunakan oleh guru dan pelajar, supaya dapat meningkatkan perkembangan pemikiran pelajaran secara optimum. Perkembangan pemikiran merangkumi tahap pemikiran tinggi, kecerdasan pelbagai dan sebagainya. Kementerian Pendidikan melalui satu pengumuman menyarankan agar semua sekolah seluruh negara akan dinaiktaraf sebagai Sekolah Bestari menjelang tahun 2010. Hasrat ini masih melalui usaha-usaha berterusan oleh semua pihak di Kementerian Pendidikan.

D. Kelebihan E-Pembelajaran Dan Kesannya Terhadap Pelajar

Sekolah dan universiti telah memilih e-pembelajaran untuk tujuan penyampaian pengajaran dan pembelajaran kerana e-pembelajaran mempunyai sifat yang unik. Antaranya ialah, e-pembelejaran dapat menjimatkan kos pengajaran yang berkait dengan pensyarah dan guru, ruang bilik darjah, bahan cetak, kos perjalanan dan sebagainya.[7]. Sebagai contoh, satu-satu sesi pengajaran dapat disampaikan kepada ramai pelajar tidak dikira dimana lokasi mereka berada , tidak kira bilangan pelajar yang ada dan ianya dapat disampaikan secara sekali gus disamping dengan bantuan teknologi seperti komputer dan internet, masalah utama kekurangan guru atau pensyarah akan dapat diatasi dengan bijak [8].

E-pembelajaran dapat menyediakan pembelajaran secara nyata dan menyediakan maklumat terbaru pada bila-bila masa. Disamping itu juga pelajar akan dapat mengikuti pembelajaran dimana-mana tempat, berdasarkan keupayaan masing-masing serta mengikut kesesuaian masa sendiri.[9]

Selain itu, pelajar menjimatkan masa untuk belajar. Kebanyakan e-pembelajaran mengandungi latihan yang membenarkan pelajar mencabar subjek tersebut dan memintas bahagian maklumat yang telah diketahui [10]. Hal ini menunjukkan bahawa pelajar tetap mencapai objektif pengajaran melalui proses pembelajaran yang berlainan. Kelebihan ini tidak dapat ditanding oleh pembelajaran tradisional. Dalam pembelajaran tradisional, pelajar yang mempunyai tahap pengetahuan yang berbeza terpaksa menerima pengajaran yang sama.

Seseorang pelajar juga dapat meningkatkan keberkesanan pembelajaran melalui e-pembelajaran. Pelajar dapat mencapai maklumat yang meluas apabila perlu. Maklumat dapat dikongsi antara individu dengan pakar dalam bidang tertentu yang dikenali melalui e-mail, chat-room atau papan buletin [11].

E. Sikap Pelajar Terhadap E-Pembelajaran Dan Faktornya

Pelajar mempunyai sikap yang berbeza terhadap e-pembelajaran. pelajar mempunyai sikap yang positifterhadap pembelajaran web dalam talian [12][13]. Keyakinan terhadap web, kesukaan menggunakan web dan pandangan kenggunaan web didapati memberikan kesan yang signifikan positif terhadap keinginan untuk menggunakan web [14].

Pelajar bertindak berlainan antara satu sama lain apabila menghadapi persekitaran pembelajaran dalam talian, bergantung pada tahap kemahiran e-pembelajaran dan sikap mereka terhadap e-pembelajaran [15]

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F. Sistem Pengurusan Pembelajaran (SPP)

Sistem Pengurusan Pembelajaran, atau Learning Management Systems (LMS) dalam bahasa Inggeris, juga dikenal sebagai Sistem Pengurusan Kursus (Course Management Systems (CMS) atau Persekitaran Pembelajaran Maya (Virtual Learning Environments (VLE).

Sistem Pengurusan Pembelajaran (SPP) sebagai satu pakej perisian yang membenarkan pengurusan isi pembelajaran dijalankan dan dapat menyalurkan isi pembelajaran serta maklumat kepada pelajar. Kebanyakan SPP telah dilaksanakan melalui rangkaian web supaya pengurusan dan pembelajaran dapat dicapai di mana-mana tempat pada mana-mana masa.

Tiga jenis ciri Sistem Pengurusan Pembelajaran yang dijelaskan dalam laporan DfEE (Department for Education and Employment) [16]

1) Laporan DfEE menujukkan bahawa setiap SPP sebenarnya mempunyai beberapa ciri yang lazimnya wujud. Ciri-ciri tersebut termasuk data pendaftaran pelajar (maklumat persedirian, username, password), data pendaftaran program dan data kemajuan pelajar dalam subjek tertentu.

2) SPP mempunyai ciri memperuntuk sumber seperti ruang dan kelengkapan. Contoh fungsi-fungsi yang ada termasuk jadual waktu untuk setiap kelas, pembahagian pensyarah kursus tertentu, sokongan atau keperluan yang digunakan (seperti projector video, komputer dan sebagainya), jadual waktu setiap pelajar dan laporan seperti penglibatan setiap pelajar dalam pengajaran dan pembelajaran.

3) SPP dapat menyokong pembelajaran jarak jauh bukan dalam talian (off-line distance learning). Bahan-bahan yang diperlukan untuk ciri tersebut melibatkan multimedia dari bahan cetakan hingga Kini, SPP secara sumber terbuka semakin berkembang pesat dalam pendidikan dan perniagaan.

G. Kelebihan Sistem Pengurusan Pembelajaran (SPP)

Sistem pengurusan pembelajaran memperoleh beberapa kelebihan terhadap mereka yang terlibat.

Berikut merupakan jadual kelebihan SPP.

Pengguna	Penggunaan
Pengurus kursus	• Mendaftarkan pelajar mengikut kursus • Catatan pembayaran yuran • Menyenaraikan sumber
Pereka kursus	• Disediakan templat mereka kursus • Soalan dan ujian dapat dijalankan
Tutor	• Dapat mengawasi proses pembelajaran seseorang pelajar • Dapat berkomunikasi dengan pelajar
Pengurus pusat pembelajaran	• Mengawasi penggunaan suatu perisian kursus • Dapat menyalur bahan dari perbagai sumber
Pelajar	• Merancang pembelajaran • Mengambil ujian • Pentauliahan • Dapat berkomunikasi dengan rakan sekelas • Dapat maklum balas dari tutor

H. Modular Object-Oriented Dynamic Learning Environment (Moodle)

Moodle (*Modular Object-Oriented Dynamic Learning Environment*) ialah hasil ciptaan seorang pendidik yang bernama Martin Dougiamas dari Australia pada tahun 2002. Martin Dougiamas berusaha membina perisian Moodle yang dapat berjayamenyokong Epistemologi Konstruktivi secara Sosial (social constructionist epistemologies) dalam pelajaran dan pembelajaran[17].

Moodle merupakan perisian percuma untuk kursus berasaskan Internet pada platform utama seperti Linux, Unix, Windows dan Mac OS X. Kursus mengandungi modul-modul termasuk Forum, chat, jurnal, kuiz, kajian, kerja kursus, bengkel, sumber maklumat, pilihan dan lain- lain. Setakat ini, Moodle telah diterjemahkan dalam 34 bahasa. Moodle direka bentuk berdasarkan pedagogi konstruktiviti dan tertumpu pada pembinaan persekitaran yang menyokong sifat kerjasama untuk pertukaran idea pembelajaran.

I. Kelebihan Moodle

Pengguna Moodle adalah percuma berbanding dengan perisian Sistem Pengurusan Pembelajaran WebCT dan Blackboard yang fungsinya lebih kurang sama tetapi perlu dibayar dengan kos yang agak tinggi. Sistem Pengurusan Pembelajaran Blackboard dipilih, ia dianggar mengambil kos sebanyak USD60000 setahun, malah kecanggihan antara muka yang ada pada Blackboard pula tidak dapat bertanding dengan antara muka pada Moodle yang percuma. Humboldt State University juga menyedari bahawa Moodle sesuai digunakan oleh institusi pengajian tinggi yang bersaiz medium dan ke atas yang ingin memaksimumkan perkhidmatan mereka dalam kos yang minimum. Kajian pensyarah Humboldt State University menunjukkan pelajar lebih suka menggunakan Moodle daripada Blackboard.

III. METODOLOGI KAJIAN

Metodologi merupakan perkara penting bagi memastikan kajian yang dijalankan dengan tersusun dan lancar bagi tujuan menyumbang kepada kejayaan memperoleh segala data yang diperlukan. Justeru itu, bahagian ini akan menjelaskan tentang reka bentuk kajian, populasi kajian, sampel kajian, instrumen yang akan digunakan, kajian rintis, pengumpulan serta menganalisis data.

A. Reka Bentuk Kajian

Reka bentuk kajian merupakan teknik dan kaedah tertentu bagi memperolehi data atau maklumat yang diperlukan. Reka bentuk kajian adalah berfungsi sebagai panduan dalam mendapatkan jawapan yang jelas terhadap persoalan kajian. Justeru itu setelah dihalusi tentang objektif kajian, maka pengkaji mengambil keputusan untuk menjalankan kajian ini menggunakan kajian deskriptif kaedah soal selidik.
Ini merupakan satu kaedah yang mudah iaitu sampel diberikan alat untuk dipenuhkan dengan maklumat dan kemudian maklumat diproses mengikut kaedah analisi yang telah dirancang oleh pengkaji. Kaedah ini juga digunakan untuk mendapatkan data yang besar kerana proses menggunakan kaedah lain adalah sukar dan komplek [18]. Instrumen yang digunakan bagi mendapatkan data dari sampel ialah soal selidik.

B. Populasi

Populasi merupakan sekumpulan masyarakat yang mempunyai ciri-ciri yang sama [19]. Untuk itu, populasi kajian ini adalah terdiri daripada pelajar tingkatan 4 matapelajaran Sejarah sekolah menengah dan pelajar tingkatan 4 aliran sains dan sastera bagi sekolah menengah terpilih daerah Batu Pahat.

Sekolah yang terlibat ialah sekolah berikut :

1. SMK Dato' Sulaiman, Parit Sulong
2. SMK Banang Jaya, Batu Pahat
3. SMK (P) Temenggong Ibrahim, Batu Pahat

C. Kajian Rintis

Bagi memastikan kebolehpercayaan instrumen, kajian rintis telah dijalankan. Kajianrintis memberi peluang kepada responden untuk memberikan komen terhadap instrumen kajian khasnya untuk menilai dan membaiki kekurangan, kekeliruan dan kekaburan bahasa instrumen [20]. Kajian rintis yang dijalankan membolehkan pengkaji mengenalpasti kelemahan dan kekuatan instrumen kajian dan seterusnya memperbaikinya supaya tidak menjejaskan hasil kajian. Ujian statistik Alpha-Cronbach telah dijalankan keatas data soal selidik. Seramai 15 orang pelajar dari tingkatan 4 dipilih untuk kajian rintis kajian ini. Setelah dijalankan kajian ini maka satu analisa diperolehi melalui perisian SPSS 11.5 bagi tujuan menilai tahap keboleh percayaan soalan. Hasil dapatan kepada analisa nilai pekali Alpha-Cronbach bagi soal selidik ialah 0.9090. Hal ini menunjukkan bahawa tahap kebolehpercayaan item-item ini adalah tinggi**.**

D. Pengumpulan Dan Analisa Data

Pengkaji telah menggunakan Statistical Package for Sosial Science Version 11.5 for Windows (SPSS) untuk menganalisis data yang telah dikumpul. Pendekatan yang digunakan dalam analisis data adalah pendekatan statistik deskriptif di mana data yang diperolehi dibentangkan dalam bentuk jadual yang menunjukkan bilangan dan peratusan, min, sisihan piawai serta taburan kekerapan. Penganalisisan data merupakan bahagian terpenting dalam penyelidikan. Pengkaji telah menentukan bagaimana data yang telah dikumpulkan telah dianalisiskan.

IV. DAPATAN KAJIAN

Kajian ini meliputi 3 bahagian. Bahagian A terdapat beberapa perkara iaitu demografi responden termasuk jantina dan aliran kursus yang diikuti disekolah, serta latar belakang responden dalam asas komputer dan e-pembelajaran. Bahagian B merupakan soal-selidik berkaiatan dengan kecekapan responden terhadap e-pembelajaran dan bahagian C, soal selidik berkaitan sikap terhadap e-pembelajaran. Maklum balas yang dikumpulkan dianalisis untuk meninjau sikap pelajar terhadap e-pembelajaran dari sudut kegusaran, keyakinan, kesukaan dan persepsi terhadap e-pembelajaran.

A. Demografi Responden

Demografi responden kajian merujuk kepada maklumat responden iaitu jantina responden dan aliran responden.

Jadual 4.1 : Jantina dan Aliran Responden

Aliran	**Frekuensi Jantina**		**Jumlah (Peratus)**
	Lelaki	**Perempuan**	
Sains	3	28	31 (51.7%)
Sastera	15	14	29 (48.3%)
Jumlah (Peratus)	18 (30.0%)	42 (70.0%)	60 (100.0%)

Jadual 4.1 menunjukkan seramai 60 orang responden murid yang terlibat dalam kajian ini. Bagi bilangan responden murid, responden murid perempuan adalah lebih ramai daripada responden murid lelaki iaitu 42 orang atau 70% bagi responden perempuan manakala 18 orang atau 30% responden terdiri daripada responden murid lelaki.

Manakala bagi aliran pula, 51.7% atau 31 responden yang mewakili aliran sains dan aliran sastera diwakili 48.3% atau 29 responden. Bagi aliran Sains responden perempuan melebihi responden lelaki iaitu sebanyak 28 orang respondeng perempuan dan responden lelaki seramai 3 orang sahaja. Manakala bagi aliran sastera pula, responden lelaki melebihi responden perempuan dimana responden lelaki seramai 15 orang, 14 responden ialah responden perempuan.

B. Pengalaman Responden

Pengalaman responden kajian merujuk kepada pengalaman responden dalam bidang komputer termasuk e-pembelajaran iaitu termasuk tahap kemahiran responden dalam bidang komputer dan e-pembelajaran dan pengalaman mengikuti kursus komputer.

Jadual 4.2: Tahap kemahiran responden dalam bidang komputer

Tahap kemahiran	**Frekuensi**	**Peratus%**
Lemah	2	3.33
Sederhana	44	73.33
Mahir	13	21.67
Tidak Pasti	1	1.67
Jumlah	**60**	**100.00**

Jadual 4.2 menunjukkan tahap kemahiran responden dalam dalam bidang komputer. Tahap kemahiran responden dalam bidang komputer dibahagi kepada lemah, sederhana, mahir dan tidak pasti. Kebanyakan responden mempunyai tahap yang sederhana iaitu 73.33% atau 44 orang responden. Kemudian diikuti dengan 13 orang atau 21.67% responden mempunyai tahap yang mahir, seorang atau 1.67% terdiri daripada responden yang tidak pasti tahap mereka dan 2 orang atau 3.33% terdiri daripada responden yang mempunyai tahap kemahiran yang lemah.

Jadual 4.3: Tahap kemahiran responden dalam e-pembelajaran

Kemahiran Dalam e-Pembelajaran	**Frekuensi**	**Peratus%**
Lemah	2	3.33
Sederhana	43	71.67
Mahir	15	25.00
Tidak Pasti	0	0.00
Jumlah	**60**	**100.00**

Merujuk Jadual 4.3, tahap kemahiran e-pembelajaran dibahagi kepada lemah, sederhana, mahir dan tidak pasti. Kebanyakan responden adalah mempunyai tahap kemahiran komputer yang sederhana iaitu 71.67% atau 43 orang responden. Kemudian diikuti dengan 15 orang atau 25% responden mempunyai tahap kemahiran e-pembelajaran yang mahir, dan 2 orang atau 3.33% terdiri daripada responden yang mempunyai tahap kemahiran e-pembelajaran yang lemah. Tiada atau 0% tahap tidak pasti.

Jadual 4.4: Kekerapan Responden Hadir Kursus Komputer

Kursus Komputer	**Frekuensi**	**Peratus %**
Ya	40	66.67
Tidak	20	33.33
Jumlah	**60**	**100.00**

Jadual 4.4 menunjukkan 40 orang responden atau 66.67% responden pernah mengikuti kursus mengenai komputer, 20 orang atau 33.33% responden tidak pernah mengikuti kursus komputer.

C. Penggunaan E-pembelajaran

Penggunaan e-pembelajaran termasuk kepunyaan komputer yang boleh mengakses internet, kekerapan mengakses e-pembelajaran, bahan yang diakses dalam e-pembelajaran dan persepsi responden terhadap kegunaan e-pembelajaran dalam pengajian mereka.

Jadual 4.5: Kekerapan Mempunyai Kompuetr Sendiri untuk Mengakses Internet

Mempunyai Komputer Sendiri	**Frekuensi**	**Peratus %**
Ya	44	73.33
Tidak	16	26.67
Jumlah	**60**	**100.00**

Merujuk kepada jadual 4.5, kebanyakan responden mempunyai komputer sendiri yang boleh mengakses internet. Hasil kajian ini menunjukkan 44 orang responden atau 73.33% responden mempunyai komputer sendiri yang boleh mengakses internet manakala 16 orang atau 26.67% responden tidak mempunyai komputer sendiri yang boleh mengakses internet.

J**adual 4.6:** Kekerapan Mengakses e-Pembelajaran

Aliran	**Frekuensi Kekerapan Mengakses (Peratus)**					**Jumlah (Peratus)**
	Tidak Pernah	**Kurang 5 kali**	**6-10 kali**	**11 - 15 kali**	**Lebih 15 kali**	
Sains	0 (0.00%)	13 (21.67 %)	12 (20.00 %)	3 (3.33%)	3 (5.00%)	**31 (51.67 %)**
Sastera	2 (3.33%)	10 (16.67 %)	8 (13.33 %)	5 (3.33%)	4 (6.67%)	**29 (48.33 %)**
Jumlah	**2 (3.33%)**	**23 (38.33 %)**	**20 (33.33 %)**	**8 (13.33 %)**	**7 (11.67 %)**	**60 (100%)**

Jadual 4.6 menunjukkan kekerapan responden mengakses e-pembelajaran mengikut aliran mereka. Kebanyakan responden dalam kajian ini adalah dalam lingkungan kurang daripada 5 kali sebulan mengakses e-pembelajaran iaitu mencatat 38.33% atau 23 orang. Terdapat 20 orang atau 33.33% responden akan mengakses e-pembelajaran sebanyak 6 hingga 10 kali sebulan, 8 orang responden atau 13.33% akan mengakses lebih daripada 15 kali sebulan, 7 orang atau 11.67% responden akan mengakses 11 hingga 15 kali sebulan. Terdapat sebanyak 2 orang atau 3.33% responden menyatakan bahawa mereka tidak pernah mengakses e-pembelajaran.

Jadual 4.7: Bahan Paling Kerap Digunakan Semasa Mengakses e-Pembelajaran

Kekerapan Mengakses e-Pembelajaran	**Frekuensi**	**Peratus %**
Bahan kuliah atau kelas (nota kuliah, soalan tutorial, tugasan, pautan kepada sumber maklumat dari seluruh dunia)	25	41.67
Kemudahan komunikasi (chat, e-mail, forum)	17	28.33
Penilaian (Kuiz, Ujian, Ujian kendiri dan latih tubi)	18	30.00
Lain-lain	0	0.00
Jumlah	**60**	**100.00**

Jadual 4.17 menunjukkan terdapat 25 orang responden daripada 60 orang responden atau 41.67% telah mengakses bahan semasa mengakses e-pembelajaran. Terdapat 17 orang responden atau 28.33% menyatakan bahawa mereka lebih kerap mengakses kemudahan komunikasi ketika mengakses e-pembelajaran. 18 orang responden atau 30% responden akan mengakses penilaian ketika mengakses e-pembelajaran. Tiada seorang responden yang akan mengakses selain daripada yang telah dinyatakan. Ini menunjukkan bahawa kebanyakan responden mengakses bahan kuliah atau kelas seperti nota kuliah, soalan tutorial, tugasan, pautan kepada sumber maklumat dari seluruh dunia ketika mengakses e-pembelajaran.

D. Kecekapan Diri Terhadap E-pembelajaran

Dalam kajian ini, kecekapan diri adalah kepercayaan seseorang pelajar bahawa boleh berjaya dengan menggunakan e-pembelajaran dan didapati bahawa seseorang yang mempunyai kecekapan diri terhadap e-pembelajaran yang tinggi akan kurang menghadapi masalah dalam menggunakan e-pembelajaran.

Kecekapan diri responden secara keseluruhannya mencatat nilai min 3.0188. Item tertinggi ialah Item 20 iaitu "Saya berasa seronok semasa menggunakan komputer." mencatat min yang tertinggi iaitu sebanyak 4.10. Diikuti oleh item 32 iaitu "Komputer adalah perkakasan terbaik untuk membantu proses pembelajaran." mencatat min sebanyak 4.08. dan diikuti dengan item 21 iaitu "Komputer membolehkan saya menjadi lebih produktif" dengan mencatat min sebanyak 3.97.

Item 34 iaitu "Saya mendapati penggunaan komputer sangat mengecewakan saya. (R)" pula tidak disetujui oleh responden iaitu 1.60. dikuti dengan item 19 iaitu "Komputer menakutkan saya. (R)" mencatat min 1.65 dan Item 26 iaitu "Saya berasa adalah lebih baik sekiranya kita tidak perlu belajar cara menggunakan komputer. (R)" pula mencatat min 1.72. Ini menunjukkan kecekapan pelajar adalah tinggi. Pelajar mempunyai keyakinan yang tinggi tentang kebolehan mereka menggunakan e-pembelajaran.

E. Sikap Pelajar Terhadap e-Pembelajaran

Terdapat empat faktor sikap pelajar terhadap e-pembelajaran telah dikaji dalam kajian ini iaitu :-

1. kegusaran terhadap e-pembelajaran yang mana didapati bahawa pelajar mempunyai kegusaran di antara tahap paling rendah dengan tahap rendah terhadap e-pembelajaran (purata min = 1.61). Daripada 10 item yang dikaji, terdapat 1 item memperolehi 50% pelajar berada pada tahap paling rendah, iaitu paling tidak gusar terhadap e-pembelajaran. 6 item hampir mencapai 50% pelajar berada pada tahap paling rendah.

2. keyakinan terhadap e-pembelajaran tinggi iaitu pada purata 4.10. Lebih daripada 50% responden mempunyai tahap kenyakinan yang tinggi pada semua item yang diuji.

3. kesukaan terhadap e-pembelajaran secara puratanya adalah di antara tahap sederhana dengan tahap tinggi iaitu 3.45. Didapati hanya item 56 dan item 63 memperoleh 50% ke atas pelajar yang mempunyai kesukaan pada tahap paling tinggi

4. persepsi terhadap faedah e-pembelajaran. Secara umumnya adalah di antara tahap sederhana dengan tahap tinggi (Purata min = 3.52). Hampir 40% orang responden mempunyai persepsi yang tinggi terhadap semua item faedah penggunaan e-pembelajaran yang diuji

F. Analisis Soalan Terbuka

Satu soalan sumbangan terbuka telah ditanya untuk menentukan faktor sebenar keseronokan pelajar menggunakan e-pembelajaran berasaskan Mooddle bagi matapelajaran Sejarah. Daripada 60 orang responden, seramai 33 orang responden telah memberikan pandangan mereka tentang keseronokan menggunakan e-pembelajaran berasaskan Moodle bagi matapelajaran Sejarah . Berikut merupakan frekuensi responden yang menjawab soalan ini mengikut jenis jawapan.

V. PERBINCANGAN, RUMUSAN DAN CADANGAN

A. Perbincangan dapatan kajian

Tujuan kajian ini menilai sikap dan persepsi pelajar terhadap penggunaan Sistem Pengurusan Pembelajaran (SPP) berasaskan MOODLE dalam Pengajaran dan Pembelajaran bagi matapelajaran Sejarah tingkatan 4. Kajian ini akan mencadangkan langkah-langkah sesuai bagi memberi kesan yang lebih optima dalam penggunaan SistemPengurusan Pembelajaran (SPP) berasaskan Moodle di sekolah untuk tujuan pengajaran dan pembelajaran.

B. Demografi dan Latar Belakang Responden Kajian

Jantina responden kajian menunjukkan bilangan responden perempuan lebih ramai daripada responden lelaki iaitu terdiri daripada 42 orang responden perempuan dan 18 orang responden lelaki dimana jumlah keseluruhan responden ialah 60 orang. Kalau dilihat dari segi aliran responden melalui hasil soal selidik, didapati responden aliran Sains mengatasi responden aliran Sastera iaitu aliran Sains seramai 31 orangmanakala aliran Sastera seramai 29 orang.

Pengalaman responden merujuk kepada tahap kemahiran responden dalam bidang komputer dimana ianya dibahagi kepada tahap lemah, sederhana, mahir dan tidak pasti. Kebanyakan responden adalah mempunyai tahap kemahiran bidang komputer yan sederhana iaitu 73.33% atau 44 orang responden. Kemudian diikuti dengan 21.67% atau 13 daripada responden mempunyai tahap yang mahir, 3.33% atau 2 responden terdiri daripada responden yang mempunyai tahap lemah dan 1.6% terdiri daripada responden yang tidak pasti tahap mereka.75 Kajian ini juga melihat kepada tahap kemahiran Sistem Pengurusan Pembelajaran

Berasaskan Moodle juga dibahagi kepada lemah, sederhana, mahir dan tidak pasti. Kebanyakan responden adalah mempunyai tahap yang sederhana iaitu 71.67% atau 43 responden daripada 60 responden. Kemudian diikuti dengan 25.00% atau 15 orang responden mempunyai tahap yang mahir, 3.33% atau 2 orang responden terdiri daripada responden yang mempunyai tahap lemah dan 0.00 % bagi tidak pasti.

Jika dilihat kepada kajian, ianya telah menunjukkan kebanyakan responden pernah mengikuti kursus komputer dengan 66.7% daripada responden pernah mengikuti kursusmengenai komputer dan cuma 33.3% daripada responden tidak pernah mengikuti kursus komputer.

C. Kekerapan Penggunaan Sistem Pengurusan Pembelajaran Berasaskan Moodle

Daripada dapatan kajian, majoriti pelajar menggunakan Sistem Pengurusan Pembelajaran Berasaskan Moodle bagi pembelajaran berasaskan Moodle ini ialah sebanyak kurang 5 kali seminggu. Kekerapan penggunaan ini adalah pada tahap sederhana. Setelah kita menyemak penggunaan Sistem Pengurusan Pembelajaran Berasaskan Moodle berdasarkan aliran yang berbeza, didapati tahap penggunaan sederhana ini merupakan tahap penggunaan bagi setiap aliran juga. Keadaan sedemikian boleh dianggap tidak jauh berbeza dengan kekerapan penggunaan Sistem Pengurusan Pembelajaran Berasaskan Moodle oleh responden kajian Haywood et al.(2004) iaitu majoriti daripada mereka menggunakan Sistem Pengurusan Pembelajaran Berasaskan Moodle lebih daripada 2 kali.

Masih terdapat 3.33% pelajar menggunakan Sistem Pengurusan Pembelajaran Berasaskan Moodle kurang daripada 1 kali dalam seminggu. Dengan kata lain, mereka pernah tidak menggunakan Sistem Pengurusan Pembelajaran Berasaskan Moodle dalam seminggu. Hal ini menunjukkan bahawa terdapat faktor tertentu yang menyebabkan mereka tidak menggunakan Sistem Pengurusan Pembelajaran Berasaskan Moodle. Sistem Pengurusan Pembelajaran Berasaskan Moodle mempunyai kelebihannya dalam penyampaian maklumat, masalah terbesar dalam isu Sistem Pengurusan Pembelajaran Berasaskan Moodle ialah keciciran penglibatan [21].

Hasil kajian ini juga mempamerkan 41.67% daripada responden akan mengakses bahan pembelajaran semasa mengakses Sistem Pengurusan Pembelajaran Berasaskan Moodle. Terdapat 30.00% daripada responden menyatakan bahawa mereka lebih kerap membuat penilaian seperti kuiz, ujian dan lain-lain ketika mengakses. 28.33% daripada responden akan mengakses kemudahan komunikasi semasa mengakses Sistem Pengurusan

Pembelajaran Berasaskan Moodle berasaskan Moodle dan tiada seorang pun yang mengakses selain dinyatakan diatas. Ini bermakna kebanyakan pelajar akan mengakses Sistem Pengurusan Pembelajaran Berasaskan Moodle berasaskan Moodle untuk tujuan mendapat nota kuliah, soalan tutorial, tugasan dan pautan kepada sumber maklumat dari seluruh dunia.

Hasil kajian menunjukkan bahawa terdapat sebanyak 78.33% responden menyatakan bahawa Sistem Pengurusan Pembelajaran Berasaskan Moodle adalah berguna semasa proses pemelajaran bagi matapelajaran Sejarah mereka. Sebanyak 18.33% orang responden tidak pasti sama ada Sistem Pengurusan Pembelajaran Berasaskan Moodle berguna atau sebaliknya terhadap pembelajaran mereka.

Manakala, hanya 5% responden yang mengatakan Sistem Pengurusan Pembelajaran Berasaskan Moodle tidak berguna untuk mereka. Ini bermakna Sistem Pengurusan Pembelajaran Berasaskan Moodle telah diperkenalkan sebagai satu strategi baru untuk menyokong kelemahan yang terdapat dalam sistem pendidikan yang lalu. Dalam pengajaran dan pembelajaran khususnya matapelajaran Sejarah, penggunaan

Sistem Pengurusan Pembelajaran Berasaskan Moodle perlu diperhebatkan memandangkan kini ilmu boleh didapati melalui penerokaan bukan hanya diberi oleh pengajar semata-mata atau dengan erti kata lain ilmu kini tidak disuap semata-mata malah diteroka secara akses kendiri samada melalui kawalan pengajar, ibu bapa atau diri sendiri.

Pelajar secara umum mempunyai keyakinan terhadap Sistem Pengurusan Pembelajaran Berasaskan Moodle. Keyakinan pelajar terhadap Sistem Pengurusan Pembelajaran Berasaskan Moodle adalah hampir tinggi (purata min= 4.10).

Daripada hasil analisa menunjukkan semua item memperoleh jumlah min yang melebihi 4 dan ini menunjukkan bahawa pelajar atau responden mempunyai keyakinan tinggi apabila kita menguruskan kerja dalam e-pembelajaran.

Purata min kesukaan pelajar terhadap Sistem Pengurusan Pembelajaran Berasaskan Moodle ialah 3.45. Nilai ini adalah di antara tahap sederhana. Semua item yang memperolehi min melebihi 3. Hal ini menujukkan mereka suka menggunakan Sistem Pengurusan Pembelajaran Berasaskan Moodle.

Semua item yang diuji dibahagian ini menunjukkan pelajar mempunyai persepsi yang tinggi mengenai faedah Sistem Pengurusan Pembelajaran Berasaskan Moodle. Hal ini dapat dilihat dengan purata minnya sama dengan 3.52. Keputusan ini juga disokong dengan fakta hampir 40% pelajar telah memilih tahap tinggi dalam semua item.

Daripada keputusan purata min keempat-empat bahagian sikap pelajar terhadap Sistem Pengurusan Pembelajaran Berasaskan Moodle dalam lingkungan 2.45 hingga 4.00, kita boleh membuat kesimpulan bahawa sikap pelajar terhadap Sistem Pengurusan pembelajaran berasaskan Moodle adalah menggalakkan.

Hasil dapatan soalan terbuka, pelajar seronok menggunakan e-pembelajaran dengan penjelasan e-pembelajaran membenarkan mereka bertukar fikiran, e-pembelajaran adalah fleksibel, e-pembelajaran membantu pembelajaran, e-pembelajaran meningkatkan kemahiran teknologi maklumat dan mereka suka menggunakan bahan teknologi maklumat. Penjelasan negatif daripada responden pula menunjukkan mereka menghadapi masalah kemudahan untuk mengakses e-pembelajaran, tempat untukmenggunakan e-pembelajaran adalah terhad Selain itu, sesetengah responden tidak melihat kebaikan e-pembelajaran, berkekangan masa untuk mengguna, kurang kemahiran teknologi makluamat, tidak biasa dengan antara muka sistem dan kurang minat terhadap penggunaan ICT.

*D. **Kesimpulan***

Secara keseluruhan, terdapat beberapa kesimpulan mengenai sikap pelajar dan persepsi pelajar terhadap sistem pengurusan pembelajaran berasaskan Moodle dan juga pengaruhnya daripada dapatan kajian. Kesimpulan tersebut adalah seperti berikut:

(i) Kekerapan penggunaan pelajar dalam sistem pengurusan pembelajaran berasaskanMoodle adalah pada tahap sederhana iaitu sebanyak kurang 5 kali dalam seminggu. Masih terdapat pelajar yang memberi sambutan dingin kepada sistem pengurusan pembelajaran iaitu penggunaan kurang daripada sekali dalam seminggu. Peratusan penggunaan e-pembelajaran menunjukkan majoriti pelajar dari setiap aliran kursus menggunakan e-pembelajaran pada tahap sederhana.

(ii) Tahap kemahiran teknologi maklumat pelajar secara amnya memuaskan. Didapati pelajar perlu bantuan dalam mengendalikan kemahiran mencipta laman web dan juga memasang komputer dengan peralatan yang diperlukan untuk mencapai kemudahaninternet.

(iii) Sikap pelajar terhadap sistem pengurusan pembelajaran agak sederhana. Satu aspek sikap iaitu persepsi faedah mencapai purata min yang lebih kurang sama dengan nilai hampir 4 (tinggi). Tiga aspek lain adalah hampir ke sederhana dan diyakini jika sistem pengurusan pembelajaran ini diteruskan maka ianya akan menampakan hasil yang lebih baik.

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Tahap Penggunaan Pangkalan Data Atas Talian Dikalangan Pelajar Pasca Siswazah Di Universiti Tun Hussein Onn Malaysia

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Abstrak—**Kajian yang dijalankan ini mengkaji tentang tahap penggunaan pangkalan data atas talian di kalangan pelajar pasca siswazah di Universiti Tun Hussein Onn Malaysia (UTHM). Responden terdiri daripada semua pelajar pasca siswazah yang sedang belajar di UTHM meliputi 7 fakulti di UTHM. Populasi responden adalah berjumlah 1676 termasuk pelajar Sarjana dan Doktor Falsafah. Kajian mendapati bahawa pangkalan data atas talian menyokong pembelajaran dan penyelidikan yang dijalankan oleh pelajar pasca siswazah seterusnya membantu dalam menyiapkan tugasan akademik yang diberikan. Tidak terkecuali juga didapati bahawa pihak perpustakaan masih kurang mempromosikan pangkalan data atas talian yang telah dilanggan yang menyebabkan masih ramai pelajar pasca siswazah yang masih tidak memahami kepentingan pangkalan data tersebut.**

Kata kunci; Pangkalan data atas talian, sumber maklumat elektronik, pencarian maklumat, perpustakaan digital

I. PENGENALAN

Penguasaan teknologi maklumat khususnya internet adalah penting bagi para pelajar untuk menghadapi era ledakan maklumat. Tanpanya, mereka akan gagal bersaing dan seterusnya negara akan ketandusan bakal pekerja yang kaya dengan maklumat dan ilmu pengetahuan. Pangkalan data atas talian adalah sebahagian daripada sumber maklumat digital yang membolehkan maklumat disalurkan tanpa batasan dan sempadan. Oleh itu, pengetahuan dan kemahiran mengakses pangkalan data atas talian menjadi satu keperluan khusus kepada semua pelajar terutamanya pelajar lepasan ijazah di Institusi pengajian tinggi.

Pangkalan data atas talian mempunyai ciri yang pelbagai dan unik yang mana kapasiti sumber maklumat dan pengetahuan yang cepat berkembang berbanding dengan sebuah perpustakaan. Segala maklumat yang hendak dicapai, akan diperolehi dalam masa yang singkat dengan hanya menggunakan enjin pencarian bahan melalui pebagai jenis pangkalan data yang ada pada masa kini seperti Science Direct, IEEE dan ACM Digital Library. Maklumat yang disediakan meliputi artikel jurnal, kertas persidangan dan seminar, hasil penyelidikan dan juga disertasi. Pangkalan data atas talian adalah sumber rujukan alternatif kepada para pelajar selain daripada buku teks, buku rujukan tambahan dan nota pensyarah. Akses kepada maklumat di pangkalan data atas talian adalah bersifat terbuka dan luas kerana ianya berhubung antara satu sama lain.

Keperluan sumber maklumat digital ini didapati tidak terlalu mendesak bagi golongan pelajar ijazah pertama tetapi bagi golongan pelajar pasca siswazah, ianya dianggap penting bagi melaksanakan setiap tugasan, membuat penyelidikan dan penyediaan tesis dan disertasi mereka. Kecenderungan dan kemahiran mereka dalam mencari, mengakses, memuat turun dan menggunakan maklumat yang dicapai merupakan antara elemen yang akan dikaji didalam penyelidikan ini. Secara amnya, pelajar pasca siswazah merupakan pelajar senior dan telah mempunyai pengalaman belajar dimana-mana institusi pengajian tinggi dan dengan itu, kelebihan yang mereka ada perlu diaplikasikan dalam melanjutkan pengajian mereka keperingkat yang lebih tinggi.

II. PERSOALAN KAJIAN

Penyelidik berhasrat untuk mengkaji dan mengenalpasti tahap penggunaan pangkalan data atas talian di kalangan para pelajar pasca siswazah di Universiti Tun Hussein Onn Malaysia dengan tujuan untuk mengenalpasti aspek pengetahuan, kecenderungan dan keupayaan mengakses maklumat. Disamping itu, kajian tentang pulangan pelaburan juga akan dibuat mengenai perbelanjaan yang telah dikeluarkan oleh kerajaan dalam langganan pangkalan data tertentu di perpustakaan UTHM.

Dibawah dinyatakan beberapa persoalan kajian yang akan dikaji tentang penyelidikan yang akan dibuat :

1. Sejauh manakah pelajar pasca siswazah menggunakan Pangkalan Data sebagai medium dalam meningkatkan tahap pembelajaran mereka.

2. Berapakah kekerapan dan kecenderungan mereka menggunakan pangkalan data atas talian bagi membantu proses pembelajaran ?

3. Adakah pelajar menghadapi masalah dalam mengakses pangkalan data yang dilanggan oleh perpustakaan ?

4. Adakah pangkalan data yang dilanggan memenuhi keperluan dan kehendak pelajar pasca siswazah tersebut ?

.

III. OBJEKTIF

Objektif kajian ini adalah untuk mengetahui masalah pencarian sumber maklumat di kalangan pelajar lepasan Ijazah. Antara objektif lain kajian ini adalah

1. Mengenalpasti tahap penggunaan pangkalan data atas talian terhadap pelajar pasca siswazah di UTHM dalam proses pembelajaran mereka.

2. Mengenalpasti masalah yang dihadapi oleh pelajar pasca siswazah ketika mengakses pangkalan data atas talian samada di dalam atau di luar kampus.

3. Mencadangkan kaedah mengatasi masalah yang berlaku ketika mengakses pangkalan data atas talian

IV. KAJIAN LITERATUR

Sumber maklumat elektronik terutamanya komputer sedang berkembang dengan pesatnya pada masa kini. Kemudahan sumber maklumat elektronik akan memudahkan pengguna untuk mengakses maklumat dalam pelbagai bentuk seperti suara, imej, maya dan sebagainya tanpa terhad kepada batasan tertentu. Keadaan ini membolehkan proses pembelajaran di peringkat pengajian tinggi berkembang dengan lebih meluas dan berkesan dengan adanya kemudahan sumber maklumat yang canggih dan terkini. Dadzie [1], melalui kajian yang telah dijalankan olehnya berkaitan aksesibiliti pengunaan sumber maklumat elektronik di Ashesi University College, beliau mendapati bahawa 88 peratus daripada 169 responden menggunakan sumber maklumat atas talian secara meluas meliputi keseluruhan pangkalan data yang dilanggan oleh universiti tersebut. Kajian tersebut tertumpu kepada pengaruh dan pengunaan sumber – sumber elektronik dalam menyediakan maklumat terkini kepada semua pengguna perpustakaan. Hutchin [2] telah membuat satu kajian di Universiti Bournemoth tentang kesan pengunaan sumber maklumat elektronik (e-resources) di perpustakaan. Kajian yang dijalankan selama 2 tahun ini memfokus kepada aspek pengajaran dan pengajaran (P&P) terhadap komuniti di universiti tersebut. Beliau menggunakan kaedah soal selidik dan temubual secara atas talian sebagai satu kaedah pengumpulan data keatas responden yang disasarkan. Hasil penyelidikannya mendapati bahawa pada tahun 2005, sebanyak 66 peratus responden menyatakan bahawa mereka akan mencari dan menggunakan semula sumber maklumat elektronik pada masa akan datang.

Pada tahun kedua, kajian serupa dijalankan terhadap bilangan responden yang sama mendapati bahawa terdapat kenaikan dalam penggunaan sumber maklumat atas talian di kalangan pelajar dan pensyarah universiti. Kajian beliau telah menunjukkan bahawa kecenderungan penggunaan sumber maklumat atas talian akan bertambah dari semasa berdasarkan keperluan akademik terkini.

Martinez-Arellano [3] dalam artikel penyelidikannya mengkaji mengenai sikap dan tingkah laku pengguna sebelum dan selepas menggunakan pangkalan data atas talian untuk penyelidikan. Hasil kajiannya mendapati bahawa selepas menggunakan pangkalan data atas talian, kekerapan pengguna ke perpustakaan bertambah, pengguna yang menggunakan pangkalan data atas talian meningkat dan hasil penulisan bagi penyelidikan mereka juga semakin baik. Ini kerana responden lebih mudah membuat pencarian maklumat menggunakan pelbagai medium digital seperti e-jurnal, e-buku dan e-tesis. Kajian ini juga mendapati setiap responden yang dikaji lebih cenderung untuk memilih menggunakan pangkalan data atas talian berbanding menggunakan sumber berbentuk monograf (buku, jurnal bercetak).

Katryn dan John [4] dari University Of Northumbria, Newcastle membuat kajian tentang sikap pelajar terhadap sumber maklumat elektronik. Mereka mengkaji sama ada sikap pelajar berubah mengikut subjek dengan kewujudan sumber maklumat elektronik ini. Selain itu mereka juga turut mengkaji perasaan pelajar tentang kewujudan maklumat elektronik dan sumber maklumat elektronik manakah yang paling memberikan perolehan maklumat yang lebih efektif. Beberapa objektif penyelidikan ini turut disenaraikan, antaranya ialah untuk mengkaji pandangan pelajar terhadap sumber maklumat elektronik dan melihat sumber elektronik manakah dapat membantu pelajar dalam pencarian maklumat mereka.

Poon, Low dan Yong, [5] melaporkan penggunaan sumber atas talian telah menandakan satu perubahan baru dalam persekitaran pengaksesan maklumat dalam pendidikan di Malaysia. Keputusan menunjukkan bahawa lima faktor utama yang mempengaruhi keberkesanan proses pembelajaran dalam talian adalah tingkah laku pelajar, ciri-ciri pensyarah, sumber atas talian yang interaktif, kecekapan teknologi dan polisi institusi itu sendiri. Hasil kajian juga menunjukkan bahawa gred pelajar adalah sangat berkorelasi dengan persepsi pelajar, keberkesanan diri dan aktiviti interaktif. Pelajar yang menggunakan sumber atas talian dilihat berjaya mengatasi keupayaan pelajar yang masih menggunakan kaedah konvensional.

Chan [10] pula dalam artikelnya yang bertajuk "Electronic Journal and Academic Libraries' menyenaraikan kebaikan dan keburukan jurnal elektronik serta implikasi kewujudannya. Antara kebaikannya ialah jurnal elektrik telah meningkatkan penerbitan jural. Ini kerana urusan percetakan dan penghantaran tidak lagi diperlukan. Ini

menjimatkan masa dan meningkatkan keijasama antara penerbitan dan pengarang. Selain itu, keupayaan untuk mendapatkan jurnal adalah lebih mudah. Dalam beberapa minit sahaja jurnal yang dikehendaki boleh diperolehi. Begitu juga dengan kos pembelian. Jurnal bercetak adalah lebih mahal berbanding jurnal elektronik. Dengan melanggan jurnal elektronik ia dapat menjimatkan kos perpustakaan. Jurnal elektronik adalah lebih menarik kerana diterbitkan dalam pelbagai media seperti grafik, teks, jadual, statistik dan sebagainya.

Coombs [6] telah membuat projek analisa log data penggunaan pangkalan data melalui Ezproxy. Dengan kajian penggunaan data untuk sumber elektronik, pihak perpustakaan boleh mengetahui halatuju, bila, mengapa dan dimana pengguna mengakses sumber elektronik yang dilanggan. Kajian Waldman dan Micaela [8] di Baruch College, menerangkan, untuk menggalakkan penggunaan sumber-sumber elektronik dikalangan pelajar, pihak perpustakaan perlu mengenalpasti apakah faktor-faktor yang menggalakkan pelajar mencari maklumat tersebut melalui perpustakaan. Penyelidikan telah menunjukkan bahawa efikasi diri mempengaruhi pencapaian akademik sebahagian besar pelajar. Hasil mendapati bahawa pelajar yang sering menggunakan sumber –sumber atas talian mempunyai skil dan keberkesanan dalam dapatan maklumat.

Saeed Rezaei [9] dalam kajiannya membuktikan bahawa kesedaran pengguna akan terhasil sekiranya pihak bertanggungjawab terutamanya pihak perpustakaan menjalankan kempen kesedaran dan promosi terhadap semua sumber atas talian yang dimilikinya. Kajian ini mengutarakan dan membincangkan aspek-aspek berkaitan dengan 'e-pembelajaran', dan bagaimana ia boleh disokong oleh persekitaran perpustakaan dan fungsi perpustakaan digital. Kebanyakan pengguna tidak sedar dengan perkembangan dan peningkatan sumber-sumber atas talian ini kerana ketiadaan atau kekurangan promosi kepenggunaan.

V. SUMBER KAJIAN

Kajian yang dijalankan ini menumpukan terhadap kepenggunaan pangkalan data atas talian di perpustakaan UTHM. Secara umumnya, penyelidikan ini berteraskan kemudahan akses yang disediakan oleh pihak perpustakaan kepada pengguna yang ada. Antara kemudahan mengakses pangkalan data atas talian adalah :

(1) Laman Web

Laman web perpustakaan menjadi satu medium penting dalam menyalurkan akses kepada pangkalan data. Tanpanya, pengguna tidak dapat berhubung dengan pangkalan data yang dilanggan dan seterusnya maklumat yang diperlukan tidak akan sampai kepada pengguna yang memerlukan.

(2) Akses Luar Kampus

Perkhidmatan ini disediakan untuk memudahkan staf dan pelajar UTHM mengakses sumber maklumat atas talian (pangkalan data dan e-buku) yang dilanggan oleh melalui internet di luar kampus UTHM. Antara kelebihannya adalah :

-Membolehkan akses pangkalan data atas talian dan e-buku yang dilanggan pada bila-bila masa, dan dari mana-mana lokasi yang mempunyai talian internet.

-Tiada yuran atau bayaran dikenakan.

-Kebebasan untuk memuat turun pelbagai jenis bahan termasuk artikel jurnal, kertas persidangan, piawai dan sebagainya yang dilanggan dalam bentuk teks penuh atau abstrak.

(3) Portal Pencarian Setempat

360 Search adalah enjin carian setempat yang membolehkan pengguna membuat carian sumber maklumat elektronik yang terdapat dalam koleksi perpustakaan dari satu antaramuka yang mudah. Ia menyediakan petikan dan abstrak, dan pautan kepada artikel teks penuh dan buku elektronik. segi pengurusan jabatan. Secara ringkasnya dapatan soal selidik boleh di lihat di jadual 1.1

VI. HASIL KAJIAN

(1) Tahap Penggunaan

Berdasarkan hasil analisa yang dibuat, didapati 99 responden mewakili 91.7% daripada keseluruhan 108 responden menyatakan bahawa mereka mengetahui tentang pangkalan data yang dilanggan oleh perpustakaan. Terdapat 9 responden mewakili 8.4% tidak maklum tentang pangkalan data yang dilanggan. Kajian jaga mendapati bahawa terdapat 3 responden atau 2.8% yang mencatat tiada penggunaan pangkalan data dalam masa sebulan manakala 8 responden atau 7.4% menyatakan lain-lain (melebihi 5 kali). Penggunaan pangkalan data sebanyak 1 – 2 kali sebulan merupakan yang tertinggi dicatatkan iaitu sebanyak 77 atau mewakili 71.3% daripada keseluruhan responden diikuti dengan penggunaan diantara 3 – 5 kali sebulan dengan catatan sebanyak 20 kali atau 18.5% daripada keseluruhan responden.

(2) Masalah yang dihadapi

Sebanyak 76 responden mewakili 70.4% menyatakan bahawa capaian internet universiti adalah perlahan. berkemungkinan penggunaan pangkalan data oleh pengguna pada masa puncak menyebabkan capaian internet menjadi perlahan. 83 responden atau 76.9% menyatakan bahawa mereka tiada kemahiran mengenai kaedah pencarian bahan maklumat yang betul, menggambarkan majoriti responden tiada kemahiran khusus dalam pencarian bahan melalui pangkalan data. Majoriti responden juga bersetuju bahawa kemudahan komputer yang disediakan perpustakaan masih tidak mencukupi.

(3) Kecenderungan Akses maklumat

Analisa mendapati pelajar tertarik dengan keselesaan perpustakaan dan hasilnya menarik minat pelajar untuk melakukan pencarian maklumat melalui pangkalan data atas talian di perpustakaan. Kemudahan pencetak yang disediakan juga membantu proses pencarian maklumat dimana pelajar dapat menvcetak maklumat akhir selepas selesai membuat encarian.

(4) Keperluan dan kehendak pelajar

Majoriti responden bersetuju maklumat pangkalan data yang diperolehi adalah memenuhi keperluan tugasan mereka. Pangkalan data atas talian memberi juga faedah yang besar kepada pelajar-pelajar UTHM.Hasil analisa juga mendapati keseluruhan responden mengakui bahawa maklumat di dalam pangkalan data atas talian bersesuaian dengan pembelajaran di peringkat universiti dan hasil capaian maklumat adalah terkini dan dipercayai.

VII. KESIMPULAN

Hasil penyelidikan ini dijalankan untuk mengenalpasti tahap penggunaan pangkalan data atas talian yang mensasarkan pelajar pasca siswazah tetapi ianya hanya terhad di dalam skop universiti berkaitan sahaja. Penyelidik berharap akan ada lagi penyelidikan yang lebih besar skopnya dijalankan terutamanya dalam skop penggunaan pangkalan data atas talian dibeberapa university di Malaysia.

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The design of a Course Management System (CrMS) for secondary school in Johor

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Abstract—**This research is involved with the development of a web based Course Management System to provide a platform, in learning and gaining knowledge in the field of Chemistry subject for secondary school. It is an alternative way for the students and teachers to communicate and create learning collaboration outside the classroom. The first objective of this research is to investigate the various types of systems to support e-learning. Second is to develop a Course Management System to secondary school in Johor, and the third objective is to evaluate the effectiveness, satisfaction on the modules and student's acceptance of the system as a new alternative method in learning. Eventually, this web based learning system is developed by utilizing the Claroline open source e-learning software that was developed based on ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model. It is believed that the developed CrMS is an approach to facilitate and enhance learning for personnel involved in Chemistry subject through computer and communication technology.**

Keywords-component; CrMS; Course Management System; Chemistry

I. INTRODUCTION

This paper will explain an overview on designing of e-portal use for developing the prototype. This chapter will describe on the methodology that use, as well as details of what are researcher done during each phase of methodology used. Basically, this chapter provides overview of this CrMS development using ADDIE Model. ADDIE model is being adapted which a general model for the instructional design. ADDIE is a generic and simplified Instructional System Design model (Analysis, Design, Development, Implementation, and Evaluation), to reflect the professional organization of the instructional technology field (Peterson, 2003).

CrMS are web applications that run on a server and are accessed by using a web browser. Course Management System (CrMS) is a tool that focuses on the management of one or more courses, typically by an instructor, and is usually used for distance education or hybrid courses. CrMS give educators tools to create a course web site and provide access control so only enrolled students can view it. (Cole, Foster, 2007). CrMS have the capability of managing group discussion and to provide groups with document sharing and editing tools to engage students in completing group assignments and tasks. Group tools may support presenting final product of collaborative work and group activities. Example of group tool includes group posting areas, discussion forums, breakout sessions, chat areas, file exchange tools and group e-mail.

Course management systems can provide information on what students are doing when they are learning online, the length of time spent learning online, how active they are in their online courses, how they interact with others and how others interactions affect their actions (Laffey et al). With Course Management System, it provides instructional designers, developers, subject matter experts and authors to create and re-use learning content and reduce duplicated development efforts. Knowing the CrMS tools that students find most effective establishes an important baseline for understanding student needsthat can be addressed not only in a CrMS but also through other online systems and services (Johnson, 2008). According to Shankar (2007), Course Management System provides:

a) Online posting of course material.
   Material such as reading copies and power point slides can be made available online, apart from the schedule of the course and its syllabus.
b) Learner assessment.
   Learners can be accessed through online quizzes, tests and grade books.
c) Discussion forum.
   Discussions can be conducted through a discussion board, where notes are exchanged and topics discussed between formal classroom sessions.
d) Communication.
   Communication is carried through announcements to classes and other tools to communicate individually.
e) Allotment of lock boxes.
   Learners can store class assignments, class notes or presentations in individual lock boxes.
f) Review of statistics.
   The course statistics can be reviewed at will, which details information about who used the site and when.

For the purpose of this study, a Course Management System is defining as a software system that is specifically

designed to teachers and students to use in teaching and learning. As education is gaining long term knowledge and supports long term classroom sessions, the term Course Management System in this research is the most suitable term to use.

II. EFFECTIVENESS, SATISFACTION AND ACCEPTANCE

This research will find out the effectivesness of the Course Management to students, their satisfaction in using Course Management System modules and their acceptance to the usability and functionality of the system. According to MsGraw-Hill Science & Technology dictionary, the term 'effectives' refers to a measure of the extent to which a system may be expected to achieve a set of specific mission requirements expressed as a function of availability, dependability, and capability. In this research, the term 'effectiveness' refers to system's capability to enhance student's result after using e-portal Course Management System in which it is tested according to student's achievement in their posttest. While for the term 'satisfaction' and 'acceptance', according to American Heritage Dictionary, 'satisfaction' is refers to the fulfillment or gratification of a desire, need, or appetite, pleasure or contentment derived from such gratification, and a source or means of gratification while the word 'acceptance' refers to the act or process of accepting, the state of being accepted or acceptable, favorable reception; approval or belief in something; agreement. In this research, the word 'satisfaction' is refers to the student's perception on the e-portal's module that they will use to have learning process instead of using conventional method while the word 'acceptance' is refers to usability and functionality of the e-portal Course Management System in order to determine the system robustness to the secondary school.

III. CRMS PROTOTYPE METHODOLOGY DEVELOPMENT

Development methodology can be defined as research activities that are used to produce specific activities for the development of prototype. The methodology for this project is adapted from Norasiken (2008) which contains the description of each phase from preliminary analysis to evaluation phase. ADDIE model is being used in the development of this CrMS. The ADDIE model is short for five sequence states of the instructional design: Analysis, Design, Development, Implementation, and Evaluation. This model stress on elements such as teaching and learning objectives, prototype, usability and improvement. This model is further discussed in development steps involved.

Design phase consists of elements that need to have in the system so that it fulfill students and teachers requirement. It also involves outlining the strategy for how to reach the instructional goal determined during the Analysis phase. In this phase it focuses on the content selection, instructional strategy and method, media and material, and delivery system options. When planning a CrMS deployment, many concerns need to be addressed, but the two most important modeling determinations are the management of Web content data and the user communities that will be exposed to the data. Accommodations must be made to ensure that the CrMS content is not rendered improperly to the disparate user base, which could compromise an individual's privacy. User profiles should be established so that content can be shown in proper user communities. This phase address this matters across all CrMS applications, content is exposed to its users in many forms, but the most prevalent forms of exposure include message boards, calendars, forums, and search utilities. For a CrMS to keep and increase their user bases, it need to maintain clear navigation flows so that end-users know where they are and where they are going to go next. If a design does not provide a proper navigation model, users may become confuse, lost interest, and ultimately browse somewhere else.

Besides, researcher decides to put on online with outside access and not limited to Local Area Network (LAN) in the schools only. Operational requirements focus on 24 hours and 7 days CrMS uptime so the students and teacher can use it at any time. During this phase, researcher also address on security issue. Security is usually one of the biggest concerns for any CrMS deployment process. As requested from target user which is students and also the teachers, researcher draws an authorization phases for each user so that how far can a user access and make alteration for the system can be limited. In addition, content and modules selection is also in focus as learning content that need to be previewed by the students are based on learning theory same goes to the selection of module. In this research, learning content is using Learning Content Management System from Ministry of Education at http://spp.moe.edu.my/ while all modules that are provided in Claroline are being used to test the student's acceptance of all the modules afterward. Appendix 1shows design phase for development of CrMS while Appendix 2 shows the design of how a learning content of E-Government LCMS Portal interact with CrMS learning content be used in the CrMS.

In addition, this phase also stressed on design of each course, module, and lesson by detailing and scheduling activities, based on learning objectives. Researcher creates a master project plan based on documented scenarios, necessary customizations and content requirements. Each topic in the plan will be outlined in order to show the specific needs within the learning content area.

In this e-portal, there are eleven main modules which have been included; which are 'Course Description', 'Agenda', 'Announcements', 'Document', 'Assignment', 'Exercises', 'Learning Path', 'Forums', 'Chat', 'Group and User' and 'Wiki'. For the first module, 'Course Description' module consists of overall course description on subject itself. In this research, student will be able to get information about Chemistry subject such as syllabus, marks division, name of Chemistry teacher and so on. 'Agenda' module enables teachers to share important events or agenda to remind student of the important dates. 'Announcement' module is the platform to teachers to notify students any new events or

posts. 'Documents' module is consists of Notes and other learning material for form five Chemistry subject. 'Assignments' module is a platform to posting files or assignments from teachers to students. Besides, it allows students to submit assignments to teachers. 'Exercises' modules are developing using several kinds of questions such as multiple choices, matching, and fill in the blanks. Besides, it enables teachers to track student's results. 'Forums' module is a public discussion space divisible into topics (asynchronous conversation) or online discussion tool (synchronous conversation). It is a tool that enables learners to share information, discuss ideas and communicate for the purpose of collaboration. 'Learning Path' is to create complete sequence of learning activities. It is to stimulate the students to read documents. 'Chat' module enables students, teachers, and experts to have real time communication among them. It allows them to chat in a private chat room. 'Group and User' modules enable students to make a division into smaller groups which only selected person will only share some resources among members in the group for example from all sixty form five students in the school, they can manage their group based on their class only. 'Wiki' module acts as a platform where user can share same links to certain website so that they can share it with others, and it is not restricted to the teachers only.

Teachers are also can supervise students with the button 'Statistic' to track the tools used by the students and supervising the progression of the students. With all these modules, indirectly, collaborative learning activity implemented, where the learning activity involves more than one learner, which they can communicating with each other while having their online education.

IV. PROTOTYPE

The prototype named e-portal is develop which consists of eleven modules which is Course Description, Agenda, Announcement, Document, Assignment, Exercise, Forum, Chat, Learning Path, Groups and User, and Wiki modules.

A. Course Description Module

Student can read details about subject or course in this module. They can also know the Qualification and goals of the subject, course content, support, methods of evaluation and others. Figure 1 shows features in Course Description interface.

Figure 1 Features in Course Description interface

B. Agenda Module

With agenda tool, teacher can provide information to the students about scheduled events linked to their course or subject. The events of the courses in which a user is enrolled show up in the 'My Calendar' section that gathers all the events in one document. Figure 2 shows features in Agenda Modules interface.

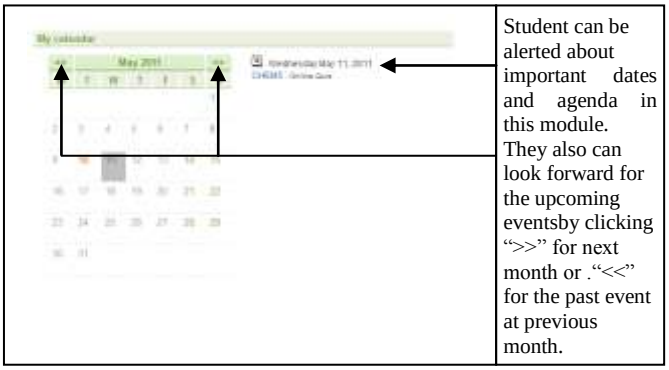

Figure 2 Features in Agenda Modules interface

C. Announcement Module

Announcement module is the platform where teachers can display current information to the students and draw their attention to it. The teacher can remind an approaching deadline, point out new documents online, or communicate about an interesting conference. Figure 3 shows features in Announcement module interface.

Figure 3 Features in Announcement module interface

D. Document Module

Document module provides a comprehensive mechanism for organizing files and links that a teacher would like to make available to the students. It is possible to make many directories, and to have directories within directories to enable grouping of files. It is a platform where students able to get links to any entity belonging to the course manager which in this research will be the teacher. It should be files, blog post, bookmarks and so on. Students can download the files or easily open it. Teachers also can create links to any websites as additional reference for students. In this research, researcher makes a links to Ministry of Education's Learning

Management System as additional learning material in order to vary the learning content. Figure 4 shows the interface of the module while Figure 5 shows the learning content in the module.

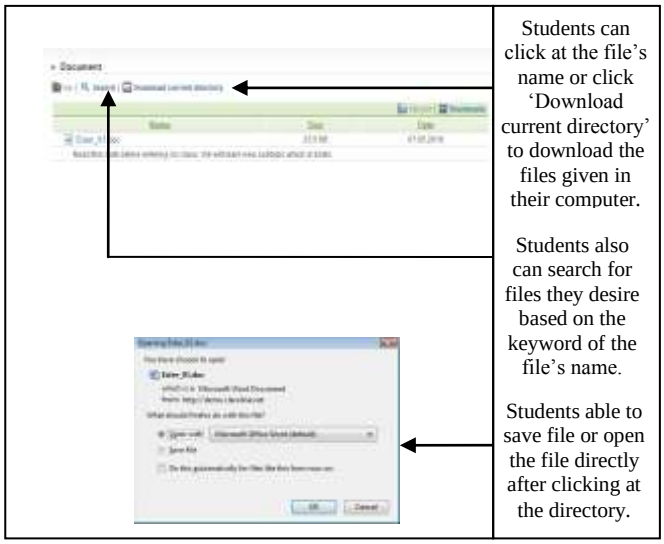

Figure 4 Features in Document Module

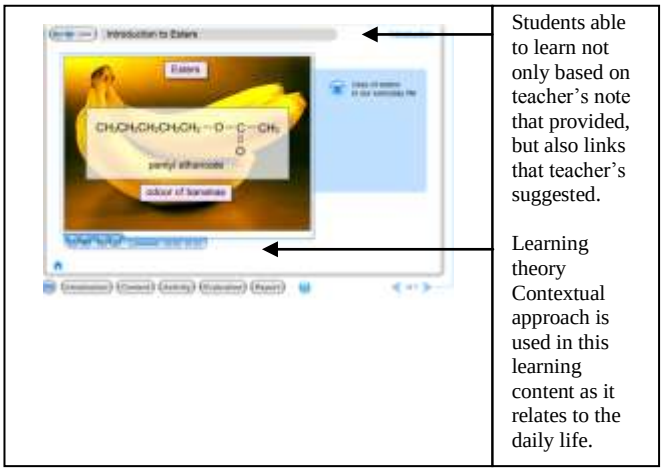

Figure 5 Learning Content links in Document Module from external websites (http://spp.moe.edu.my) as learning reference.

E. Exercise Module

Exercise module is a platform where students can do their exercises online. The exercise format can be multiple choice questions with unique answer, multiple choice questions with multiple answer, true/false question, fill in the blanks and matching question. Figure 6 shows features in Exercise module.

Figure 6 Features in Exercise Module

F. Learning Path Module

The learning path module allows teachers to create a complete sequence of learning steps or activities that students can follow. This can stimulate students to read the documents. The main idea is that teacher themselves can suggest the sequence of documents, exercises, or follow learning activity that created. Figure 7 shows features in Learning Path Module.

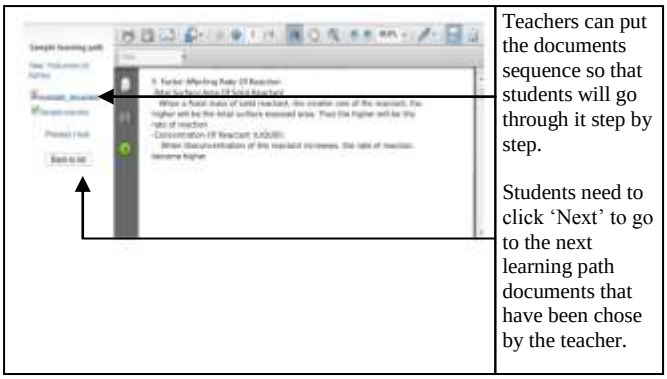

Figure 7 Features in Learning Path Module

G. Assignment Module

The Assignment module is a publication area for students. The teacher can create one or several assignments, where students will be able to publish their work. Publication can be a file, or a text, or a text and a file. It is also be made for a group instead for a single user. Students have the ability to modify their work after submission, and the course manager (teacher) can give them a feedback about their submissions. Figure 8 shows features in Assignment module.

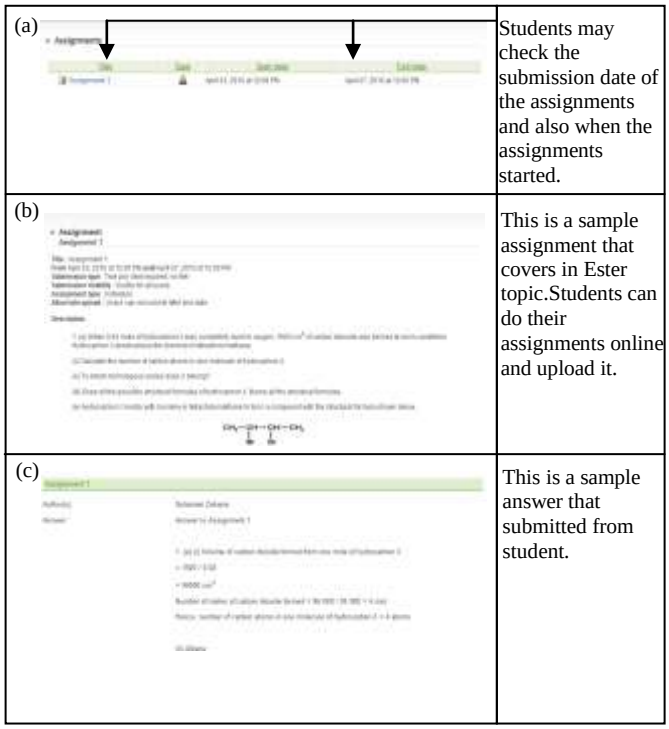

Figure 8 Features in Assignment Module

*H. **Forums Module***

The forum module allows students and also teachers to post ideas, opinions, and any information in an organized way about the course. Posts are organized in a way that makes it easy for people to find the information they are interested in, but without having to wade through unrelated information. Teacher can post a new topic to start a discussion. Post a topic also can be made by the student themselves. At the same time, teacher and students may respond to the topic posted. This feature builds two ways communication between students and the teachers although they are outside the class. Figure 9 shows the forum created by the teachers and replies from the students.

Figure 9 Features in Forum Module

*I. **Groups Module***

A group is a collection of students under a label which is group name that share the same tools. The tools that they can share are forums, documents upload area, chat and Wiki tool. This tool allows teacher to compose sub groups of students from all of the students enrolled in the course. Figure 10 shows feature in Group module.

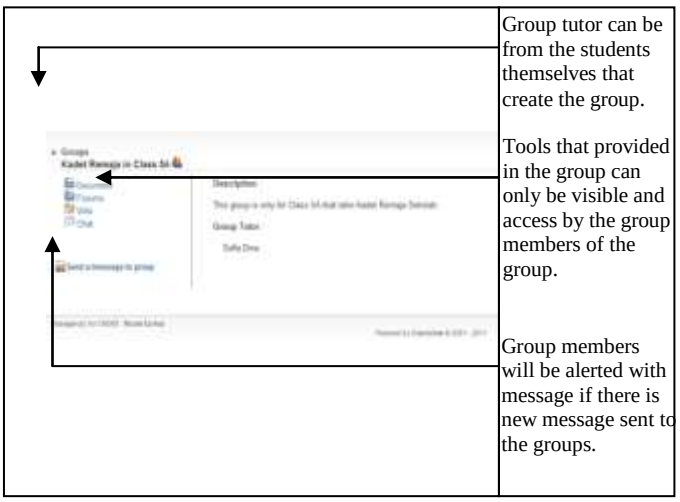

Figure 10 Features in Groups Module

*J. **Users Module***

User Module allows students to look for their friends in the group that had been created. It is just a platform where students can see listing of members without authoring anything to the database for example at Figure 11 (a) while Figure 11 (b) shows interface for the teacher that has the authority to remove or add the member of the group.

Figure 11 Features in User Module

*K. **Chat Module***

The Chat module is a tool for online chatting. It enables student, teachers and also experts sending message while they are online. Students are also able to chat among peer groups. User able to see other online users in this module. Figure 12 shows features in Chat Module.

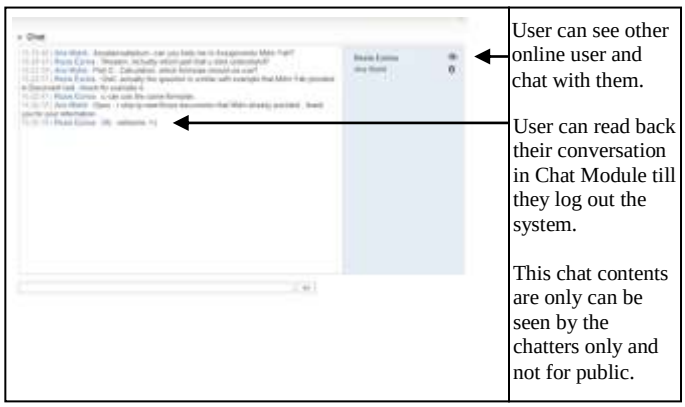

Figure 12 Features in Chat Module

L. Wiki Module

The Wiki module allows registered students to collaborative create, edit, link, and organize the content of a website for reference material. It is use to create collaborative website and to power community websites. These Wiki websites are often referred to as Wikis, for example Wikipedia. Figure 13 shows features is Wiki module.

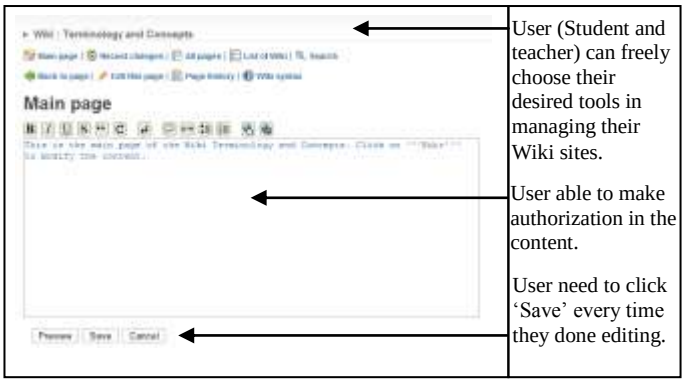

Figure 13 Features in Wiki Module

V. CONCLUSION

In general, this part describes the designing and development of the prototype. Each part of the stages is important to complete the final prototype. There are five stage involved to complete the development of this project. The ADDIE model is a generic and simplified instructional systems design (ISD) model. ADDIE is short for Analyze, Design, Develop, Implement, and Evaluate. It is important to clarify and complete the stage in ADDIE to achieve the goals of the project. The research methodology is based on life cycle module for Course Management System (CrMS) that adapted from Norasiken (2008). The next chapter will discuss about the result gathered during the project.

ACKNOWLEDGMENT

First and foremost, my utmost gratitude to Dr. Hajah Norasiken Binti Bakar whose sincerity giving guidance and support from the initial to the final level enabled me to develop an understanding of the subject. Without her continued support and interest, this thesis would not have been same as presented here. Thanks also to Prof Madya Dr Faaizah Binti Shahbodin, Deputy Dean of Academic, for her patience, motivation and immense knowledge. Not forgettable, my colleagues and staff in the Information and Communication technology Departments for the use of facilities, consultations and moral support. The omnipresent God, thank you for answering my prayers.

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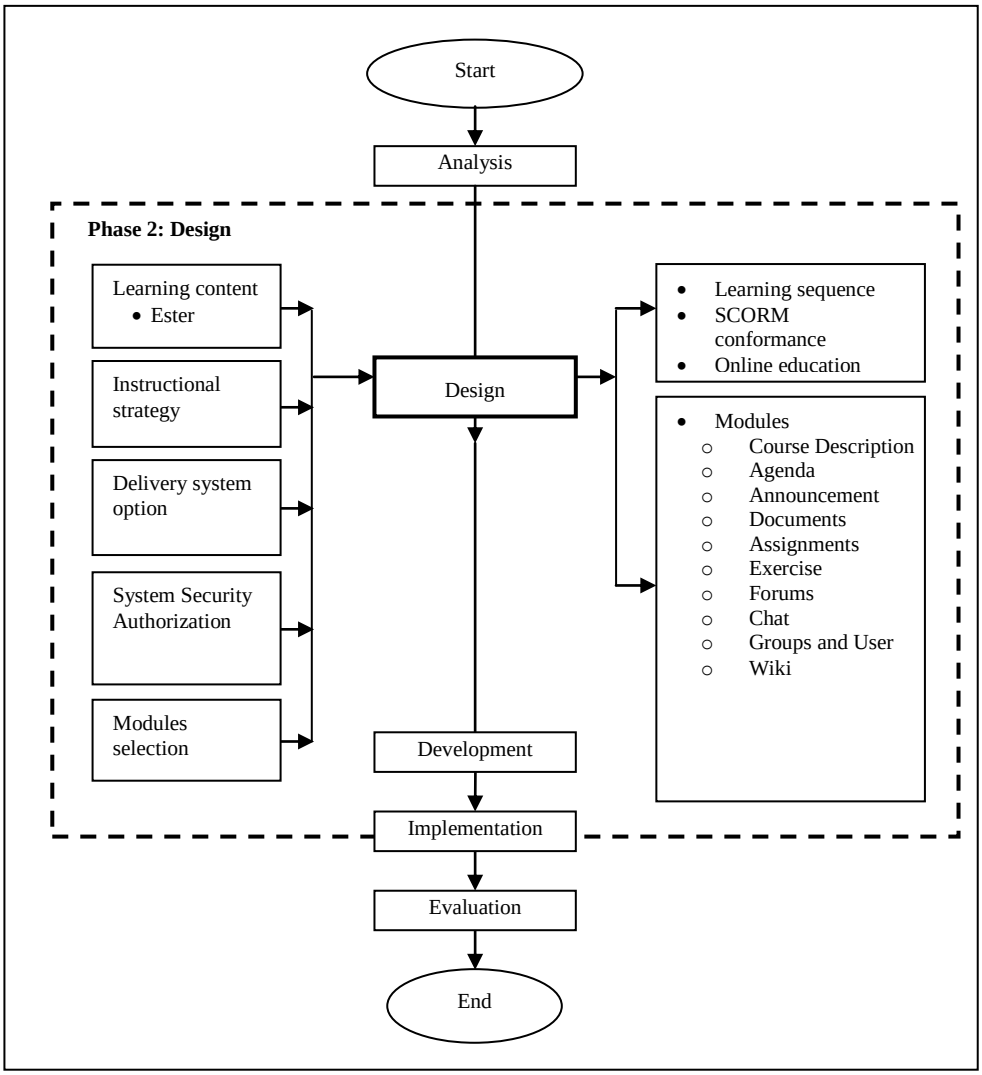
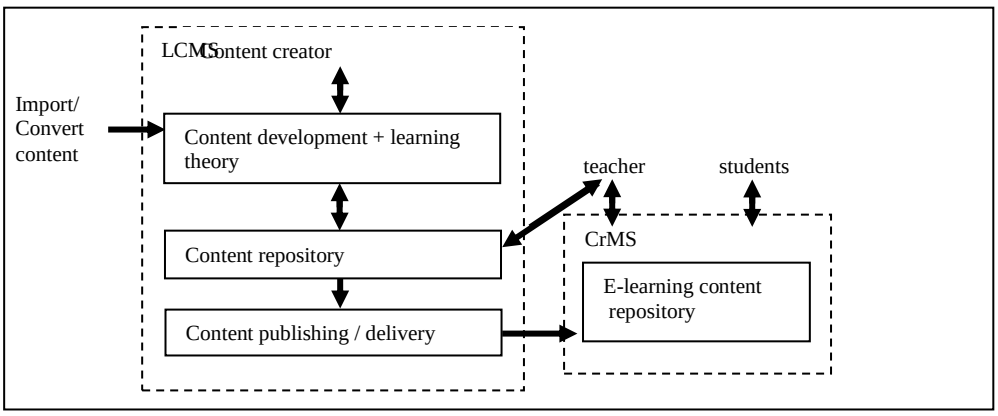


Appendix 1 Design Phase



Appendix 2 CrMS launches courses develop by LCMS

The Use of E-learning System in Higher Education to Support Active Learning

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I. EXTENDED ABSTRACT

Nowadays many higher education institutions have used e-learning systems i.e. Content Management System (CMS) as the medium of learning. But the implementation does not pay attention to learner's experiences of using the system, which can be used to measure the effectiveness of learning. Although the e-learning system is believed to improve learning, the features and functionalities of the systems are often underutilized. Therefore, the important issue need to be determined is: what are the e-learning features that can enhance learning as meaningful learning? In order to promote student interaction on e-learning system, this paper explores the concept of meaningful learning pedagogy, particularly focusing on the characteristics of the active learning.

According to Ausubel in Sun & Li [1], Meaningfullearningis a process oflinkingnew informationrelevantto the conceptscontained ina person'scognitivestructure. Meaningful learning occurs when students able create a linking between an old and a new knowledge [2]. Jonassen et. al [3], proposed the characteristics of meaningful learning and the corresponding advantages are summarized as follows: *active, constructive, intentional, authentic, and cooperative*. One of meaningful learning characteristics is an active learning,meansthatlearnersgathering informationby listening the lecturers'explanation, askingquestions, listening an answer and provide response tothe answertoaskfurther questions. Active methods in learning process have been requested in many educational debates at national and international levels, Randi & Corno [4]. Case studies from different countries in the OECD Active Learning Project by Stern & Huber [5] proposed to promote active learners, an educators should be a facilitator, more responsibility to their learners, give more collaborative arrangement, tasks and project, enabled learners to collaborate with each other.

This paper also investigates the potential factors that contributes to active learning in the e-learning system (i.e. Moodle); which focuses on the activities and actions that able to support active learning by lecturers and students. Moodle is an open web-based system and one of a Learning Content Management System (LCMS), and designed around pedagogical principles. This open system is free to use, modify, and developing according to the requirements. Main activities on Moodle as follows *assignments, lessons, choice, to share documents, quizzes, workshops, and chat, and to provide a forum for learners*. While, some actions on Moodle are *view, add, edit, update, upload, review, and search*.

The e-learning data log are observed to measure the hits of activities and actions on the e-learning system to determine whether the active learning characteristics have been achieved. Datalogisafilethat contains lists of actions, events(activities) that have occurredwithin an e-learning system. Statistical analysis method were used to analyze activity and actions on data log.

Finally, this paper reveals which activities and actions that support active learning. Therefore, with appropriate and proper usage of the tools in the e-learning system, learning experiences can be enhanced. This guidelines may be useful to enhance active learning using technology by the educators.

Keywords: e-learning system; active learning; e-learning activities and actions

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Transforming the Mindset of Malaysian Polytechnic Lecturers towards Innovative Behaviour

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Abstract— **Despite the emphasis given on innovation, innovative behaviour remains an issue for all members in polytechnic's academia. Innovative behaviour has been identified as one of the behavioural outcomes of psychological empowerment. This study was carried out to examine the relationship between psychological empowerment and innovative behaviour. This study was also aimed to verify the reliability and validity of psychological empowerment scale. A total of 272 lecturers from two polytechnics in Peninsular Malaysia participated in the survey. Using Structural Equation Modelling, first- and second-order confirmatory factor analyses verified the existence of the four dimensions of psychological empowerment i.e. meaning, competence, autonomy and impact. The fit indices indicate that the models were fit. The correlation analysis showed that psychological empowerment had a positive significant relationship with innovative behaviour. It was also found that three (competence, autonomy and impact) of the four dimensions of psychological empowerment had positive relationships with innovative behaviour. Regression analysis done shows that the dimension of impact was the most significant predictor of innovative behaviour. The findings of this study may be utilized by the administrators in enhancing innovative behaviour amongst Malaysian Polytechnic lecturers. A similar study is hoped to be carried out in other polytechnics or higher education institutions in the nation for wider generalization.**

Keywords-psychological empowerment, innovative behaviour, structural equation modelling first-order confirmatory factor analysis, second-order confirmatory factor analysis.

I. INTRODUCTION

Innovative behaviour is the intentional creation, introduction and application of new ideas that may improve the performance of the role, group and organization [1]. As empowerment has been identified as an increasingly important factor in predicting innovative behaviour [2], it is essential to examine the effect of psychological empowerment on innovative behaviour.

This study utilized the concept of psychological empowerment proposed by Spreitzer and Thomas and Velthouse which is based on the intrapersonal concept specifically for workplace [3], [4]. Psychological empowerment focuses on the perception of employee on empowerment [5], [4] whereby an employee feels empowered when he/she views his/her work environment as providing opportunities for individual behaviour [3]. In situations where traditional bureaucratic social structures exist, employees would not feel empowered because of extensive rigidity [3]. Empowering employees in the workplace involves providing employees with access to information, organizational support, resources and opportunity to learn and develop [6].

Psychological empowerment can be defined as the process of enhancing the feeling of self-efficacy among employees through the identification of condition that brings about or reduces powerlessness [7]. The state of powerlessness can be reduced by formal organizational practices and informal techniques of giving self-efficacy information [7]. Therefore, psychological empowerment focuses on the intrinsic motivation that raises the level of power possessed by employees [8].

II. LITERATURE REVIEW

A. Dimensions of Psychological Empowerment

Based on the definition given by Conger and Kanungo, Thomas and Velthouse and Spreitzer, psychological empowerment comprises four different cognitive dimensions, namely meaning, competence, autonomy and impact [7][4][5]. These dimensions may be considered as the core for psychological empowerment in the workplace [9].

Meaning is defined as the value of work goal and purpose, in relation to the individual's own value and standard [4]. Meaning can also be defined as the value of work goal and purpose as perceived by the individual, relative to his own personal mission and expectation [5]. Employee will feel that

their work matters when the organizational mission and goal agree with their own value system [5].

Through the competence dimension, empowered employees feel that they are efficient and able to influence their work and organization meaningfully [5]. Competence refers to the self-efficacy specific to work i.e. ability of an employee to perform his/her job tasks with the required knowledge and skill [5]. The fourth dimension, impact refers to the extent that an employee feels that his work can affect the overall goal achievement [4] and how far an employee believes that he/she can influence the strategic output, management and operation in the workplace [5]. In conclusion, psychological empowerment can be defined as the feeling of being facilitated to carry out tasks in the workplace according to individual's own value and standard or to influence the work outcome by having autonomy and competence.

Psychological empowerment can be increased by changing the psychological environment or climate [4]. Moreover, empowerment is a dynamic phenomenon that is influenced by the context surrounding an individual, therefore, the feeling of empowerment can be encouraged or constrained by the things that happen in the environment [10].

B. Innovative Behaviour

Innovative behaviour can be defined as the ignition, promotion and realization of new ideas in the intended work role [11]. On the other hand, innovative work behaviour as the creation, introduction and application of new ideas intended to improve the performance of the role, group and organization [1].

III. METHODOLOGY

This cross-sectional study is descriptive-correlational in nature and utilizes ex-post facto research methodology. The survey was conducted in two polytechnics in the Peninsular of Malaysia. Data gathered were analyzed using the computer-assisted Statistical Program for Social Science (SPSS) for Windows version 19.0. Statistical analyses include reliability tests, descriptive analysis and correlations. First- and second-order confirmatory factor analyses were also conducted to verify that psychological empowerment comprises four dimensions (meaning, competence, autonomy and impact).

A. Instrument

Psychological empowerment was measured using 12 items from Spreitzer based on four dimensions, namely meaning, competence, autonomy and impact [10][3]. A seven-point Likert type scale ranging from (1) 'strongly disagree' to (7) 'strongly agree' was used in the instrument. The scores from these dimensions were averaged to form the mean score for psychological empowerment for each respondent. To measure innovative behaviour, nine items with three subscales i.e. ignition, promotion and realization of new ideas based on Janssen was used [1].

B. Sampling

A total of 272 lecturers in two polytechnics in Peninsular Malaysia participated in the survey. The respondents were selected randomly.

IV. ANALYSIS OF RESULTS

A. First- and second order confirmatory factor analysis

First-order confirmatory factor analysis was done to examine the appropriateness of the items to measure each construct. In this confirmatory factor analysis as depicted in Figure 1, the four dimensions of psychological empowerment were the constructs under study. The constructs were measured using three items each. The factor loadings, that illustrate the correlations between items and constructs, ranged between .64 and .93 which were above .4 recommended by Nunally to be the cut-off value [12]. Therefore, all of the 12 items were retained in the measurement scale.

Second-order confirmatory factor analysis was conducted to validate that psychological empowerment comprises four dimensions. Second-order factor analysis examines the correlations between first-order factors and produces a factor-pattern matrix that denotes the weights given to the first-order factor scores in establishing the second-order factor [13]. Figure 2 illustrates the results of the second-order confirmatory factor analysis.

The fit indices as shown in Figure 2 indicate that the model was fit. Though the value of RMSEA of .094 was above the value recommended for a reasonable error of approximation .08, it did not exceed .1 i.e. the cut-off value for a model to be employed [14]. The chi-square/df ratio of 3.388 is between 2 and 5 which is considered as a reasonable fit [15]. The values of NFI and TLI (.916 and .919 respectively) were closer to 1 and above .9 which indicate a good fit [16].

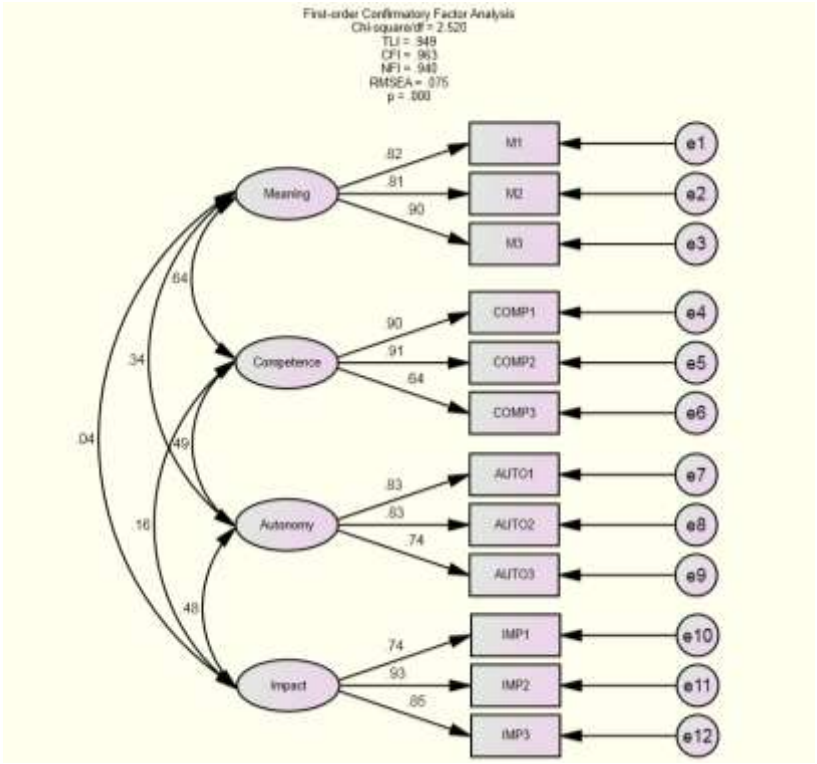

Figure 1. First-order Confirmatory Factor Analysis

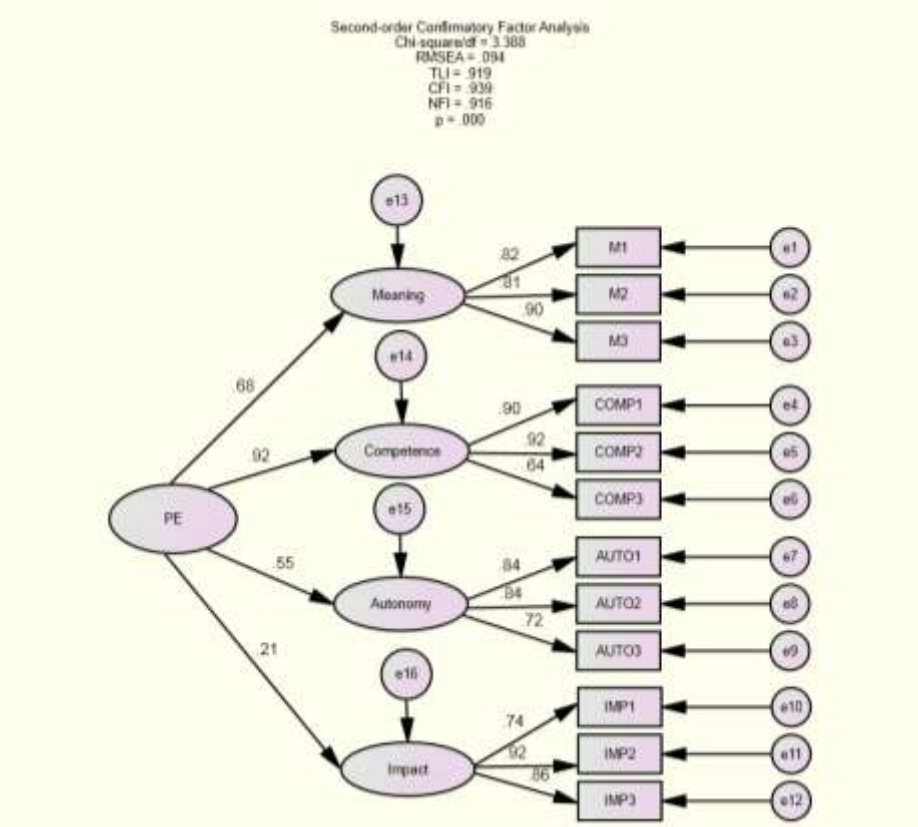

Figure 2. Second-order Confirmatory Factor Analysis

*B. **Reliability of Subscales***

Reliability tests were conducted for each of the four subscales of psychological empowerment and the three subscales of innovative behaviour. The Cronbach alpha values in Table 1 shows that the reliability of the subscales were between .839 and .941.

TABLE 1. RELIABILITY OF SUBSCALES

Subscale	Cronbach Alpha
Psychological Empowerment:	
Meaning	.878
Competence	.851
Autonomy	.839
Impact	.876
Innovative Behaviour:	
Ignition of ideas	.889
Promotion of ideas	.853
Realization of ideas	.941

*C. **Correlation Analyses***

Correlation analyses were done to analyze the relationship between psychological empowerment and its four dimensions and innovative behaviour. The results of the correlation analyses in Table 2 shows that psychological empowerment had positive significant relationship with innovative behaviour (r = .321) at the .01 level. The results also show that three of the dimensions i.e. competence, autonomy and impact had significant positive relationships with innovative behaviour with r values of .169, .207 and .388 accordingly. The dimension of meaning had a positive but not significant relationship with innovative behaviour (r = .081).

Hence, any increase in competence, autonomy and impact may be associated with the increase in innovative behaviour. Similarly, any reduction in the three dimensions of psychological empowerment may be associated with the reduction in innovative behaviour. However, the correlation coefficients do not reveal the causal effect of psychological empowerment on innovative behaviour.

To study the effect of psychological empowerment on innovative behaviour, regression analysis was conducted. The results of the regression analysis are displayed in Table 3. The beta values shows that only the dimension of impact had significant effect on innovative behaviour with beta value of .375. The dimension of meaning, competence and autonomy did not have significant effect on innovative behaviour. Therefore, the dimension of impact was found to be the most significant predictor of innovative behaviour. In other words, management may consider increasing the perception of lecturers on the dimension of impact to enhance innovative behaviour amongst lecturers.

TABLE 2. CORRELATIONS

	PE	Meaning	Competence	Autonomy	Impact	Innovative Behaviour
PE	1	0.598**	0.721**	0.812**	0.686**	0.321**
Meaning	0.598**	1	0.544**	0.284**	0.064	0.081
Competence	0.721**	0.544**	1	0.487**	0.193**	0.169**
Autonomy	0.812**	0.284**	0.487**	1	0.459**	0.207**
Impact	0.686**	0.064	0.193**	0.459**	1	0.388**
Innovative Behaviour	0.321**	0.081	0.169**	0.207**	0.388**	1

Correlation is significant at the 0.01 level

TABLE 3 REGRESSION ANALYSIS

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.879	.584		3.217	.001
Meaning	.008	.093	.006	.088	.930
Competence	.154	.112	.101	1.377	.170
Autonomy	-.017	.078	-.016	-.222	.825
Impact	.371	.063	.375	5.925	.000

V. DISCUSSION AND SUGGESTION

This study proved the validity and reliability of the psychological empowerment scale developed by Spreitzer [9] in the work context of polytechnics. This finding was consistent with the empirical study of Carless [16]. Management ought to evaluate the level of psychological empowerment at their institution to get information on the lecturers' perception about the structure of psychological empowerment. The management should also examine each dimension of psychological empowerment and play active role to increase psychological empowerment by focusing on dimensions that are poorly evaluated by lecturers.

To empower employees in the workplace, employees should be given access to information, organizational support, resources and opportunity to learn and develop [6]. For example, the management can increase lecturers' access to opportunity to learn and develop by encouraging mentoring among experienced and novice lecturers. This will facilitate the sharing and development of skills and knowledge among lecturers. Lecturers should also be given opportunity to attend courses, seminars and training to increase their knowledge and skills. These courses, seminars and training can be held either inside or outside of the institution and can be handled by lecturers, speakers or facilitators from the institution itself or from other agencies. The participation of lecturers in courses, seminars and training held outside of the institution will give them opportunity to develop new knowledge and build relationship network with other people that are supportive either from inside or outside of the institution. Discussions and forum can also be held from time to time to facilitate the sharing of knowledge and brainstorming among lecturers. Open channel of communication such as periodic publication, emails and forums can facilitate the flow of needed information and increase the level of lecturers' skills and knowledge.

As impact was found to be the most significant predictor of innovative behaviour, management may increase the perceived impact by facilitating employees to feel that their work can affect the overall goal achievement of polytechnic. Employees should be given opportunity to participate in decision making so that they may feel that they are able to influence the strategic output, management and operation in the workplace. Participation in decision making may not only stimulate innovative ideas, but may also facilitate transformational leadership development [17].

This study was carried out in two polytechnics in Peninsular Malaysia. The same study is hoped to be carried out in other polytechnics or higher education institutions in order to enable generalizations made to all polytechnics or higher education institutions in the country. Future studies should also consider antecedents to psychological empowerment or other factors of innovative behaviour supported by extensive literature review.

VI. CONCLUSION

This study proved the reliability and validity of the psychological empowerment scale by using first- and second-order confirmatory factor analyses. The correlation analysis found that psychological empowerment has significant relationship with innovative behaviour while the regression analysis shows that the dimension of impact was the most significant predictor of innovative behaviour. Therefore, innovative behaviour may be considered as one of the behavioural outcomes of psychological empowerment.

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ON ENHANCING ACTIVE E-LEARNING THROUGH CONTENT SYNDICATION

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Abstract— **Learning involves the acquisition and modification of knowledge, skills, strategies, beliefs, attitudes, and behaviors. It also involves cognitive, linguistic, motor and social skills and can take many forms. In e-learning, teaching and learning (T&L) is done using computers. In active learning (AL), students are given the responsibility of finding the information and performing the learning activities with a reduced amount of lectures given by the lecturers. To enable an active learning in an e-learning environment, called active e-learning (AeL), a technology called the Push-Pull (P&P) may be deployed. In this paper, we discuss the P&P technology that uses the concept of Content Syndication (CS) in enabling AeL. In its implementation, this involves a server to deliver educational contents either automatically (i.e. the Push) or on-demand by the students (i.e. the Pull). The contents are delivered interactively and promptly in a fast manner. Lecturers may assume that the T&L contents are received by the student successfully. Thus, the P&P technology can be improvised to provide lecturers and students with active learning concept. Once the information is delivered, a student may actively act directly to the questions or instructions received. We also focus on the formal temporal model of CS for AeL that relies on the use of the formal specification language called the Z-specification language. In this paper we describe the architecture of the system and show that this model establishes the correctness and the robustness of the system.**

Keywords: active learning, e-learning, content syndication, formal model

1.0 Introduction

Over the pass hundreds of years or so, educators have proposed a number of different approaches to teaching history to our children. In Islam the traditional oral learning way of memorization of the Quranic verses has been practiced. The knowledge has then been written down and compiled into various chapters in the [1]. The Quran has been used as a reference from the old days until now.

In psychology and education, learning is defined as a process that brings together cognitive, emotional, and environmental influences and experiences for acquiring, enhancing, or making changes in one's knowledge, skills values and world views[2]. As in psychology, behaviorism were linked to learning which is focused on observable and measurable aspects of experience to gain knowledge [3]. The environment in which we are immersed has changed. Media and technology has changed. The social environment has been changed rapidly same as the increase of use web. The world nowadays has become networked and connected. The traditional learning methodology also has been altered to cope with environmental change.

Figure 1 show how the educational technology take place [4]. Teacher use either using direct input teaching or with help of teaching aids. In basic, an education started with input which what teacher or instructor wanted to teach to student and in the end, there will be output where students will be tested to ensure that they have acquired the skills.

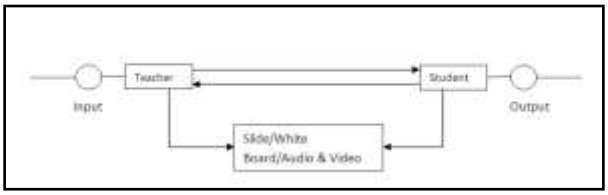

Figure 1: Educational Technology Workflow

In e-learning, T&L is done electronically. E-learning contents can be delivered via internet, audio/video tape and CDROM. E-learning known to be started as earlier in year 1960 [5]. In the earlier stage, educationist experimented to teach math and reading using a computer. The system then

was developed to replicate autocratic teaching styles which is in that time, E-learning was assumed to be system for transfer knowledge[5].

2.0 Active learning

Active learning refers to T&L techniques such that the students will be given the responsibility of learning [6]. Some examples to describe active learning activities include class discussions, student debate sessions, class quizzes or class games. Active learning can be supported by technology while maintaining the pedagogy that used in learning. Learning have their own technique which include instructional theory and known as pedagogy. Pedagogy is defined as the study of the methods and activities of teaching. Pedagogy is a process in T&L which is made up from various related task and activities [7]. The technique of teaching adult human defined as "critical pedagogy" [8]. These instructional theories refer to the science of teaching that being adopt by all lecturers around the world. Most teaching instructors have their own pedagogy approached, but each of the approached have different outcome and learning can be present as a complex process to gain knowledge.

Basically, there are two types of content delivery: the push of the contents or the pull [13]. The traditional e-learning technique lets lecturers put teaching information into the traditional web pages. Then student will surf the web and "pull" the information from the web by reading it thoroughly[9]. The information normally lacks interactive features. The lecturer may ask their students to visit the web pages to get the information and the concept is only using the pull technology. As shown in Figure 2, the Pull methodology suggests that the contents are delivered when the students make the effort to get them i.e., pulling the contents. The assessment is done once students pull the contents. While in Push learning, as shown in Figure 3, the contents are delivered or pushed to learners without them having to find and pull the contents.

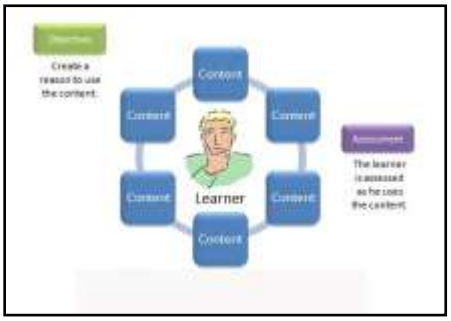

Figure 2: Pull Learning Methodology [14]

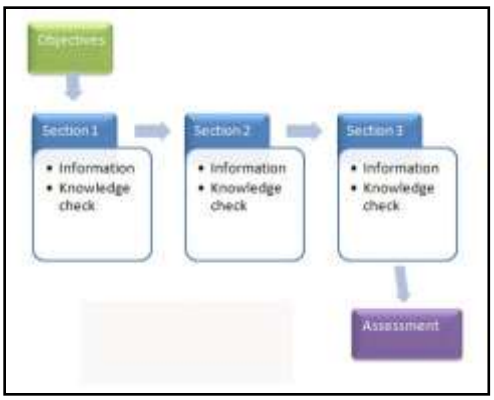

Figure 3: Traditional Push Learning Methodology [13]

This form of information delivery using the P&P technology is now widely used. It is not only used in education but also in other applications [10] where information is delivered interactively and as fast as possible. In education, the P&P technology can be improvised to provide lecturers and student with active e-learning concept. The lecturers will have to provide the learning contents. Once the information is pushed, students actively can act directly to the questions or instructions.

The sending of alerts might differ with the P&P technology where the lecturers may not directly inform their students. Here, the application will itself automatically pushes the information and gives the details to students.

3.0 Content Syndication (CS)

Syndication is the way to exchange or to supply any information to being reused by another party [10]. It may also be used to control the subscription of services such as news syndication. Syndication is mostly used through a service subscription [11]. This definition makes Internet Content Syndication differ from other Internet distribution methods such asfixed-site, linking and viral models, as well as direct-to-user systems such as e-mail. Content syndication attracts and engages sufficiently large audiences of users which are the environment are rapidly expanding.

Further advantages provide by syndication is the user possible to spend more time on site, the publisher can improve their content success metrics such as user session length, page views and impressions of their website [11]. One example of Content Syndication tools is Real Simple Syndicate (RSS). RSS describes a system of Web Feed formats that is used to publish updated web content. RSS document sometimes build up from Extensible Markup Language (XML) and can include either a summary or full content of the information. To received RSS content, user need to use feed readers such as Google Reader or embedded feed fetcher that can read and transfer xml data into understandable content.

With the rapid development of mobile technology and content development, mobile learning (or m-learning) has become a new trend in T&L. Researcher [12] have studied the usage of RSS to support m-learning based on media richness theory. They have listed 3 types of media used to evaluate the content focus on media richness. They are Short Message Service (SMS), Email, and Really Simple Syndicate (RSS). Among these three types of media, RSS has a better performance than SMS and Email on content accuracy and adaptability.

4.0 Adapting CS for active learning

In this paper we discuss one way to implement an active e-learning through the use of P&P technology [8]. The content providers here will be the lecturers and the subscribers will be the students. Learning Management System (LMS) will be used as a place of content repository of T&L. The server for the Syndicate Engine will then be integrated with the LMS to perform the push function by delivering the appropriate learning materials. This is done at the appropriate configured times to various communication devices such as emails, SMS and any Web 2.0 tools. Students as subscribers will enroll in a course in the LMS. Once the information is delivered, students may actively act directly to the questions or instructions received. They may interact with the content pushed by the syndicate engine and perform the pull function as a synchronous activity. All the details of push and pull timed are recorded and lecturers can see various reports of students' activities in their courses. This technology enables students and lecturers to perform an active learning via web and e-learning platform.

Input for push content will be defined and solicited from lecturers. For output, results can be classified as interaction from student towards content after the content published (pushed) to student via multiple platforms and this is shown in Figure 4. The system is developed for integration with the current LMS used in the university. The data in P&P will be recorded and an analysis will be done in temporal manner [13].

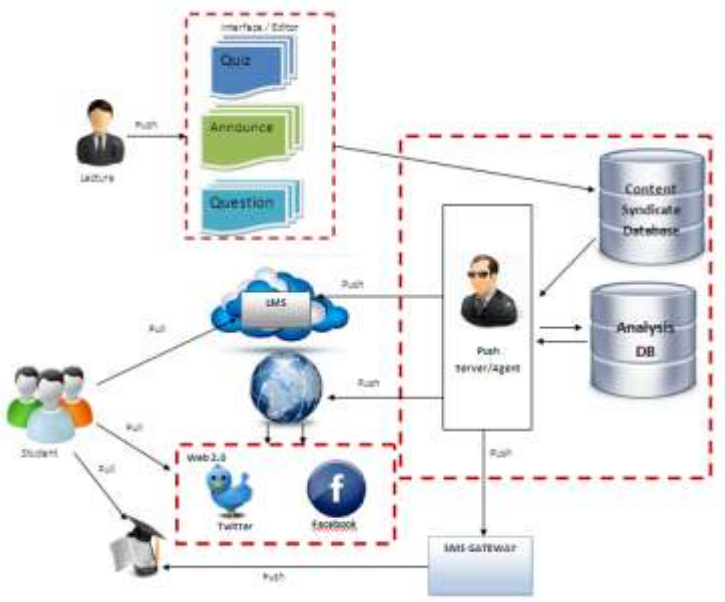

Figure 4: Content Syndication for on-demand active e-learning

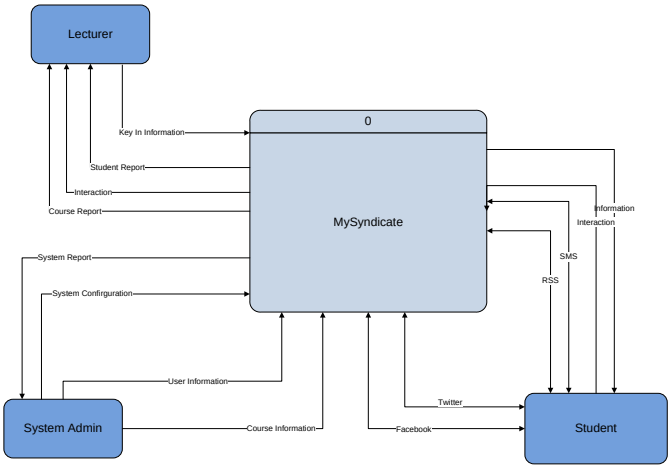

Figure 5: Context Diagram - Content Syndication for on-demand active e-learning

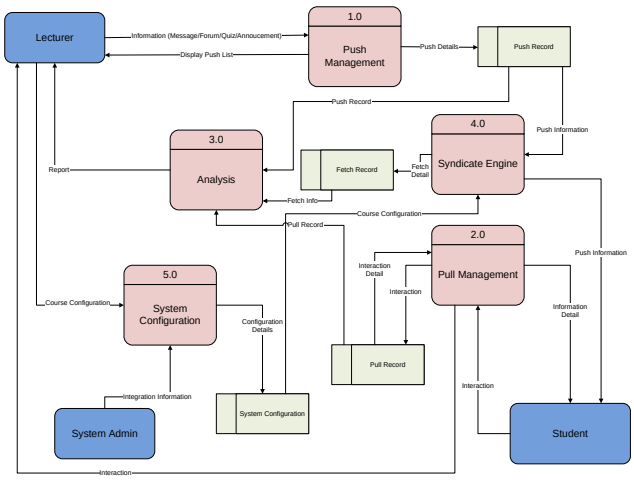

Figure 6: Level Zero Diagram: Content Syndication for on-demand active e-learning

5.0 Formal model of CS

In Software Engineering, software specification playing important roles in ensuring the system quality, behavior and the output of the system. Formal methods have been defined as the use of mathematics as a formality in representing specifications in system engineering [14]. They are used in developing systems that are mathematically based for describing their properties. Such formal method provides frameworks within which people can specify, develop, and verify systems in a systematic. Formal methods allow the software engineer to create a specification more consistent, complete, not vague compare with the object oriented method. The main principals in using formal method are in reducing number of faults in the system. Thus using Formal method can help to reduce cost as system failure cost can be avoided [15]. Formal method now is very useful because it have help many developer to reduce problems, cost and time.

Formal specification involve in more effort in the early phases of software development. This help developer in detaining the requirement error earlier as in Formal specification, it force to have detail analysis on each module and function in system [15]. Hence, this helps to reduce development rework in system development.

A method is formal if it has a sound mathematical basis, typically given by a formal specification language. This basis provides a means of precisely defining notions like consistency and completeness, and more relevant, specification, implementation and correctness [16]. A formal specification has some advantage in management a system. For example, it can reduce the number of errors in the system whereby the arrangement of systematic work in mathematics help developer to find the error happen. Besides, the main area of applicable of formal method is a critical system and also the use of formal method is most likely to be cost and time effective.

Z-specification is structured as a set of schemas – box like structures that introduce variables and specify the relationship between these variables. A schema is essentially the formal specification analog of the programming language subroutines are used to structure a system, schemas are used to structure a formal specification. Based on the system architecture and adaptation model of content syndication for on-demand e-learning, Formal specification was generated using Z-eves.

In the P&P technology, we have design of database sets which are push and pull. Those given set then are defined as learning content to represent the pushed message or information in the push (consist of push message with date and time) and pull (consist of pull information which is pull respond with time stamp).

push = Powerset of push learning content
pull = Powerset of pull learning content

Push = { {message1→ ’12-10-2011:10.00’}, {message2 → ’13-10-2011:21.00’}, {message3 → ’13-10-2011:22.00} }

Pull = { {message1 → respond1}, {message1→ respond2}, {message2 → respond3 }

The other set is represent in the schema as below;

Course = {course1, course2, course3}

Lecturer = { {course1 → lecturer1}, {course2 → lecturer2}, {course3 → lecturer3} }

Message = {{course1 → ‘what is data structure’},{course2 → ‘which language do
you prefer’}, {course3 → ‘what is formal method’}}

Below are some of the functionalities perform on above database set. Main schema displays the main functionality of the whole content syndication system that use for all items database. At the fist, push and pull database will be first initialize with the power set of Information and interaction. The number of push and pull record should not exceed the size of database.

Syndicate

$Push : \mathbb{P} information$

$Pull : \mathbb{P} interaction$

$\#push \leq size$

$\#pull \leq size$

This following schema below describes first initialization of syndicate engine in P&P system. Course and Push are initialized to empty sets. If we not defined it here, the system could start in any valid state that satisfied any state invariants. Typically, many state components are most usefully initialized to empty set or some predetermined value.

_InitSyndicate

Syndicate

$Course = \varnothing$

$Push = \varnothing$

For the push operation, information record will be added to the database if the record does not exist yet. The record $\{message? \mapsto pushtime\}$ will be checked upon added if it exist in push. If preconditions are satisfied, the information will be added. Shown below, the push database will be affected. Input message? and pushtime? Is required to specify what message and when information to be push to students.

AddPush

$\Delta Syndicate$

message?:*MESSAGE*

pushtime?:*DATETIME*

$\{message? \mapsto pushtime\} \notin push$

$push' = push \cup \{message? \mapsto pushtime?\}$

The Syndicate engine then will push the contents to students according the date time value given by lecturers as shown in below schema. Ξ Syndicate mean that there will be no updated on the Syndicate database. This also to ensure that all the dashed state components in the after state are the same as the matching undashed state. *Currentdatetime*? will be used to compare between the push date time and current date time of the system. If push message date time is below than current system date and time, the message will be pushed to students

PushAlertMessage

$\Xi Syndicate$

Currentdatetime?:*DATETIME*

$Alert! : \mathbb{P} MESSAGE$

$Alert! = \{n:course \mid ran\ push = currentdatetime?\}$

Once the students received the push information, students will interact with the information. The information will keep the time stamp of interaction with the push information as we describe using formal model as schema below.

PullMessage

$\Delta Syndicate$

message? : *MESSAGE*

pushtime?: *DATETIME*

respond?:*RESPOND*

today?:*DATETIME*

$messageAlert! : \mathbb{P} MESSAGE$

$message? \in \{n:course \mid ran\ push = today?\}$

$\{respond? \mapsto pulltime\} \notin pull$

$pull' = pull \cup \{respond? \mapsto pulltime\}$

$messageAlert! = dom\ push$

Normally successful operations, where the preconditions are satisfied and the operation does what is required. The precondition can be calculated and the error conditions must have precondition to handle the negation of this process. As in below schema, we define a set of possible reports. if further error reports are needed. It could added later to Report as required subsequently from operations:

Report ::= Success | Pending | No Push Information | alreadyAdded | confirm | max | norecord

6. Verifying the CS model

Model verification is the process of ensuring that the conceptual descriptions of the proposed model implemented correctly. A fundamental issue is to make sure that the specification matches the model of CS [17]. The validation proofs consist of a set of procedures to check that the specifications behave as expected. This may help in conforming the correct understanding of the specifications If it

turns out to be false, it may indicate the existing of problems in the specifications apart from understanding the solution[18]. Automatic verification tools that support proof techniques such as Z/Eves for Z specification language may help in proving the correctness of the specifications [19]. Requirements used to produce formal specification are formal and this is always true in this case [17]. Checking on the consistency of the specification may also being used as proof.

7. Conclusion

In this paper, the content syndication technique has been described as part of the implementation in contents delivery in an LMS. The usage of P&P technology with mobile web technology is hoped to increase thedevelopment of e-learning in Malaysiain terms of active e-learning. This also will increaseandimprove the application and usabilityof e-learningin universities through increased interactions between students and lecturers. Formal method can be used effectively to synthesize and validate operating procedure also can be used to ensure correctness and verify system in systematic. System then can be modeled into mathematical entities in order to explicit system behavior.

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Kajian Penerimaan Pensyarah Terhadap Pengajaran Dan Pembelajaran Hadith Berbantukan Laman Web *al-Durar al-Saniyyah*

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Abstrak—**Pengajaran dan pembelajaran berbantukan laman web telah menjadi keperluan pada zaman globalisasi ini. Pelajar perlu diberi pendedahan kepada pendekatan terbaru sebegini agar mereka dapat mengharungi cabaran mendatang dengan lebih berkeyakinan. Pendekatan yang bergerak seiring dengan masanya ini diharapkan dapat melonjakkan golongan pelajar aliran keagamaan agar sentiasa bersifat terkini dan kontemporari. Dalam pada itu, pengajian Islam yang bersumberkan al-Quran dan hadith turut mengalami transformasi ini. Didapati kebelakangan ini kewujudan pelbagai kemudahan dalam bentuk digital bagi mengenal pasti kedudukan sesuatu hadith telah menggamit keterlibatan ilmuan Islam dan juga pelajar Pengajian Islam agar menggunakannya dalam kajian mereka. Kemudahan ini terdiri daripada buku elektronik, CD, internet dan sebagainya. Kertas kerja ini akan berkisar berkenaan salah satu laman web iaitu al-Durar al-Saniyyah yang menyediakan kemudahan rujukan hadith secara dalam talian. Kajian ini menggunakan kaedah kajian lapangan secara kualitatif yang bersandarkan kepada temuduga separa berstruktur bersama sekelompok pensyarah dari Fakulti Pengajian Quran dan Sunnah, Universiti Sains Islam Malaysia. Antara objektif kertas kerja ini adalah mengkaji secara ringkas latar belakang laman web, menilai keberkesanan penggunaannya dalam proses pengajaran dan pembelajaran, mengkaji sejauh mana laman web ini mudah digunakan dan mengenal pasti beberapa kelebihan serta kekurangannya. Kajian ini juga turut mendalami persepsi mereka terhadap isu-isu takhrij hadith, penggunaan laman web tersebut dalam mentakhrijkan hadith, dan kesesuaian laman web itu bagi kajian hadith. Hasil kajian mendapati bahawa laman web ini mudah untuk digunakan dan berkesan untuk proses pentakhrijan hadith. Ia juga membantu memudahkan pengajaran dan pembelajaran. Kesimpulannya, laman web al-Durar al-Saniyyah ini perlu diperkenalkan sebagai salah satu alat bantu mengajar yang menggunakan hadith sebagai sumber serta membantu proses kajian hadith secara umum.**

Kata Kunci; pembelajaran berbantukan web; takhrij hadith; kajian hadith; laman web al-Durar al-Saniyyah

I. PENDAHULUAN

Sejak zaman berzaman, cabang-cabang Pengajian Islam diajar dengan bersumberkan al-Quran dan hadith, dua sumber yang autentik (sangat dipercayai). Tidak lengkap pengajian itu, jika tidak dipandu oleh pengajaran dari dua sumber ini. Justeru, proses pembelajaran Pengajian Islam perlulah meliputi teknik-teknik tertentu bagi mendapatkan maklumat serta bagaimana memahami dua sumber ini. Bahasa asalnya dalam bahasa Arab memerlukan penguasaan secara optimum agar setiap patah perkataan tidak disalahertikan. Bagi yang berpendidikan sekolah agama dan pernah belajar di negara-negara Arab, tentulah tidak menghadapi rintangan sebegini berbanding yang lain.

Pengajaran dan pembelajaran telah melalui proses transformasi dari kaedah menadah kitab di hadapan guru, kepada penggunaan teknologi moden. Pembelajaran yang berpusatkan kepada guru semakin bertukar kepada berpusatkan pelajar. Penggunaan komputer dan internet secara meluas juga telah merubah pendekatan pembelajaran dengan harapan agar pelajar lebih proaktif dan produktif dalam pengajian.

Pengajian Islam turut mengalami tempias perubahan ini. Pelajar memerlukan interaksi pelbagai hala bersama pengajar agar garapan ilmu menjadi lebih mantap dan berkesan. Islam sendiri tidak menghalang sebarang perubahan atau penggunaan teknologi dalam penyampaian ilmu. Nabi Muhammad s.a.w sendiri mengaplikasikan teknologi pada zaman Baginda seperti penggunaan gambar rajah bagi menyampaikan pengajaran Baginda dengan lebih berkesan.

> Dari Abdullah ibn Mas'ud r.a. berkata: Rasulullah s.a.w. membuat untuk kami satu garisan kemudian bersabda "Ini sabil (jalan) Allah S.W.T." Kemudian Baginda s.a.w. membuat beberapa garisan di kiri dan di kanan garisan tadi seraya bersabda "Ini jalan-jalan, dan lebih bercabang-cabang, pada setiap jalan ada syaitan yang menyeru ke arahnya" kemudian Baginda s.a.w. membaca ayat berikut (dalam menafsirkan ayat tersebut) iaitu ayat ke-153, surah al-An'am.
>
> Diriwayatkan oleh Imam Ahmad (6/89)[1]

Oleh yang demikian, penggunaan teknologi dalam pengajaran yang berpusatkan kepada pelajar tidak bercanggah dengan pengajian bidang keagamaan. Pelajar juga boleh mendapatkan hasil yang optimum semasa belajar. Masa dan kos yang merupakan antara faktor-faktor kekangan masa kini dapat dijimatkan. Justeru, tiada alasan untuk tidak belajar atau tidak habis belajar.

II. PERMASALAHAN KAJIAN

Proses mentakhrij hadith atau merujuk hadith kepada sumber asalnya yang secara tradisional menggunakan kaedah terdahulu, merupakan suatu proses yang agak kompleks. Proses ini memerlukan pelajar mengenali selok-belok kitab hadith serta mahir di dalam proses pencarian hadith dalam rujukan-rujukan primer kitab hadith. Ini berikutan metod penyusunan kitab yang berbeza-beza dalam kalangan penulis kitab itu yang menjadikan setiap kitab adalah unik antara satu sama lain. Di samping itu, kesukaran untuk membuat rujukan hadith juga menjadi halangan yang sukar diatasi, berikutan koleksi hadith yang sangat terhad dalam perpustakaan universiti atau peribadi.

Penggunaan laman web hadith seperti *al-Durar al-Saniyyah* dijangka dapat mengatasi masalah yang dihadapi. Ia memudahkan pensyarah membuat rujukan hadith dengan kadar bahan rujukan yang hampir tidak terbatas. Selain itu, pensyarah juga boleh membuat rujukan hadith sekalipun berada di luar kampus, iaitu di mana sahaja yang membolehkan mereka mengakses internet. Namun begitu penggunaannya dalam kalangan pensyarah masih begitu minimum dan kurang mendapat sambutan yang meluas. Keadaan ini berkemungkinan beberapa faktor penghalang seperti masalah bahasa, kurang pengetahuan, kurang kemudahan, kurang kemahiran pengendalian serta keadaan web tersebut yang kurang mesra pengguna.

Bidang hadith telah melalui proses pendigitalan selari dengan bidang-bidang lain dalam Pengajian Islam. Era pendigitalan telah hampir menenggelamkan buku-buku bercetak, terutamanya yang baru ditulis. Pemilikan buku bercetak juga telah turut digantikan dengan pemilikan buku digital. Dalam hal ini, alam siber juga telah begitu luas tanpa sempadan, tiada had dan tiada kekangan. Namun, adakah era pendigitalan buku-buku hadith ini diterima oleh golongan pensyarah yang terdidik dengan buku-buku bercetak.

Justeru, kajian ini cuba meneliti pendapat mereka berhubung isu-isu takhrij hadith dengan menggunakan laman web, di samping meninjau kebaikan dan keburukan dalam penggunaan elemen digital dalam proses pengajaran dan pembelajaran. Adakah penggunaan laman web hadith seperti *al-Durar al-Saniyyah* memberikan impak yang besar dalam mengakses hadith untuk dijadikan rujukan berbanding yang lain. Pengkaji hadith dan pelajar memerlukan pangkalan data yang mudah, cepat dan lengkap supaya pembelajaran menjadi lebih berkualiti. Penemuan dan pembuktian keberkesanan laman web *al-Durar al-Saniyyah* boleh memberi kesan kepada kelestarian pengajian hadith.Sehubungan dengan itu, keperluan semasa memerlukan penghayatan dan penggunaan elemen pembelajaran aktif yang berpusatkan pelajar di era siber.

III. KEPENTINGAN KAJIAN

Kajian ini difikirkan penting berdasarkan kepentingan ilmu takhrij hadith kepada umat Islam dan secara khusus penguasaannya di kalangan tenaga pengajar dalam pengajian Islam. Berdasarkan ilmu ini, umat Islam dapat menyemak kesahihan sesuatu perkhabaran yang disandarkan kepada Baginda Rasulullah s.a.w. Kajian ini juga boleh dijadikan rujukan di dalam model penggunaan laman web di dalam kursus ilmu takhrij, ilmu hadith, kajian hadith daif dan mawdu', ilmu rijal dan ilmu yang berkaitan dengan bidang hadith. Penggunaan laman web di dalam takhrij hadith di kalangan tenaga pengajar, boleh memberi nilai tambah kepada kemahiran insaniah graduan USIM, sekaligus memartabatkan lagi bidang pengajian hadith sejajar dengan perkembangan ICT.

Tambahan, kajian ini sebagai usaha perintis di dalam bidang pengajian berkaitan dengan aplikasi di dalam bidang hadith menggunakan teknologi ICT. Pengetahuan asas ini dapat dikembangkan lebih lanjut lagi ke arah penghasilan sebuah modul pengajaran dan pembelajaran berbantukan laman web serta perisian, bagi bidang hadith di peringkat USIM. Usaha ini juga diharap dapat dikembangkan lagi dalam pengajaran hadith di IPTA yang lain.

IV. PERSOALAN KAJIAN

Berdasarkan pengamatan penyelidik, didapati isu digitalisasi maklumat hadith ini mengundang isu autentik atau tidak, sumber yang diperoleh. Adakah boleh dipercayai 100 peratus kepada dapatan carian, tanpa perlu merujuk kepada sumber asal yang bercetak? Ini kerana kebarangkalian untuk kewujudan gangguan-gangguan siber amat tinggi. Laman web kerajaan tertentu seperti China telah diceroboh, dan maklumat-maklumat pentingnya telah diubah. Malaysia juga

telah pernah mengalami situasi getir ini. Justeru, tidak mustahil maklumat-maklumat berbentuk hadith, dikhuatiri boleh diceroboh, dan berkemungkinan ditukar jika ada yang berkemahiran membuat pengubahsuaian. Penyelidik cuba meninjau isu ini, dari aspek pandangan pensyarah yang mengajar bidang Quran dan hadith bagi mencari jalan penyelesaian dalam kajian ini.

V. TAKHRIJ AL-HADITH, SEJARAH DAN KEPENTINGANNYA

A. Definisi Takhrij al-Hadith

Takhrij al-Hadith bererti menyandarkan hadith kepada sumber-sumber asalnya daripada kitab-kitab ahli-ahli hadith, serta memperkatakan tentang kedudukannya setelah dikaji dan diperhatikan keadaannya dari segi sanad dan matan. (al ‘Abid, 2001)[2]. Hadith pula ialah segala apa yang disandarkan kepada Baginda Rasulullah s.a.w. dalam bentuk sama ada perkataan, perbuatan, perakuan, sifat tubuh, atau akhlak; dan sama ada sebelum dilantik menjadi nabian ataupun selepas dilantik sebagai nabi (‘Ajjaj, 1989)[3].

Ketika mensyarahkan lafaz al-Imam al-Suyuti ((**و بالغت في تحرير التخريج**)), al-Imam al-Manawi (1994)[4] berkata: “Aku bersungguh-sungguh di dalam menyusun dan menyelaraskan penyandaran hadith-hadith kepada yang mengeluarkannya dari kalangan imam-imam ahli hadith sama ada dari kitab-kitab al-Jawami‘, al-Sunan, dan al-Masanid. Dan tidak pula aku sandarkan salah satu hadith itu kepada imam-imam dan kitab-kitabnya kecuali setelah mengkaji tentang hal hadith tersebut beserta dengan perawi-perawinya. Aku tidak cukup hanya dengan menyandarkan kepada sesiapa yang bukan ahli (dalam hadith) walaupun hebat seumpama pakar-pakar tafsir *(al-mufassirun).*”

B. Teknik-Teknik Takhrij / Carian Hadith

Terdapat empat teknik untuk membuat carian hadith. Setiap teknik mempunyai kekuatan yang tersendiri serta kitab yang membantu bagi carian itu. Teknik-teknik tersebut ialah:

1. Dengan melihat dan berpandukan kepada perawi sanad atau sebahagian perawi sanad.
2. Dengan melihat dan berpandukan kepada lafaz-lafaz hadith (matan).
3. Dengan melihat dan berpandukan kepada topik perbincangan di dalamnya serta maksud hadith tersebut.
4. Dengan melihat dan berpandukan kepada keadaan hadith itu secara umum dari sudut sanad dan matan. (Mahmud al-Tahhan, 1996)[5]

Inilah teknik-teknik utama dalam membuat kajian hadith sebagaimana yang dinyatakan oleh ulama dengan menggunakan kitab-kitab sebagai sumber primer. Setiap daripada cara ini mempunyai kitab-kitab tertentu bagi memudahkan prosesnya. Seseorang pengkaji hadis akan menggunakan sebanyak mungkin cara yang boleh bagi memaksimumkan pencariannya.

Di era globalisasi ini telah muncul beberapa teknik baru untuk membuat carian hadith iaitu :

1. Dengan menggunakan perisian-perisian hadith tertentu.
2. Dengan menggunakan laman-laman web tertentu.

Kedua-dua jenis teknik ini hanya menggunakan komputer dan perisian tertentu yang akan menunjukkan sumber asal sesebuah hadith Rasulullah s.a.w. Ia dianggap cara yang paling mudah serta murah pada zaman ini. Sesiapa yang mempunyai kemahiran berkomputer dan boleh berbahasa Arab akan mengetahui serba sedikit asal usul sesuatu hadith.

C. Sejarah Perkembangan Ilmu Takhrij

Menurut al-‘Abid (2001)[2], perkembangan dan asas ilmu takhrij dimulakan oleh al-Imam Abu ‘Isa al-Tirmidhi (w 279H) dalam kitabnya al-Jami‘, di mana beliau telah menyebut selepas setiap hadith yang diriwayatkan: dan di dalam bab ini daripada *fulan* dan daripada *fulan*. Perbuatan al-Tirmidhi pada waktu itu sudah dianggap sebagai takhrij. Dan dalam masa yang sama, pada kurun ini juga telah lahir keinginan yang tinggi di kalangan ulama-ulama hadith ketika itu untuk mencari *al-isnad al-‘ali* iaitu sanad yang tinggi yang mana jumlah perawinya adalah lebih sedikit berbanding riwayat yang lain. Kesungguhan mereka mencari sanad yang tinggi ini telah melahirkan satu usaha yang dinamakan sebagai *istikhkraj* iaitu mereka mengeluarkan hadith daripada satu kitab yang lain, dengan sanad mereka sendiri bagi mencari sanad yang lebih tinggi. Usaha *istikhraj* ini adalah salah satu fenomena awal kepada munculnya kitab takhrij yang lebih sempurna pada kurun yang berikutnya. Antara mereka yang melakukan usaha *istikhraj* ini ialah:

1-Abu Muhammad bin Muhammad bin Raja’ al-Isfarayini al-Naisaburi (w286H). Beliau telah melakukan *istikhraj* ke atas kitab Sahih Muslim dan dinamakan sebagai al-Mustakhraj ‘Ala Sahih Muslim.

2-Abu ‘Ali al-Hasan bin Ali bin Nasr al-Tusi al-Khurasani (w312H). Beliau telah mengeluarkan hadith-hadith di dalam Jami‘ al-Tirmidhi.

Pada kurun ini juga terdapat beberapa ulama yang melakukan takhrij dengan kaedah mereka sendiri. Mereka mengumpulkan hadith-hadith daripada seseorang sahabat atau tabi‘in kemudian mereka menamakan kitab atau hasil mereka ini sebagai takhrij kerana hadith yang mereka kumpulkan

tersebut telah disandarkan kepada tuan asalnya. Antara mereka yang melakukan takhrij sebegini ialah :

1-Abu Umayyah al-Tarsusi (w273H). Beliau telah mengumpulkan hadith-hadith Ibnu ‘Umar, kemudian beliau menamakan kitab beliau sebagai "Musnad Abdullah bin Umar Takhrij Abi Umayyah al-Tarsusi.
2-Ibnu al-Baghandi (w312H). Beliau mengarang kitab Musnad ‘Umar bin Abd al-‘Aziz Takhrij al-Baghandi.

Kesemua fenomena takhrij yang berlaku seperti di atas berlaku secara berterusan dalam kurun kedua dan ketiga hijrah sehinggalah munculnya Imam al-Daruqutni (w385H) dengan satu kaedah takhrij yang baru. Kaedah tersebut ialah beliau mengumpulkan hadith-hadith yang diriwayatkan oleh seorang syeikh daripada syeikh-syeikhnya, kemudian meletakkannya dalam satu kitab dan menyandarkannya kepada imam-imam yang terdahulu seperti imam-imam al-Sunan al-Sittah.

Tujuan dilakukan sebegini adalah untuk memastikan setiap hadith yang diriwayatkan oleh syeikh tersebut adalah sama dengan apa yang telah diriwayatkan oleh imam-imam yang terdahulu daripadanya. Perbuatan al-Daruqutni ini adalah satu teknik takhrij yang baru yang dihasilkan bagi memastikan riwayat seseorang syeikh tersebut haruslah konsisten dengan apa yang telah diriwayatkan oleh imam sebelumnya. Kaedah ini juga dianggap sebagai satu teknik takhrij kerana beliau telah menyandarkan hadith tersebut kepada orang yang asal yang meriwayatkannya.

Antara ulama yang melakukan proses takhrij sebegini ialah:

1- Abu al-Hasan Ali bin ‘Umar al-Daruqutni (w385H). Beliau telah mengarang kitab "Takhrij Hadith Abi Ishaq Ibrahim bin Muhammad al-Muzakki al-Naisaburi (w362H).
2- Abu Bakr Ahmad bin al-Husain al-Baihaqi (w458H). Beliau telah menulis kitab Takhrij Ahadith al-Umm li al-Imam al-Syafi‘i (w204H).

Kaedah takhrij yang dilakukan oleh Imam al-Daruqutni dan al-Baihaqi tadi berlaku pada kurun yang keempat dan kelima hijrah. Namun pada kurun yang keenam telah berlaku peningkatan yang menarik di dalam perkembangan ilmu takhrij. Ini adalah kerana perkembangan kaedah takhrij yang berlaku dalam kurun yang keenam ini adalah satu kaedah takhrij yang hampir sempurna seperti yang difahami dan dikenali pada hari ini. Kaedah takhrij pada kurun ini berlaku dengan mereka menyandarkan sesuatu hadith kepada kitab yang dikarang oleh imam-imam yang terdahulu, kemudian mereka menambah satu teknik baru iaitu meletakkan hukum ke atas hadith yang mereka keluarkan tersebut.

Meletakkan sesuatu hukum ke atas hadith adalah suatu perkembangan yang baru yang mana tidak pernah dilakukan oleh imam-imam yang sebelum ini. Justeru dengan sebab itulah Dr. Mahmud Al-Tahhan (1996)[5] menganggap al-Khatib al-Bagdadi adalah antara orang yang pertama mengarang kitab takhrij yang 'sempurna' kerana beliau telah meletakkan hukum hadith ke atas hadith yang ditakhrijkan olehnya. Dan di antara ulama yang telah mengarang kitab takhrij berdasarkan kaedah ini ialah :

1- Abu Bakr Ahmad bin ‘Ali bin Thabit al-Khatib al-Baghdadi (w463H). Beliau telah mengarang kitab Takhrij al-Fawaid al-Muntakhabah al-Sihah wa al-Ghara’ib li al-Syarif Abi al-Qasim al-Husaini.
2- Abu Bakr Muhammad bin Musa al-Hazimi al-Hamdani (w584H). Beliau telah mengarang kitab Takhrij Ahadith al-Muhadhdhab li Abi Ishaq Ibrahim bin ‘Ali al-Syirazi (w476H).
3- Syams al-Din Muhammad bin Ahmad bin Abdul Hadi al-Maqdisi (w744H). Beliau telah mengarang kitab Takhrij Ahadith al-Mukhtasar al-Kabir fi al-Usul li Ibni al-Hajib (w646H).

Malah kaedah takhrij ini telah diikuti sehingga zaman kini sehingga terdapat di kalangan pelajar ijazah lanjutan pasca siswazah Sarjana dan Doktor Falsafah yang memilih untuk menulis tesis mereka dengan melakukan takhrij seperti kaedah ini. Antaranya ialah :

1- Dr. ‘Ali Muhammad Nasir Faqihi. Beliau telah mentakhrijkan hadith-hadith di dalam kitab al-Iman li Ibn Mandah (w395H). Takhrij ini adalah tesis Doktor Falsafah beliau di Universiti Ummu al-Qura.
2- Dr. Ahmad bin Saad bin Hamdan. Beliau telah mentakhrijkan hadith-hadith Syarh Usul ‘Aqaid Ahl al-Sunnah li al-Lalaka’i.
3- Ahmad Sanusi bin Azmi. Beliau telah mentakhrijkan hadith-hadith di dalam kitab Munyat al-Musolli karangan Syeikh Daud al-Fattani.

D. Kepentingan Ilmu Takhrij

Secara umumnya takhrij ini amat penting dan berfaedah kepada orang yang mempraktikkannya dan juga kepada pembaca ataupun pengguna. Ini adalah kerana sifat hadith itu sendiri yang amat penting sebagai sumber kedua syariat Islam. Takhrij merupakan wasilah atau kaedah untuk mengetahui sumber asal hadith, daripada mana ia dipetik dan seterusnya membawa kepada darjat atau hukum hadith tersebut.

Seseorang yang ingin mahir dalam ilmu hadith perlu mendalami dan mengetahui *Takhrij al-Hadith*. Bahkan ia amat penting dan amat diperlukan bagi sesiapa yang berada dalam bidang Pengajian Islam umumnya. al-Imam al-Khatib al-Baghdadi (1983)[6] berkata: “Telah berkata sebahagian daripada para sheikh kami: Barangsiapa yang berkehendakkan faedah dan ilmu maka pecahkanlah (bersungguh-sungguh dan

perbanyak) pena penyalinan dan ambillah (terlibat dan mendalami) pena Takhrij".

Menurut al-'Abid (2001)[2] di antara faedah-faedah *Takhrij al-Hadith* ialah:

1. Memastikan keaslian hadith dan mengetahui darjatnya di sisi ulama al-Hadith.
2. Mengetahui sebarang pertambahan dan kekurangan di dalam matan hadith, yang membawa kepada pengetahuan apakah lafaz yang sahih, daif, munkar, shaz, mudraj dan sebagainya.
3. Mengetahui bentuk-bentuk lafaz hadith yang berbeza-beza yang membawa kepada kefahaman hadith yang sempurna dan dapat mengeluarkan hukum yang bersesuaian dan tepat daripada hadith.
4. Membetulkan nas-nas atau lafaz-lafaz yang tertukar atau tersalah atau yang tidak dipastikan berpandukan riwayat daripada jalan yang lain. Ini akan menyelesaikan masalah nas yang sahih.
5. Membetulkan nama-nama yang ada pada sesuatu isnad, menerangkan serta menjelaskan nama-nama yang tidak sempurna di dalam matan hadith dan memastikan sebutan atau baris yang sahih bagi sesuatu lafaz.
6. Faedah yang kembali kepada orang yang mempraktikkan ilmu takhrij itu sendiri iaitu: Membentuk kemahiran dan kemampuan ilmiyyah pada dirinya dalam memastikan kesahihan sesuatu nas dan mengetahui kefahaman-kefahaman berkaitan hadith-hadith Rasulullah s.a.w.

VI. LAMAN WEB AL-DURAR AL-SANIYYAH الدرر السنية

A. Pengenalan Ringkas

Laman web ini dibangunkan secara percuma serta tidak bermotifkan keuntungan Boleh diakses melalui alamat URL berikut: http://www.dorar.net/. Penyelia kepada laman web ini ialah: al-Sheikh 'Alawi bin 'Abd al-Qadir al-Saqqaf. Seorang yang berketurunan Rasulullah s.a.w. Isi kandungan ataupun enjin pencarian web ini sebenarnya merangkumi pelbagai jenis maklumat yang merangkumi :

1. Kitab-kitab hasil karya penyelia al-Sheikh 'Alawi sendiri.
2. Senarai kitab-kitab dan kajian-kajian di dalam pelbagai displin ilmu-ilmu Islam yang merangkumi Quran, hadith, fikah, tauhid, mantiq dan sebagainya. Setiap daripada kitab-kitab ini akan disenaraikan nama penulis, cetakan, tempat dan tahun cetakan serta bidang yang menjadi perbahasan kitab.
3. Senarai kitab-kitab yang dinasihatkan untuk dibaca mengikut bidang-bidang tertentu.
4. Teknik atau cara menggunakan ruang pencarian.
5. Teknik atau cara mengutuskan email atau persoalan.

B. Ruangan Ensiklopedia Hadith Dan Cara Penggunaannya

Terdapat juga suatu ruang pada yang dinamakan *Taysir al-Wusul ila Ahadith al-Rasul* s.a.w. Ruangan ini juga dikenali dengan ruangan Ensiklopedia Hadis. Dalam ruangan inilah para pengkaji dan pengunjung web ini boleh membuat carian (takhrij) sesuatu hadith dan mengetahui hukumnya berdasarkan sumber yang menyatakannya.

Para pengunjung hanya perlu menekan pada pautan ini untuk memaparkan ruangan untuk mentakhrijkan hadith. Satu pilihan lain bagi pengguna laman web ini ialah terus kepada alamat URL berikut: http://www.dorar.net/enc/hadith.php [7]. Di dalam ruangan ini akan terpapar bahagian untuk petikan hadith yang dikehendaki, nama ahli hadith, kitab, cara pemilihan perkataan yang dibuat.

Di antara cara penggunaan yang akan menjimatkan masa dan mendapat natijah yang diharapkan, pengguna hendaklah :

1. Meletakkan ibarat atau perkataan di ruangan العبارة tidak terlalu banyak (lebih daripada tiga kalimah)
2. Tidak menggunakan tanda bacaan.
3. Boleh mencari kata-kata ahli hadith yang tertentu dengan menulis namanya di ruangan المحدث .
4. Boleh mencari hadith atau maklumat tertentu di dalam kitab tertentu dengan menulis nama kitab di ruangan الكتاب.
5. Boleh mencari di dalam semua kitab dengan memilih perkataan الجميع .
6. Boleh memilih di antara: sebahagian perkataan yang dikehendaki, semua perkataan, semua pecahan perkataan, atau perkataan dan ayat yang sama dan serupa.
7. Di sana juga terdapat 5 pilihan hadith atau kata-kata ulama sama ada: hadith-hadith yang sahih, hadith-hadith yang isnadnya sahih, hadith-hadith yang daif, hadith-hadith yang isnadnya daif atau pengguna boleh memilih untuk mencari semuanya dengan perkataan الجميع .

Akan dinyatakan nombor hadith, ibarat hadith, perawi hadith, kesimpulan darjat hadith, ahli hadith yang mengeluarkan hadith tersebut, sumber atau kitab ulama hadith tersebut dan jilid serta muka surat. Secara keseluruhannya kenyataan dan darjat hadith adalah dibuat secara :

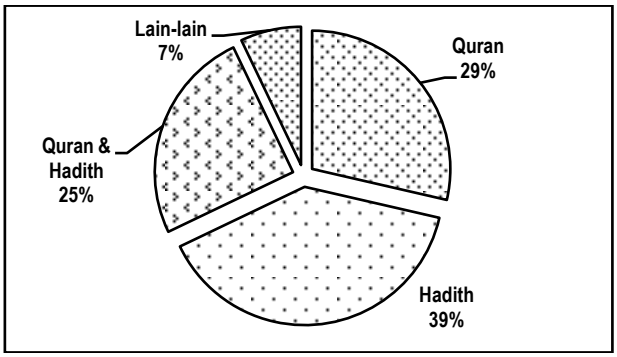
1. Kesimpulan terhadap kata-kata ulama hadith yang dinyatakan.
2. Kenyataan tentang darjat sesuatu hadith dibuat secara ringkas tetapi tidak menukar maksud sebenar kata-kata tersebut.
3. Kenyataan tentang darjat hadith adalah dilihat kepada matan hadith sahaja. Jika ulama hadith menyatakan sanad daif kemudian mengatakan ia *hasan li ghairihi* atau sahih dengan sekalian isnadnya, maka yang akan

disebut hanyalah hukum terhadap matan. Jika ulama tersebut hanya menyatakan hukum terhadap sanad, maka akan dinyatakan hukumnya itu.

VII. DAPATAN KAJIAN DAN PERBINCANGAN

A. Latarbelakang Responden

Rajah 1 menjelaskan komposisi pengkhususan para pensyarah di Fakulti Pengajian Quran dan Sunnah iaitu 28.6 peratus adalah graduan dalam bidang Quran, 39.3 peratus adalah graduan dalam bidang Hadith, 25 peratus adalah bidang Quran dan Hadith dan selebihnya 7.1 peratus sahaja yang berlatarbelakangkan bidang-bidang yang lain.



Rajah 1: Pengkhususan Pensyarah FPQS, USIM
Sumber: Syed Najihuddin et. al (2009) [8]

B. Penggunaan Laman Web al-Durar al-Saniyyah Dalam Kajian Hadith

Hasil kajian mendapati, sebilangan besar daripada pensyarah bersetuju bahawa kursus yang diajar oleh mereka memerlukan penggunaan ilmu takhrij dalam pengajaran dan pembelajaran. Ini membuktikan bahawa pengajaran dan pembelajaran bidang keagamaan memerlukan penggabungjalinan semua kemahiran serta ilmu. Setiap pelajar yang menuntut ilmu khususnya bidang keagamaan wajar didedahkan dengan ilmu takhrij agar pencarian ilmu menjadi lebih saintifik dan bersumberkan rujukan yang berautoriti. Justeru, para pensyarah seharusnya bertindak merentas kurikulum bagi menggalakkan proses penghadaman ilmu khususnya bidang keagamaan.

Mereka juga kadang kala turut mengajar beberapa teknik takhrij kepada pelajar dalam pencarian hadith, walaupun kursus yang diajar tidak berkaitan dengan takhrij hadith. Beberapa tips mudah dalam pencarian bahan dan maklumat, mampu memantapkan keilmuan pelajar dalam carian maklumat tersebut. Selain itu, kebergantungan maklumat Islam kepada sumber yang autentik telah menjadikan ilmu takhrij hadith ini sangat penting dan relevan. Justeru, tiada salahnya dilakukan berulang kali bagi memahirkan diri dalam menggunakannya.

Mereka juga turut memberi galakan kepada para pelajar mereka supaya menggunakan perisian komputer dan laman web takhrij di internet untuk melakukan takhrij terhadap sesebuah hadith. Hal sebegini menggalakkan pembelajaran secara aktif pelajar agar senantiasa mempraktikkan ilmu takhrij walaupun di luar kelas. Kemudahan komputer dan internet memberikan jaminan kesinambungan pembelajaran di luar kelas pengajian. Dapatan ini juga membuktikan bahawa para pensyarah bidang Quran dan hadith secara kolektifnya tidak menentang penggunaan perisian dan laman web malah memberikan galakan pula. Namun begitu, terdapat sedikit tentangan dari aspek keabsahan maklumat serta ketepatannya yang menuntut proses merujuk kepada sumber asalnya yang berbentuk buku bercetak.

Di samping itu, didapati kebanyakan pensyarah memberi penekanan kepada para pelajar semasa sesi pengajaran dan pembelajaran berhubung ketepatan sesebuah hadith. Hal ini meningkatkan kesedaran pelajar tentang kepentingan perkara tersebut yang mana akan membuahkan kesedaran jangka panjang kepada mereka. Sebenarnya penekanan ini tidak semestinya secara langsung, seperti menyuruh atau mengarahkan. Malah, penekanan boleh disampaikan dalam bentuk memberikan ganjaran positif atau negatif, seperti memberikan markah atas carian yang tepat, dan sebaliknya mengurangkan markah bagi rujukan yang salah. Justeru, peranan pensyarah sebagai pendidik dan murabbi akan memanfaatkan pelajar dan memberikan panduan suri teladan kepada mereka setelah menceburi alam pekerjaan nanti.

Mereka juga turut memberikan tugasan kepada para pelajar yang menuntut mereka menganalisis status kesahihan sesebuah hadith terlebih dahulu. Tugasan ini mematangkan pelajar dalam soal penerimaan atau tidak, bagi sesuatu hadith. Proses pembelajaran ini yang berpusatkan pelajar amat baik dalam membentuk sahsiah pelajar bidang agama.

C. Kelebihan Pendekatan Berbantukan Laman Web

Mereka berpendapat bahawa antara kelebihan laman web al-Durar al-Saniyyah berbanding teknik lain ilmu takhrij ialah ia mudah diakses walau di mana sahaja asalkan ada khidmat internet di kawasan tersebut. Ini kerana, kewujudan laman web ini di alam siber, dan aksesan internet hampir di mana sahaja di dunia, telah menjadikan teknik ini amat berkesan dalam carian hadith.

Kalau perkara ini dibandingkan dengan kaedah lain ilmu takhrij tentulah lebih mudah dan cepat. Ini kerana kaedah-kaedah yang lain memerlukan kehadiran buku secara fizikal yang melibatkan carian yang berbeza mengikut metodologi penulis yang berbeza. Walaupun hanya menggunakan kaedah carian berdasarkan potongan perkataan dalam hadith, kaedah ini mampu memanfaatkan carian perkataan sebanyak

mungkin. Setiap patah perkataan dalam hadith akan dirujuk, tidak hanya perkataan awal sahaja. Malah setiap perkataan yang dijumpai akan diberi warna merah bagi memudahkan carian.

Maklumat yang diperoleh adalah ringkas dan padat. Ini kerana maklumat tersebut dipersembahkan dalam bentuk yang komprehensif yang merangkumi matan (teks) hadith, perawi sahabat, sumber hadith berserta hukum hadith iaitu sahih, hasan atau da'if, diberi secara ringkas. Sebarang hukum hadith yang diberikan membantu pelajar juga pengkaji lain merumuskan hukum hadith secara awalan. Jika keperluan untuk menghuraikan semula berlaku, pengkajian kepada sumber asal boleh dibuat dengan mudah kerana rujukannya turut disertakan.

Laman web itu juga bersifat mesra pengguna, kata kebanyakan pensyarah. Penggunaan warna, sebagai contoh, kepada perkataan carian memudahkan pengguna mengenal pasti perkataan yang dicari olehnya. Di samping itu, susun atur setiap laman web juga turut membantu meningkatkan elemen mesra pengguna kepada web tersebut. Terdapat beberapa unsur lain yang selalu ditambah baik oleh pengendali laman web tersebut bagi meningkatkan kekuatan elemen mesra pengguna ini dari semasa ke semasa.

Menggunakan laman web dalam mentakhrijkan hadith juga mampu menjimatkan masa, kos dan tenaga. Masa yang diambil hanya beberapa saat bergantung keadaan rangkaian, kos carian juga percuma dan tenaga yang digunakan juga adalah minimum. Keseluruhan kajian yang memerlukan masa yang lama secara tradisional, telah dapat dicepatkan secara berkali-kali ganda dengan kejuruteraan perisian. Buku juga jikalau dibeli atau dipinjam akan melibatkan kos yang amat besar, malah masih ada yang tidak dapat ditemui di sini.

D. Kekurangan Pendekatan Berbantukan Laman Web

Beberapa kelemahan telah dapat dikenal pasti dari perspektif pensyarah, antaranya:proses ini memerlukan kepada capaian internet, yang mana hal ini turut melibatkan *server* dan *network*. Apabila prestasi kedua-duanya menurun, pengaksesan kepada laman web ini turut terkena tempiasnya.

Segelintir pensyarah pula menyatakan keraguan mereka terhadap sumber maklumat yang dimuatkan dalam laman web ini. Ini kerana wujudnya kebarangkalian penyedia perkhidmatan laman web tersebut memasukkan entiti luaran tetap ada. Berkemungkinan juga, gangguan itu dari pesaing tidak sihat, yang merosak maklumat digital laman web ini. Justeru, keselamatan datanya perlu dipertingkat, dan dari pihak pengguna perlulah merujuk sumber asal.

Ada juga yang menyatakan bahawa proses carian digital ini mengakibatkan kurang penghayatan dalam carian hadith. Ini disebabkan keadaan carian yang tidak bermediumkan buku-buku yang boleh dipegang serta ditatap helaian demi helaian. Malah ada yang mempunyai kepuasan yang lebih tinggi dengan memegang buku bercetak dari membaca pada skrin komputer.

Selain itu, laman web ini tidak menyediakan maklumat cetakan pada rujukan sumber hadith seperti tempat, tarikh serta penerbit cetakan tersebut pada tetingkap yang sama. Ini kerana maklumat tersebut disenaraikan di halaman lain yang khusus. Hal sebegini agak mengganggu carian, kerana pengguna terpaksa meneliti maklumat cetakan satu persatu dalam satu senarai yang panjang.

E. Kebergunaan Laman Web Dalam Kajian Hadith

Pensyarah juga berpendapat bahawa Laman Web al-Durar al-Saniyyah berguna dalam ilmu takhrij serta kajian hadith kerana masa carian yang diambil secara relatifnya adalah cepat, di samping memberi peluang untuk meneroka dengan lebih mendalam lagi. Di samping itu, laman web ini menjelaskan hukum sesebuah hadith, menyenaraikan banyak riwayat dan matan serta memberikan pilihan sumber rujukan yang banyak kepada pengkaji hadith. Oleh yang demikian, mereka bersetuju agar laman web ini digunakan sebagai alat bantuan mengajar, dan seterusnya menjadi kunci kepada ilmu takhrij. Ini kerana laman web ini mampu memberikan pemahaman dalam sesi pengajaran dan pembelajaran yang mana hal sedemikian boleh memudahcarakan penyampaian pensyarah dalam kelas pengajiannya.

VIII. RUMUSAN

Kebanyakan pensyarah menyatakan bahawa laman web ini berperanan sebagai alat bantuan mengajar yang baik dan berfungsi sebagai teknik terkini dengan berwadahkan teknologi yang mana hal ini menjadi kehendak masyarakat pelajar pada masa kini. Kaedah pengajaran berpusatkan pelajar sebegini juga perlu dirangka sebaiknya agar membantu meningkatkan motivasi pelajar serta dapat mencapai hasil pembelajaran yang dikehendaki.

Mereka juga percaya bahawa penggunaan laman web ini mampu memberikan pemahaman dalam sesi pengajaran dan pembelajaran yang mana hal sedemikian boleh memudahkan penyampaian pensyarah. Pelajar juga dapat merujuk di mana sahaja, dan pada setiap masa, dengan rujukan yang sangat banyak. Kemudahan internet terdapat hampir di mana sahaja yang menyebabkan pembelajaran berlaku secara berterusan.

Mereka juga berpandangan bahawa pengayaan pelajar boleh berlaku dengan menggunakan laman web ini kerana kandungan web ini yang memuatkan isu-isu semasa berkaitan hadith, di samping menjimatkan kos. Sesetengah rujukan susah didapati di Malaysia, menyebabkan rujukan secara digital yang sentiasa ditambah dari semasa ke semasa, sangat relevan pada zaman ini.

Mereka juga turut menyuarakan keperluan untuk laman web ini diperkenalkan ke seluruh IPT beraliran agama secara khususnya, sebagai elemen kepelbagaian dan keunikan yang mana boleh membangkitkan minat pelajar terhadap kajian hadith dan membantu dalam proses penulisan dan penyelidikan.

IX. CADANGAN KAJIAN

Melalui kajian ringkas terhadap khidmat pentakhrijan hadith yang ditawarkan oleh Laman Web *al-Durar al-Saniyyah* ini, pengkaji ingin menyarankan beberapa perkara untuk perhatian dan maklum balas para pembaca, terutama para pakar dalam kajian ilmu hadith:

1. *Takhrij al-Hadith* menggunakan laman-laman web atau internet adalah suatu cara yang mencepatkan proses mengetahui sumber hadith. Dalam era ICT ini, kaedah ini perlu dibangunkan secara komprehensif bagi membantu para pelajar, penyelidik, pendakwah, pegawai-pegawai agama, perunding-perunding syarie dan masyarakat umum seluruhnya dalam menentukan status sesuatu hadith untuk keperluan masing-masing.

2. Para pakar atau ulama dalam bidang hadith perlu bergabung tenaga dengan pakar ICT bagi menjamin khidmat pentakhrijan hadith melalui internet ini mempunyai tahap kebolehpercayaan atau kredibiliti yang tinggi dan diyakini serta mesra pengguna dan memenuhi keperluan mereka.

3. Sehingga kini, para pengkaji yang menggunakan khidmat pentakhrijan hadith melalui internet masih perlu merujuk kembali sumber asal yang bercetak bagi memastikan kesahihan natijah yang diperolehi, juga untuk mengelakkan sebarang bentuk penyelewengan atau kesan kesilapan teknikal semasa proses pembangunan sesuatu laman web berjalan.

4. Pendedahan mengenai proses pentakhrijan hadith melalui internet perlu diberikan kepada pelajar-pelajar dalam bidang hadith khususnya dan bidang pengajian Islam umumnya, melalui mata pelajaran-mata pelajaran yang berkenaan seperti *Ilmu Takhrij al-Hadith* misalnya, bagi membolehkan mereka mengintegrasikan ilmu Islam tradisional dengan teknologi moden.

5. Pembelajaran secara aktif dengan mengaplikasikan kemudahan internet amat berguna dalam memudahcarakan pengajaran dan pembelajaran hadith di IPTA pada masa kini. Ini selari dengan hasrat kerajaan, masyarakat dan ilmuan yang memerlukan graduan berdaya saing di peringkat global tanpa melupakan elemen tradisional.

6. Modul pengajaran dan pembelajaran yang dibangunkan untuk pembelajaran hadith perlu bersifat dinamik dan kontemporari. Pelajar perlu didedahkan dengan aksesan digital dalam carian sumber serta diberi tunjuk ajar sebaiknya.

7. Sebuah institusi yang mempunyai autoriti dan bertanggungjawab dalam memantau segala isu dan perkembangan yang berlaku dalam bidang hadith perlu diwujudkan di peringkat negara-negara Islam. Kewujudan institusi seperti ini penting bagi memudahkan masyarakat Islam mendapatkan pandangan yang tuntas mengenai perisian-perisian atau laman-laman web atau apa sahaja bahan yang menyentuh isu-isu berkaitan Sunnah Rasulullah s.a.w. Fungsinya mungkin tidak banyak beza dengan Unit Kawalan al-Quran di bawah Kementerian Dalam Negeri yang bertanggungjawab memelihara kesucian al-Quran dalam apa bentuk terbitan atau bahan.

X. RUJUKAN

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Methods for adaptivity in intelligent web-based learning systems

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Abstract—There are two main methods for implementing adaptivity in intelligent web-based learning systems: adaptive presentation (or content-level adaptation) and adaptive navigation support (or link-level adaptation). In the systems that use an adaptive presentation method, the content of an adaptive hypermedia page is generated or assembled from pieces according to the user's background and knowledge state. In such the page, narrowed and detailed deep information (in forms of multimedia or text) is provided for advanced users, while broader and less deep additional explanation is provided for novices. Adaptive navigation support is a method of helping users to find their paths of learning in hypermedia systems by adapting the way of presenting links to goals, knowledge, and preferences of individual users. It consists of all methods of altering visible links to support hyperspace navigation. Some technologies were distinguished from the points of view according to the way they adapt presentation of links: direct guidance, link sorting, link hiding, link annotation, link generation, and map adaptation. Based on recent research and applications, this simple taxonomy is developed further.

I. INTRODUCTION

Advances in the Web technology can provide a number of learning experiences that go beyond that possible in the traditional classroom environment such as facilitation of variety of learning activities including small group discussion and collaborative projects and a forum for expression of different beliefs and attitudes. It is argued also that such learning experiences are considered as important factors to facilitate knowledge construction.

The flexibility of hypermedia system of well-designed learns- ing environments often reflect the interrelatedness and ill- defined or unstructured characteristics of knowledge domains. Such environments could provide rich contextual structures for the acquisition of advanced knowledge [1], [2]. However, re- search into flexibility of hypermedia systems as an information delivery agent has documented the existence of four problems associated with the use of hypermedia: disorientation, cogni- tive overload, discontinuous flow, and content readiness [3]. Disorientation refers to users not knowing where they are, where they have been, or how to get where they want to go in the hypermedia space. Cognitive overload refers to users being overwhelmed or confused by options available to them in multi-path, multi-tool environments such as hypermedia documents. Discontinuous flow is divided into two issues: narrative flow and conceptual flow. Narrative flow refers to didactical or dialogical flow of the text itself. Conceptual flow refers to the flow of ideas or concepts. Content readiness refers to how the content is tailored so that the user is neither bored nor overwhelmed. Complexity of non-linear structures of hypermedia also causes inconvenience to users as often the existing navigational tools of hypermedia systems are not powerful enough to provide orientation [4].

Adaptivity is one way to increase the functionality of hypermedia and may be able to solve the problems associated with the use of multimedia. Adaptive hypermedia is a possible remedy to the negative effects of the traditional 'one-size-fits-all' approach of many hypermedia systems [5]. Adaptive educational hypermedia or intelligent learning systems are capable of recognizing specific user characteristics such as need, interest, knowledge, and preferred learning styles and respond accordingly [6]. In adaptive or intelligent systems, the systems responses are performed by tailoring learning strategies and learning materials to meet an individual learner.

II. METHODS FOR IMPLEMENTING ADAPTIVITY

In web-based systems, adaptivity is mainly implemented in two ways according to the types of adaptation provided: adaptive presentation (or content-level adaptation) and adaptive navigation support (or link-level adaptation)[4], [5], [7].

In the systems that use an adaptive presentation method, the content of an adaptive hypermedia page is generated or assembled from pieces according to the users' interest, background and knowledge state. In such the page, narrowed and detailed deep information (in forms of multimedia or text) is provided for advanced users, while broader and less deep additional explanation is provided for novices. Hence, adaptive presentation method was subdivided into multimedia and text presentation technologies [5], [8].

The process of adapting content to specific user needs can be thought of as two main sub processes. The first sub process, which we will refer to as content adaptation,

involves understanding what content can be most relevant to the current users' state, and how this content should be organized. The second sub process, which is referred to as content presentation involves deciding how to most effectively present the selected content to the user [9]. Fig. 1 shows the application of scaling-based adaptation technique, increasing or decreasing font sizes (text presentation), as the function of user's degree of interest to the fragments of a content. Here the user's focus of interest is assessed to be theatre, thus paragraphs with different degree of relation with this topic are presented in different font sizes.

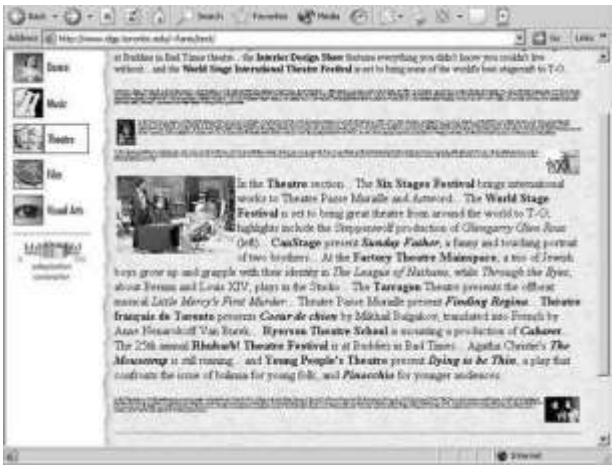

Fig. 1. Scaling-Based Adaptation [9]

Adaptive navigation support is a method of helping users to find their paths of learning in hypermedia systems by adapting the way of presenting links to goals, knowledge, and preferences of individual users. It consists of all methods of altering visible links to support hyperspace navigation. Adaptive navigation support was subdivided into direct guidance, link sorting, link hiding, and link annotation. Some applications on those techniques are described briefly as follows.

Direct guidance can be applied in any system which can decide what is the next "best" node for the user to visit according to the user's goal and other parameters represented in the user model. ELM-ART [10] is an example of an adaptive system implemented on the Web that uses this technique. ELM-ART generates an additional dynamic link (called"next") connected to the next most relevant node to visit. Direct guidance has been criticised for being"too directive" as it provides almost no support for users who would like make their own choice rather than follow the system's suggestion.

In adaptive ordering or sorting technology all the links of a particular page are sorted according to the user-model using some easily recognisable means of conveying this to the user, such as having the more relevant links closer to the top. This technology exists within ELM-ART [10] and Interbook [11]. Adaptive ordering has a limited applicability since it can be used with non-contextual links, but it cannot be used for indexes and content pages (which usually have a stable order of links), and can never be used with contextual links and maps.

Hiding is an annotation technology which restricts the navigation space by hiding links to irrelevant pages. A page can be considered as irrelevant for several reasons: for example, if it is not related to the user's current goal or if it presents materials which the user is not yet prepared to understand [12]. Adaptive annotation technology augments the links with a comment which informs the user about the current state of the nodes behind the annotated links [13]. Link annotations can be provided in textual form or in the form of visual cues, for example, using different icons, or colours, font sizes, or font types. Typically the annotation in traditional hypermedia is static that is independent of the individual user. Adaptive navigation support can be provided by dynamic user model-driven annotation. Adaptive annotation in its simplest history-based form (outlining the links to previously visited nodes) has been applied in some hypermedia systems which shows a folder as unread with a "U" until all of the items within that folder have been visited, including several Web browsers. Even the form adaptive annotation which distinguishes two states of links is quite useful.

As an example, an application of adaptive link annotation technology in NavEx system helping students to choose the example to browse by augmenting each example link with an adaptive icon that visualizes the status of the example, [14], is shown as in Fig. 2. It provides a list of links to all examples and augmented each link with an adaptive icon that visualized the status of the example, adapted to the current state of the student's knowledge and history of past interactions. These icons help students to distinguish new examples from examples that have already been partially or fully explored in the past; as well as to distinguish examples that are ready to be explored from examples that demand prerequisite knowledge the student lacks.

Fig. 2. Adaptive Link Annotation Technique [14]

The simple taxonomy above enables to classify several methods and techniques present recently and described in the review. There is no sufficient space here to describe the whole taxonomy in detail, the review will concentrate on the changes that are required of the original taxonomy in order to

accommodate the new methods and techniques suggested and explored lately. From this point of view, new methods and techniques can be divided into three groups [5]. The first and the largest group can be considered as variations of methods and techniques reported earlier, and can thus be easily classified using the old taxonomy. The second group requires relatively small extensions of the taxonomy. The third group demands more considerable changes. Here the last two groups will be discussed in more detail.

Small extensions of the taxonomy require addition of new technologies on the terminal level of existing taxonomy. Some have suggested and implemented several different variants for what was known as link hiding: disabling, hiding, and removal. Therefore, these are classified as independent technologies within a more general hiding technology. Another innovative way of adaptation is text dimming. This also be considered as a separate technology. At this time it would probably be wise to refine text adaptation further by dividing it into two essentially different groups: canned text adaptation and natural language adaptation. The main ways of canned text adaptation can now be considered as adaptation technologies: inserting/removing fragments, stretch-text, altering fragments, sorting fragments, and dimming fragments. Natural language adaptation can not be classified further at the moment. Of course, many natural language generation systems do, in fact, make use of fragments (and even paragraphs) of canned text. The distinction here is made between those systems that use natural language technology as a foundation and those that do not. It may be needed to refine this distinction at a later stage. A few methods and techniques developed lately demand more considerable changes to the taxonomy to be accom- modated. First, it is named that adaptation of modality as a high-level content adaptation technology. Modern adaptive hypermedia systems may have a choice of different types of media with which to present information to the user; that is, in addition to traditional text, we can also use music, video, speech, animation, and so on. Quite often fragments of different media present the same content, and hence the system can choose the one that is the most relevant to the user at the given node. In other cases, these fragments can be used in parallel, thus enabling the system to choose the most relevant subset of media items. Currently, we can identify several different methods for adapting the modality of presentation on the basis of user preferences, abilities, learning style and context of work, in several kinds of adaptive hypermedia systems.

The rise of recommender systems makes it necessary to distinguish between two essentially different ways of adaptive navigation support: adapting the links that were present on a page at the time of hyperspace authoring, and generating new, non-authored links for a page. Link generation includes three cases: discovering new useful links between documents and adding them permanently to the set of existing links; generating links for similarity-based navigation between items; and dynamic recommendation of relevant links. The first two groups have been presented in the neighbouring research area of intelligent hypertext for years. Recent techniques of adaptive creation of global and local links and adaptive similarity-based navigation demand their inclusion into the ”taxonomy of adaptation”. The third group of methods dealing with the generation of a dynamic list of additional relevant links is new, but already well-explored in the areas of information retrieval hypermedia, on-line information systems, and educational hypermedia. It is suggested considering adaptive link generation as a new high-level technology of adaptive navigation support. This technology can be used in conjunction with existing technologies such as annotation and sorting.

In summary, the updated taxonomy of technologies is pictorially shown in Fig. 3.

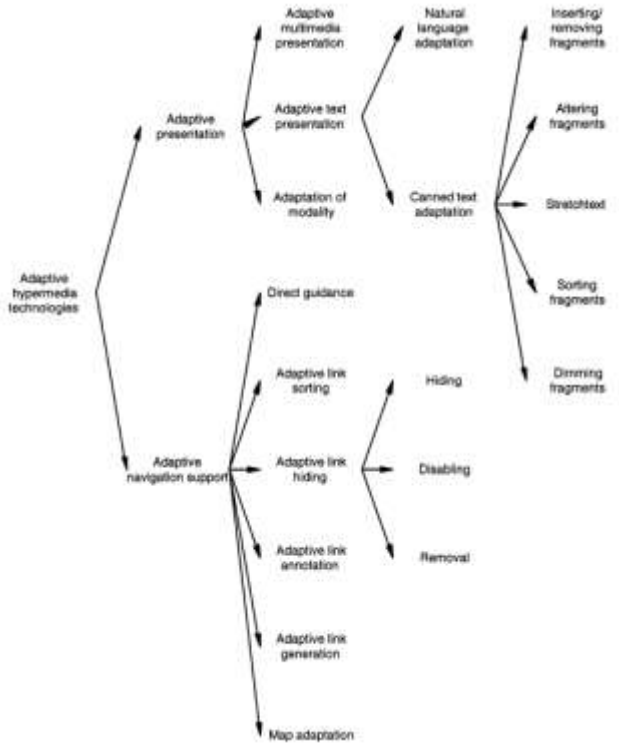

Fig. 3. Taxonomy of Adaptivity Methods [5]

III. CONCLUSION

The existing main taxonomy of adaptation methods in intelligent web-based learning system is refined, mostly at the terminal levels based on changes of adaptation technologies implemented lately. For the adaptive presentation method, adaptation of modality added and further classification is made under text presentation: natural language and canned text. Under adaptive navigation support, link generation and map adaptation are specified. Link hiding is divided further into hiding, disabling, and removal.

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The Effectiveness of 3D Alkene Isomerisme Courseware (3D-AI) At MRSM Terendak, Melaka

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Abstract-**The usage of multimedia courseware in education field is one of the methods that can be used to increase the motivation and interest of student towards the subject that being taught. This research is about the development and effectiveness of courseware title 3 dimensional (3D) Alkenes Isomerism. This courseware is specifically developed for a topic in chemistry subject for form five students in Malaysia. The topic chosen are Alkenes and Isomerism which is a part of hydrocarbon topic in chemistry secondary syllabus. The research was done at Maktab Rendah Sains MARA Terendak Melaka involving Form five Students who took Sijil Pelajaran Malaysia (SPM) in year 2010.The questionnaires is the instrument used in this research to determine the problem statement. Based on the questionnaires, Alkenes and Isomerism are identify as the most difficult topic and suggested a courseware is developed and then tested for its effectiveness. The courseware used MAYA software version 2010 to develop the 3D molecules of Alkenes structure. Two group of students called Experimental group (EC) and Control group (CG) involved in this process and a set of questionnaires is used during pre-test and post test for this purpose. A pilot study is running to determine the effectiveness of the courseware before post test is carried out. From this research the researcher finds out that courseware titled 3 dimensional (3D) Alkenes Isomerism(3D AI) is suitable to used during teaching and learning process as teaching aid. This is also because it can help to increase student's performance for topic Alkenes Isomerism.**

Keywords-component; Courseware, 3D AI, Alkene Isomerisme, Chemistry

I. Introduction

Teaching and learning is an important process that happens in a classroom. Many studies have been carried out to identify the learning strategies and learning technique that is suitable to be implemented in classroom. This is to ensure that teaching and learning process reach its goal which is student get the knowledge and student is inspired to find the knowledge even they are not in the classroom.

Teaching and learning become more adventurous in 21st century. The progressing in ICT field expresses the big impact towards education process. Many researches show that ICT give positive effect to the teaching and learning process whether for the student or the process itself. ICT help to fasten the government agenda in education long term plan.

The science education become more important in Vision 2020 through it sixth challenges Rose Amnah et al. 2004. The sixth challenge of Vision 2020 is the challenge of establishing a scientific and progressive society, a society that is innovative and forward-looking, and one that is not only a consumer of technology but also a contributor to the scientific and technological civilization of the future. Teacher's role is vital in implementing ICT literature to students. Teacher becomes facilitator or instructor that not only preparing the suitable environment for learning process but also help and instil good value in students for their future. Teacher play important role to guide students to surf internet, finds website, chose the right courseware also collect and review information (Norrizan, 2011). Based on Mateer (2011), instructor can engage students and produce more meaningful and deep learning experiences by using films, television shows, popular music, new stories, literature, documentaries and videos from sources such as YouTube.

II. Problem Statement

Chemistry has been regarded as a difficult subject for young students by chemistry teachers, researchers, and educators (Kirkwood & Symington, 1996; Lorenzo, 2005; Nakhleh, 1992). Students view chemistry as one of the most difficult subjects to study at all levels of schooling (Özmen, 2005). Many students reported to have trouble with the conceptual nature of chemistry (Rhoda, 2011).

Chemistry is a difficult subject for certain students because it is a conceptual subject. Student should have high imaginary in order to understand the concept of chemistry better. According to (Johnstone, 1997) chemistry consists of three forms which can be thought of as corners of a triangle. No form is superior to another, but each one complements the other. These forms of the subject are: (i) the *macro* and tangible: what can be seen, touched and smelt; (ii) the *sub micro*: atoms, molecules, ions and structures and (iii) the *representational*: symbols, formulae, equations, morality, mathematical manipulation and graphs. Student should be able to think at the molecular level and explain changes at macro

level in term of interaction between individual atoms and molecule. It is true that one of the most difficult challenges in teaching and learning chemistry at secondary level involves conveying to students the three dimensional structures and dynamics interaction of atoms and molecules (Abdoolatiff & Narod, 2009). The main problem in Chemistry is the abstraction of facts in order to understand the 3D arrangements and properties of the molecules, Alonso et al. 2011.

Many studies all level of schooling to determine student's ideas about basic chemistry concepts suggest that students who did not acquire satisfactory understanding of scientific concepts occurred because of traditional teaching method. In traditional teacher-centred classroom the students become listeners and the teachers gives out the facts and defines important ideas. Traditional teaching method in science means students may understand the subject but only at a 'knowledge level'- memorizing the fact (Lewis, 2006).

One of the problems when student learn chemistry is students do not understand the topic well because it needs students to imagine the formation of the structure and their arrangement (Sun, 1997). By developing this courseware, it is use to stimulate student's interest in some content of the learning and as a supplement to classroom teaching, the graphics and animation make the subject come alive, so that learning the subject is much easier, animation and voice are used to implement various teaching strategies such as tutorials, activities and games. Besides that, the simple animation can be use in this courseware to make the learning of content in the class more interactive. With the development of computer technology, multimedia methods are been increasingly used in teaching practice. A multimedia courseware can combine sound and pictures with knowledge. This reinforces the fact that students retain 50% of what they see and hear, as the use of multimedia technology gives students more information than just writing on the blackboard and increase the chance of active learning (Huo, 2006).

III. Multimedia in Chemistry Education

The well-known aim of science education is to teach the science concepts meaningfully and make students become aware of how these concepts can be used in their daily lives (Çepni, 2004).With the rapid development in science and technology, chemistry which is the fundamental to many disciplines, it becomes increasingly important (Saeed et al. 2011). Chemistry is often regarded as a difficult subject for students (Johnstone, 2000; Rhoda, et al. 2011). Chemistry subject at secondary level contain various topics, some of these are considered as difficult by various students (Rhoda, et al. 2001). The conceptual understanding in chemistry includes the ability to represent and translate chemical problems using macroscopic (observable), molecular (particulate) and symbolic forms of representation. Students are required to think at the molecular level and explain changes at macroscopic level in terms of interaction between individual atoms and molecules (Abdoolatiff & Narod, 2009). Visualization skills or the skills necessary to describe microscopic phenomena need to be developed as an integral part of chemistry teaching and learning (Steenberg & Bradley, 2009). Student learning and understanding has the potential to improve with the use of computer-based multimedia environments (Akili, 208). ICT-integrated environmental learning in experimental chemistry show positive and scientific perspective for academic research (Su, 2011).Students agreed to a larger extent that integrating ICT in teaching and learning of Chemistry enhances conceptual understanding of Organic Chemistry (Bhukuvhani, 2011). Thus, the Chemistry multimedia courseware prepared by the Ministry of Education is most welcome and right at the time. The materials were in the form of browser-based courseware, teachers' guides, student worksheets, and sample lesson plans to guide the teachers in integrating the courseware in their lessons. 87.5% of the respondents felt that the multimedia courseware supplied by the Ministry to teach science and mathematics is well planned and effective in terms of content (Ong, 2008). This shows that multimedia courseware is one of the right tools to use in teaching and learning.

IV. Implication of multimedia in education for 3D AI courseware

Teachers today are encouraged to use technology-driven teaching and learning aids to enhance students learning (Rahimi et al. 2007). They need to ensure that, the educational software used as part of their classroom instructions is appropriate and effective in producing the intended outcome and achieving educational goals (Lim & Tay, 2003; Rahimi et al. 2007).This research is about to develop a multimedia courseware for secondary school students. The courseware choose a topic from form five chemistry syllabus as the topic has been chosen as one of the difficult topic among the students. Multimedia element is embedded in the courseware is in lined with the current technology pattern in education that approve the usage of ICT facilities in education. Text, graphic, animation and audio are used to make the 3D AI courseware is accepted as one of the adequate teaching aid. It also attracts student's attention and use maximally to understand the content effectively. The presence of multimedia technology is an important for distributing information in teaching and learning process thus the teachers are the key factor for the success of multimedia application technology in the classroom (Arsat & Hasnisham, 2011).

V. Reasults and Analysis

Researcher use pre and post test questions in evaluating the significant difference in term of student's performance between student who use 3D AI courseware and student who study using text book. In the pre-test, questions about Alkene and Isomerism topic are given to all students then they would answer the question using paper based. Students have to answer the questions before learning the topic to get their pre understanding before they learn in class. Both subtopics are continuous and related to each other. Hydrocarbon topic consist of subtopic Alkanes, Alkenes, Isomerism, Alcohols, Ester and Carboxylic Acids. The pre-test consisted of 20 objective questions with four choices of answer

covering topic Alkene and Isomerism and 3 subjective questions with total mark 20.

The post-test questions consisted of the similar number of questions from the same topic. After both experimental and control group finish with pre-test, they start learning the topic. For experimental group, they learn both topics using the 3D AI courseware. From observation of the researcher, students are able to use the courseware and study on their own with minimum help form the teacher. After finish learning the topics using 3D AI, they answer the post test questions. For control group, they learn the topic in class as usual and answer the post test questions on question paper that distributed to them. The effectiveness of 3D AI courseware is measured by the performance of students in pre and post testing. Students were labeled from S1-S50 which is S1 to S25 is from control group while S26 to S50 is from experimental group.

According to the Table 1.1, the result shows that for the control group, the highest percentage of the mark distributions is 60% in which the mark range is 61-80. It can be concluded that majority students in conventional method scored around 61-80. On the other hand, the highest percentage of the mark distributions using 3D AI courseware is 56% in which the range of the mark is also around 61-80.However, the number of students who score higher marks is greater in experimental group compared to control group. There is increment of 40% for marks range 81-100 for experimental group. This shows that 3D AI courseware effective to increase student performance in term of the achievement of student during test. It means that the students from experimental group tend to understand much better compared to students who takes conventional method. Figures 1.1 and Figure 1.2 shows the frequency histogram for control group and experimental group during post test.

Regarding to the Table 1.2, the highest score for the pre-test is achieved by the student by S6 and with the score 72% and the lowest is gained by the 2 students, S7 and S8 with30%. Post-test is done after they learn Alkene and isomerism topics in class. The highest score is S14 with 85% and the lowest is by S13 with score 43%. The table proves that all of the students have achievement in their result with the lowest achievement is 1% and the highest achievement is 34%. Table 1.3 shows the achievement of pre and post-test for the experimental group.

Table 1.1: Marks Distributions for Control and Experimental Group in the Post Test

Mark	**Control Group**		**Experimental Group**	
	Number of student	**Percentage %**	**Number of student**	**Percentage %**
0-20	0	0%	0	0%
21-40	0	0%	0	0%
41-60	9	36%	1	4%
61-80	15	60%	14	56%
81-100	1	4%	10	40%

Table 1.2: Pre and Post Test Result for Control Group

Student	Testing result %		Achievement (%)
	Pre test	Post test	
S1	66	76	10
S2	58	70	12
S3	51	74	23
S4	64	77	13
S5	59	62	3
S6	72	74	2
S7	39	49	10
S8	30	53	23
S9	49	57	8
S10	53	55	2
S11	46	49	3
S12	47	53	6
S13	42	43	1
S14	79	85	6
S15	51	53	2
S16	65	76	11
S17	59	72	13
S18	45	68	23
S19	60	60	0
S20	67	68	1
S21	69	72	3
S22	66	74	8
S23	68	70	2
S24	65	72	7
S25	59	64	5
Mean	57.16	65.04	7.88

Table 1.3: Pre and Post Test Result for experimental group

Student	Testing result %		Achievement (%)
	Pre test	Post test	
S26	15	65	50
S27	24	84	60
S28	17	63	46
S29	23	70	47
S30	33	87	54
S31	26	91	65
S32	13	59	46
S33	32	74	42
S34	16	66	50
S35	26	81	55
S36	22	78	56
S37	31	76	45
S38	39	89	50
S39	45	86	41
S40	29	79	50
S41	40	85	45
S42	25	76	51
S43	25	77	52
S44	28	88	60
S45	30	90	60
S46	22	72	50
S47	19	79	60
S48	20	71	51

S49	27	79	52
S50	21	83	62

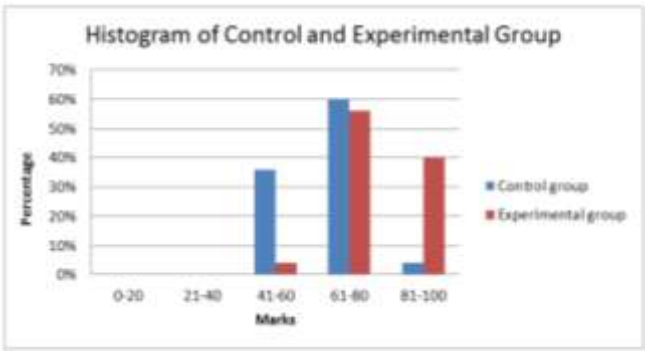

Figure 1.1: Histogram for Control and Experimental Group

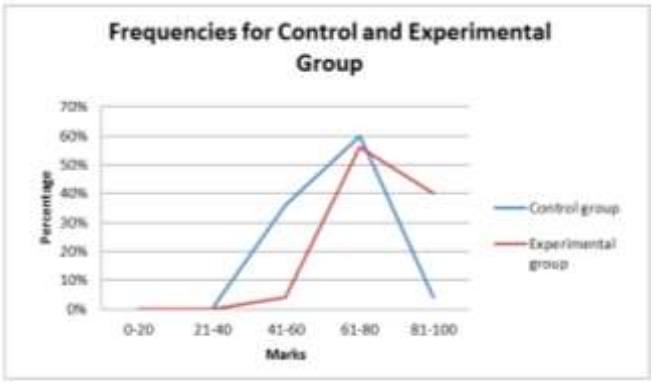

Figure 1.2: Frequencies for Control and Experimental Group

Based on the result of students' achievements, researcher found that experimental group performance get higher mean compared to control group. Hence, learning using 3D AI courseware is more effective to learn Alkene Isomerism topic.

T-test is used to prove the null hypothesis H01, H02 and H03.T-test has been carried out to evaluate if there is any significant difference in term of student's performance between student who use 3D AI courseware which is Experimental group(G) and student who study using text book which is Control group(C). The data is analyzing using SPSS version 16. Table 5.8, Table 5.9 and Table 5.10 shows all the data collected.

> **$H_0$1**: There is no significance different in term of achievement in pre and post-test for Control group.

Table 1.4 shows the result of t-test and p-value for the Control group based on pre and post test result. Based on the result, it shows that t-value is 7.160 and the significant of two tailed value, p is 0.00. Because of the p <0.05, thus the null hypothesis $H_0$1 is rejected.

Mean	25.92	77.92	52.0

Table 1.4: Mean, SD and t-test for pre-test and post-test for Control Group

	Control Group Testing	
	Pre test	Post test
Mean	57.16	65.04
Standard Deviation (SD)	11.600	10.937
t-test	2.471	2.471
p-value	0.017	0.017

There is a significant difference in the result (t=2.471, df=48, p<.05). Null hypothesis is rejected because there is different in term of student' marks between pre-test and post-test group. The different mean value score (7.88) between both pre-test and post-test is enough to reject the null hypothesis.

> **$H_0$2**: There is no significance different in term of achievement in pre and post-test for experimental group.

Table 1.5 shows the result of t-test and p-value for the Experimental Group based on pre and post test result. The testing is using paired sample t-test since the same group has been used for two times (two variables). Based on the performance of the students in t-test using pre and post-test, the t-value is 21.949 and the significant of two tailed value, p is 0.00. The result shows p<0.05, thus there is a significant difference between pre and post-test. Hence the null hypothesis H01 is rejected.

Table 1.5: Mean, SD and t-test for pre and post-test for experimental group

	Experimental Group Testing	
	Pre Test	Post test
Mean	25.92	77.92
Standard Deviation (SD)	7.889	8.836
t-test	21.949	21.949
p-value	0.000	0.000

The research result show a significance (t=21.949, df=48, p<.05). There is a different mark obtained by students between pre-test and post-test result for Experimental group. Null hypothesis is rejected because there is difference of student's performance in pre-test and post-test. The difference's mean value, 52.00 shows that Experimental group post-test result has greater performance in term of marks obtained by the student compared to the marks that they get during pre-test.

> **H03**: There is no significance different in term of achievement in post-test between Experimental group who use 3D AI courseware and controlled group who learn using text book.

Based on the result of student's achievement, researcher found that post-test perform higher mean compared to pre-test result. Hence, it shows that Experimental group that using 3D AI courseware in their teaching and learning session in had achieved higher marks during post-test.

Table 1.6: Mean, SD and t-test for post-test for Control and Experimental Group

	Testing – Post Test	
	Control Group	Experimental Group
Mean	65.04	77.92
Standard Deviation (SD)	10.937	8.836
t-test	4.580	4.580
p-value	0.000	0.000

The result is significant (t=4.580, df=48, p< .05). Null hypothesis is rejected because there is different in term of the marks for Control and Experimental group result in the post-test. The different mean score value (12.880) for both group is sufficient to reject null hypothesis. This is caused by the standard error mean (2.812) that exist in the research data.

VI. Conclusion

This research covers the development and effectiveness of 3 dimensional (3D) Alkene Isomerism (3D AI) to achieve the objectives of the research. The starting of the research covers the background of study that explains the focus of the research and the use of ICT in education. This research is focus on secondary school which case study is at Maktab Rendah Sains MARA Terendak Melaka. The research focuses on the 3D AI courseware and its effectiveness in chemistry subject at secondary school. It is suggested to be an alternative of teaching material to be used in classroom. The study evaluates student's achievements in both conventional and experimental method in the same topic which is Alkene and Isomerism topics. A courseware named 3D AI has been developing using ADDIE model. A systematic framework is being used to investigate the effectiveness of the courseware. The testing has been done with the involvement of 50 students who in Science stream that taken Chemistry subject.

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TRACK 3: PERSONALIZED LEARNING ENVIRONMENT (PLE)

Online Learner Interaction: Comparative study on structured and less structured course content in Learning Management System

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Abstract— **One of the major challenges facing distance learning educators is to create an optimum course content that attracts learners and enhances their engagement. To this end, whether course content is highly structured or not is one of the contributing factors that impact learners' interaction with the learning material (Chadwick and Ralston, 2010). A comparative study between a structured and a less-structured course at the post graduate (masters) level were used for this study. This study looks into Oliver and McLoughlin's 5-dimensions of learners' learning interaction, in both a well-structured course and a less-structured course. The finding of this study shows that learners are less participative in a well structured course content compared to weak structured course content. Further exploration by the analysis of the five dimensions of the learners' interaction in the learning management system (LMS) concluded that in the less-structured course content, learners tend to be high in procedural activities such as administrative issues.**

Keywords- e-learning; learner interaction; online course content design; learning management system

I. INTRODUCTION

e-learning has become popular in the past two decades, providing many benefits for learners, especially working adult learners. With the increasing interest in, and concentration on distance education, the concept of e-learning has seen phenomenal, exponential growth, especially in the Asian region. The growth is partly due to the globalisation and competitiveness of higher education and the development of information and communication technologies (ICT) which have brought a dramatic transformation to Asia (Jung, 2009).The e-learning model has gained paramount importance partly because of the class scheduling flexibility and the fact that the student can study according to their own schedule, which makes the learning experience easier to accommodate while working. Undoubtedly, the education door is now open to a much wider audience than ever before. The e-learning model has posing a challenge for e-learners (especially transition from face-to-face classroom lecturing to self-guided independent learning) but also for e-learning communities and the educators, who now need to create optimum learning content and a context that attracts learnersand enhances their engagement (Tatkovićž, Ružic and Tatkovic, 2006; Hossain, 2010). Whether course content ishighly structured or not is one of the factors that impact learners' interaction with the learning management system(LMS) in the e-learning environment (Chadwick and Ralston, 2010).

II. BACKGROUND & LITERATURE REVIEW

Pedagogy for distance education is unique and requires a different instructional design tailored to the needs of e-learners. Some researchers have termed this online distance education pedagogy as electronic pedagogy (Natriello, 2005). Barker (2008) posited that online course design is a complex activity influenced by a wide range of factors from pedagogy to various technologically related factors. Studies on distance education courses contend that learning design which has highly structured course content is more likely to be successful compared to ill-structured course content, in promoting student learning (Kearsley and Lynch, 1996; Ostlund, 2008; Saba, 2005). The term structure refers to the elements in the course content design, such as the learning objectives, information presentations, activities, assignments, and feedback mechanisms that are uniformly controlled and organised in well structured manner.

Various researchers in the field of distance education (or e-learning mode) have reported that the most critical factors in this type of learning are course structure and interaction with the learners (Stein et al., 2005). Lee and Rha (2009) studied the influence of instructional design and management style on student achievement and resulting student satisfaction with the distance education environment. The researchers developed two web-based instructional programs. One course was developed in a highly structured, resource-based, self-learning mode, with little interpersonal interaction and the other course was used less structured materials with more interpersonal interaction. Their results suggested that a well-structured instructional program can be provided as a substitute for teacher's interaction. Learners from the well-structured instructional course can learn by themselves with very little interpersonal activities such as forum discussions. This is important for distance learning because there is in fact a computer mediated-separation between the teachers and the learners.

Because different ways of presenting instructional materials in e-learning have been found to have different

effects on learners' achievement, researchers have become increasingly interested in understanding the role structural presentation of instructional strategies plays in learning. Hosie, Schibeci and Backhaus (2005) highlighted that when presenting course content in the online environment, it is always best practise to play it safe by never assuming anything. The idea behind this comes from the belief that since instructors are not able to have a face-to-face classroom experience with their learners, it is very important to make sure the course content be organised in such a manner that it promotes a sense of continuity. The course content must be concise and explicitly clear to avoid any errors or discrepancies that confound the learners. In addition, Junk, Deringer, and Junk (2011) posited that learning management systems such as WebCT, Blackboard or Moodle, designed for online learners, must be well organised and have visually pleasing web content display to "astonish the customer", since online learners are accustomed to surfing the Internet and viewing commercial sites developed by graphic designers, and have come to expect this level of development in any web-based environment.

The interactions between the instructors and learners occur when one gives instruction and the other responds, and it is a two-way communication. The interactions and relationship between instructors and learners in distance education are extremely important, since learners usually carry on a dialog with their instructors that are separated in both space and time (Mahaesh & McIssah, 1999). Moore (1991) defined this separation of geographical distance between learners and instructors as 'transactional distance'. He claimed course structure and learner-instructor dialog are important elements in transactional distance. The theory posits that a rigid and inflexible program structure will reduce dialog, hence increasing transactional distance.

Oliver and McLouglin (1997) explored the discourse of interaction and communication in live interactive television (video conferencing in our present time). They investigated five possible dimensions of interactions present in that context. They characterised the dimensions of interactions as: social, procedural, expository, explanatory and cognitive. Each of the interactions requires different classifying interaction activities such as social interaction involves conversations that establish relationship; procedural involves dialogue that exchanges information about procedures in general; expository involves demonstrating knowledge or skill in general; explanatory involves further extending knowledge and developing content in the conversation; and finally cognitive involves constructive feedback to a learner's response resulting in internal reflection. Based on Oliver and McLouglin's ideas, Wu and Teoh (2007) have done a comparative study on two distance learning higher institutions (one in Malaysia and another one in China) regarding learners interaction in learning management systems (LMS). They found that the explanatory dimension of interaction was the more dominant dimension in Malaysia's learners than in its counterpart in China. The procedural dimension was the dominant dimension among China's learners.

III. MODEL FOR THE STUDY

The researchers hypothesize that the design of the structural course content (i.e. well-structured versus weak-structured) would motivate learners to be more engaged in their materials on a continuous basis, which in turn will promote more learner interaction. Secondly, learners' participation in online discussions, such as the discussion forums, which are mainly learner-dominated rather than instructor-dominated, could be effected by the course structure. For instance,learners who find the course content in Learning Management System (LMS) helpful and informative, navigating and finding the information easily, may participate less in online forums, contrariwise, learners who find the course content is insufficient, may require more guidance or assistance, hence they may participate more in the online discussions.

Synthesising the review of literature from the previous section, the following figure 1 illustrates the research framework for this study.

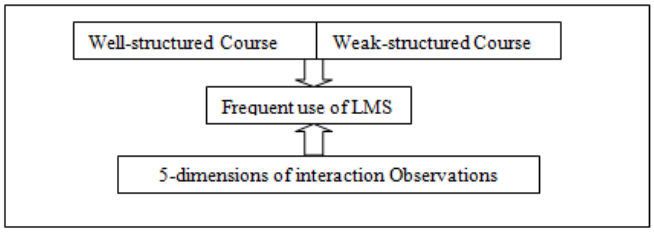

Figure 1: Research Framework

A. Research Questions

Q1: Are learners less participative in the LMSin a well-structured course compared to a weak-structured course?
Q2: What is the form of interactions, in the context of the five dimensions, in a well structured course compared to a weak-structured course in the online discussion forum?
Q3: What did the learners' perceived course content display between a well- structured course and weak-structured course in LMS?

IV. METHODOLOGY

The study was conducted in January semester of 2011 at an e-learning higher insitution in Penang Malaysia. All participants in this study are learners from two post-graduate courses, one course was well-structured and organised and the other course was less-organised and less-structured. Data was obtained from LMS as well as from survey quentionnaire from two courses selected for this study. We conducted an end-of-semester Student Opinion Survey in both courses, giving students opportunities to respond to pre-coded questions based on 4-points scale (1-strongly disagree to 4-strongly agree) and open-ended questions. Both courses had a significant difference in terms of the level of structure in the course material presentation. The courses were: **Project course (B1**) and an **Operation Management (B2)** course. Both courses were taught in the January semester 2011 running from January of 2011 to June of 2011. A total of 117 learners

enrolled in the B2 course and 45 learners were enrolled in the B1. Since the B1 is the prescribed last course that learners take before graduating, the course requires pre-requisites compared to the B2 course, hence, the enrolment is generally small. *The B1 course is designed to be more content dependent, less-structured and student learning is mainly self-guided in the LMS, although a project supervisor is assigned.* B1 is inherently less-structured as the objectives require the learners to synthesise the various bodies of knowledge from the previous courses and demonstrate soft skills such as critical thinking in completing the final project report. *The B2 course was presented in a more traditional well-organised and well-structured.* In the B2 course common resources are included within each study unit/ tutorial in a folder that contains additional summaries/notes in presentation files and documents, hyperlinks to relevant external websites, online quizzes and other online activities, assignments, sample of assignments, and all necessary information pertaining to the course are included. On the other hand, resources presented in the B1 course contain only a folder for download which has information about conducting a final project.

On the student interaction construct for this study, the researcher adapted Oliver and McLoughlin's (1997) and Wu and Teoh's (2007) framework for analysis of interactions, in which the five dimensions of interaction is shown in table 1. The researcher characterised and coded the learners' interactions in the asynchronous forums (announcements from course coordinators, announcements from tutors, public forum, general group discussion, etc).

Table 1.Five Dimensions of Interactions

Dimension One: *Social*	Any discussions of social or personal greeting not directly associated with the course. For example, "Greetings! I am Janice Oh and I am new to course", "Hi, nice to meet you all in this forum" etc.
Dimension Two: *Procedural*	Any communication related to administrative procedures/ issues for the course. Some examples of this would be: "When is the assignment 1 due?" "Can I get an extension for my assignment 2, because I am going overseas for assignment…", etc
Dimension Three: *Expository*	Any request that involves some demonstration of knowledge and facts which may or may not require further explanation. For example, "Operation Management is derived from the operation aspect of business", "What do methodologies in a study look like?", etc.
Dimension Four: *Explanatory*	Any discussions on the topic for the course as explanatory when there is a need for explanations or elaborations of certain ideas/theories/ concepts. For instance, "What are the pros and cons associated with working with small sample population for the study?", "Can you elaborate on the concept of variables, how to define it in a study?", etc.
Dimension Five: *Cognitive*	Cognitive discussions as those that require feedback and commentary via critical thinking that would lead to knowledge gains between the learners, CC, or tutors. Example would be "I know the literature review is the part where we review the available or related literature on my topic, but how can I find or locate good reference articles in our library? And, if our library doesn't have the articles or books where else might I find them? " , etc.

V. FINDINGS AND DISCUSSION

Descriptive statistics were used to summarise the study findings. One hundred and sixty learners took part in the study with 43 learners from B1 and 117 learners from B2.

The number of learners for B1 is much smaller than B2 due to the nature of the program, as B1 is the final capstone project for learners who are near to the end of the programme, either of the last two semesters for the degree. As explained in previous section, B1 is a less-structured design and less informative while B2 is well-structured design and very informative in nature.

Research Questions

Q1: Are learners less participative in the LMS in a well-structured course compared to a weak-structured course?

The hypothesis for this question was that learners from the B1 course would be more participative in their interactions in LMS. The interaction responsiveness defined as the number of total postings and interactions collected throughout the semester.

Table 2 Number of postings for both courses for the semester

Participative	**B1**	**B2**
Public Forum Postings	122	57
Announcement from Course Coordinator Postings	45	3
Announcements from Tutors Postings	3	12
Total Participative	**170**	**72**

This finding indicated that B1 learners have a high ratio of postings (170) compared to B2 which recorded 72 postings. The results imply that the B1 learners are perhaps more uncertain or need more guidance during their course and are communicating with their peers, tutors, and course coordinator, hence, the are using the LMS and postings are considerably higher in comparison to B2.

Q2: What is the form of interactions, in the context of the five dimensions, in a well structured course compared to a weak-structured course in the online discussion forum?

To answer this question, Oliver and McLoughlin's (1997) and Wu and Teoh's (2007) framework in analysing B1 and B2 were adapted. Table 3 shows the dimension of interactions in between B1 and B2.

Table 3. Dimension of Interactions

Five Dimension of Interactions	**B1**	**%**	**B2**	**%**
Social (e.g. Welcome Message, not directly related with course content)	5	3	2	3
Procedural (Learning Obj/outcomes, assessment tasks, involve explanation on course related procedures, requirements and administrative issues)	95	**56**	12	17
Expository (Demonstration of knowledge without much further elaboration)	15	9	7	10
Explanatory (Elaborate explanation on knowledge and developed content based	16	10	29	**40**

on learner's response)				
Cognitive (constructive feedback and commentary on course content via critical thinking which leads to knowledge development)	39	23	21	30

The findings highlighted that B1 learners are high in *procedural* activities such as administrative issues and assessment requirements related to the course. At the same time, this may also imply that they are very dependent on the LMS and their tutors/supervisors, and course coordinator to gain knowledge from the course. Learners in the B2, however, are mainly reflected in the *explanatory* dimension, which may indicate that they are exploring and elaborating the knowledge. It appears that B2 learners are more independent and concentrate on gaining knowledge in the course, which may imply they are self-confident in term of the course content presented in the LMS hence require less administrative support.

Q3: What did the learners' perceived course content display between a well- structured course and weak-structured course in LMS?

In this question, the data was extracted from the survey questionnaire of both learners of B1 and B2. Five distinct questions that target learners' perceived the course content layout were asked in the survey. Table 4 represents the summary result of the collected responses.

Table 4. Analysis of learners' perceived course content display in LMS

Survey Questions	B1 (%)				B2 (%)			
	SD	D	A	SA	SD	D	A	SA
Content arrangement is clear, logical and orderly manner	-	25	70	5	-	-	80	20
Content display unfolds in a clear and understandable direction	-	10	75	15	-	5	65	30
Content display explains the knowledge and concepts well	-	-	80	20	-	-	95	5
Course organisation is what I was expected	-	-	90	10	-	-	100	-
Locating the resources is easy and simple	-	25	70	5	-	5	80	15

Note: SD = Strongly disagree, D = Disagree, A = Agree, SA = Strong Agree

Learners were asked to rate their opinion on whether they think the present course content arrangement is in a clear, logical and orderly manner. Eighty percent (80%) of B2 learners' rated agree and 20% rated strongly agree with the asked statement. Contrary, on B1 response, 25% rated disagree and 75% rated on either agree and strongly agree. The second question asked learners to rate the course content display was clear and presented understandable direction, and it was interesting to note that both groups do have some small percentage of them disagree upon the asked question. Ten percent (10%) of B1 learners perceived the course content display were not clear and was not presented in an understandable direction whereas only 5 percent from B2 learners has the similar opinion. Third question was seek to understand learners thought on the content display sufficient information for helping them learn the concepts well and gain knowledge by browsing the course content in LMS. Both groups agreed that the content did sufficiently provide and help them in gaining knowledge and understand the learned concepts well. Similar result was recorded on question four where all learners (100%) from B2 rated agree on perceived their course content was well organized and meet to their expectation. On the other hand, nearly 90% agree and 10% strongly agree with the asked of this question from B1. Finally, the last question seeks learners' input regarding locating the information presented was considered easy and simple. Twenty-five percent of B1 responded disagree with locating the resource is easy and simple whereas only 5% B2 learners disagree.

However, it is noticeable that there is a vast difference in terms of content arrangement between B1 (75% agreed) and B2 (100% agreed). This may be an indication that B1 learners are dissatisfy towards the content arrangement compared to B2, where some of B1 learners found course content do not presented in a logical and orderly manner.

Overall, the results of above questions suggested that learners found the B1 is poorly structured and information posted in LMS are constantly changing which cause inconveniences for some learners. To some extent, active learner LMS participation is a matter of learners being comfortable with the medium. In this case, B1 learners having difficulty in getting supportive information from the LMS and the involvement in forum interactions were comparative high.

VI. CONCLUSIONS

In conclusion, learners in the well structured and organised course content in LMS show less anxiety and more independent to navigate the LMS resulting in higher motivation and enjoyment, as evidenced by result from research question #1 compare to learners in weak structured and less organised course content. Similarly, learners who are actively participating in the online forums were those that are finding the course content insufficient (weak structured or less organised) resulting more interaction in LMS. Evidence of high involvement of the course coordinator in *procedural* interactions such as involved explanations about course related procedures, requirements and other administrative issues in the forums for weak-structured course content design than for the well-structured course content.

The presented study provides an initial research model that may be expanded and generalised for future e-learning studies on the impact of structural. Although the limitation of only a simple study like this cannot prove "causality", this study did evidence that in distance education environment, learners need a well structured, well organised and informative course content for them to be self-guided, self-explored, and independent for continuity of learning. Future research is needed that looks at a much larger data set such as comparison from multiple e-learninginstitutions and add additional contextual variables such as learners' learning styles as a new factor into the structural course content design. It is also

desirable to redesign this study to further explore the measures of motivation and enjoyment of learners in e-learning environment.

VII. RECOMMENDATIONS

To improve the learners' interaction in LMS especially inherently less structured course such as B1, the recommendations are that a *welcome posting in LMS* by the course coordinator detailing the differences between B1 and the highly structured courses. These differences include:

- No tutorial classes in B1 whereas there are 5 tutorial classes in the well structured courses.
- No units or chapters of study material whereas there are 5 units of study material corresponding to the 5 tutorial classes in the well structured courses.
- No fixed questions in the assignments in B1 whereas the opposite applies for the well structured courses.

By doing so, learners are informed, prepared and aware of the differences of the previous courses than in this B1 course. Hence, they are able to make a mental adjustment and adapting well to the structural different in content design.

A framework of the course assessment in table form posted in LMS to explain the difference in assessment between B1 and the well structured courses. B1 being an individual research project work by the learner necessitates individual meetings with the supervisor. To assists the learners in less structured courses, the recommendation is to have at least 2 tutorials at the beginning of the semester where the learners attend classes to revise on the fundamental concepts such as literature review, research methodology etc. The inclusion of the 2 tutorial classes serves to add structure to B1 course and bring a sense of familiarity to learners pre-conditioned to well structure courses.

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Online Multiple Intelligence Tools for Teaching at Polytechnic

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Abstract— **This study mainly aims to develop an Online Multiple Intelligence Teaching Tools for Polytechnic lecturers. These teaching tools can facilitate the lecturers to design and develop their own teaching material without any ICT knowledge especially in programming. The theories of Multiple Intelligences (MI) are used in this research. The theory postulates that everybody has at least two or more intelligences. In an effort to achieve quality teaching and learning, it must be based on multiple approaches with a series of activities in online teaching tools. Most of the research conducted on Multiple Intelligences in teaching and learning has yielded mixed results. The objective of the research is to identify the relationship between the students self-perceived Multiple Intelligences and their academic achievement in Polytechnic. The instruments used for this study were UMI (Multiple Intelligence Tests). The results showed that Polytechnic students have strength in Interpersonal, Visual/Spatial and Logic/Mathematic intelligences.**

Keywords- Multiple Intelligences, Online Teaching Tool, Interpersonal, Visual/Spatial, Logic/Mathematic

I. INTRODUCTION

According to Howard Gardner (2006), every human being has at least two or more intelligences such as verbal linguistic, logic mathematic, intrapersonal, interpersonal, visual spatial, musical, natural and existential intelligences. It is believed that every human being has at least one intelligent, and some of them can even possess to a maximum of eight intelligences. With the strength poses by student, lecturer can prepare suitable teaching material in a classroom. Lecturers should allow considerable elements of students' choice when designing activities and tasks for the intelligences because students perform well in the tasks which appeal to their interests.

An online Multiple Intelligences tool for Polytechnic lecturers will build to facilitate lecturers to create interactive course materials or multimedia presentations based on multiple intelligences theory through step by step procedures and guidelines via e-learning. With the tools and knowledge to successfully implement MI, lecturers can find success in applying this method to their classroom. Therefore, an online MI tool for teaching is design as a teaching tool to overcome the current problem and establish teaching method in Polytechnic and improve the interaction among students themselves.

A. Problem Statement

One of the gaps found during the research proposal was related to teaching tools used by Polytechnic lecturer and that eventually became the aim for this study. To define a research problem, interview and survey questionnaire have been done to a few Polytechnic in Malaysia. There is an online learning use in teaching and learning for Polytechnic lecturers called Curriculum Information Document Online System (CIDOS). The objectives of the survey are to understand the use of e-learning (CIDOS) in teaching and learning at Polytechnic and to identify the critical subjects that difficult to deliver to the students. The focus is more to the lecturer preparation in design teaching materials. The major weaknesses found in polytechnic are the technology tool used in teaching and learning process. The result from the survey, most of the lecturers comments that the e-learning is not user friendly, too complex and difficult to use. CIDOS also does not fit in with their teaching methodology and incompatible with a few courses.

Many research related to MI theory indicate that students MI contribute significant differences in their learning output. Safdar et al(2011); Moran et al(2006); Rettig(2005) recommended that teacher should plan in a way which can involve as many of the intelligences as possible because all the intelligences contributes to the student achievements. Most of the research conducted on MI in teaching and learning has yielded mixed results. Certain studies shown that teaching to students strength using MI has many benefits while other studies said that there is a cause and effect between intelligence and academic achievement ((Suzanna Ganggi, 2011); Laidra, Pullmann & Allik; 2007,Waterhouse,2006a). Recent research in education also indicates that there is a lack of creative and innovative teaching strategies among the teachers. (Che Mah Yusof & Mariani, 2001).

Past experiments showed the teaching effectiveness and efficiency are still limited. (Suzanna Ganggi, 2011) recommended extended research need on how best to apply the MI theory into teaching practice. According to Clifford et al(2011), very little has been written on how these MI theory can be applied in institutions of higher education and pose challenges for instructors to apply these intelligences in teaching.

B. Project Objective

The objective of this research is:
To identify the relationship between the students self-perceived Multiple Intelligences and their academic achievement in Polytechnic.

C. Research Question

Based on the problem background and research objective of this project, one (1) research questions were derived:
What are the relationships between the students self-perceived Multiple Intelligences and their academic achievement in Polytechnic?

D. Research Hypothesis

Based on the research question of this research, one (1) hypothesis were derived:
There is a relationship between the students self-perceived Multiple Intelligences and their academic achievement in Polytechnic.

E. Scope of Research

An online MI tool for teaching is design as a teaching tool to overcome the current problem and establish teaching method in Polytechnic and improve the interaction among students themselves. Learning contents were based on FP201 Programming Fundamentals that covered the sub topics of function and pointer in C-Programming and the target respondents are Polytechnic lecturers and Diploma students.

II. LITERATURE REVIEW

Howard Gardner (1993) is a psychologist and professor at Harvard University's Graduate School of Education. Based on his study of many people from many different walks of life in everyday circumstances and professions, Gardner developed the theory of multiple intelligences. Each person has at least two or three dominant intelligences that he or she uses to complete daily tasks, solve problems and respond in stressful situations. In addition, most all people have the ability to develop skills in each of the intelligences and to learn through them. In his theory, Gardner defines intelligence as the "biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture" (Gardner, 2000). This definition implies that, depending on the setting or domain, different intelligences are used to solve problems and fashion products such as compositions, music or poetry. It is also important to note that Gardner considers intelligences as something that cannot be seen or measured but instead are potentials that will or will not be activated depending upon the values of a particular culture and the opportunities available in that culture.

According to Multiple Intelligences theory, types of learning styles are as follows:

A. Visual/Spatial

Visual/Spatial is the ability to perceive and recreate the visual world accurately, to visualize in one's head and to give some kind of order and meaning to objects in space. For this intelligence, students should be able to demonstrate visual perception, which would include the use of images, designs, colours, pictures, visual symbols, patterns designs and shapes. Drawing and painting pictures have to be considered in this category, as would drawing a map. Instructors can employ the use of visual/spatial learning environment equipped with access to visual tools, intentional display areas and changing perspectives through rotating seating. (Campbell, Campbell, Dickinson,1996).

B. Verbal/Linguistic

Verbal/Linguistic intelligences is the ability to understand and use language, both written and spoken, sensitivity to the meaning of words and the different functions of language. Verbal/linguistic intelligence is most commonly used as we use it in daily communication, whether formal or informal, written or spoken. . Some of the activities that facilitate the development of this intelligence include reading, vocabulary, writing and making speeches, journal or diary keeping, creative and poetry writing, debates, impromptu speaking, or story telling (Lazear, 1994).

C. Logical/Mathematical

Logical/Mathematical intelligence is the ability to use inductive and deductive thinking, numbers and abstract patterns. This intelligence is often referred to as scientific thinking such as comparing, contrasting and synthesizing information. We use logical/mathematical intelligence so often in our daily lives in activities such as making shopping lists and budgeting. All forms of problem solving come under this category. To include the mathematical-logical intelligence, Campbell, Campbell and Dickinson (1996) offer many great ideas such as diverse questioning strategies, posing open-ended problems, applying math to real world situations and using concrete objects to demonstrate understanding.

D. Bodily/Kinesthetic

Bodily/ kinesthetic is the ability to use and understand physical movement, a mastery over body movement or the ability to manipulate objects with finesse. For bodily/ kinesthetic intelligence, the emphasis is on practical demonstration or action such as physical exercises, sports, games, martial arts and drama. Students should be able to demonstrate control of various motor activities through activities like games, athletics and exercise, dance, drama, gestures and mime. To include those students who have many strengths with "hands-on" material, instructors might try using creative movement, hands-on thinking, field trips, classroom theatre, competitive and cooperative games, use of kinesthetic imagery, tactile materials and experiences and using communicative body language (Armstrong, 1994; Campbell, Campbell, Dickinson, 1996).

E. Musical/Rhythmic

Musical Intelligence is the ability to discern meaning in or to communicate with tonal patterns, sounds, rhythms and beats. Musical/rhythmic intelligence calls for students to display auditory skills, which basically includes hearing and producing sounds. To incorporate the musical intelligence, instructors can play mood and background music, linking tunes with class concepts and giving students musical options for their projects or assignments (Armstrong,1994). Campbell, Campbell, Dickinson(1996) suggest that background and mood music helps set an engaging climate for students to work in, as well as providing supportive technology. Even having a portable compact disc player in class gives students options.

F. Naturalist

Naturalistic is the most recent addition to Gardner's theory (Gardner,2001) and has been met with more resistance than his original seven intelligences. According to Gardner, individuals who are high in this type of intelligence are more in tune with nature and are often interesting in nurturing, exploring the environment and learning about other species. These individuals are said to be highly aware of even subtle changes to their environments.

G. Interpersonal

Interpersonal intelligence is the ability to make distinctions among other individuals in regard to their moods, motivations and temperaments and to communicate with others. Interpersonal intelligence would emphasize the ability of students to work as part of a group, which requires verbal and non verbal communication skills, co-operation and empathy within a group. The focus would be on learning in groups or in pairs. Students should be encouraged to use the knowledge and skills to help the group or partner succeed. To help students learn with and from others, instructors can incorporate cooperative groups, interpersonal interaction, conflict mediation, peer teaching, group brainstorming, peer sharing, community involvement, and parties or social gatherings as context for learning (Armstrong, 1994). To encourage interpersonal interaction in my classes, students often work in small groups that I assign. Later in the semester, students have become comfortable enough to choose their own groups.

H. Intrapersonal

The person with intrapersonal intelligence can be introverted, prefers to work alone and has clear knowledge of what he or she needs in most settings. Some people who agree with Gardner's theories believe that those who possess intrapersonal intelligence in great degree need opportunities to work alone, but may require some extra care because of a high level of perfectionism associated with this form of intelligence. Instructors can include the intrapersonal intelligence through activities such as independent study, self-paced instruction, individualized projects and games, private spaces for study, one minute reflection periods, encouraging personal connections, options for assignments or projects, exposure to inspirational/motivational curricula, journal keeping, self-esteem activities, and goal setting (Armstrong, 1994).

In general, MI also helps teachers create more personalized and diverse lessons to accommodate their students learning needs, which leads to more opportunities for students to learn the expected material (Wilson, 1998). There are various ways to implement the MI theory and the implementation may look different in every classroom (Baum, Vines, & Slatin, 2005). There is a study showed that there are significant positive correlation between perceived linguistic, logic-mathematic and visual spatial intelligence academic achievement of the study while the relationship between self perceived bodily/kinesthetic and musical intelligence and academic achievement was very weak (Safdar,2011). In other paper, the finding showed that Logic Mathematic group had the highest score on the post test and learning gain followed by visual spatial and verbal linguistic intelligences (A. Bushro et. al, 2007). In related study, before and after treatment, the dominant intelligence of the students for both experiment and control groups was found to be logical-mathematical intelligence which includes analytical skills as well as logical thinking ability (Ozdemir et. Al, 2006).

III. METHODOLOGY

This part described the research methodology and the research design of this study. This part also addressed aspects of research design such as research instrument and research framework.

A. Research Design

There are six phase in research design of this study.

i- Requirement Elicitation
ii- Preliminary Analysis
iii- Design and Development
iv- Data Collection
v- Data Analysis
vi- Documentation and Reporting

B. Interview

The purpose of the interview was to gather information about the current problem in teaching and learning using e-learning CIDOS at Malaysia Polytechnic. To obstruct taking some idea, lecturers were randomly selected. This interview approach provides to obtain depth information, easy analyzing and more systematic and comparable information from different individuals. In addition to pre-prepared questions, it aims to receive more detailed information on all aspects related to the research problem.

C. Questionnaire

Actions taken based on interview. The survey questionnaire will help to determine the usage and current problem of e-learning – CIDOS at Polytechnic. Also identify the lecturers needs in preparing teaching materials and critical subjects. The Instrument was using a Likert Scale (1-5). The questionnaires were distributed and instructions were given to respondents. Participation was voluntary. The questionnaires were personally administered to respondents from Politeknik

Ungku Omar, Politeknik Seberang Perai, Politeknik Merlimau, Politeknik Shah Alam. For the Internet-based survey, the questionnaires were distributed via e-mail to the respondents.

D. Research Instrument

There are many ways to determine students' intelligence strengths. Several inventories, questionnaires, and tests have been created for this purpose. The UMI (Multiple Intelligences Test) is used to determine which intelligences are strongest for Polytechnic student. The form was taken from (Bushro Ali, 2008). This form was translated in Malay in order to make it easier and understandable to the students. Students were asked to take the MI Test using online application. Once the items of the survey instrument were scored, the points for each of the intelligences were totaled for each student using the Ms. Excel.

IV. RESULT AND DISCUSSION

Results of the study showed there are significant positive correlation between perceived interpersonal, visual-spatial, logic-mathematic intelligence and academic achievement of the study while the relationship between self perceived musical intelligence and academic achievement was very weak at Polytechnic. (Refer Figure 1)

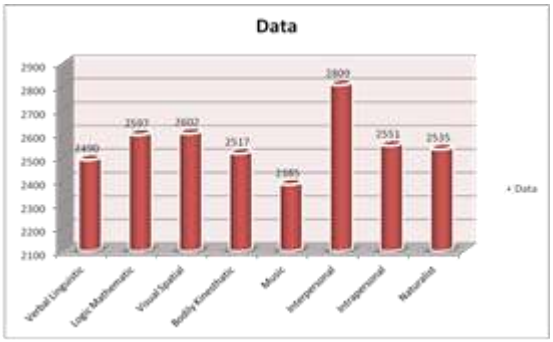

Figure 1. UMI Result

An online survey to identify the most difficult subject and sub topic have been done in this research. The result showed that the critical subject in Polytechnic is sub topics of function and pointer in C-Programming. (Refer Figure 2)

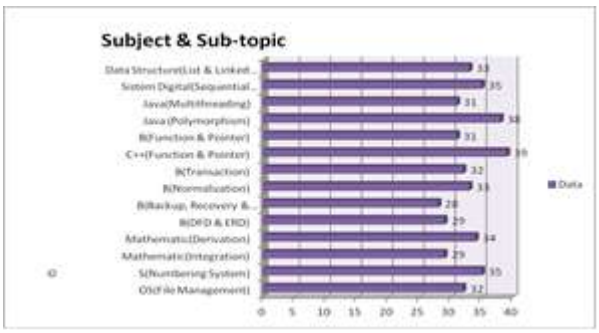

Figure 2. Critical Subject

V. SUMMARY AND FUTURE PLAN

Lecturers must be creative in designing teaching materials. With the interactive teaching materials can retain student attention in class and improve lecturer motivation in teaching. With the tools and knowledge to successfully implement MI, lecturers can find success in applying this method to their classroom. Future plan for this research is developing an Online Multiple Intelligences Teaching Tools Prototype.

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Social Learning Activities Using Wiki in Moodle 2.3 E-Learning System

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Abstract— **e-learning systems have been widely used by many institutions and organizations mainly for teaching and learning purposes. There are many features available in the e-learning systems. The current trend of learning is social learning that needs engagement with peers, sharing of information, communication and collaboration. With the advancement of web 2.0 technology, more features have been added to the e-learning systems that allow social learning activities to be implemented. However the features of e-learning are not fully utilized. This paper focuses on using the wiki as a social learning feature of Moodle 2.3. This work involves exploratory study which identifies the importance of wiki in supporting social learning activities. We implement wiki in the programming language course at the Facultyof Computer Science and Information Systems, UTM to assist learners in knowledge construction and contextual application. This paper analyzes the activity history of Moodle Wiki to proof that the social learning activities have taken place. As a result, learners could provide a complete glossary and collection of final group titles through the activities of collaborating, communicating and sharing. The learners also are able to enhance their solving problems skills, and improve learners' thinking. Moreover, Moodle Wiki makes learners get engaged through the whole process of learning.**

Keywords-component; (e-learning, wiki, social learning, Moodle 2.3.)

VII. INTRODUCTION

Learning is the process of gaining information from various angles. Information can come from data, observation, senses and much more. Ranson, et al. said that the process of discovery and generating new understanding about ourselves and our world; as a learning process [1]. E-learning can be defined as virtual learning, online learning, network and web based teaching as well as distributed learning; Puteh said that e-learning become one tool to facilitate teaching and learning online [2]. Social interaction also is vital to encourage teaching and learning. Nowadays, Moodle 2.3 is occupied with e-learning features that encourage social learning [3].

First matter that has been identified is that e-learning application becomes a passive platform and not interactive so that students are not using effectively for learning process [4]. It has been argued that e-learning does not fully utilize the two way communication which encourages students' participation and feedback [5]. Research found that most lecturers use e-learning to deliver materials and the students actively upload and view the learning materials. These practices are not a good indicator of a commitment to e-learning [2].

On the other hand, a wiki is a feature in e-learning application that able to empower students' collaborative learning which contribute to cognitive learning [3]. Wiki allows users to post course materials, maintain a forum, create a glossary, collect and organize content to be distributed to users [6]. The wiki also is an application that provides a community platform for negotiation, knowledge construction and also learning in a social context through the participation of learners, teachers, educators and experts [7].

This paper discusses about wiki as one of the social learning features in Moodle 2.3 e-learning system. The e-learning application should not be used only to access learning material. As wiki becomes a feature in teaching and learning process, this paper explains how the Moodle wiki is used to engage students to achieve their learning goals meaningfully.

VIII. SOCIAL LEARNING CONCEPT

Social learning theory had been proposed by Albert Bandura that it's become the most influential theory of learning and development [8]. Social learning refers to the involvement of social interaction within a group of communities [9]. Social learning involves activities such as exploration of knowledge, exchange and sharing. Reed determined three situations to demonstrate a social learning: (1) a changing of individual understanding, (2) the changing of the situation from individually become wider to communities and (3) a social network involved with actors through social interaction. It becomes an important role in learning. One strategy to increase social learning is through collaborative learning.

Nowadays, social learning has been practiced as a learning process by using technology and aided by social media tools [10]. Examples of social media tools are blogging, instant messaging, wiki, content management system, tagging and forum. These tools have been used by many social networking sites such as Facebook, Linkedin,

Ning and Elgg. Kim and Jeong mentioned that learners use those tools to establish and communicate in online connection, to participate in an online group, to share user created content (UCC), to express opinions, to find information and also to connect with other sites [11]. Significantly social concept brought by social networking features can lead to collaboration on learning [12]. It is also noteworthy to improve remote education and achieve more enhancements for learning.

Previous e-learning systems were based on content and instructional methods that delivered on a computer; whether on CD-ROM, internet or intranet. They were also focused on building skills, knowledge of learners and the organization [13]. Unfortunately those e-learning systems did not support two way communication and social learning activities.

Current e-learning systems have embedded social learning tools once the web 2.0 technology being introduced. These tools help users to implement social learning activities as the potential to complement, enhance and add new collaborative dimension in learning [14, 15]. The openness concept of web 2.0 allows interaction which not limited between learners and computer, but also between learner and instructor, as well as between the learner and learner [16].The major components of the emergent an application of web 2.0 is wiki [15].

Generally wiki is a collection of web paged created by HTML which allow users modifying, adding, editing and deleting content [6, 15, and 17]. The application enables to record each change occur in context so that content can be easily revert as previous version. The wiki also becomes a tool for collaborating authors as well as a source of information and knowledge [15]. In order to understand the collaborative dimension in social context, four dimensions have taken place [18]. The first dimension is a discovery that requires learners to find, create and publish information. Second, communicate to convey the information to others. Third, socialize to increase the ability to interact with learners. Fourth, perform as constructive work within the learners. Collaboration works involve as one learner start a page and others can add or change to it later. A wiki can become a highly searchable knowledge based useful for learning [17].

West claimed that wiki is a remarkable tool which assists learners in knowledge construction, collaborative learning, critical thinking and contextual application [19]. Table I shows wiki projects that can be applied and created to assist contextual application and knowledge construction. Wiki projects for contextual application can be: event plan activity to create a story, process map to encourage teams to find ways in solving problems, virtual science lab to complete experiments on a project, and field research project to allow researchers around the globe to contribute data and information of a research. While wiki projects for knowledge construction can be applied to construct a resource bank such as annotated bibliographies, to compile frequently ask question for online dialogue, to find and correct errors on group summary and to develop a historical timeline such as class encyclopedia [19].

TABLE I. THE WIKI APPLICATION [19]

Item	**Wiki Project for Contextual Application**	
	Applying	***Creating***
1	Event planning	Story creation
2	Process map	Team challenge
3	Virtual science lab	Media design project
4	Field research project	Service learning project
Item	**Wiki Project for Knowledge Construction**	
	Applying	***Creating***
1	Resource bank	Annotated bibliography
2	Frequently Asked Question	Online dialogue
3	Error finding and correcting	Group summary
4	Historical time line	Class encyclopedia

IX. MOODLE WIKI

Moodle 2.3 is an e-learning system with new features released to support social learning activities. Mansur et. al identify four features in Moodle 2.3 that contains social learning activities namely forum, wiki, chat and email [20]. One of the essential features of Moodle 2.3 application for social activities is a wiki which is called Moodle Wiki.

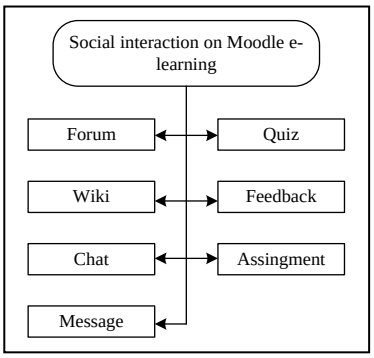


Figure 1. Social learning features on Moodle 2.3. [20]

Moodle Wiki is a collection of collaboratively authored web documents [21, 15]. Table II lists the options for both instructors and learners to use Moodle Wiki. All options can be accessed by both users except that the administration option is only for the instructors. Administration option is where the instructors can delete selected pages which are not necessary. Instructors are responsible to guide and monitor students in Moodle Wiki activities. Other than that, instructors also are able to identify students' participation in activities by using the History option. Moodle Wiki can assist the instructors to do a few tasks, such as group lecturer notes, group project management, brainstorming, contribute to other wikis, and also collaborative storytelling.

TABLE II. MOODLE WIKI OPTIONS [21]

Item	Moodle Wiki			
	Options	***Description***	**I**	**L**
1	Administration	Allow user to delete page version or selected pages. First page of wiki cannot be deleted	√	×
2	Adding more pages	Type the name of the page inside '[[ ]]', save, and then click the red link to create another page.	√	√
3	View	Allow user to display and view the wiki page/s	√	√
4	Edit	Allow user to edit wiki pages	√	√
5	Comment	Allow user to see and comments about Moodle Wiki content	√	√
6	History	Allow user to see what has been changed and restore previous versions by click the 'Compare Selected" button.	√	√
7	Map	Allow user to see areas in Moodle Wiki.	√	√
8	Files	Allow user to access any files which have been added to the wiki.	√	√

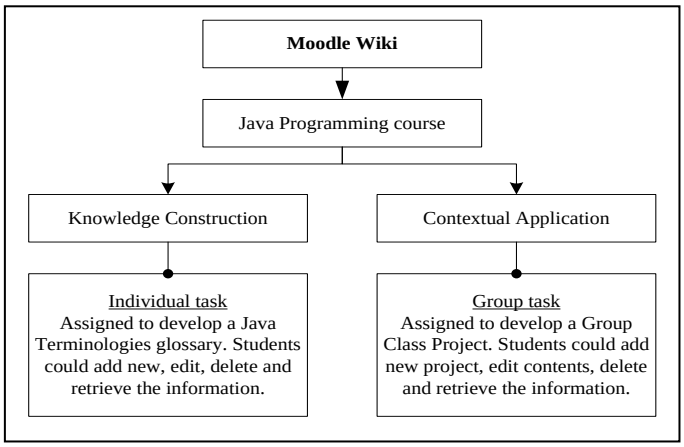
I= Instructors
L= Learners

X. LEARNINGPROGRAMMINGLANGUAGEUSINGTHEMOODLEWIKI

Learning programming language can be divided into three stages which are: foundation stage, advance stage and applied stage. Foundation stage requires learners to learn about basic information and problem solving skills in programming languages. Advance stage is the stage where learners enhance their programming skills such as in object oriented programming techniques and data structures. While the applied stage is the stage where learners are capable to apply and implement the knowledge and skills in real projects and in several subjects [22]. In this paper, we focus only on the basic stage as the first step to expose students with Moodle Wiki. Learners will develop their problem solving skills and elaborating knowledge. [23] Found that learning programming can be more effective when learners collaborate in a group with many interactions.

In this work, the second year students in Faculty of Computer Science and Information System, taking the Java Programming Language course are selected as the sample. There are two wiki projects assigned to assist the students' knowledge construction and contextual application as shown in Figure 2.

Figure 2. Wiki 2.3 in JavaProgrammingg course.



A. *Knowledge Construction*

Knowledge construction is the process of learning involved in discoveries learning [24]. In wiki environment, the knowledge construction method will assist students to define, elaborate, edit, annotate, summarize, organize and elaborate on information from nearly any subject or discipline [19].

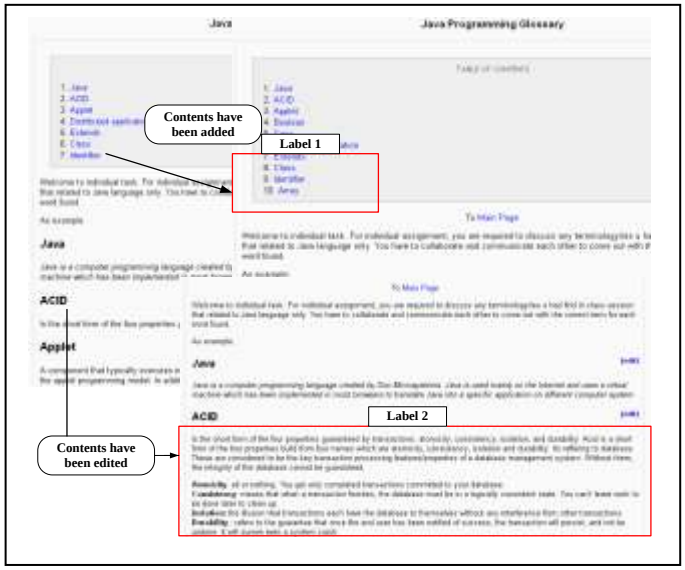


Figure 3. Glossary in Moodle Wiki

For the individual task, the students have to use Moodle Wiki to list new words that they found in class and they need to explain the meaning of the words. Each student is able to add a new word/s, edit, and delete the contents of a wiki. Students can edit the content/s by click an 'editors' sub menu or directly through the particular terminology.

Students also can add pictures and diagram to assist them to present the content. As a result, a complete glossary of terminologies has been constructed and this glossary is useful for their references. In Moodle Wiki students can track their work and identify original works done by other students at the History tab. Instructors are able to monitor students who participate in the given task through the log activity of Moodle Wiki.

Figure 3 shows the glossary of Java Programming terminology in Moodle Wiki. It shows a wiki page that has been added and edited by two different students. Label 1 shows how the contents have been added while Label 2 Shows how content have been edited.

B. *Contextual Application*

Contextual application can track all works done in groups, starting from planning the project, objective/s and all phases until producing the result [19]. Moodle wiki enables students to have self-organization and reflects on their own work. This task required students to seek

information, collect, organized and apply to their own project.

For the group task, the students have to use Moodle Wiki to propose a final group project title collaborate with their teammates. The instructor had provided them a link for them to write the contents of their project group task. They are able to add a new title, edit, and delete the contents of the wiki. Moreover, a Moodle Wiki allows students to add pictures and diagram to help them elaborate the content. At the end of the task, a collection of group project titles is organized complete with the contents.

The instructor becomes the observer of the student's task by group and ensures that they work on their own project only. Instructors also use a Moodle wiki to clarify the context of work such as the problems, artifacts and also guidance.

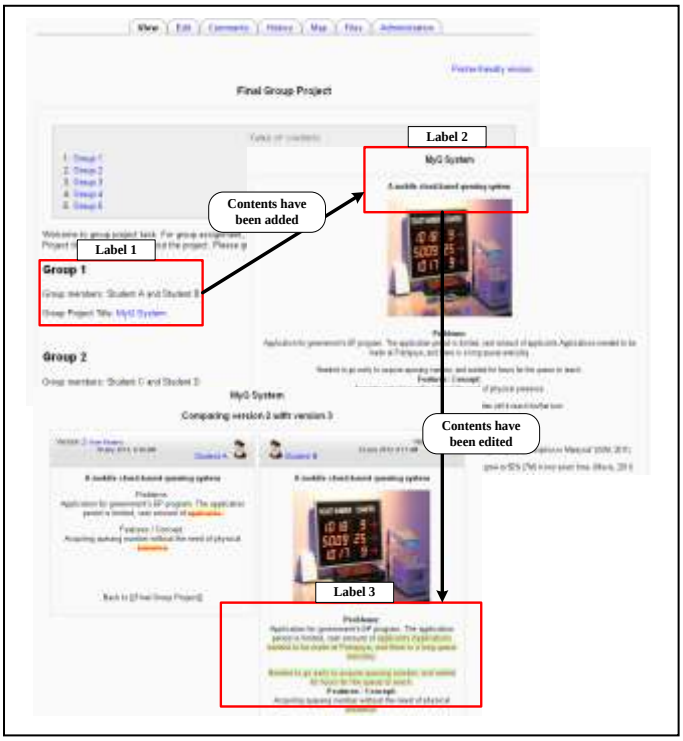


Figure 4. Final Project task in Wiki 2.3.

Figure 4 illustrates the Final Group Project titles of Java Programming in Moodle Wiki. It shows the wiki page link to the new wiki page that elaborate the whole content. Label 1 shows the lists of group title with a group member's name. Label 2 shows the new page that used by students to edit and elaborate all the project contents. While Label 3 shows how content have been edited.

XI. RESULT AND DISCUSSION

Log History has been analyzed to identify social learning activities that have occurred while using Moodle Wiki. Figure 5 shows the log activities of learners while using Moodle Wiki. The column with the titled Course, represents a subject taken by learners which is PC named as Programming Course. The column with the titled Time, represents the time taken when they access Moodle Wiki. In addition, the column with the title IP address, represents the learners' computer IP address. The User full name column represents the person who has taken the action. And the Action column represents the activities occurred in Moodle Wiki, while the Information column represents the version page visited.

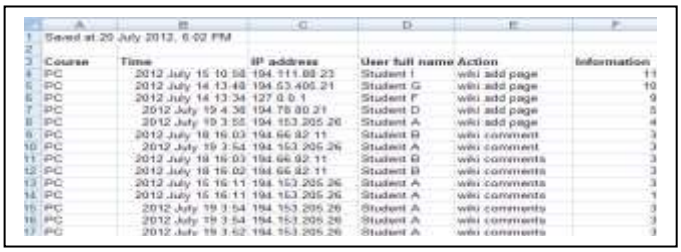


Figure 5. Moodle Wiki Log by activity.

In order to analyze the Moodle Wiki collaboration, [25] stated that it is important to measure the amount of activity of all learners to identify who are active participants and those who are passive. Active participants used all Moodle Wiki options. In this study, active participants considered as learners who construct the knowledge such as create a new page, commenting or editing on the existing ones. Table III shows the number of learners who are participating actively in Moodle Wiki. However, passive participants are learners who only do the browsing, i.e. viewing or reading content, and these activities enable learners to reproduce knowledge as well as memorized the knowledge [26].

TABLE III. MOODLE WIKI ACTION LOG

Action Log of Moodle Wiki	**Numbers**
Number of wiki pages	11
Number of added pages	11
Number of edited contents	42
Number of views for contents	131
Number of comments contents	20
Number of registered users	10
Number of registered administration	1

The result found in this work is the social learning activities that have occurred in Moodle Wiki. Learners used their full capability of sharing, communicating and collaborating knowledge to produce a complete glossary and collection of final group project titles. In addition, Moodle Wiki able to activate learners to participate in the tasks given in the Programming Language course from the beginning until the end. It can be an effective tool in e-learning for learning programming. Moreover, Moodle Wiki

becomes a high potential e-learning system to assist social learning activities because the promising of collaboration and construction work, not only in learning programming language, but also in other field of computer science.

XII. CONCLUSION

Moodle Wiki has been identified as a tool that support social learning activities. From the practices of Moodle Wiki, learners can enhance their problem solving skills to make wise decision and invigorate their learning thinking to elaborate knowledge. Besides, learners can also collaborate and construct work together with Moodle Wiki that will empower learners' collaborative learning which contribute to cognitive learning.

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The Lesson on Money: A Simulation Technique in Teaching Mathematics to the Grade 3 Students in the English Program of Assumption College Thonburi

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Abstract— **This research study is an attempt to compare the Mathematics Achievement and the changes in behavior of the Grade 3 students using simulation technique with the conventional or traditional method of teaching. In this study, forty-four Grade 3 students of English Program at Assumption College Thonburi for the academic year 2011 were the subject of the study. They were categorized into two groups: the experimental group who was taught using simulation teaching and the control group who was taught using the conventional or traditional method of teaching. Purposive sampling was used to determine the sample size of the respondents. To compare the Mathematics Achievements of the experimental and control groups, the data were collected from their Pretest and Posttest. The criterion for the effectiveness of lesson plan (E_1/E_2) on simulation was 80/80, and the result from the experiment was 87.46/90.24. This showed that the lesson plan on simulation was highly effective. Moreover, there is a significant difference of 0.05 on the Mathematics Achievements of the respondents. The pretest's mean score of the Experimental group is less than that of the Control group, which is approximately 6.1%. However, the posttest's mean score of the Experimental group is more than that of the Control group, which is approximately 8%. Result of the study shows that simulation technique in teaching Money lesson is better than the conventional or traditional method of teaching. Likewise, simulation plays a vital role in the active learning of the students, as it increases motivation. It also allows the students to be cooperative and responsible.**

Keywords: Simulation; Money Lesson; Mathematics Achievement; Learning Behavior

I. INTRODUCTION

Teachers constantly face the decision on how to design instruction, which will best meet the needs of the learners. These decisions include selecting methods and techniques. The selection process requires not only the teachers' awareness on how to use various techniques, so as his expertise of determining which types of students learn best with various techniques. However the problem arises that even though some students have studied Mathematics for over 11 years, they are still unable to find the connection between mathematics and daily life situations. Some research has tested adults and students with tasks, which require the application of mathematical skills. The results showed that adults and students do not make use of school-learned mathematics methods or procedures in real life situation. Moreover, various mathematical educators said that students are unable to apply school learned mathematical procedures and rules because they do not fully understand them [1].

Associate Professor Witayakorn Chiengkul, Director of Social Innovation at Rangsit University [2] said that one of the major reasons why students have been unable to achieve good scores is because of the method of teaching applied in school. Teachers focus on memorization of various theorems, proofs and mathematical procedures without giving the students any basic understanding of the topic. This has resulted in students being unable to adapt and apply mathematics to various situations. Therefore, to be able to link content into students' lives requires creativity. XIA Xiaogang et.al [3] compared the use of creative and non-creative problems in teachers' lessons. The surveys showed that most teachers preferred to apply creative problems into the lessons, saying that they helped the students enjoy it and gain a deep understanding of the subject.

Nowadays, international schools are reverting to a student-centered classroom, whereby students are the center of the teaching–learning process, with the help of teacher facilitation. Extra-curricular activities are aimed at developing students' creativity and enable them to apply it into life situations. This will allow the learners to enjoy and gain maximum benefit from education. However, the above method is similar to teaching by using simulation. As simulation technique allows the students to carry out activities by themselves and they are able to think, analyze, judge and solve problems that arise during the process. However, there has been less usage of simulation in the teaching of mathematics, especially in the primary school on the topic of money, which is the lesson that is applied in everyday life from preschool to adult.

Consequently, the objective of the research paper is to compare the Mathematics achievement, when grouped according to simulation technique of teaching and the conventional or traditional teaching method of the Grade 3 students of English Program at Assumption College Thonburi with the hypothesis of the study is there is no significant difference in the Mathematics achievement.

II. RESEARCH METHODOLOGY

A. Population and Sample size

The population and the sample size are the Grade 3 students of the English Program at Assumption College Thonburi during the Semester 2 of the academic year 2011. The respondents of the study composed of two sections. One section which has 21students is chosen has the experimental group and the other one has 23 students is selected as the control group.

B. Instruments and Procedures

There are 5 sub– topics on money lesson and each topic is taught in 3 sessions making a total of 15 periods using the role-playing method of teaching. In the same manner, the controlled group has the same topics and number of sessions.

Lesson plans using simulation technique is shown in Table I.

TABLE I: THE CONTENTS AND NUMBER OF PERIODS OF THE LESSON ON MONEY USING SIMULATION TECHNIQUE.

Lesson Plan No.	**Content**	**Number of periods**
1	Reading and Writing the amount of money using dot	3
2	Comparing the Value of money	3
3	Addition and subtraction of money	3
4	Word problem on addition and subtraction of money	4
5	Reading the income statement	3
6	Writing the income statement	4
	Total	20

The pre-tests and post-tests on money consisting of 30 multiple choices questions are given to the respondents to measure their mathematics achievements which are illustrated in Table II. Both pre-test and post-test papers consisted of the same set of questions and are given to the experimental group and the controlled group. The time allocated for each test is one period.

TABLE II: THE NUMBER OF MULTIPLE CHOICE QUESTIONS ACCORDING TO THE EXPECTED LEARNING OUTCOMES.

Learning Objectives	**Number of questions**
Students should be able to read and write the amount of money using dots.	10
Students should be able to solve the addition and subtraction word problems on money.	10
Students should be able to write the statement of incomes and expenses.	10
Total	30

The procedures for teaching using simulation technique were as follows:

- The teacher started teaching the lesson by linking the previous knowledge to the new knowledge that was taught on that particular day.
- All the activities were done according to the lesson plan.
- The time was given to the respondents for discussing and for explaining their knowledge or mathematics concepts that they have gained from the lesson or activity.
- The assignments were given to the respondents to measure their understanding about the lesson. The students were also asked if the simulation technique help them to improve their mathematical ability.

After the 15 periods' duration in teaching both groups, the researcher gives a post – test to the respondents to assess their mathematics achievements.

III. RESULT

The result was analyzed and treated statistically .The data were computed employed SPSS using Descriptive statistics, and Paired-Sample t-test. Following are the procedures for data analyzes:

A. Result of the analyzes of the effectiveness of lesson plan

To find the effectiveness of the lesson plan on simulation (E_1/E_2), the efficiency process (E_1) and the performance result (E_2) were applied. The efficiency process was the in-class assignment on the topic money and the result is shown in Table III. The result explains that the experimental lesson plan was effective as it passed the set performance criteria of 80/80.

TABLE III: RESULT OF THE ANALYZES OF THE EFFECTIVENESS OF LESSON PLAN

Categories		**Number of Students**	**Total score**	**Average score**	**Percent-age of the average score**
Efficiency Process	Worksheet on Money	21	25	21.55	86.19
	Creating Word Problem	21	5	4.69	93.81
	Average Score	21	15	13.12	87.46
Performance Result		21	30	27.07	90.24

B. Result of students' achievement in the lesson

The result from the pretest score illustrates that the mean of the score of experimental group (6.95/30) was lower than the control group (8.78/30) with a difference of 6.1%. This means that the control group had higher fundamental knowledge than the experimental group. The result is shown in Table IV.

TABLE IV: PRETEST SCORE OF EXPERIMENT AND CONTROL GROUP

	Mean	**Std. Deviation**	**Std Error**	**Test of Significant Difference**	
				t-value	p-value
Experimental Group	6.95	2.87	0.64	2.118	0.048*
Control Group	8.78	2.94	0.66		

* p-value < 0.05

The comparison in the post-test score of the experimental and control group showed that the average score of the experimental group (27.07/30) was higher than the control group (24.26/30) by 8%. The result illustrates that after conducting the lessons, the experimental group gained higher knowledge in the content compared to the control group. The result is represented in Table V.

TABLE V POSTTEST SCORE OF EXPERIMENT AND CONTROL GROUP

	Mean	**Std. Deviation**	**Std Error**	**Test of Significant Difference**	
				t-value	***p-value***
Experimental Group	27.07	3.90	0.85	2.188	0.041*
Control Group	24.26	4.68	1.02		

* p-value < 0.05

The posttest average score of the experimental group was higher than the pretest average score by 67.07%, whereas the difference in the average score of the control group was 53.10%. The individual score of each students in the experimental and the control group are illustrated in Table VI and VII.

TABLE VI: INDIVIDUAL PRETEST AND POSTTEST SCORE OF EXPERIMENTAL GROUP.

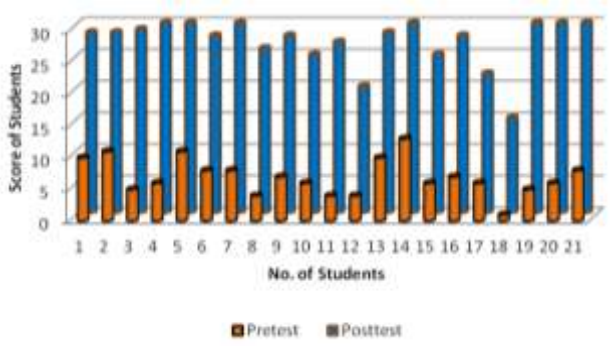
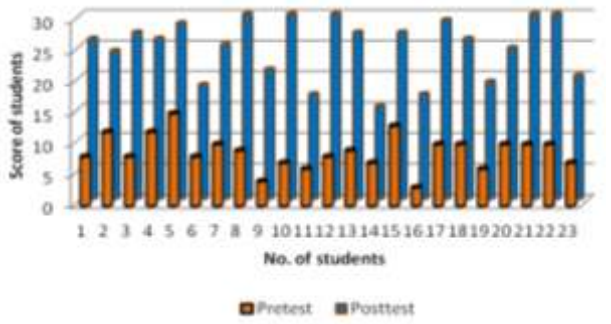


TABLE VII: INDIVIDUAL PRETEST AND POSTTEST SCORE OF CONTROL GROUP.



With the application of simulation technique in the teaching of mathematics, the students showed a sign of improvement in the reading and writing of the amount of money. Also they were able to add and subtract the value of money mentally and solve various word problems on the lesson. Most satisfactory from using simulation, the students were able to apply the lesson on money into their daily situation, such as the application on the reading and writing of the students' daily income statement.

From in-class observation of students' behavior, simulation technique allows the students to do hands-on-activities. Through this method teacher acts as a facilitator of the students, the students are able to use their multiple intelligence in solving the problems. The students can freely think various methods and use their creativity in creating the solution to the problems. Simulation technique also helps the students to be cooperative, helpful and supportive towards one another. The students were also motivated to study the content. They were also enthusiastic, active and responsive in the classroom.

IV. CONCLUSION AND DISCUSSION

The result from above explains that the lesson using simulation method was excellent and was helpful in increasing the students' knowledge in the subject matter. Moreover, the comparison of pre-test and post-test of the both groups show that the experimental group was able to attain higher amount of knowledge compared to the control group.

Therefore, it can be concluded that simulation technique was effective in enhancing the mathematics achievement of the students. It also helps the students to gain deeper understand and higher expertise in the content. At the same time, simulation technique focuses on students-centered classroom, which had an effect on the students' behavior towards learning. With the help of simulation, students showed a higher keenness towards the subject and the teacher. In addition, the feedback or attitude of the experimental students is positive towards using simulation technique as the instruction method. The students said that they enthusiastically enjoyed the activity, as they were able to understand the subject even more than before. They learned the importance and value of money in their daily life. And they were able to understand that earning money was not easy, so they should use money wisely. At the same time the students also requested that such activity should be applied to all the lessons in mathematics.

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Kindling an Active Learning Culture Through Online, In-Service Teacher Training

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Abstract—**Active learning, ideally, promotes active learners poised to become active world citizens. Yet research suggests that, regardless of theory, teachers teach as they themselves were taught [1] thanks to their "apprenticeship of observation" [2]. In this light it is possible that through more active learning experience, teachers can learn how to make their own classrooms environments more active. Online training is an ideal vehicle for in-service teachers to obtain active learning experience, as it is flexible, increasingly accessible and based on social constructivist principles [3] that are conducive to active learning. As a result, teachers enrolled in a well-designed online course are highly likely to experience active learning first-handover an extended period of time, equipping them to promote an active learning culture in their own classrooms. Online, in-service teacher training, in other words, can be an "apprenticeship of observation" in active learning that is sustained for a longer period of time than intensive, face-to-face training. This paper introduces the way an online training course for Malaysian in-service English teachers has aimed to kindle a culture of active learning by engaging the teachers as active learners.**

Keywords— active learning, online teacher training, in-service teacher training, professional development

I. Introduction

Active learning holds great promise for education at many levels, with implications reaching to a wider, "learning society" on a global scale [4, 5]. To make active learning a reality in everyday classrooms it is vital that teachers have not just high ideals and textbook theory, but also practical experience at their disposal. Within teachers' practical experience - especially in more "traditional" education systems - active learning experiences can be startlingly rare. If Lortie's [2] "apprenticeship of observation" dictum holds true, and teachers do, indeed "teach as they were taught" [1], teachers require extensive experience of active learning to draw on.

This paper documents how active learning experiences were modelled in an online, in-service training course for Malaysian teachers of English, arguing that sound online training can provide teachers with an "apprenticeship of observation" in active learning that can enrich their classroom practice. The paper suggests that a wider range of effective, active learning models can better equip teachers to implement active learning in their own classrooms, promoting the place of the learning individual within a learning society [see 5].

To begin with, a background to the study is provided, with both a broader view of the context and the online training project itself. A literature review follows, gleaning key insights from the literature from three areas: those of active learning, online learning and teacher training. Next, active learning experiences emerging from the online training course are documented, highlighting the ways in which these could enhance an in-service teacher's repertoire of active learning strategies. The exploration concludes with certain qualified cautions, but concludes with some confidence that the online training experience has the potential to spark active learning in participating teachers' classrooms, and perhaps even ignite the culture of a broader learning society.

II. Background of the Study

A. In-Service Training for English Teachers in Malaysia

One of the English Language Teaching Centre (ELTC) Malaysia's core tasks is to provide support for in-service teachers of English in Malaysia, with a focus on professional development opportunities and training [6]. Briefly, the ELTC has a unique and challenging mandate that calls for equally unique solutions.

By reaching in-service English teachers with effective training, the ELTC seeks to foster their professional development, enhance their students' learning and play a part in the true role of public education. This is the institution's aim, towards which a dedicated team works tirelessly, while constantly seeking better avenues to fulfil this vision. Historically, ELTC lecturers have conducted in-service English teacher training (INSETT) at venues around the country, modelling the philosophy of active learning (defined in more detail in Section III A) in their delivery of content knowledge.

Even though high quality, face-to-face training can have a great impact, the reach remains limited while the costs - not only financial and logistical but also workforce - are high. Elsewhere around the globe, face-to-face learning has been substituted and supplemented by online mode of learning delivery. The emergence of this mode of education delivery has created a surging need for educational institutions to

The authors extend their thanks to the English Language Teaching Centre ELTC) Malaysia and Brighton Education Group Malaysia for their support of this research.

embrace innovation and change [7, 8]. Due to these reasons and the increasing reach of new technologies around Malaysia, the ELTC is prompted to explore a new avenue: online INSETT.

B. The Online Course Pilot Project

1) The ELTC Online Course Pilot Project

At the end of 2011, the ELTC initiated a pilot project comprising an online course for in-service teachers. In 2012 this course was developed, implemented and evaluated. The results of the pilot project would serve to establish guidelines for future online INSETT to be rolled out in 2013. Online INSETT at national level is a first for the ELTC, and this pilot project can play an important role in charting new territory, while making a far-reaching contribution.

2) Benefits of online training

In addition to the often-cited benefits of online training [see 8], which include reduced demands on resources, enhanced learning options and more, the online medium offers a specific benefit in terms of active learning. Best practice in online training [9] literally *demands* active learning. This would in turn equip in-service teachers with an "apprenticeship of observation" [see 2] in active learning upon which to model their instruction - the focus of this paper.

Online INSETT also allows teachers to continue their professional development without disrupting their normal teaching routines [also cited in 8]. This has a dual benefit: not only can teachers experiment with new techniques in their classrooms, but they can also immerse themselves in the active learning experience – from the learner's point of view – over an extended period of time. From an "apprenticeship of observation" point of view this is ideal, since it allows deeper, first-hand understanding of the active learning philosophy.

3) Course Structure and Participation

The pilot project was based on a course entitled "Reading Fluency: The Foundation of Reading for Meaning", designed for two days of face-to-face training sessions. The online course was designed to continue for six weeks, breaking content down into small chunks that teachers could manage in addition to their professional and personal obligations.

Reading Fluency addressed a rather specialized area of teaching methodology that was somewhat advanced compared to teachers' curricular requirements. The content was also somewhat abstract, giving very specific instructions for assignments. Tasks were guided by best practices in online learning, which by their nature involve active learning strategies. As such, the course set high demands for teachers, and called for rather intensive involvement from participants. In other words, active learning was not optional but an absolute requirement. Section IV elaborates on specific techniques used to encourage active learning. The pilot course involved twelve course participants, of whom eight were actively involved in the course, and a group of seven moderators, selected for their qualifications in this field.

Such a project delivers a wealth of other data beyond the scope of this paper, as reflected in the complete Pilot Project report [10]. The important point for the purpose of this discussion is the way the online medium fosters active learning, which in turn can begin to instil a repertoire of active learning techniques among teachers, and ultimately ripple out to encourage a culture of active learning beyond the online training experience, the classroom and even beyond formal education.

In Section 4 we examine in more detail how active learning was encouraged among participants in the online course. Before doing so, we turn to a review of the literature from three fields that illuminate the subject of this paper: active learning, online learning and teacher training and professional development.

III. Review of the Literature

The subject of this paper is informed by three specific areas of scholarly literature. The first is the literature pertaining to active learning, which has received attention in pedagogy and methodology circles as well as within specific subject disciplines. Next, the literature on online learning gives a more rounded background to learning in the online medium, and although "active learning" is not always mentioned by name, it is worth noticing that it is often implied as an anonymous contributor to the greatest successes of online learning. Finally, the realm of teacher training and professional development is tapped for insights into the way training and experience translate into practice.

With such an eclectic background covered in a paper of this length, an in-depth review of each of these fields is not possible. The review of the literature in this paper aims to provide not a comprehensive overview but a concise summary of pertinent ideas. We turn first to the core theme of active learning.

A. Active Learning

Active learning, though it has been defined in many different ways, essentially refers to any method of instruction that involves learners in meaningful, thought-provoking activities [11]. Notably, learner-centeredness is at the heart of active learning. The focus is on the learning process, not so much on the outcome. Wolcott (1996) in Purcell-Robertson and Purcell [12] highlighted that in learner-centred environments the learners' personal growth is encouraged and facilitation of learning is emphasized over transmission of information. Constructivists [cited 13] concurred that learning is essentially a process in which knowledge is reinvented, reorganized and constructed through active learning and by associating the new information to existing understanding.

Active learning principles can take on countless variations, and authors Faust and Paulson demonstrate the variety with their catalogue of active learning techniques for the college classroom [14]. In addition to their diverse spectrum of

activities, these authors further defend the usefulness of active learning with their own experiences, drawn from two very different subject areas (organic chemistry and philosophy). In both authors' cases, incorporating the active learning approach corresponded with significant improvements in students' retention, understanding of the content and attitudes towards the course.

These authors' promising findings on active learning are not isolated. Writing from the perspective of engineering education, Prince [15] documents numerous positive findings on active learning from his subject area. Again, successes are reported in terms of retention, understanding, and student attitudes. Notably, this author suggests that active learning techniques like problem-based learning may not necessarily impact on student grades, but may promote longer-term application of learning in addition to transferable, problem-solving skills. Evidently, these skills are not merely essential for school, but also for life.

Readers may remark that the above sources deal mainly with tertiary or adult learners. Given the thesis of this paper, that active teacher training is likely to transfer to active classroom teaching, the selection seems appropriate. Yet it is worth mentioning that when it comes to younger learners, active learning has become almost axiomatic to current, accepted teaching methodologies – so much so that the importance of active learning is rarely explicitly stated or justified. Whereas some teacher textbooks and resource books, such as those by Wasserman [16] and Silberman [17] spell out the active learning agenda, a great many more advocate active learning without explicit reference to the term or its theoretical rationale. It appears that the value of active learning is widely accepted without question in the realm to day-to-day teaching, specifically at pre-primary and primary level.

Despite the promise of active learning, the practice is not without obstacles. These are acknowledged by Faust & Paulson [14], and are significant enough to be addressed specifically in an online workshop for faculty presented by the Centre for Teaching and Learning at the University of Minessota [18]. These sources agree that typical objections are often related to time constraints, difficulties with implementation and student objections - although both subtly imply that these may be thinly veiled excuses from faculty uncomfortable with the shifting locus of control implied by active learning - whether real or perceived.

The shift towards active learning, to quote Meyers and Jones [19], means "spending less time centre-stage as a presenter and more time offstage as a designer, choreographer and manager of the learning environment". The adjustment calls for a fundamental shift in teaching practice, calling for not only theoretical knowledge but practical know-how. Niemi [20], writing from the Finnish education context in 2002, describes this adjustment as nothing short of a "cultural change". A decade after Niemi's documenting of this cultural change, the results of the active learning philosophy in that context have reached far beyond the mere field of education, resulting in extensive international interest in what has been called "The Finland Phenomenon" [21].

Even before this surge of interest in active learning, such value had been ascribed to the approach that a body no less expansive in its reach than the Organization for Economic Cooperation and Development (OECD) commissioned a report based on its potential for intra- and international growth, which was published in 1997 [4]. The preface to the volume argues that "... the involvement of students as 'knowledge workers' in creating 'knowledge products' does provide a kind of re-hearsal for participation in the learning economy".

From a broader reading of the literature on active learning, it becomes clear that far more is at stake here than mere classroom techniques. Active learning proves effective because of its natural affinity with the learning demands of real life - the realm for which education is, after all, intends to prepare learners. The sources cited in the preceding two paragraphs suggest that this mode of learning feeds back very positively into the broader context beyond the classroom. This reasoning is an important consideration, as it extends the importance of active learning into society and the global economy.

B. Online Learning

Although the field is still in its infancy, online learning has received exponentially increasing attention in the past years, emerging from the shadows of special interest group research into a fledgling discipline in its own right. It is prudent to keep in mind that unlike many fields of educational and academic interest, online learning holds a two-sided attraction: its vast potential for profit. While profit is certainly not the sole motivator for online learning research, its influence may account for the focus on online learning software and hardware that often prevails even in scholarly literature on online learning. For the purposes of this paper, the focus is on principles rather than products [see 9]. The principles of active learning can certainly be embodied with (or, indeed, without) any form of technology.

1) Evolving approaches to online learning

It would not be at all difficult to identify strong parallels between evolving approaches to online learning and educational theory at large. Warschauer [3, 22] has cast a consistent and critical eye over the evolution of online learning (from its humbler, offline roots) for many years. He has identified three stages in the development of computer-assisted learning [3], echoing broader trends in pedagogy and the human sciences. Warschauer describes the stages as behaviouristic (repeated drill and practice reinforced with rewards or punishments as appropriate), then communicative (facilitating authentic applications of learning) and finally integrative (where different media converge around the learning process).

Yet it is in an earlier paper [3] that Warschauer identifies the approach that has become the foundation of contemporary online (and indeed of offline) learning: social constructivism, as formulated by Russian psychologist Lev Vygostky in his seminal work *Mind and Society* [23]. In essence, this social constructivist approach to education can be described as an

emphasis on the way groups work together to build knowledge based on a shared understanding [3, 23].

Moreover, it is worth noting that in the same text [3] Warschauer elaborates on the ever-expanding, ecologically evolving impact of the technologies individuals use, ranging from its influence on the individual right through to society on a large scale. The concept is a profound one, and could make a strong argument for the integration of online INSETT in an era when modern technology permeates so many areas of our lives. Extended to the "technology" of active learning, this concept is even more far-reaching: it could well be argued that active learning moulds the individual, the learning community, the learning process and ultimately, society.

The foundational role of social constructivism in online learning is further reflected in the scholarly work on the subject. Our next port of call in seeking key principles in online learning is the literature on best practices.

2) Best practices in online learning

In previous research, Le Roux [8] has identified a shortfall, and indeed a continuing decline, in scholarly literature on best practices in online learning. From the existing body of work, however, this author compiled a synthesis of key principles, based in particular on the work of Sunal and Sunal [24], Caplan and Graham [25], Clark and Maher [26] and Chickering and Ehrmann [27]. At the time of writing, this synthesis of best practices was being put to the test in the context of online INSETT in Malaysia [28]. Several emerging themes were identified, but those that pertain to this paper are listed below:

a) Tasks pertain to authentic situations: task authenticity is a typical trait of active learning (see Prince [15] in Section 3A).

b) Use of further resourcesis facilitated and encouraged: fostering the culture of independent learning beyond is in line with active learning principles.

c) The learner's interaction is encouraged in three directions: the learner is led to interact with knowledge, with the course moderator and fellow learners/participants, using a variety of media. According to Repman and Logan (1996) in Purcell-Robertson and Purcell [12] "interactions lie at the heart of any learning situation and remain critical to active learning". As such, the multidirectional interaction prompted by sound online learning promotes a deepened active learning experience.

Among best practices in online learning (which admittedly extend considerably beyond the scope of this paper) the principles of active learning recur frequently. This parallel clearly delineates the principle of active learning in the online realm.

3) Stages of online learning

A further principle that has stirred much interest as online learning has evolved from its text-based infancy to its current, interactive adolescence is the five stages of online learning identified by Salmon [29, 30] in two widely acclaimed books on the subject. Salmon approaches active learning from two angles: that of the learner [29] and the moderator [30]. In addition to academic recognition, Salmon's work has the all-too-rare distinction of receiving attention not only across the boundaries of education and training but beyond the theoretical confines of academia in what is affectionately known in research circles as the "real" world of business.

Salmon's simple but insightful model identifies five stages of online learning [31]:

a) Access and motivation: Newcomers need to become comfortable with the technologies used and become truly motivated to participate in the course.

b) Socialisation: Newcomers become comfortable with the moderator and peers, laying the foundation for a learning community to be built.

c) Information exchange: Participants begin to exchange basic, factual information related to the course material and extending into their own lives.

d) Knowledge construction: Participants extend their participation from the exchange of straightforward facts to building on their personal, growing knowledge and collective understanding.

e) Development: Participants now become actively involved in autonomous, *self-motivated* assessment and establishing a culture of lifelong, life-wide learning strengthened through the online medium.

The body of Salmon's work advises online moderators, trainers and teachers on how to understand, facilitate and indeed capitalize on each of these stages to optimize the learning process. When observing documented (and anecdotal) failures in online learning, the popularity of Salmon's work is explained: her five stage model is a pre-emptive strike on the typical pitfalls of online learning. It is plain to see why this five stage model deserves consideration in any review of the online learning literature.

What is notable from an active learning point of view, however, is that these five stages focus almost entirely on actively engaging the learner. Looking at the broad adoption of Salmon's five-stage model as an embodiment of active learning, the link between active learning and online learning becomes ever clearer. The active learning emphasis in principled online training is likely to impact those taking such a course. For in-service teachers, the example of active learning, especially if well implemented, can well act as a resource for their future reference as they teach.

4) Online, in-service teacher training (INSETT)

While both online training for pre-service teachers [see for example 32] and online training outside the field of education [27] have received considerable attention, online INSETT specifically has generated very little scholarly documentation. This is sadly ironic, since in-service teachers in many environments receive increasing pressure to implement e-learning as teachers, although they have never experienced it themselves, as learners.

Online INSETT can benefit in-service teachers in at least three ways. The first, and most obvious, is by imparting the knowledge contained in the course content. The second, as argued by authors in the following paragraph, is that of online learning skills, which enrich online teaching. The third, argued

by this paper, is an extended repertoire of active learning techniques that can be deployed in teachers' own classrooms.

Among the sparse literature on online, INSETT, Al-Mahmoud and McLaughlin [33] sound a brave note. These researchers report on their own experience, where they had taught several courses online before participating in an online course as learners. Their own online learning dramatically enriched their online teaching, leading them to recommend online training for teachers. Although the Malaysian English language teachers have yet to be required to conduct online teaching, the potential benefits of online INSETT for them can well be equally relevant.

Moreover, according the thesis of this paper, in-service teachers who have not experienced online training lose more than merely the experience of being online learners, as argued by Al-Mahmoud & McLoughlin [33]. Even more importantly, they miss the opportunity of extending their repertoire of active learning techniques during such a course. An increased storehouse of active learning strategies can empower teachers to implement active learning more extensively and more effectively in their classes – whether online or off.

Niemi [5] echoes the sentiment in reporting on the way educational technology has deliberately been integrated in teacher training in Finland's celebrated educational system. According to this author, using technology becomes a skill that extends beyond training and the classroom as it kindles the culture of a learning society.

C. Teacher Training and Professsional Development

1) Teacher training, professional development and teacher learning in perspective

As the education field is subject to rapid changes, it has been suggested that educational improvement hinges around teacher training, and the renewal of teachers' professional knowledge and skills, in other words - their opportunities for professional development [34, 35]. Within the Malaysian context, Suseela [35] has identified the significance of teachers' continuous learning in educational transformation and improvement. Teacher training can, indeed, be a source to re-invigorate teachers with current knowledge, skills and newfound enthusiasm.

Teacher training is one of many possibilities within the broader spectrum of professional development, which for teachers can include any number of activities ranging from membership of professional associations, industry events and participating in professional dialogue by observing, or contributing to, publications and presentations in the field, to mentoring and further studies. Yet one subtle mechanism for teachers' professional development may not seem ambitious, but proves to be remarkably powerful: learning communities of teachers (termed as teacher support groups by Richards and Farrell [35]) have repeatedly proven to be a vital element in this regard, as cited from a range of sources [as cited in 37].

With these varied mechanisms of professional development in mind, it is worth considering the concept of teacher learning alongside that of teacher training. The erstwhile model of teacher training, presented as an isolated event with little sensitivity to the teaching context, has resulted in justified criticism [38, 39] due to its (unsurprisingly) superficial impact. What has evolved is a more holistic picture of teacher learning, which "is seen as an active and constructive process that is problem-oriented, grounded in social settings and circumstances, and takes place throughout teachers' lives" [38]. In addition, Hoban [37] cites a range of sources in defining teacher learning as "any infrastructure provided to support teachers to cope with new ideas and the process of educational change".

This teacher learning model is especially pertinent to online training for in-service teachers as explored in the present paper. The online medium allows for active experimentation in the "virtual training room", in interaction with a group of like-minded educators, over an extended period of time, equipping teachers for change - meeting all elements of teacher learning listed by Scheerens [38] and Hoban [37] in the previous paragraph. It would appear that online training, if wisely managed, can provide in-service teachers with a broad spectrum of the requirements for teacher learning.

2) The "apprenticeship of observation"

At the heart of this paper lies the concept of the "apprenticeship of observation" identified by Lortie [2], which often strikes a chord in teacher training. Mewborn and Tyminski [1] cite the common explanation for this phenomenon: "teachers teach as they were taught". These authors then question this view and go on to defend new teachers' ambition to raise their classroom practice to new levels towards what can be described as active learning.

There is, of course, truth to both sides of the argument. On the one hand, new and experienced teachers often aspire to take their classroom practice to new heights. Yet on the other, the reality is that most teachers' high ideals and theoretical training are far outweighed by an overwhelming base of practical experience in traditional, teacher-centred classroom practice. As the pressures of classroom teaching mount - a demanding curriculum, administration, classroom management, assessment and the ubiquitous concern of'shortage of time'–it is not surprising that teachers' "apprenticeship" in teacher-centred classrooms can easily become the ruling force.

This paper argues that when English teachers participate in online INSETT, they implicitly take on an "apprenticeship of observation" in active learning. This active learning experience can then equip teachers with techniques and principles they can use to facilitate active learning in their own classrooms.

IV. Active Learning in the Online Course

In accordance with best practices in online learning [9], the online course studied in this paper was designed to promote active learning, even though the process was mediated online. Throughout the course participants were required to participate actively in a chat room, while also completing tasks independently or in collaboration with other online

participants. As suggested by Grant and Thornton [40], interaction in three directions was encouraged: participants interacted with the material, the moderator and the other participants. A brief description of active learning activities used in the course follows.

A. Chat rooms

The common active learning techniques of discussion and questioning are usually conducted verbally in the offline training room. Useful online equivalents are chat rooms, forums and more recently social networks, which all allow mediated conversation in some text-based form. The Reading Fluency course made use of a social network platform (Google Plus at www.plus.google.com) for discussion. It may be useful at this stage to clarify that conversations in Google Plus are not technically "chat rooms", but the term was retained to allow consistency within the course materials.)

Throughout the course participants were encouraged to visit allocated chat rooms to communicate with the moderator and among each other. The chat rooms, hosted on the Google Plus social network, allowed asynchronous communication. The asynchronous mode made it possible for participants to do coursework at times that suited them - a major benefit for the typical participant, who may have limited, varied and unpredictable time slots available for training. The asynchronous mode is also important, as constant presence of the moderator is unlikely. In the absence of the moderator, participants are left to their own (collective) devices and are more likely to actively take ownership of the discussion.

Chat room participation was explicitly mentioned as a requirement in the continuous assessment rubric (see below), where participants could receive prompt feedback on recent work. While some participants joined the chat in response to instructions, there were many instances where a core of especially enthusiastic participants shared their learning and classroom experiences or approached each other with questions. The contagious excitement among participants reporting back on successful classroom activities, and even contemplating shortcomings, demonstrated the power of the collaborative element of active learning. Communications of this nature were often entirely on-task, looking deeper into the applications of the course materials.

In addition, there were many instances where social cohesion rituals were initiated by participants: for example, without being prompted they would welcome, encourage or congratulate each other for completing an assignment. Although these social functions may not have been directly related to mastery of the course material, they established relationships among participants who had never met face to face. In online learning research these relationships are deemed vital to course completion, since dropout rates in online courses are notoriously high [41].

For the purposes of this paper, the most important benefit of the chat room is the way it models active learning, giving teachers (as participants) an expanded repertoire to draw on. Independent, spontaneous interactions between participants, which may be frowned upon in the traditional, teacher-centred classroom, can become a powerful force for learning. In fact, according to Dede et. al [cited in 8], "teachers who tend to be silent in face-to-face settings 'find their voice' in mediated interaction".

B. Posting opinions online

At the beginning of the course, participants were asked to consider their views on the subject of the course, reading fluency. Being experienced classroom teachers, they had considerable experience with reading fluency and the lack thereof, but no specific training or tools for gauging or enhancing it. Participants were invited to post their opinions on an external website, Wallwisher (www.wallwisher.com), which offers an attractive, user-friendly interface for virtual "sticky notes".

Participants responded very well to this activity, reporting no difficulties. They also referred to the activity again later in the course, having enjoyed the "outing" from the usual course platforms. It seems that the incentive to participate in a change of routine in an enjoyable environment (albeit virtual) stimulated them. It could also be the case that "teachers enjoyed the freedom of learning online", as reported Boling and Martin (2005) [cited in 8].

A look at the responses posted in this activity does however sound a caution that should always accompany active learning strategies: active learning is justified by effectively meeting the learning objectives. Even though there certainly was activity and enjoyment is evident, participants' responses do not show the depth of reflection or independent thought that was the objective of the exercise. A significant number of responses are copied from online sources, harvested from the course materials or simply not indicative of meaningful reflection. This suggests that an activity of this nature should be set up very deliberately to lead towards the learning objectives.

The value for participants, however, is that they can experience different ways in which active learning can be encouraged. Participants can apply many versions of an activity like this in the offline classroom, such as using bulletin boards in the classroom. To enhance the activity further, follow-up questions can be based on peers' responses. This encourages respect for and interest in peer work - a valuable approach in active learning. Robb [42] asserts that the strength of this kind of interaction lies in the questions that the peers raise and probe in order to deepen their understanding of how certain ideas or strategies could help their students.

C. Summarizing information in graphic organizers

To guide participants in structuring and reformulating the content of a reading passage, one activity provided a graphic organizer with a few prompts. There was a very clear instruction that text taken directly from the reading would not receive any credit, prompting participants to paraphrase.

By encouraging participants both to structure and reformulate the content of a reading in a visually appealing way, this activity set a healthy trend for active learning. It was well received, and thanks to clear disincentives for plagiarism, original work resulted. Such a task is cognitively demanding, which was not necessarily popular in itself, but the technique is a valuable one for teachers' active learning repertoires.

Graphic organizers and mind maps [43] can be used in a multitude of ways to enhance learning, memory, summarization and creative idea generation. Tools like these will stands participants in good stead as they seek ways to implement active learning in their own classrooms.

D. Contributing to group projects using online collaboration tools

Since the online course did not assume any face-to-face contact, online collaboration tools were deployed for several group-based activities. The course made use of Google Docs (www.docs.google.com), which is an productivity suite equivalent to the well-known Microsoft Office©, with the difference that it is based online and optimized for collaboration. Different authorized users can log in to Docs to add information, edit or comment on others' work.

In several tasks throughout the course, participants were instructed to add their findings, opinions or experiences to these Docs, which were also accessed by other users. Where collaborative work such as this was required, it appeared that participants delegated different portions of work to each other. They did not use the comment function to comment on others' work. This may be explained in several ways, including participants' limited time and motivation to comment on others' work, as well as varied levels of computer skills. There were also instances where participants appropriated others' work as their own (exposed very easily with more knowledge of the software.) It is clear that more could have been made of online collaboration in some of these tasks.

The use of online collaboration tools was hardly unsuccessful. However, as a source of active learning experience, the course structure did not optimize the tools. Throughout the course participants were (unsurprisingly) eager to meet explicit course requirements. By sharpening instructions to demand collaboration rather than mere participation for assessment purposes, participant behaviour can become more active.

In its present form the online collaboration experience did offer participants an active learning experience, but the experience can certainly be enriched further with more collaborative work. An important aspect of such online collaboration is the culture of valuing the contribution of peers, rather than only that of the moderator. This culture is fundamental to the social constructivist approach that underpins contemporary online learning theory [22], and also has a contribution to make in active learning in all contexts.

E. Developing, administering and evaluating assessments for real, in-class students

An important outcome of the course was to provide participants with tools to assess their students' reading fluency. In this respect the online format proved to have a real advantage: participants had the opportunity to administer these assessments in class with their own students. During face-to-face courses this had not been immediately possible, since participants were away from their classes. Actually applying the techniques provided a sense of authenticity and real world value, which is an important principle in all learning and, indeed, the very crux of training. In addition, this was also a tangible example of active learning, making use of various activities, media and feedback.

Reading fluency assessment is a rather intricate process, and participants had to execute each of a series of steps following instructions very closely. Since the steps build on each other, the course required each step to be submitted before proceeding to the next, as any error would compromise the result. Participants first prepared a reading fluency screening test text appropriate to the students' level. They then practiced marking reading errors using a pre-prepared text and audio reading, to ensure that they were comfortable with errors marking and had a sound understanding of the process. The most challenging task was administering the screening test to their own students, making an audio recording to facilitate accurate marking of errors and calculating students' fluency and reading ages. A reflection on the process was also submitted for assessment.

These intricate steps, translated to the classroom, display many properties of task-based learning [44], where learning is a by-product of completing a task with real world value. Task-based learning, in turn, embodies the active learning principle. This complex task, while it placed high demands on participants, could serve as a strong example of active learning in these teachers' on-going apprenticeship of observation [2].

F. Developing learning activities for the classroom

The final content-based activity in the course introduced participants to four techniques for building students' reading fluency. Each group was assigned one activity, and asked to prepare a plan for implementing the activity effectively. Due to

the time constraints faced by many teachers, they were not required to implement the plan during the course.

Again, activities like these can be highly authentic, and ideally teachers can implement lesson plans developed in a course like this to their benefit. Building a basic lesson outline collaboratively is another instance of active learning to enrich participants' experience.

Although implementing the reading fluency building activity was not a course requirement, it was surprising to find that one group had, in fact, not only implemented the activity with great enthusiasm, but even shared a video recording of the activity. The participants in this group had been especially active throughout the course and visibly supported each other. What is interesting, though, is that they themselves decided on the most active element of the activity. This seems to be a case of autonomous, active learning. While it falls beyond the scope of this paper, it would be fascinating to investigate what factors prompted this approach by the participants, and how it can be fostered in future courses.

With or without such autonomous active learning, this task not only provided content to equip participants with active learning techniques, but also with a further active learning experience to add to their conceptual artillery when they re-enter the classroom following training.

G. Using visual metaphors and reflective writing to formulate the learning experience in this course

After completing the theoretical components of the course, a final assignment prompted participants to reflect on their development throughout the course using visual metaphors and writing portraying their classes before and after the courses. This allowed participants the opportunity for focused reflection, while also providing contingency time for any unforeseen technical or other difficulties. Moreover, it presented the opportunity to consolidate course material and identify the contribution such training can make to teachers.

This task left ample room for creativity and self-expression, being somewhat open-ended - qualities that participants may find threatening when dealing with course content, but satisfying at this final stage of the course. Again, active learning is encouraged with the more creative element of using images, as well as formulating the course experience in retrospect. Once again, active learning is modelled in a way that can enrich the teacher's repertoire.

H. Continuous Assessment Rubric, Extra Credit Activities and Awards

There is considerable evidence that adult learners often welcome continuous assessment when scoring criteria and results are openly available to them, since they can swiftly respond to feedback to boost scores - and become more self-aware in the process. This online course took advantage of a continuous assessment rubric with explicit scoring criteria, which was regularly updated and visible to participants online. In addition, participants were alerted to the fact that extra credit activities would increase their scores. The incentive for assessment scores was that participants with scores above a certain level (86%) would receive certificates of merit. This was significant, since in the past only certificates of participation had been awarded for ELTC courses. A further incentive was that schools where all teachers received certificates of merit would in turn receive achievement awards. Although largely symbolic, these incentives had a visible result on certain (but not all) participants.

Being a pilot study, all of these elements were experimental. Yet it would appear that their results were desirable from an achievement point of view. Underlying the increased achievement, however, is an element of learning that should not be underestimated: the power of rewards. Rewards are always a significant element in motivation, but in the brave new world of online learning they deserve to be taken especially seriously, since the affordances of face-to-face communication are lacking.

The heart of continuous assessment, extra credit activities and awards is that they provide a feedback loop that empowers the participants (or learners) to take charge of the learning process and autonomously make adjustments as they enhance their learning. This may not fall within the examples of active learning as described by Prince [15], but it certainly reflects his statement that "(t)he core elements of active learning are student activity and engagement in the learning process". In this respect feedback tools are a powerful aid to active learning that once again serve as a model for participants to draw on when they re-enter the classroom as teachers.

This section serves to demonstrate how active learning was embodied throughout this online course in a spectrum of activities that coaxed participants to engage with the course material, the moderator and, significantly, each other. The central argument of this paper is that active learning is best implemented by teachers who have rich experience in it. The particular affordances and constraints of an online course often make active learning tasks vital to prove that a participant is learning. As such online INSETT is an ideal vehicle for the English teachers to absorb not only the content of courses but the culture of active learning. When these teachers leave the course to teach their classes, they then have a richer repertoire on which to draw as they implement the theory as well as practice of active learning in their classes. In this way, online teacher training may well foster active learning.

I. Teachers' Observations of Active Learning in the Course

The online course in question did not explicitly mention active learning to participating teachers. However, the design

of the course followed an active learning approach, while the content introduced teachers to activities for gauging and building reading fluency. Teachers' reflections submitted at the end of the course showed how active learning success had set a trend in their teaching style.

Although the course addressed reading fluency, increased active learning in classrooms proved to be an unexpected side effect. Admittedly, the authors of this paper have not observed participating teachers in their classroom environments, but the reflections below suggest a shift towards active learning. References to the active learning philosophy are italicized.

"After the fluency building activities, my students felt confidence *(sic)* and love *(sic)* in reading. *This is because they had learnt new activities in their reading skills.* They love to learn the new ways in reading." – Y.H.

"I can see some improvement, not only in my teaching techniques, but also students' attitudes and commitment towards reading lesson… with a lot of *strategies we have shared and implemented* in classroom, I can see they become more confidence *(sic)…"* –S.M.

"(Students) become more confidence *(sic)* and actively *participate in the activity*." – N.H.

"Every time I enter the class students will be eagerly waiting for my English lesson because they were given a chance to improve their reading. They are so happy, no frustration, less stressed and of course not irritated when it comes to reading. Their behaviour changed drastically. *The activity that was carried out motivated them in trying to read.*" –P.J.

"If Reading Aloud was a challenge for the pupils, the Theatre Play was a pleasure. *The participants for the Theatre Play were happy and very enthusiastic to do the reading and they did it confidently*. Even the average readers did their very best…" –F.N.

These reflections suggest a positive, first-hand experience of implementing active learning with participating teachers at the helm of their own classes. The course content accounts for this to some extent, as it does in any teacher training course. However, the very nature of a short course limits the number of techniques that can be learned, and it is not enough to account for a fundamental shift towards active learning as a guiding principle.

This is where the nature of an extended online training course can augment teachers' mastery of mere techniques with an "apprenticeship of observation" in active learning. By experiencing active learning *from the learner's point of view* over an extended period of time, teachers participating in an online course can move beyond the small-scale tactics of isolated active learning techniques to a holistic strategy of a pervasive active learning philosophy.

V. Conclusion

INSETT is the perfect opportunity to equip teachers with skills that can promote active learning and deliver remarkable results. The challenge, however, is to go beyond isolated active learning techniques to establishing active learning as a holistic, *default* teaching philosophy-in-practice.

The nature of online INSETT makes it possible to engage participating teachers *as active learners* over an extended period of time. This allows for a renewed "apprenticeship of observation" where teachers can experience active learning for themselves. Online training can equip teachers not only with a broader spectrum of strategies for implementing active learning, but also with the chance to experiment reflectively in their classrooms. The highly interactive online training environment is also a platform for sharing this experience with other teachers.

This paper has postulated that online INSETT for in-service teachers is an ideal vehicle for kindling an active learning culture. While the possibility of online INSETT in Malaysia had been contemplated for some time [8], the ELTC has laboured to make it a reality. The example of an online course for in-service English teachers suggests that this approach holds great promise to take active learning beyond the classroom and into the vision of a learning society.

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TRACK 4: ASSESSMENT AND EVALUATION

Peer Assessment As A Tool For Enhancing Teaching Towards Active Learning

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Abstract— **Peer review assessment is the practice of colleagues providing feedback on one another's teaching and it is a fundamental tool for the evaluation and development of teaching. It gives an excellent opportunity and benefit for enhancing teaching and learning for both reviewee and the reviewer. The peer review exercise in the Malaysian private university offered invaluable experience which made effective inputs for the better teaching towards active learning. The assessment focused on the various areas such as employing active learning teaching, encouraging student engagement, time management, accommodating diverse learning styles, communicating expectations and providing prompt feedback. After the peer review session, the discussions and reflections between the reviewee and reviewer provided the feasible action plans based on the achievements and opportunities for further development. The peer review exercise carries supportive and positive enhancement of teaching and learning environment for the academics.**

Keywords- peer review; assessment; active learning

INTRODUCTION

Peer review is the practice of colleagues providing feedback on one another's teaching. It is a fundamental tool for the evaluation and development of teaching, complementing feedback collected from students [1]. It has the enhancement of teaching and learning as its primary purpose [1]. Internationally, peer review in higher education has occupied a well established role in the pursuit of academic quality through, for example, publishing in referred journals, awarding research grants and the processes of curriculum development [2]. Yet the higher education lecture hall, laboratory or classroom has, in countries across the globe, traditionally served as the preserve of individual teacher, unobserved by colleagues [2]. According to Lappalainen and Mason O'connor (2012), some countries like Finland and the United Kingdom had developed a peer observation of teaching and promoting a culture of continuing a professional development [2]. The peer review exercise in the Monash University Sunway Campus offered invaluable experience which made effective inputs for the better teaching towards active learning. It gives an excellent opportunity and benefit for enhancing teaching and learning for both reviewee and the reviewer.

PEER REVIEW ASSESSMENT AT MONASH UNIVERSITY SUNWAY CAMPUS

A. Monash peer review instrument

The peer review teaching programme was introduced and implemented from 2011 across the Monash University campuses to measure the effectiveness of all teaching academics. It consists of a peer review assessment tool which is a generic instrument and reflective tool for the personal and professional development. The assessment focused on the various areas such as employing active learning teaching, encouraging student engagement, time management, accommodating diverse learning styles, communicating expectations and providing prompt feedback [3]. During the development of the tool, many factors like cultural differences in feedback, behavioral influences of observers, changes in practice as a result of peer feedback were also considered [3]. Discussions with the staffs across the school and their views were also incorporated during the development of the instrument. For the academics from Sunway Campus, the questionnaires according to the rating system assessment for SETARA curriculum content was incorporated in the second part of the peer review instrument.

B. Reviewers

The reviewers were the academics who had received the training on peer review instrument. They had attended the training entitled "Becoming an effective peer reviewer" by School Medical Education Unit collaborated with the Education Quality and Innovation Department. Over fifty academic staffs from both Sunway Campus and Clinical School of Johor Bahru had attended the training and became the reviewers for the peer review process with the support of the School Medical Education Unit. The School Medical Education Unit provided additional learning resources for further improvement of the peer review teaching programme through the web site.

C. Peer observation process

The peer review assessment at least once a year is required for the academics to fulfill the academic performance appraisal. Faculty members have a right to choose two suitable reviewers, at least one is from different school or discipline in the campus. The reviewer should observe the teaching of a reviewee for at least one hour on one occasion. Before the peer observation, the reviewee needs to meet and have a preliminary discussion with each reviewer and after the peer observation, the reviewer have to send the completed report to the reviewee and further reflection on the report and completion of the action plan would be done by the reviewee.

SELF EXPERIENCE AS A PEER REVIEWEE

Within a year, I had been reviewed by my colleagues from same discipline as well as from different school for two to three occasions. It was a good opportunity to be reviewed and received a valuable feedback from the reviewer. Most of the reviewers were supportive and positive.

It is important to give the reflection on the achievements, opportunity for further development and draw an action plan and timeline. Here is one of the example of my reflection and action plan for further improvement of my teaching and professional development.

I had received a feedback from my peer reviewer on my lecture entitled "Drug-receptor interaction" which was targeted for the Principle of Pharmacology Module (PHA 3801) for Year 3 Biomedical students. I had modified the teaching plan and lecture power point slides to increase students' interaction. I had provided achievable tasks and activities that enhance the learning of the whole group. I used a range of resources that reflect the students' learning needs. I had planned to add the activity of drawing the dose-response curve for the different agonists and antagonists to have more active participation of the students during lecture and to practice their psychomotor skills. I had tried to use the attractive and wide range of graphs, images, text and cartoons in my slides to keep the students' attention and understanding the basic concepts. I used the simple lock and key analogy to explain the complex terms and critical concepts in Pharmacology like affinity, efficiency and selectivity, etc. I had provided various resources to enhance students' motivation for deeper discussion and to promote post-session self-directed learning.

According to "ABC of learning and teaching in Medicine" edited by Cantillon and Wood [4], active learning is an approach to teaching in which the teacher recognizes that it is the learner who does the learning and therefore makes every effort to facilitate that process. During the lecture, I also tried to post many questions to challenge the students intellectually. I had planned well and organized for the session and presented confidently. I could demonstrate the task in an appropriate level and pace for the whole group, adapting and repeating if required. For time management, I allowed sufficient time for question and answer, session review and closure. I allowed periodic pause in between lecture and reviewed the previous learning so far. I had provided students with prompt guidance and endeavored to engage students to participate in and contribute the session. I am quite satisfied with the outcome but it could have been better.

I agreed with my reviewer's suggestion on modification of the learning outcome to be more clearly defined. I had read some medical education resources and realized the characteristics of good learning objectives and revised the learning outcome accordingly. I had used the well-structured statements which were measurable and specific learners' centered-words. I had also changed the strong verbs like "evaluate, analyze and choose" to be suitable for the students' learning of higher order thinking of the Bloom's Taxonomy. According to Amin and Eng [5], as we moved up along the 'cognitive ladder' in Bloom's classification, it may become more difficult to specify the degree or the extent by which educational objectives need to be met. Therefore, a certain degree of latitude is permissible and may be necessary in specifying the degree of target with higher order cognitive objectives[5]. I realized and strongly believed that such objectives challenged the students into critical thinking and problem solving skills. Moreover, it encouraged me to improve my teaching techniques.

One of my reviewer had suggested considering of the domains of knowledge, skills and attitude in this lecture. The teaching activities were added with fill in the blanks activity in column to analyze the characteristics of agonist, antagonist, inverse agonist. The drawing activity to illustrate Dose-response curve of different types of antagonism was included so that this lecture could be improved to deliver the psychomotor skill as well. The affective domain includes the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations and attitudes [6]. During the lecture, I could see the students' enthusiasm, discussion and participation showing their responding to phenomena of new concepts. I had added to "choose the correct drug" in the learning objectives so that I could appreciate the students' value and select the correct one at the end of the lecture. The educationist Edgar Dale illustrated and developed the "Cone of Learning" based on his research which states that after two weeks we remember only 10% of what we read, but we remember

90% of what we do [7]. As I agreed and believe this concept, I had added the activity to involve to draw the curves by the students as well as to improve psychomotor skills. The students are allowed to draw on their own paper and one or two representatives would come out front to draw the different pattern of dose-response curves on white board and have a brief feedback on this activity.

The summary and enclosure slide was modified to put the salient points instead of repeating learning outcomes again. I had changed the summary slide containing bullet-points of the main lecture content. I had planned to point out the most important concepts by asking the questions, related to various assessments (e.g. MCQs or short answer type, etc.) at the closure of lecture. I had provided the further reading resources and hope the students would have got brief and succinct take-home message at the end of the session.

For future action plan, I had already revised the teaching plan and changed the power point slides for learning objectives and summary. I had also added the psychomotor and affective domain as well. The suggestions and comments from reviewer enable me to identify the areas of my weakness and highlight a good practice. This makes me full of thoughts and ideas or techniques to improve in future. I am quite satisfied and confident that my lecture would have a role in medical education and the modifications for further development would definitely provide success for my future teaching.

SELF EXPERIENCE AS A PEER REVIEWER

Teaching is also a learnable skill; this is not an inherent quality that we are born with. Most of us learn the craft of teaching by an arduous, painfully slow and insufficient process of observation of our peers or learning from our own mistakes[4]. I had got an excellent opportunity to have a position of being a reviewer for a lecture delivered by a senior colleague. I noticed that the lecturer had clearly outlined the learning objectives and expected outcomes, demonstrated in-depth knowledge and content expertise and delivered the session with an enthusiastic and motivating style. A good overview of pathogenesis of bacterial infections was successfully delivered.

The lecturer employed active learning techniques and it was outstanding. The lecturer encouraged communication and collaborative learning through use of relevant question and answer techniques. I had learned how different approaches could lead to achieve the goal. I had picked up some tips and ideas which could be applicable for my future lectures. The slides were well prepared and organised for the session and presents material in a clear and cohesive manner, demonstrated the task/skill(s) at an appropriate level and pace for the whole group, adapting and repeating as required and allows sufficient time for session review and closure. The lecturer used a range of resources that reflect the group's learning needs and ensured a balance of discussion which accommodates differing levels of knowledge and experience. Evidence of active learning was noted. The lecturer posed the questions and provides feedback whenever necessary. An overall view of bacterial pathogenesis with the aid of cartoons was presented very clearly.

According to Race P. *et al*., the benefits of peer review in teaching provides "identification of good practice, so that it is more easily shared and built upon; identification of commonly experienced problems and needs, so that these can be made the basis of staff development opportunities designed by assessment, learning and teaching team"[8]. Through observing the teaching, I could learn good practice from different discipline and I understand that subject matter is not important in case of peer review process. Moreover, I had noticed her excellent dedication to the profession. I could appreciate learning from the position of a student as well.

DISCUSSION

The peer teaching evaluation is important for continuing professional development. New faculty member might argue about the value of "one off" observation episode which take place perhaps once a year. It can hardly be seen as sufficient in terms of developing teaching and learning. Thus attempts must be made to move beyond the observation of teaching [9]. Gosling and Masor O'Connor published "Beyond peer observation of teaching" includes case studies of six universities which encompass the broader practice of peer review of teaching and learning, rather than peer observation [9]. According to this article, a common teaching problem in these case studies is a fault or deficiency in the teacher. Whereas the research problems are a "good thing" that academics are only too happy to discuss and debate with colleagues, often "teaching problems" have been seen as implying a fault or deficiency in the teacher. "Changing the status of the problem from terminal remediation to ongoing investigation is precisely what the movement for the scholarship of teaching is all about. How might we make the problematisation of teaching a matter of regular communal discourse? How might we think of teaching practice, and the evidence of student learning as a problem to be investigated, analyzed, represented and debated?" [9]

Peer review assessment of teaching provides a development opportunity which benefits both reviewee and the reviewer through collaborative processes of inquiry, reflection and future action plan and time line. The peer review process might deploy the resource of

staff time, it does not incur the costs of other forms of professional development trainings, conferences, seminars, etc. A well designed peer observation of teaching and peer review scheme can contribute to the scholarship of learning and teaching through collaboration, promoting dialogue, exploring and building on existing knowledge and publicizing new ideas emanating from process of reflection [2]. An effective support of facilities from the school and the commitment of the faculties towards the peer review exercise are also necessary for the successful completion of the process.

CONCLUSION

In conclusion, the peer review of teaching was a mutually beneficial learning experience by being in both positions of reviewee and reviewer. It would help to upgrade the personal and professional development of the academics.

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Evaluating in-house Online Assignment Submission System (OAS) in an e-Learning environment: A case study

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Abstract—**The *in-house* developed Web-based Online Assignment Submission (OAS) system is a robust web-based online assignment submission system for students and tutors at Wawasan Open University. With respect to the demands of its fairly diverse and mobile student population and to the constraints of submission of students' assignments, the first in-house built OAS was developed in late 2007. It was created especially to facilitate students' online assignment submission anywhere, anytime and make it for possible tutors to download students' Tutor-Marked Assignment (TMA) and upload marked assignments together with online feedback to individual students. The OAS has been through developmental changes several times since it first debuted in July 2008. Such developmental changes have yet to be evaluated from the end-user perspective. The intention of the system was to better facilitate end-users experiences compared to previous or existing systems. This study looks into students' and tutors' responses regarding perceived *efficiency, helpfulness, control* and *learnability* of *in-house* built OAS. A survey questionnaire was distributed to students and tutors to obtain data. The findings of this study suggest both that participants were generally quite positive in their overall impression of the four tested components. Tutors responses were found to be more positive than students in terms of the *efficiency* component. This study also verified the perceived positive features of OAS and identified some concerns about features that need to be further improved such as inflexibility to revise mistakes and length of time it takes to upload files. Findings of this study can help to provide guidelines for similar future system development to an OAS in a distance learning institution.**

Keywords-Online Assignment Submission System, attitudes and perception, course management tool, distance learning tools & technologies

I. INTRODUCTION

With the increasing interest in, and concentration on distance education and e-learning, the concept has seen phenomenal, exponential growth, especially in the Asian region. The growth is partly due to globalisation and the competitiveness of higher education as well as the development of information and communication technologies (ICT) all of which have brought a dramatic transformation to Asia [11]. In many countries, distance universities have been developed to respond to the educational needs of working adult learners who wish to gain skills to advance in their careers without the need to step into a traditional brick-and-mortar classroom. Wawasan Open University (WOU) is the first charity funded, not-for-profit, privately established open distance institution dedicated to working adult learners in Malaysia. Since its first intake of students in January 2007, the University has provided distance and e-learning education to over 8,000 adult learners from across six regional offices in Malaysia – Penang, Ipoh, Kuala Lumpur, Johor Bahru, Kuching and Kota Bahru. The presentation of course content in the distance learning mode ensures that learners do not have to sacrifice their work commitments by enabling them to study on their own time and at their own pace [14].

The tutor-marked assignment (TMA) is one of the important elements in assessing distance learners' understanding of the materials presented in the distance learning mode. Normally, TMAs make up 40% - 50% of the total student grade. The remaining 50% - 60% of the students' grades are contributed by the final exam paper, which they must take personally at a scheduled date, time and location. When the university was officially launched in 2006, the physical submission of TMAs required the students to present their assignments during the scheduled tutorial day. However, such practices posted inconveniences for students who cannot attend the tutorial due to personal reasons, as well as the fact that tutors often needed to make several trips to regional offices to collect late TMA submissions. In addition, physical submission of TMAs required a significant amount of paperwork to be completed by tutors for proper claims and compensation. The entire physical submission process is tedious, labour intensive, prone to human error and expensive in terms of the time and natural resources consumed. Many requests for variation were made either by students or by tutors trying resolving physical submission issues. With respect to the demands of its fairly diverse and mobile student population and to the constraints of submission of students' TMAs from six regional offices, the university realised the need to create greater accessibility and flexibility to the student groups. The *first in-house* built Online Assignment Submission (OAS) system was developed beginning in late 2007. It was created especially to facilitate students' online assignment submission from anywhere, anytime and make it for possible tutors to download students' TMAs and upload marked assignments together with online assignment feedback to individual students.

The OAS system is a robust web-based system for students and tutors. Although OAS has been through developmental changes several times since it first debuted in July 2008, such developmental changes have yet to be evaluated from the end-

user perspective: namely the students and the tutors. The intention of the system was to better facilitate end-users experiences compared to the previous systems of handling students TMA submissions. This study looks into students' and tutors' responses regarding perceived *efficiency*, *helpfulness*, *control* and *learnability* aspects regarding effective feedback mechanisms of the functions enabled by the OAS.

II. BACKGROUND & LITERATURE REVIEW

The WOU developed web-based Online Assignment Submission (OAS) system is a robust assignment handling system designed to replace the manual, unpractical physical TMAs submissions for students. The previous TMA submission was too resource intensive and had not been successfully accepted by stakeholders, primarily the students and tutors. There are 5 various stages in of the OAS process from the specification of TMA submission to the student's retrieval when marking is complete by tutor and subsequently released by the course coordinator (lead instructor). The OAS Repository Database (OAS_RD) is the central and major component of the system which stores all stakeholders' information such as students' personal information, enrolments classes, TMA assignments for the enrolled classes, tutors' personal information, TMA assignments, etc. Figure 1 illustrates how stakeholders interact with the OAS. As shown in the diagram, there are separate web interfaces for different stakeholders to accommodate differing stakeholder requirements, as needs from the three sets of stakeholders vary.

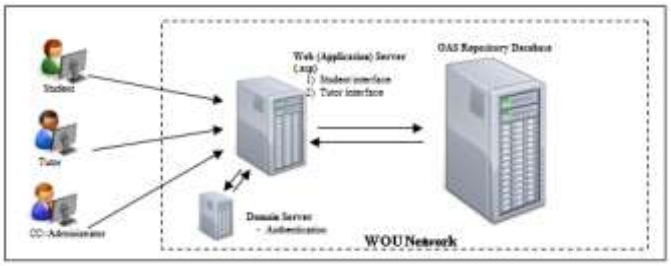

Figure 1: OAS Architecture

The process flow of student submission in OAS is processed in 5 different stages. Stage 1, the Course Coordinators (CC) set up course requirements→Stage 2 Student TMAs Submission→ Stage 3 Tutor Marking (Download/Upload)→ Stage 4 CCs Moderation/Release→Stage 5 Student Grade Retrieval.

With the full implementation of the OAS system across the 6 regional offices, no paper assignments or email submission are needed, which has dramatically helped reduce the time consuming administrative work for both tutors and CCs. The system enables easy and safe access through the internet so students can conveniently submit and check their TMA status at their own convenience. This in turn helps students who are enrolled at outstations, on a job assignment, or elsewhere.

Studies on distance education courses contend that there are many benefits associated with online assignment submission compared to the physical delivery of hard copy assignments [3][7][15]. According to Weir [15], a network-based e-submission (online) provides greater convenience and flexibility to match local conditions and preferences compared to physical submission.

The e-submission of assignments has been widely used in classrooms for many years in forms such as electronic (email), file transfer protocol (FTP), shared file locations or even web-enabled (online). As Bridge and Appleyard [3] noted 'the use of online assignment submission and management is recommended for in Higher Education establishments where students may be remote." The web-based (online) assignment system and electronic marking system, a.k.a OAS, at Queensland University of Technology [1] was created in response to the growing number of students and wide acceptance of use of electronic methods for receiving and processing student's assignments and examinations. The OAS have been well received by students where they find it convenient to submit their assignments from home and later retrieve marked assignments through the web compared to having to collect hard copies. The key advantages of implementing such a system is that it provides the functionality of submitting assignments but also provides a convenient facility to assist the lecturers in marking the assignments all in a web browser environment. The system, however, was aimed towards particular subjects assignments such as C programming, databases, Visual Basic, Java programming and written documents. The BOSS system [9],[10] was among the earliest developer of automatic assignment submissions. The BOSS system allows students to submit programming assignments online to run those program languages against the test data. Although it is not an automatic marking system and the lecturer still needs to manually undertake a marking scheme, compared to non-computer-mediate schemes it helped the administrative staff and lecturer reduce the time involved considerably. Griffiths and Joy [5] extended the functionality of BOSS to improve plagiarism detection and enhanced the user interface in HCI design to increase acceptance by student users. Work on BOSS was again carried in the academic year 2004 - 2005 by evaluating the BOSS system from three perspectives – technical, usability, and pedagogy [6]. The group of researchers study reported that at the technical level the system is robust with regards to integration of plagiarism detection software, platform independence with client-service architecture that enabled the adoption of technology changes (such as Unix or windows or Mac-based). Pedagogically, the BOSS system has sufficient features and functions that adequately support the needs of all stakeholders for course management and assessment tools besides traditional face-to-face classroom and lab classes. In terms of usability, their study reported the current web interface for lecturer users is regarded as overly complex due to its depth-emphasising programming structure.

A similar online assignment submission system was developed at the Open University of Israel that provides alternative ways for students send their assignments via regular email. The assignment system is a Wed-based system that enables students to submit assignments online, track its status, and receive feedback from the graders. However, the use of the system is mainly voluntary. A study was conducted to determine the factors behind the slow adoption of the system since the University-wide implementation in 2007. The results

from the study showed that students' behavioural intention to use the system was influenced mainly by its perceived usefulness, its ease of use, and the individual's attitude towards new technologies. The findings also suggested that students may not have been sufficiently encouraged to use the assignment system due to the voluntary policy set by the University [12]. Other factors that can also contribute to slower adoption are learners' preferences for printed materials for reasons of portability, dependability and ergonomics [4][13].

The purpose of the study described in this paper is to evaluate a built *in-house* OAS from the end-users' perspectives – the primary users are students and tutors groups. Specifically, this study sought to answer four research questions as follows:

Q1. What differences exist between these two groups regarding *efficiency, helpfulness, control* and *learnability* of the *in-house* built OAS?

Q2. What are the perceived positive and negative aspects of the in-house built OAS?

III. RESEARCH METHODOLOGY

The current study deals with students' and tutors' views regarding *in-house* built OAS during the July semester of 2011 at Wawasan Open University. To measure and evaluate the *efficiency, helpfulness, control* and *learnability* aspects of the OAS, the study employed a series of constructive questions to gauge the participants' views on specific items. Specifically, the detailed descriptions of the four scales assessed in this study are presented in Table 1:

Table 1

Efficiency	User's perceived that the system is responsive, straightforward, clear screen layout, accessible and do what is intended to do
Helpfulness	User's perceived that the system communicates in a helpful way that meets their needs (i.e. help and support provided)
Control	User's perceived that the system is responding in a normal, consistent way, and assists them in the event of errors
Learnability	The ease with which the user becomes familiar with system; whether there are user guides, rules, tutorials, etc

A university-wide online survey questionnaire was sent and distributed at the end of semester. Participation in the survey was voluntary and data collection lasted about two weeks. The study recorded 132 students and 51 tutor participants, who were enrolled or who tutored in the July semester. Students and tutors who did not complete the survey questionnaires were removed from the analysis.

Using the relevant literature, a survey questionnaire was developed to assess the participants' views on four aspects of OAS. The survey questionnaire developed was an adaptation of the SUMI (Software Usability Measurement Inventory) evaluation method. This survey consisted of a 19-item questionnaire dealing with issues related to OAS pertaining to students' and tutors' practice in viewing, manipulating and submitting their work in OAS. A 5-point rating scale was employed and designed for this questionnaire. The 5-point scale provides a sharper focus than with typical 1-to-10 scale rating. To add to the body of data for this study, participants were given opportunities to respond to open-ended questions in addition to pre-coded 5-point ratings. Participants were asked "List the most negative aspect(s) of OAS", "List the most positive aspect (s) of OAS". The survey was conducted via online survey where participants from both courses were informed about the survey through Learning Management System announcements as well as through an email message sent through participant email to remind them about the survey.

IV. FINDINGS AND RESULTS

One hundred and eighty three participants took part in the study with 132 of them were student participants (ST) and the remaining of 51 participants were tutors participants (TP). The number of participating tutors (TP) is much smaller than students (SP) due to the nature of the system. The typical student/tutor ratio is 30:1 for each courseoffered. Thus, one can observe that a higher percentage of students than tutors responded to this survey. Forty-eight percent of the student participants were new to the university (2 semesters or less) and sixty percent of the student participants were experienced computer users. Similar for participating tutors, about 45% were new to the university and 67% rated themselves as experienced computer users. More than 80% of both groups are professionals. Most of student participants have a bachelor's degree or less whereas tutor participants nearly all (96%) have attained a Master'sdegree or above.

Usability is an important factor for the evaluation of any system and there are many methods for studying usability. One approach was proposed by Kirakowski and Corbett (1993), where the researchers' characterised usability through five different components (that included *efficiency, affect, helpfulness, control* and *learnability*). For this study, the researcher removed the *affect* component but kept the four other components as this component serve no purpose in measuring the intended outcome. Evaluation of the *efficiency, helpfulness, control* and *learnability* of the system, from the perspectives of student and tutor users, were measured from a 16-item questionnaire.

Q1. What differences exist between these two groups regarding *efficiency, helpfulness, control* and *learnability* of the *in-house* built OAS?

To properly evaluate this research question, an independent-Samples T test was employed to compare between the student group and tutor group, assuming 95% confidence level. SPSS 19.0 was used in analysis the data. The result of the analysis is as follows:

Efficiency

The result of the *t* test on 4-item questionnaire targeting *efficiency* was shown in Table 2. The table contains three columns of results. SPSS 19.0 calculated t value, Sig. (2 tailed) value and the determined statistical result as indicated .

Table 2

Efficiency	Group	Mean (M)	t-test for Equality of Means t	Sig. (2-tailed)	Result
Reading characters on the screen	SP	3.72	-2.563	0.011	Reject H_0
(1 Hard _____5 Easy)	TP	4.10			
Performing tasks is straightforward	SP	3.70	-2.336	0.021	Reject H_0
(1 Never _____5 Always)	TP	4.08			
OAS accessibility	SP	3.50	-1.477	0.141	Fail to reject H_0
(1 Unreliable _____5 Reliable)	TP	3.73			
Overall impression on OAS	SP	3.45	-3.031	0.003	Reject H_0
(1 Terrible_____ 5 Excellent)	TP	3.86			
Overall *Efficiency*			-2.108	0.036	Reject H_0

Overall, TP responses were generally more positive than SP on the average mean. Particularly, TP reported reading characters on the OAS screen were easy (M, 4.1), performing tasks is straightforward (M, 4.08), OAS accessibility was quite reliable (M, 3.73) compared to the SP. The result of the *t* test on this component revealed that three-items shown Sig. (2-tailed) value was less than .05, (p <.05) at normally specified alpha level. Consequently, the statistically significant difference were found between the reading characters on the screen, performing tasks is straightforward and overall rating between TP and SP. The means of both items indicated that there are reasons to believe that tutors reported more positively on these items. However, in terms of accessibility there were no significant differences between TP and SP. The overall average mean for efficiency, statically suggests that TP have greater positive views than SP.

Helpfulness

The results of the *t* test on the4-items questionnaire targeting *helpfulness*is shown as Table 3.

Table 3

Helpfulness	Group	Mean (M)	t-test for Equality of Means t	Sig. (2-tailed)	Result
Error/Alert messages	SP	3.69	0.018	0.985	Fail to reject H_0
(1 Unhelpful_____5 Helpful)	TP	3.69			
Tailored for my needs	SP	3.38	-1.324	0.187	Fail to reject H_0
(1 Never _____5 always)	TP	3.61			
ITS Helpdesk / Support	SP	3.01	-4.703	0.000	Reject H_0
(1 Unhelpful _____ 5 Helpful)	TP	3.78			
Overall impression on OAS	SP	3.53	-0.251	0.802	Fail to reject H_0
(1 Frustrating _____5 Satisfying)	TP	3.57			
Overall *Helpfulness*			-1.661	0.230	Fail to reject H_0

Again, overall the mean score for TP were more positive than SP on 3 of the items on this component. Both TP and SP have similar scores regarding perceived helpfulness of error/alert messages on the OAS (M, 3.69). In term of *t* test, only one item was proved to be statistically significant. This item was the perceived helpfulness provided by the ITS Helpdesk and Support. The finding suggests that SP think ITS Helpdesk were less helpful when compared to TP, with (2-tailed) value is less than .05, (p <.05). The rest of the items in this component were not significantly different between TP and SP. In terms of overall helpfulness, there is no difference between TP and SP.

Control

Table 4 shows the statistical results of the *t* test on the4-items questionnaire targeting perceived *control*in OAS. In terms of the *control* component, SP reported higher (M, 3.36) with regards to the speed of the OAS than the TP (M, 3.2). Regarding the issue of control in revising mistakes, upload/download and overall impression, TP rated OAS much more positively than SP. Two important observations from the results suggest that SP perceived OAS is rigid and revising mistakes in OAS was reported as much more difficult with mean scores 2.86 and 2.89, respectively (Note: mean score that < 3 is considered to be a *negative* reaction.).

Table 4

Control	Group	Mean (M)	t-test for Equality of Means t	Sig. (2-tailed)	Result
Uploading & downloading	SP	3.77	-1.311	0.192	Fail to reject H_0
(1Difficult_____5 Easy)	TP	4.00			
OAS speed	SP	3.36	0.900	0.369	Fail to reject H_0
(1 Too slow_____5 Excellent)	TP	3.20			
Revise mistakes	**SP**	**2.89***	1.464	0.145	Fail to reject H_0
(1 Difficult_____ 5 Easy)	TP	3.02			
Overall impression on OAS	**SP**	**2.86***	-3.09	0.002	Reject H_0
(1Rigid_____5 Flexible)	TP	3.43			
Overall *Control*			-1.27	0.110	Fail to reject H_0

* denote negative (-) view

The result of the *t* test on this component revealed there is a difference in perception of the system in terms of *flexibility* in controlling the system. As indicated from the mean score, the item inquiring about ease of revise mistake was rated negatively by SP, however, there is no statistical difference between them. In terms of *overall control*, there is no statistical difference between TP and SP. However, as noted from this result, problems associated with the rigidity of the system were quite striking, where students' views of *rigid* to *flexible* were interpreted in terms of the ability to make changes and revise mistakes without needing to send request notes to the course coordinator for permission. Presently, the system does not permit users (either SP or TP) to make changes or make any revisions to submissionsand this can only be done with permission from the course coordinator or the Dean.

Learnability

In order to evaluate the OAS against the objective of*learnability*, a 4-item questionnaire wasdeveloped to assess participants' perceptions of how easy it was to learnand use the OAS. In particularly, the survey questionnaire asked the participants to rate how easy for them to learn this OAS rating from 1-being difficult and 5-being easy. The results of the *t* test and the compared mean on the4-items questionnaireon perceived *learnability* was shown as Table 5

Table 5

Learnability	Group	Mean (M)	t-test for Equality of Means		
			t	Sig. (2-tailed)	Result
Learning to use the OAS	SP	3.86	-1.863	0.064	Fail to reject H_0
(1 Difficult_____5 Easy)	TP	4.14			
Exploring the features	SP	3.76	-1.261	0.209	Fail to reject H_0
(1 Difficult_____5 Easy)	TP	3.94			
User Guides & Rules	SP	3.54	-2.343	0.02	Reject H_0
(1 Unhelpful_____5 Helpful)	TP	3.92			
Overall impression on OAS	SP	3.92	-0.951	0.343	Fail to reject H_0
(1 Difficult_____5 Easy)	TP	4.06			
Overall *Learnability*			-1.27	0.110	Fail to reject H_0

Again, TP responses were more positive than SP on all 4-items of thiscomponent. Particularly, TP perceived learning to use the OAS asquite easy (M, 4.06), quite easy to explore the features (M, 3.94) and quite helpful user guides were provided for them (M, 3.92) compared to their counterparts (SP). From the statistical analysis on *t* test, three-items show no statistical difference between ST and TP. However, only one item, regarding *User Guides and Rules*, astatistically significant difference was found between the TP and SP. There is reason to believe that TP perceived user guides and rules provided are much more helpful and easy to learn than did the SP.Yet, on the overall average mean for *learnability*, nostatistical difference between TP and SP was observed. In this account, the user guides that provided for students and tutors are all the same type of documents and information.

Q2. What are the perceived positive and negative aspects of the *in-house* built OAS?

From the survey questionnaire, open-ended questions were added to add value to the quantitative data. Students and tutors were asked to comment what were the perceivedpositive and negative of OAS.

TP and SP positive responses generally commented that the system isstraightforward, easy to learn, user friendly, accessible and saves time. The ability of the auto-grading feature was appreciated by the tutors. Students were pleased to no longer need to personally visit the regional office to submit their assignments. However, the principal negative concerns of both students and tutors fell into two categories. First of all, the system is not flexible enough to meet the requirements of end-users. In particular, any correction or revision of submission must go through course coordinators for approval, or they need to seek assistance from ITS support, which posses inconveniences for end-users because they need to call or email respective course coordinators about any minor mistake in submission of assignment. The second criticism is that TP and SP both perceived that uploading files on OAS takes too long especially during the peak assignment submission deadline period. Comments from SP also noted that the OAS's display and layout needs to be upgraded or re-modeled to be livelier, that the current layout is not appealing.

Most of them would like the system to be more *flexible* in the sense that it allows making changes without the need to obtain many layers of approval,increase the size for submitted file and upload speed, redesign the interface to be more attractive to users and automated prompt system for reminding of student deadlines and marking of assignments (for tutors) via sms or email.Specifically, SP would like to have the functionality to retrieve achieved foldersof submitted assignments from previous semester, to use or to view for reference. TP think that feedback should be in both directions as presently *TP can write feedback to SP* but there is no option for SP to respond. It might be a good idea to add a feedback column on OAS where students can write regarding the feedback from the tutors.

V. DISCUSSION AND PREACTICAL IMPLICATIONS

The *in-house* built OAS is a tool that allows students to submit assignments and permits tutors to upload marks and grades over the internet. Although it is not an automated marking system, it does automatically convert the entered marks into grades. Students can retrieve grades and marked assignments anywhere and anytime. The participants' responses to the study survey on perceived *efficiency, helpfulness, control* and *learnability* of OAS were generally favourable. Most of the participants were new to the University (47%, 2 semesters or less), it was noted that the general feedback regarding the OAS was generally quite positive (average mean scored ranged from 2.86 to 4.06, the control component SP scored 2.86, the least positive) where 5-being the most positive response and 1-being the most negative response. The favourable feedback might be partially due to the fact that the majority of these participants were experienced computer users (62%, computer literacy), thus one might expect the users feel that computer mediated approaches are comfortable.

Comparing between the two groups of participants, the overall statistically significant differences were found on perceived the e*fficiency* component. However, no statistically significant differences were found on perceived *helpfulness, control* and *learnability* between tutor and student participants. On a macroscopic level, the implication from the results suggests that tutors (for this study) have a better and much more positive view of OAS regarding efficiency. Specifically, the tutors' positive responses were that reading the characters on the screen is much easier, performing tasks is quite straightforward and considered it quite excellent compared to students. There is reason to re-examine OAS in terms of efficiency, especially since students rated OAS less efficient than tutors. Although the overall results on *helpfulness, control* and *learnability* between tutors and students participants do not suggest any statistical differences between them, when examining individual items from those three components, results did raised some concerns about the following aspects:

- perceived of *helpfulness* in term of ITS helpdesk support,
- perceived of *control* in term of flexible and revise mistake;
- Perceived of *learnability* in term of User Guides & rules

Students perceived the ITS helpdesk and support less helpful (M, 3.01) than tutors (M, 3.78) which can partly be explained by the lack of ITS staffing. Hence, all technical inquiries (including OAS inquires) might take a longer time to resolve which might create dissatisfaction from the users. In terms of the control component, the student group seem to dislike what they perceive as inflexibility in the system, which it seems, is mostly due to the inability to revise mistakes easily (M, 2.89). The indications of inflexibility also exhibited in Q3 as most of the negative reports about the OAS were about the issue of flexibility. For example, numerous remarks sounded like this:

"There are inflexible re-log-in after log-out. (have to follow certain procedure)."

"Once submitted cannot recall for revise."

"take time to upload, rigid, not flexible"

Presently, the OAS disallows any changes once submitted on the OAS to prevent any such unscrupulous act from students. However, only with the approval from the respective course coordinators or the Dean, students or tutors are then allows to make changes, which imposed some inconveniences especially for really minor or unintentional mistakes during submission. The result provided an indication for the institutional to re-examine the quality assurance policy. In terms of User Guides & rules, tutors seem have much appreciation for the user guides compared to the students, however it was not alarming as the overall *learnability* rating was quite positive by both tutors (M, 4.06) and students (M, 3.92).

VI. CONCLUSIONS

The rapid development of the internet and increasingly sophisticated software capabilities has indirectly impacted the dynamics of distance learning (e-learning) on many levels. Distance learning tools are undergoing re-design by software developers to meet current e-learners expectations and to improve effectiveness to create better capabilities. As the results from this study on *in-house* built online assignment submission system have illustrated, the perceived *efficiency, helpfulness, control* and *learnability* of the tool is very much contextual and depends on different uncounted or unknown factors. To properly evaluate the OAS tool, it required feedback from the 'real' end-users to provide inputs into further improvement. Nonetheless, students and tutors participating in the survey provided valuable insight *into in*-house built OAS's practices and issues.

In conclusion, the results indicate that overall, students and tutors perceive OAS to be quite *positive* that accounted on the aspects of *efficiency, helpfulness, control and learnability*. Overall impressions were found to be relatively positiveespecially the key reported items such that performing tasks is straightforward, easy to learn, accessible and the system saves time. Because distance education is becoming more popular and acceptable to mainstream education, especially in developing countries such as Malaysia, the widespread use of online assignment submission systems seem to be an appropriate and cost-effective solution to remote and adult learners. Criticism and some principal of concerns expressed were found regarding the issue of flexibility and the issue of long uploading times. Both students and tutors would like to be given more control to make certain changes (such as wrongful submissions) without the need to obtain layers of approval. Increases in upload speed with larger file spaces would definitely reduce the time to upload assignments. Another perceived drawback identified from the end-users was that the "plain and unattractive" layout needs an upgrade. Students' feedback quoted that *"the interface too plain", "everything seems too cramp together", "To many wording in the in the OAS web page."* and *"Maybe the graphic/or back ground need some improvement and not too dull"* Although most research on similar topics does not emphasise aesthesis student input, it does provide an indication there may be a need to look into the matter when designing or redesigning the tool. The study provides an initial research model that may be expanded and generalised for similar future studies about the evaluation of online submission tools. This study is also one of the few studies that evaluate the *usability* from the four dimensions of *efficiency, helpfulness, control* and *learnability* that potentially affect end-users experiences in the distance learning environment. Although the limitations of a simple study like this cannot prove "causality", this study did show evidence that in designing online submission tools in the distance education environment, there are indeed potential factors for consideration which the developers or the institutions should think about before designing and deploying a similar system:

- Carefully consider the needs of *all* involved end-users
- Provide as much flexibility and accessibility as possible while assuring quality and safety remain intact
- Provide sufficient support (from ITS personnel) and training for end-users in terms of the application use

The OAS has fully replaced the manual submission system since 2007 and has proved to be very successful; however, this study has shown and provided some insight about the needs of the system regarding for further improvement to meet the expectations and requirements of the end-users.

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The Achievement and Assessment Method for Program Outcomes of FKE, UTeM

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Abstract—**This study is to investigate the attainment of Program Outcomes (PO) for Faculty of Electrical Engineering (FKE). The curriculum of the program in FKE was developed based on the PO set by the faculty academic committee. PO for this faculty consists of eleven statements that describe what the students should achieve immediately after graduation. Entry survey is a form of survey that was conducted to students that just after their admission into the faculty while exit survey was conducted to students that just finish their four year education in the university. The purpose of these surveys is to discover student's preparedness in learning engineering educations and yet to measure the achievement of POs set by the faculty committee. Both of these surveys were distributed to the same respondents and the mapping for the achievement of the PO was made based on the data gain from both surveys. Result from the study shows that students admitted to this faculty were prepared enough to study engineering education and majority of all POs are achieved after their four years engineering program; hence it is believed the POs set for the faculty would be able to produce a competent engineers.**

Keywords- entry survey, exit survey, program outcomes

I. INTRODUCTION

Engineering profession proposed a road map that put a big impact on economic growth of a country in various means such as technology, learning, access and quality. It is believed that to maintain a good quality of human resources in engineering profession, accreditation and assessment of engineering education is compulsory. This would foster engineering education for socioeconomic development at all levels [1]. Engineering education criteria emphasizes outcomes over process, and provides stakeholders involvement to help universities define educational goals and objectives and design a curriculum to meet the desired outcomes.

Universiti Teknikal Malaysia Melaka (UTeM) offers Bachelor Degree in Engineering field such as mechanical engineering, electrical engineering, manufactured engineering and engineering technology. The Faculty of Electrical Engineering (FKE) in UTeM, Melaka provides students in Bachelor Degree of Electrical Engineering and Mechatronics Engineering. FKE mission is to provide the best services and facilities to the students in order to produce high quality of technical students [2-3]. As one of the engineering university, UTeM implemented the concept of Outcome Based Education (OBE) in producing a future engineer. The implementation of OBE in Malaysia Engineering Programs is based on the requirement of Engineering Accreditation Council (EAC) and it has become the standard practice in Higher Education Institution [4]. Accreditation of undergraduate an advanced engineering education programs is an important aspect of ensuring quality of education according to the national and international criteria of benchmarks. Accreditation involves an evaluation and assessment of undergraduate and postgraduate programs offered by universities and other educational providers, through a well defined, peer review process in which endorsement based on broadly designated parameters and criteria are rendered [1].

Referring to EAC Engineering Programme Accreditation Manual 2007, the team highlights the following; Program Educational Objectives (PEO), Program Outcomes (PO), and a matrix linking courses to PO. The POs are referring to statements that describe what students are expected to know and able to perform or attain by the time of graduation. These statements are related to the knowledge, skills and abilities that students should possess through the program. Meanwhile the PEO describe the expected achievements of graduates in their career and professional life a few years after graduation. [5]. In order to attain the achievement of both POs and PEOs, two assessment techniques were proposed, that are direct and indirect assessment methods. The assessment of direct method is based on an analysis of student's behavior or products in which they demonstrate how well they have mastered learning outcomes. For this method, the assessment tools are based on student's achievement in tests, quizzes, examinations, laboratory, assignments and projects. Indirect assessment methods are based on survey and questionnaires that consists of an analysis of reported perceptions about student mastery of learning outcomes. The achievement of PO is based on report from entry survey and exit survey while the achievement of PEO is based on the findings from alumni survey and employer survey [6].

The faculty has developed eleven POs and students of FKE, UTeM are expected to attain all of these POs set by faculty top management. The POs set for FKE is based on eleven attributes from The Accreditation Board for Engineering and Technology (ABET) Engineering Criteria (2000) and EAC manual 2007. These POs are intended to probe not only students attainment to specific knowledge of engineering field, but also to cause them to reflect upon how these aspects measure in POs will fostered their attitudes

and skills towards their jobs employment.These 11 FKE's POs that students acquire throughout the programme are as in Table I.

PROGRAM OUTCOMES OF FKE, UTEM

PO1	Ability to apply fundamental knowledge of mathematics, sciences, electrical and/or mechatronics engineering.
PO2	Ability to design a system, component, or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
PO3	Ability to design and conduct experiments, as well as to analyze and interpret data for practice and applications.
PO4	Ability to identify, formulate and solve engineering problems.
PO5	Ability to use engineering tools necessary for engineering practices.
PO6	Ability to practice professional and ethical conduct.
PO7	Ability to communicate effectively.
PO8	Ability to function in a team effectively with the capacity to be a leader.
PO9	Ability to undertake lifelong learning.
PO10	Ability to identify fundamental entrepreneurship skills as applied in the engineering profession.
PO11	Ability to have knowledge of contemporary issues.

The purpose of assessing POs is to evaluate the performance of the program. Since the engineering education is very dynamics with the changing of technology, the POs require proper attention and continuous improvement to remain relevant in the current state of art of the technology. It needs to be reviewed after a period of time. Therefore, the findings from the present formal survey instruments would benefit various parties in the university especially the student's expectation in learning engineering education as well as the FKE top management in planning and conducting necessary programmes for the students to assure the program accreditation requirements are met. The aim of this findings not only addressing the requirement of the accreditation process at the highest level, but to enrich and continuing to improve the programme offered so that it is relevant and competitive.

II. ASSESSMENT TOOLS

Two set of questionnaire were distributed to the students in order to gain data for this study. The entry survey was distributed to the students in the cohort of 2008/2009. After four years of their education program, the exit survey was then distributed to these students. Both of these surveys are in the form of questionnaire in which the respondents need to do a self evaluation to all items listed in the survey.

A. Entry Survey

The purpose of entry survey was to determine student's preparedness and perceptions before starting their engineering education in FKE, UTeM. A set of entry survey was developed which consists of three parts, namely part A, part B and part C. Part A consists of personal background of the respondents such as matrix number, email, year of enrollment, gender, race, course and entry qualification. This information is needed as it will be used to track the students for exit survey once they have completed the four year program. Meanwhile Part B in the questionnaire consists of items to identify student's interest in choosing electrical/mechatronics engineering education program. Part C contains 42 items that were constructed on the basis of each FKE's POs. On average, each PO consists of four items to identify student's preparedness in engineering program. The students were asked to rate each items in Part B and Part C on a Likert scale from 1 for strongly disagree to 5 for strongly agree.

B. Exit Survey

The purpose of exit survey distributed was to measure the achievement of all POs listed after four year engineering education period. Another purpose of exit survey was to develop some demographic information about FKE students so that it will be easy to trace them for alumni survey. The exit survey developed consists of two parts, namely Part A and Part B. Part A of the questionnaire contains respondent's background such as name, email, phone number, permanent address, gender and race. Part B consists of 20 items that matched with FKE's POs with the scale used same as entry survey. Exit survey was distributed to the same students (cohort 2008/2009) via online during their last day in the faculty. All the data gain from this survey was automatically saved in the data based for further analysis.

III. ASSESSMENT CRITERIA

To measure student's perceptions and preparedness in learning engineering education at FKE, UTeM, analysis that took part are listed as below:

A. The frequency analysis for the background of the respondents.

B. The alpha reliability coefficient of the scale to see the validation of the instrument use.

C. Mean score and standard deviation to measure student's interest and preparedness in entry survey.

D. The percentage of agree and strongly agree for each POs items to measure PO achievement in exit survey.

To calculate the mean score, the following formula was used:

$$\text{mean score} = \frac{(F1\times 1)+(F2\times 2)+(F3\times 3)+(F4\times 4)+(F5\times 5)}{N}$$

where $F1$ = frequency of strongly disagree
$F2$ = frequency of disagree
$F3$ = frequency of neutral
$F4$ = frequency of agree
$F5$ = frequency of strongly agree
N = number of respondents involve in this survey

For entry survey, once the mean score is calculated, the rank for the mean score was distributed as follows; 0-2.00: low, 2.01-3.00: medium, 3.01-5:00: high. For exit survey, the attainment of all POs is based on the faculty target 75% of FKE students will agree or strongly agree with the statements that describe each PO. Student's comment and suggestions were also considered and necessary revision was carried out accordingly [7-9].

IV. RESULTS

A total of 250 students took part in both of these surveys. All data from entry survey and exit survey were then entered

into a statistical analysis package for a later analysis. The following are the results and findings of the research.

A. Respondents Background

The breakdown of the respondents that involve in both of these surveys is as shown in Table II. About almost 70% of the respondents are male as majority of the students in this faculty are male student. Comparing to students races, majorities are Malay, follow by Chinese, Indian and others. Others race involved in this study are referring to Bumiputera Sabah Sarawak and international students from Arab and Yemeni. For entry survey, the respondents also being group based on their entry qualification. This information is needed in order to measure student's level of interest base on their education background. Result shows that a big number of the respondents are from Matriculation (123), followed by Diploma holder (92), STPM holder (32) and the least from foundation program (3).

RESPONDENTS BACKGROUND

Background	Items	Entry Survey	Exit Survey
Gender	Male	175	171
	Female	75	79
Race	Malay	201	208
	Chinese	35	28
	Indian	7	3
	Others	7	11

B. Reliability of the Questionnaire

Evidence for the reliability of the instrument was found by computing the internal consistency (Cronbach's alpha coefficient) for the data for the whole sample and for the scales. The Cronbach's alpha test was run in order to see the reliabiliity and consistency of the questionnaire. The value for this measure is varies between 0 and 1 and the nearer the result to 1, the more internally reliable is the scale [10]. For entry survey, the Cronbach's alpha coefficients are 0.850 for Part B and 0.963 for Part C. Meanwhile, for exit survey, the value of Cronbach's alpha coefficient is 0.939. The Cronbach's alpha values greater than 0.70 inicate that the questionnaire used in this study are high in reliability. Furthermore, a high value of Cronbach's alpha coefficients also meaning that the Likert scale used in this questionnaire is suitable to produce a consistent and stable answer.

C. Student's interest & preparedness

Table III below presents analysis result for Part B entry questionnaire which about items related to students interest. The mean score are above the rank of 3.01 which indicate that FKE students in the cohort of 2008/2009 have high interest in studying electrical/mechatronics engineering course. The analysis result can be explained in this way; a high self interest in learning electrical/mechatronics engineering course is the main reason for the student to join this program. Another main reason for them to involve in this field is the uniqueness and specificity of the program with a better future career of becoming an engineer. A big opportunity to further study is the next reason for the students in choosing engineering program. Apart of this, the interest of becoming an entrepreneur is the other reason for the students in choosing engineering program.

As illustrated in the Table III below, student's expectation could be met in the adoption of new culture in university environment and the decent facilities provided by this faculty. A significant number of students (63.2%) agreed that FKE, UTeM offer good facilities in order to support their studies and 83.6% agreed that they can adapt to university culture. Referring to the values of standard deviation in Table III, it shows that all of these values are small which means that the variability in the answer from the questionnaire is acceptable.

RESULTS FOR STUDENTS INTEREST

No	Items Related to Student's Interest	Mean	Std. deviation
1.	Profound interest in electrical/ mechatronics engineering	4.26	0.902
2.	Career prospects of the programs	4.14	0.896
3.	The uniqueness and specificity of the program	4.15	0.836
4.	Faculty facilities provided	3.76	0.948
5.	Opportunities to further studies	4.12	0.862
6.	Interest becoming entrepreneur	3.35	1.003
7.	Adopting new culture	4.25	0.804

Table IV illustrates student's preparedness based on POs items. It is observed that the highest mean score is 4.35 corresponds to PO6. It shows that the students enroll in electrical/ mechatronics engineering course in FKE, UTeM are prepared enough for professional practice and ethical conduct. The second highest mean score is for PO8; which implies that the students are prepared to work in team and possess a leadership skill. The third highest mean score is for PO9, follow by PO7. A high value of mean score (4.11) for PO7 indicate that the students are highly prepared to communicate effectively within their colleague and faculty staff before starting engineering program.

RESULTS FOR STUDENTS PREPAREDNESS

Preparedness based on Program Outcomes (PO)	Mean	Std. deviation
PO 1	3.94	0.829
PO 2	3.99	0.809
PO 3	4.09	0.794
PO 4	3.91	0.779
PO 5	4.07	0.826
PO 6	4.35	0.729
PO 7	4.11	0.743
PO 8	4.32	0.712
PO 9	4.16	0.771
PO 10	3.33	1.075
PO 11	3.93	0.837

A ranking for a slightly different value of mean score are for PO3, PO5, PO2, PO1, PO11 and PO4. It is also observe tht the lowest mean score (3.33) is for PO10, meaning that these students are least preapred in term of entrepreneurship skill. Results as illustrated in Table IV shows that based on POs approach, the FKE student in the cohort of 2008/2009 have prepared themselves with all the criteria needed to learn electrical/mechatronics engineering. Examined values of standard deviations for all items shows that variability within respondents answer are small and acceptable.

D. POs achievement based on exit survey

The primary purpose of exit survey was to assess the achievement of faculty POs after four years education in engineering program in FKE. Table V shows the percentage of respondents that agree and strongly agree gained from exit survey. On average, the percentages for all POs are greater than 70%. It also evident from Table V that the highest percentage of agreeness is for PO8 (83%), which is teamwork and leadership, follow by PO3 (83.2%) and PO1 (82.4%). Comparing to the respondents percentage of agreement, PO10 percentage is 73.6%, which is below the target set. Hence PO10, that is to develop students entrepreneurshipskills is not achieve for FKE students in the cohort of 2008/2009. Comparing the percentage of agreement, Table V reveals that other POs are more than 75% which proven that all other POs are achieved. The ranking for PO achievement are as follows; PO8, PO3, PO1, PO6, PO9, PO2, PO7, PO5, PO4, PO11.

RESULTS FOR PO ACHIEVEMENT

Preparedness based on Program Outcomes (PO)	Percentage of agreement
PO 1	82.4
PO 2	78.8
PO 3	83.2
PO 4	75.8
PO 5	76.2
PO 6	81.4
PO 7	77.6
PO 8	83.4
PO 9	80.4
PO 10	73.6
PO 11	75.6

V. CONCLUSION

Based on the results of the study, it appears that students admitted to the FKE, UTeM have a high self interest in electrical and mechatronics engineering program. Results of the study also reveal that good facilities in lecture hall and highly modern equipment in laboratory be their expectation in choosing this faculty as place of study. Measuring student's preparedness shows that the ethical conducted be the main criteria of student's preparedness in learning engineering program while entrepreneurship skill is student's the least prepared criteria. On the other hand, the ranking for the achievement of the POs be slightly different from the ranking of student level of preparedness. This would probably due to the learning process that took part in four years education have changed their level of preparedness based on PO items. It can be summarized here from exit survey analysis that only PO10 is not achieved for the students in the cohort of 2008/2009.

VI. DISCUSSION

This study is significant for the acadameic and nonacademic staff in FKE, UTeM in a way of providing a better quality of services. It is observed from the result of this study that developing students entrepreneurship skill is an interesting aspect that should be take into proper attention. Developing entreprenurial skills is equally valuable to developing technical skills in engineering profession [11]. As an initiative, the faculty administration could provide relevant training and courses to increase the knowledge of business process. Apart of this, the faculty could also applied a very hands-on approach to teaching engineering via the concepts of innovation and entrepreneurship as done in [12]. As mention in [12], the studentswere given the opportunity to experience the product development process by learning more about the business side of product development including formulating an idea for a product/business, presenting their proposal to faculty, developing a prototype, researching market potential, and preparing a business plan for funding. Indirectly, this kind of course could also enhance students communication and presentation skills, cultivate teamwork and develop leadership skill.

Student's interest, expectations, preparedness and PO achievement could contribute for a better engineering program planning for learning environment which will enable students of this faculty achive success and hence produce competents engineers. It is hope that the findings from this study will be a benefit to the faculty in planning the program offer and yet the accreditation of the electrical and mechatronics engineering program offer by this faculty could be done effectively.

ACKNOWLEDGMENT

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Library Customer Satisfaction (LCS) at Library of Universiti Tun Hussein Onn Malaysia: A Study of Space, Facilities and Services

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Abstract—**Consideration of customer satisfaction should be an essential part of evaluating library performance. Satisfaction depends, to some extent, on customer expectations of space, facilities and services. The purpose of this study is to evaluate the "Outcome Budget Evaluation (OBE)" for gauging the level of space, services and facilities available in the library of past and present. Therefore, a focus group of 60 degree-level students across seven faculties was selected using the "Lead User" method. These students who have been using both infrastructures; both the old and new UTHM libraries, are involved with parameters as space, services and facilities. A self-administered quantitative survey is designed and executed to measure the library performance. In overall, results of this study reveal that 98 percent of respondents are very satisfied with the present library including space, facilities and services. Lesson learned in this study has implications not only on student satisfaction, however much more internal perspectives on space, facilities and services in the library.**

Keywords-Library Customer Satisfaction; Lead User; Outcome Budget Evaluation (OBE); Satisfaction

I. INTRODUCTION

Recently, there has been scarce discussion and publication on the Library Customer Satisfaction (LCS) which relates to Outcome Budget Evaluation (OBE) on universities' libraries. The Outcome Budget Evaluation is a progress card for governmental ministry and department to monitor the progress of a project development and investment, whether it's successful or otherwise. OBE is one of the methods of assessment and evaluation required by the Ministry of Higher Education (MOHE) Malaysia to gauge customer satisfaction after the construction phase is completed. Customers may express their satisfaction with a product or service in terms of specific aspects such as the product attributes, price, customer service, or a combination of these various features [1]. It is a performance measurement tool that facilitates in attaining better service delivery and decision-making; evaluating program performance and results, communicating programme goals and improving programme effectiveness. This method measures flow of funds, project implementation and the actual results of the monetary investment which has been implemented by many countries [2]. In view of knowledge management practices [3],[4], it is closely related to knowledge creation [5],[6], whereby physical expansion of space in the library building is one of the outcomes in measuring consumerism [7].

This outcome program, which has been implemented by MOHE, will help government ministries to monitor and coordinate the outcomes of the invested budget.

The objectives of this study are listed as the followings:

(a) To assess the implications of Library development against academic activities, university management and surrounding communities,

(b) To assess customer perception against space, facilities and services, and

(c) To assess the implication for growth and development of human capital.

Therefore, this study deals with intereting issues from the holistic satisfaction point of view.

II. METHODS

In determining the focus groups, this study uses the Lead User method by Von Hipple (1986) and M. Saufi, *et al.* (2012) as references [8],[9]. The sample of *n* equals to 60 lead users

This research project was sponsored and funded by the Deputy Vice Chancellor (Research and Innovation) Office of Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia.

among degree students. They were selected based on a frequency ranking in using library facilities and services. Selected respondents were asked to state their level of importance from the perspective of customer (student) satisfaction. There are 60 respondents across seven faculties who have been selected from the library computer system as a representative sampling to the student community in Universiti Tun Hussein Onn Malaysia (UTHM). This implies that each student who goes to the library has the same chance of being selected to answer the questionnaire. Respondents are requested to return the filled-in questionnaires to the library counter. A total of 60 filled-in questionnaires were returned showing overall response rate of 100 percent. The questionnaire was developed based on a 5-point Likert scale (1=Very Unsatisfied to 5=Very Satisfied). It measures students' satisfaction for both old and new UTHM library buildings.

III. Results And Discussion

A. Demographic Analyses

The subsequent section reports the basic findings of the research in terms of demographics of respondents. It consists of respondents' semester, gender, age, and faculties in using space, facilities and services.

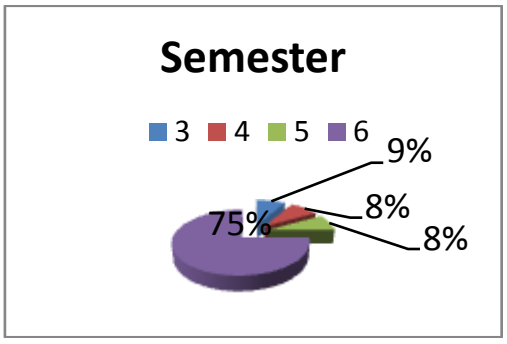

Figure 1. Respondent Semester Distribution

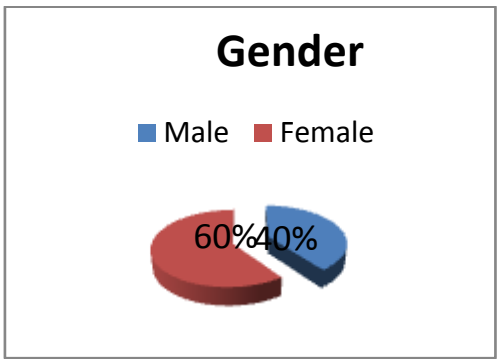

Figure 2. Respondent Gender Distribution

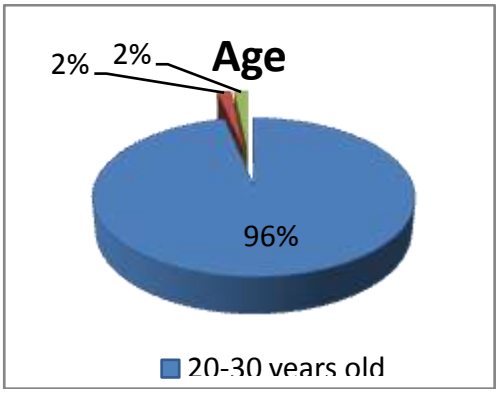

Figure 3. Respondent Age Distribution

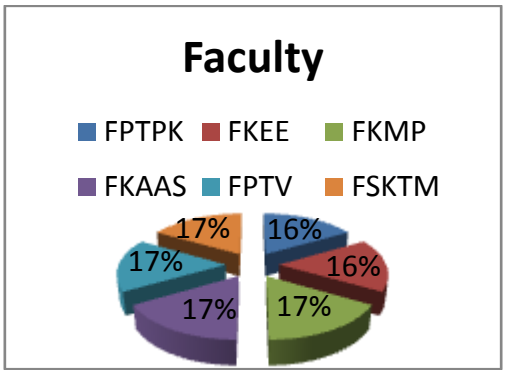

Figure 4. Respondent Faculty Distribution

B. Purpose of Visit

Generally, all students who were going to visit the university library had various purposes and objectives. Some of them went to the library purposes for seeking information, study and etc. Therefore, undergraduate (degree) students were asked to identify and rank their activities that occupied students most while using the library.

Mean Score Distribution and Standard Deviation

Extent	Range
Low	1.0 – 2.3
Medium	2.4 – 3.7
High	3.8 – 5.0

Extent Level for Mean by Tasmin and Woods [10]

Figure 5 depicts the highest mean score of the library, whereby library has a comfortable space is at 4.68. This is because present UTHM library has larger meter square feet to accommodate more students. The lowest mean score indicates that student involved in library programme is at 3.58. It is because of library needs an arrangement of interesting events to attract students' interest to join library programme. The average mean score refers to Inter Library Loan and

Internet/Wifi is at 4.10. It shows that customers use frequently this facility when they visit the library.

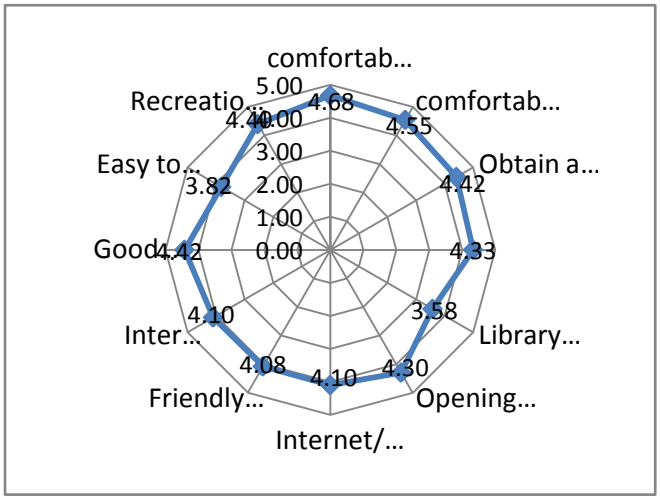

Figure 5. Purpose of Library Visit

C. Overall user Satisfaction against Library Staff

Figure 6 depicts an overall level of user satisfaction past and present with respect to library staffs. There are 53% of respondents who were satisfied on library staffs at present, while 47% of respondents were satisfied with old library staffs. It indicates that library staffs are more motivated and enjoying doing their work in present UTHM Library.

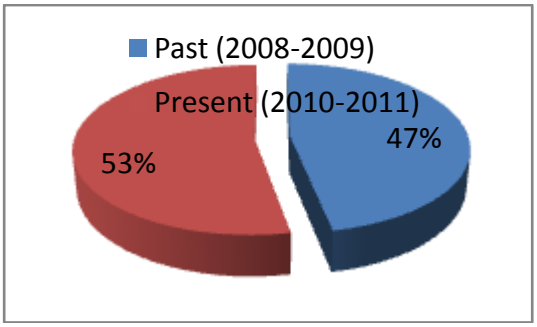

Figure 6. Respondent Past and Present of user satisfaction

D. Overall user satisfaction of Infrastructure/Facilities

Figure 7 depicts overall level of user satisfaction for past and present of infrastructure/facilities in the library. There are 90% of respondent who were satisfied with infrastructure/facilities at present, while 47% of respondent rated low in the past. It indicates that present UTHM library has adopted current technology and facilities in the building rather than in the old library. The average of customer satisfaction percentage, from old to new UTHM library, has increased by 16%.

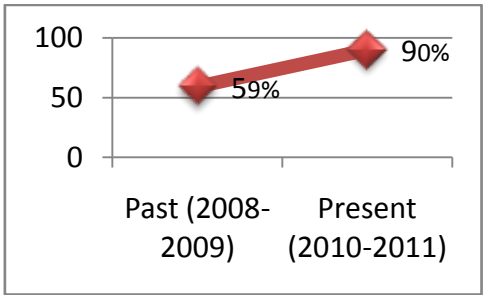

Figure 7. Respondent Past and Present of user satisfaction

E. Overall user satisfaction of the library service.

Figure 8 depicts the highest mean score for library staffs' user friendliness is at 3.70. It shows that space could influence mood and behaviour of individual library users. The lowest mean of collection complete is at 3.20. This is because in the past, UTHM library has small space and insufficient collections to be managed. At present, the highest mean for helping transaction is at 4.58. The lowest mean for Information Literacy Class is at 4.22.

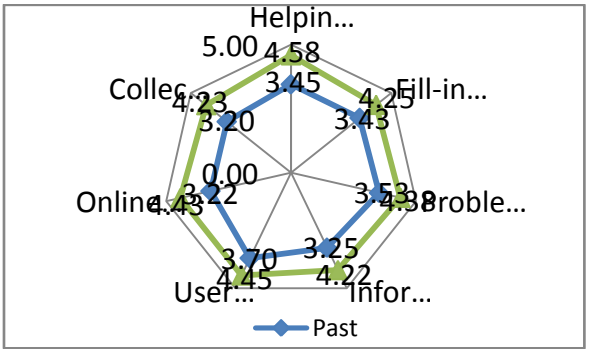

Figure 8. Overall user satisfaction of library services

F. Overall user perception of the present library.

Figure 9 depicts the highest mean, in past, for support learning process is at 3.70. While, the lowest mean score, in past, for relationship is at 3.22. However, at present the same highest mean for knowledge explore and support learning process. While the lowest mean for helping society is at 4.23.

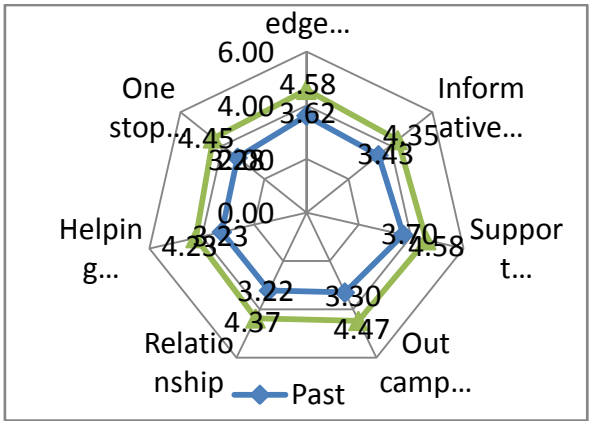

Figure 9. Overall user perception of the present library

G. Overall user satisfaction againts building infastructure, facilities, services and etc. provide by UTHM library

The result depicted in figure 10 indicates that the overall user satisfaction against building infrastructure, facilities, services and etc. In all, most of respondents were rated about 98% out of 100% which is very high. It shows that respondent highly satisfied with the present UTHM library.

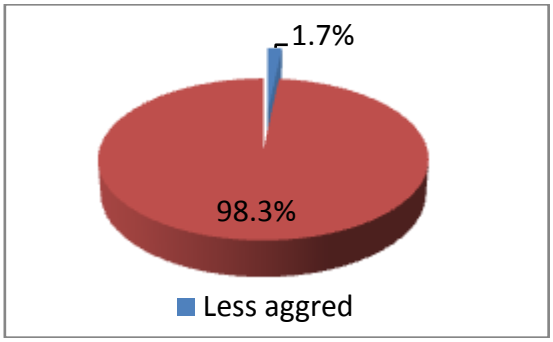

Figure 10. Overall user perception of the present library

IV. CONCLUSION

As a conclusion, this study has achieved the objectives which the present UTHM library supports against academic activities, university management and surrounding communities. The library also gives customer more spaces, facilities and services, and also contributes to positive implication for growth and development of human capital in the university. It has projected an image of new future and direction to become a Future Library. This study discovers that the present UTHM library could support not only university community but also local community at Parit Raja, Johor. Therefore, future research needs to be done to undertake other pertinent library issues, such as intranet access and digital contents (e-books) which are not discussed or highlighted in this study.

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Exploring Undergraduate Students' Feedback: An Experience in Insaniah University College

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Abstract— **In this paper we explore the student's feedback towards their lecturer by using 18 lecturer characteristics used internationally. We examine the descriptive statistics in order to identify their satisfaction level followed by a correlation analysis and distance matrix to explain the inter-relationship among those characteristics. Later we implement a minimum spanning tree to demonstrate evidence that students are most influence by knowledgeable, willingness, understanding, and good communication of lecturer. If these four characteristics are well managed then the other characteristics will be influenced. The lecturers and university senior management would benefit by knowing this feedback in order to gain a competitive advantage.**

Keywords- correlation matrix; high dimension data; higher education; lecturer skill; multivariate statistical analysis; network analysis

I. INTRODUCTION

The factors that might contribute active learning would be the setting of the classroom [1], the well-preparedness of the lecturer [1] [2] and the ability of the lecturer to recognize his students by memorizing their names [3]. In certain situation, [4] claimed that some students are more willing to participate actively in class if they trust the lecturer, which is only possible once they get to know the lecturer better. As they know the lecturer better, they will feel more relax and willing to participate in the class activities.

This is also supported by [4] and [5]. Noels mentioned that the things lecturer does in the classroom will be influence the students' motivation. While, Hodgson found that students were motivated by lectures extrinsically, intrinsically or vicariously. Here, we can see the role of lecturer is very important in motivating and stimulating the students.

At the same time, the students are university asset and stakeholders as well. Therefore, they should be considered as the most important person in examining teaching quality. We require information and feedback from the student point of view since it is now required by educational institution worldwide, generally in the form of a satisfaction feedback questionnaire [6] [7] [8].

The notion of asking students to provide feedback on the quality of teaching has been with us for almost a century. Student rating was introduced into North American universities in the mid 1920s [9].

Therefore, in this paper, we explore the student's feedback towards their lecturer by using 18 lecturer characteristics used internationally [10]. The primary purpose of this paper is to identify the level of student's satisfaction towards their lecture's characteristics and what lecturer should be prepared for teaching in the classroom.

This feedback will be benefit to the lecturer since it may give some encourage to the lecturer on their teaching practices. At the same time, the university senior management would benefit by knowing this feedback in order to gain a competitive advantage. The most important thing, we can understand what student's needs from lecturers.

The rest of the paper is organized as follows. In the next section, we present the research methodology. Then, in Section III, we will discuss the results of analysis. This paper will be closed with the conclusion in the last section.

II. RESEARCH METHODOLOGY

In what follows we discuss first the data preparation, and data analysis.

A. Data Preparation

There are 114 undergraduate students have been participated in this survey. The sample is collected based on stratified sampling technique among undergraduate students who enrolled for the second semester of 2008-2009. The population size is around 1,000 students. In this paper, we explore on the undergraduate student's feedback only since they are representing majority of students.

The questionnaire consists of 18 questions (characteristics). They are classified into five main constructs, namely; accessibility, willingness, understanding, responsive, and professionalism of lecturer.

The scale from strongly very satisfy (7) to strongly very unsatisfy (1) has been used in the questionnaire to measure the characteristics. See [10] for the details of the questionnaire development.

B. Data Analysis

We used descriptive and multivariate statistics to analyze the data. Here, we introduced a network analysis approach to identify the most important or dominance or influential characteristics. Those 18 nodes and 153 links can be considered as a social network, i.e., a network representation of social phenomenon viewed as a complex system. Network analysis was originally developed in computer science. However, nowadays, it has been used in various fields of study. See, for example, [11] in sociology, [12] and [13] in finance and [14] in transportation.

In practice, network analysis starts with a correlation matrix. Then, we transform it into a distance matrix [15]. From this matrix we construct the corresponding sub-dominant ultrametric (SDU) distance matrix based on minimum spanning tree (MST).

1) Correlation matrix

We denote X_i is the *i*-th characteristic under study where *i* = 1, 2, … , 40. The correlation matrix among those characteristics, issued from a sample, is a symmetric matrix of size 40×40 where the element in the *i*-th row and *j*-th column is,

$$\rho_{ij} = \frac{\langle X_i X_j \rangle - \langle X_i \rangle \langle X_j \rangle}{\sqrt{\left(\langle X_i^{\,2} \rangle - \langle X_i \rangle^2\right)\left(\langle X_j^{\,2} \rangle - \langle X_j \rangle^2\right)}} \qquad (1)$$

representing the correlation coefficient between *i*-th and *j*-th characteristics [14]. That correlation coefficient quantifies the degree of linear relationship between *i*-th and *j*-th characteristic. By definition, $\rho_{ii} = 1$ for all *i* and ρ_{ij} can vary from – 1 to 1 for all $i \neq j$ where,

$$\rho_{ij} = \begin{cases} 1 & \text{means perfectly positive linear relationship} \\ 0 & \text{means no linear relationship} \\ -1 & \text{means perfectly negative linear relationship} \end{cases}$$

2) Distance matrix

To analyze the network, we transform the correlation coefficient is transformed into a distance by using the following formula [14].

$$d_{ij} = \sqrt{2(1-\rho_{ij})} \qquad (2)$$

It is the Euclidean distance between the *i*-th and *j*-th characteristics since it satisfies the following three properties; (i) $d_{ij} \geq 0$ and $d_{ij} = 0 \Leftrightarrow X_i = X_j$, (ii) $d_{ij} = d_{ji}$, and (iii) $d_{ij} \leq d_{ik} + d_{kj}$. The first property tells us that two characteristics that are perfectly correlated (either positive or negative), $|\rho_{ij}| = 1$, will be represented by a single point in Euclidean space ($d_{ij} = 0$). More over, $0 \leq d_{ij} \leq 2$.

The second property is symmetric property; the distance between the *i*-th and *j*-th characteristics is equal to the distance between the *j*-th and *i*-th characteristics. In other words, the correlation between the *i*-th and *j*-th characteristics is equal to the correlation between the *j*-th and *i*-th characteristics ($\rho_{ij} = \rho_{ji} \Leftrightarrow d_{ij} = d_{ji}$).

The last property is well known as triangular property. From (2), we conclude that, in general, the higher the correlation coefficient the smaller the distance.

By using equation (2), we obtain a distance matrix D of size 40×40 with d_{ij} as the element in the *i*-th row and *j*-th column. It is this matrix that we analyze in the rest of the paper.

For this purpose we use Kruskal algorithm as suggested in [15]. MST will then be used to simplify the original network and summarize the most important information. To visualize the MST we use the open source called 'Pajek' [16] [17] [18].

Furthermore, to interpret the MST we use dot plot matrix, and centrality measures such as degree, betweenness, closeness, and eigenvector centralities. These measures are helpful to understand the importance and or influence of each node relative to the others ([19], [20], [21]). The role of each measure in details and its formula can be consult in [22]. To make the MST more attractively and efficiently useful, we use the Kamada Kawai procedure provided in Pajek [23].

III. RESULTS AND DISCUSSION

A. Reliability Analysis

Prior to actual data collection, the reliability coefficient alpha was used to measure the reliability of the constructs in the pilot study. The sample for the pilot study comprised of 23 respondents. Table I shows the Cronbach's alpha coefficient for each construct respectively, which are all at acceptable levels. [24] suggested that a constructs with a coefficient exceed 0.7 can be considered as internal consistent.

MEAN, STANDARD DEVIATION AND CRONBACH'S ALPHA

Constructs	Mean	Standard Deviation	Cronbach's alpha
Accessibility	4.27	1.49	0.91
Willingness	4.62	1.61	0.93
Understanding	4.33	1.66	0.91
Professionalism	4.60	1.63	0.89
Responsive	4.51	1.62	0.90

Table I presents the mean values of the characteristics. The mean value of all the constructs is greater than 4. The higher mean values of "Accessibility", "Willingness", "Understanding", "Responsive" and "Professionalism"

indicate good practices of the lecturer characteristics, which yield students satisfaction.

B. Analysis of Student's Feedback towards Lecturer Characteristics

Table II summarize the descriptive data of lecturer characteristics which include all the five constructs. In this table, all the means score is more than 4 exclude Consultation and all the median score is 5 exclude Consultation, Openness, Comfortability and Concern. The highest score belong to Knowledgeable, and all the standard deviation is less than 2.

LECTURER CHARACTERISTICS

Code	Characteristics	Mean	Median	Standard Deviation
A1	Consultation	3.97	4	1.53
A2	Openness	4.06	4	1.49
A3	Comfortablity	4.35	4	1.50
A4	Respectability	4.68	5	1.45
W1	Knowledgeable	4.82	5	1.54
W2	Consciousness	4.53	5	1.64
W3	Willingness	4.60	5	1.64
W4	Good Manners	4.54	5	1.64
U1	Understanding	4.41	5	1.72
U2	Consideration	4.36	5	1.65
U3	Concern	4.21	4	1.62
P1	Expert	4.57	5	1.60
P2	Professional Appearance	4.63	5	1.66
R1	Good Communication	4.77	5	1.65
R2	Accountability	4.46	5	1.59
R3	Responsiveness	4.30	5	1.62

Lecturer's accessibility include four characteristics namely consultation, openness, comfortablity, and respectability. The highest score is given to respectability (Mean=4.68, Median=5) and the lowest is given to consultation (Mean=3.97, Median). It seem have no problem towards openness (Mean=4.06, Median=4) and comfortability (Mean=4.35, Median=4) of the lecturers.

In lecturer's willingness and understanding, there are seven characteristics have been studied, namely knowledgeable consciousness, willingness, good manners, understanding, consideration, concern. In this construct, the students are really satisfied with the lecturers knowledgeable (Mean=4.82, Median=5). It is followed by willingness, good manners, consciousness, understanding, and consideration with mean scores more than 4 and median more than 5. However, lecturer's concern is behind the others with Mean=4.21 and Median=4.

According to the construct of lecturer's professionalism and responsive, the students give highest scores on communication (Mean=4.77 and Median=5). In this construct, we have to pay more attention on lecturer accountability and responsiveness since they get fewer score from the students. The mean score of both characteristics are a bit low compared to the others.

C. Correlation Network Analysis

To investigate the interrelationship between all of 16 characteristics, the results are shown in Table II. It reveals that all of the correlation coefficients are significant.
However, the correlation structure is not easy to understand, especially when we involve with high dimension dataset. Since we will have p x p number of characteristics and p^2 number of relationship to be examine in correlation analysis, this situation can be classified as complex system.

The system will be more complex when we considered larger number of characteristics in our study. For that reason, in this paper, we introduced a correlation network analysis in order to understand that structure by filtering that particular complex system into p x (p-1)/2 elements of correlation

CORRELATION ANALYSIS

	A1	A2	A3	A4	W1	W2	W3	W4	U1	U2	U3	P1	P2	R1	R2	R3
A1	1															
A2	0.79	1														
A3	0.66	0.73	1													
A4	0.58	0.71	0.78	1												
W1	0.53	0.62	0.69	0.77	1											
W2	0.65	0.69	0.74	0.70	0.77	1										
W3	0.62	0.66	0.69	0.68	0.78	0.88	1									
W4	0.54	0.63	0.68	0.73	0.73	0.75	0.82	1								
U1	0.53	0.64	0.65	0.71	0.74	0.73	0.83	0.86	1							
U2	0.54	0.65	0.66	0.68	0.68	0.67	0.75	0.80	0.82	1						
U3	0.57	0.58	0.65	0.63	0.68	0.69	0.73	0.68	0.72	0.74	1					
P1	0.51	0.45	0.61	0.63	0.66	0.61	0.63	0.61	0.59	0.54	0.64	1				
P2	0.58	0.61	0.71	0.72	0.70	0.68	0.69	0.70	0.70	0.71	0.71	0.81	1			
R1	0.55	0.65	0.59	0.67	0.75	0.69	0.74	0.74	0.73	0.70	0.69	0.71	0.74	1		

R2	0.58	0.63	0.69	0.59	0.67	0.74	0.67	0.64	0.65	0.65	0.72	0.61	0.72	0.76	1	
R3	0.50	0.55	0.58	0.57	0.67	0.64	0.65	0.61	0.67	0.65	0.66	0.53	0.67	0.67	0.83	1

All the coefficients are significant at alpha=0.05.

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DISTANCE MATRIX

	A1	A2	A3	A4	W1	W2	W3	W4	U1	U2	U3	P1	P2	R1	R2	R3
A1	0															
A2	0.65	0														
A3	0.82	0.73	0													
A4	0.91	0.76	0.67	0												
W1	0.97	0.87	0.78	0.68	0											
W2	0.83	0.79	0.72	0.77	0.68	0										
W3	0.87	0.82	0.79	0.79	0.66	0.50	0									
W4	0.96	0.86	0.80	0.73	0.74	0.71	0.60	0								
U1	0.97	0.85	0.83	0.76	0.73	0.74	0.58	0.52	0							
U2	0.96	0.83	0.83	0.81	0.80	0.81	0.71	0.63	0.59	0						
U3	0.93	0.92	0.83	0.86	0.80	0.79	0.74	0.81	0.74	0.72	0					
P1	0.99	1.05	0.89	0.86	0.83	0.88	0.86	0.88	0.91	0.96	0.85	0				
P2	0.92	0.88	0.76	0.75	0.77	0.80	0.79	0.77	0.78	0.76	0.76	0.61	0			
R1	0.94	0.84	0.90	0.81	0.71	0.79	0.72	0.73	0.73	0.77	0.79	0.76	0.72	0		
R2	0.92	0.86	0.79	0.90	0.81	0.72	0.81	0.85	0.84	0.84	0.74	0.88	0.74	0.70	0	
R3	0.94	0.95	0.91	0.93	0.81	0.85	0.84	0.89	0.82	0.83	0.82	0.97	0.81	0.81	0.59	0

Therefore, based on distance matrix in Table III, we produce a minimum spanning tree in Fig. 1. In this case, instead of analyzing 16*16=256 correlation elements, we can filter the information into 16*[16-1]/2= 120 correlation elements by using MST. See, Fig. 1.

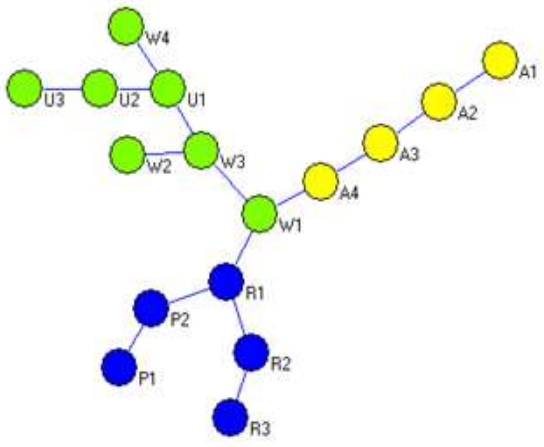

Figure 1. Minimum Spanning Tree of Student's Feedback

To elaborate the above findings more clearly, based on the MST issued from Matlab version 7.8.0 (R2009a), we use Pajek software to present the tree in Fig. 1. From this figure we see the interrelationship among all characteristics has been studied.

By using MST, we found that we have three constructs, namely "Accessibility" in yellow colour, "Willingness and

Understanding" in green colour, and "Responsive and Professionalism" in blue colour. They are clearly separated to each other. In this analysis, all of the characteristics of "Willingness" and "Understanding" are interrelated to each

other. It is also the same case for "Responsive" and "Professionalism". This result shows that MST can be used to do a classification. The role is no different with what exploratory factor analysis can do.

To interpret the MST, we perform a degree centrality measure to identify the most influential characteristics. In Fig.2, the size and colour of the node represent the score of centrality measure and the rank of importance.

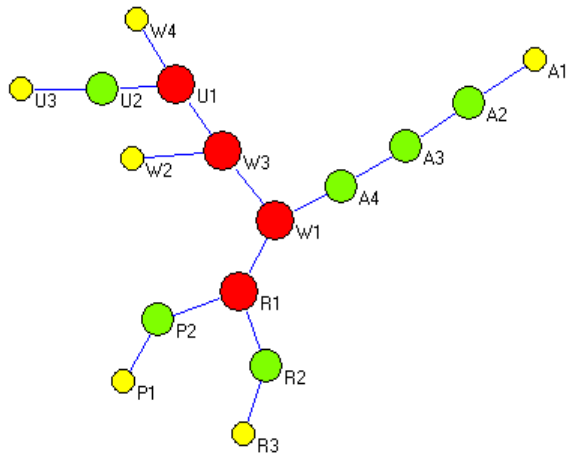

Figure 2. Degree centrality measure

From that figure, we learn that all the red points; W1-knowledgeable, W3- willingness, U1- understanding, and R1-good communication, have the highest number of links (3) in the network. A4-respectability, A3-comfortablity, A2-openness, U2-consideration, P2- professional Appearance, and R2- accountability (green points) has 2 links respectively. The rests (yellow points) are of 1 link only. The most the influence of those particular characteristics is refer to the higher the number of links to the other.

IV. CONCLUSION

In this paper we show the implementation of network analysis in social science study. 16 characteristics and their correlation structure are considered as a network system. To simplify that network we used minimum spanning tree which provide an optimal sub-network in the form of a spanning tree. This tree is then used to construct the optimal network analysis of those variables. In the analysis, we obtain three main results.

First, the result on reliability analysis convinces us to adopt the questionnaire developed by [10] in examining student's feedback towards their lecturer's characteristics in Insaniah University College.

Second, according to descriptive analysis, the student's feedback on lecturer's consultation, lecturer's openness, student's comfortability and lecturer's concern is good. However, among the others, those four characteristics must take into consideration for improvement.

Third, by using a network topology and centrality measure as well, we can conclude that knowledgeable, willingness, understanding, and good communication are should be put in the high priority if the lecturers need to fulfil their student needs. This finding is consistent with studies by [25].

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Evaluation of A Learning-To-Learn Reading Module for EFL Learners

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Abstract-**Reading is an important aspect in the academic world. It is essential for learners to be able to grasp reading strategies to excel in their studies. This study discusses the evaluation of a reading module for EFL (English as a Foreign Language) learners in private institutions of higher learning. The objective of this study is to evaluate the module in terms of its suitability, usability and user friendliness for learners. The reading module consists of five reading strategies which were evaluated on their suitability, usability and user friendliness. The study was conducted on 20 EFL learners from a private university in Malaysia. A set of questionnaires with 14 questions were distributed to the participants to be evaluated. The learners' evaluation of the module was between (*M* = 3.29 to 3.46) which shows that they feel the reading strategies are useful for them. From the survey, this paper offers some suggestions for EFL reading instructors on how to provide to various learning preferences of their learners. Results from the study helped to understand better the learning needs of the learners, at the same time developa challenging reading module.**

Keywords-Language learning strategies; material evaluation; reading strategies

I. INTRODUCTION

English language plays a vital role in the fast moving world. It is widely known that English is the most popular language around the globe. Being able to master the language will be a strong accolade as it is not only used as lingua franca in the world trade and education but also in scientific inventions. According to Mohamed Amin (2000), the Malaysian government has proposed the higher institutions of education to use English as medium of instruction for technical subjects. In this way the foreign students who enrol in the higher institutions of education in Malaysia get a chance to have an environment where teaching and learning take place in English.

Nel et al. (2004) asserted that one of the major problems at university that is often unidentified by both students and lecturers is reading. Learners are mostly unaware of the importance of reading until there is a necessity, hence they do not take much notice of it. Most students are incapable of grasping reading skills which are among the most important skills that the students should master first to be able to succeed in their studies. Nel at al. (2004) further stated that reading at the university level is challenging. In order to tackle reading comprehension, learners should first be familiar with the reading strategies. Most students who come from non-English speaking countries have problems in mastering the English language. So language learning does not become productive but a mundane task. To become a proficient language learner, it is essential to first obtain proper learning strategies. The language learning strategies are the most important part in learning a target language as it provides various approaches for learners.

This study helps learners to become better academic readers which is essential in their years of studying in higher institution of education. Findings gathered from evaluating the reading module will be able to help learners become better readers which eventually assist them in their studies.

II. LEARNING STRATEGIES AND ITS SIGNIFICANCE

Language learning strategies (LLS) are used to help learners to comprehend their language learning. Dakun (2006) asserted that learning strategies assist learners in making language learning much enjoyable and effective. He further stated that learning strategies not only help in achieving a much focused goal but also allow the learners to become independent, motivated and give opportunities to learn new cultures. Oxford (1989) stated that the significance of learning strategies is that they can be taught and also can be amended through training. As such, the training steers learners to become conscious of strategy use and also to learn to accept more suitable strategies which lead to the accomplishing of language learning goals. Hence, learners implement different types of language learning strategies and styles in comprehending the target language. It is undeniable to claim that learners have different learning styles and strategies to achieve their learning goals.

Moreover, reading strategies is another area that learners need to focus on in order to tackle reading comprehension. According to Mohd Azam Nair (2000), at times, readers can become the core of their own reading problem as they try to read all the reading materials the same way. As such, it is crucial for the instructors to teach reading in a way which will give the learners a better chance at understanding. Thus, the instructors should familiarize the learners with the strategies which will help them to understand the texts better. There are various kinds of reading strategies which can help learners to comprehend a text. Learners can employ

these reading strategies when they read a reading material and connect it to their existing knowledge and experience. Through using these strategies, learners have a better chance of grasping the reading with the help of their reading instructors.

Lessard-Clouston (1997) suggested that future studies should include curriculum development and materials for LLS training which embraces the L2/FL (foreign language) classes (especially adult learners), the learning styles and motivations as well. He also included that there should be more learning materials developed especially for the FL environment. Consequently, this research will fill the gap of scarcity of information. The module comprises of reading strategies and hands-on practices which will help students and also make language learning fun.

III. METHODS

The population used for this study were learners from an advanced level who were enrolled in the English Improvement Programme in a private university. The sample size is 20. Most of the speakers are non native speakers of English. These learners are EFL learners and come from a non English speaking environment as they only learn English in the classroom.

The reading module was validated by two experts. The experts are both from the English language department at the National University of Malaysia (UKM). One of them is an Associate Professor and the head of the department for learning strategies and application. The other expert is also an Associate Professor in the field of teaching of English as a Second Language. Both experts have vast knowledge in language learning strategies and the teaching and learning of language. Both experts agreed that the reading module is appropriate and fulfilled the benchmark. Some minor changes such as typo errors were highlighted by the second expert. The changes were done accordingly. After the changes had been made the module was given to the students to be assessed.

A set of questionnaire which explores the suitability, usability and user friendliness of the reading module was distributed to learners to evaluate the effectiveness. This questionnaire was adapted from an English language learning website called i-SELL developed by Mohamed Amin Embi (2010).The questionnaire consisted of 14 questions and ranges from strongly agree to strongly disagree. The module consists of five reading strategies and participants were able to evaluate each strategy in term of its suitability, usability and user friendliness.

The evaluation that is analyzed in this study is focused towards the evaluation of the reading module. The mean score of the data collected were used for this study. The key performance index that was used for this study is adapted from Mohd. Zaki (2011) from his research entitled 'Development and Evaluation of Learning to Learn English Module for EFL Learners'. Table 4.6 provides the key index score used in this study:

Table 1.0 Key Performance Index

Score	Indicator
1.0-1.75	Very Weak
1.76-2.5	Weak
2.6-3.25	Good
3.26-4.0	Very Good

IV. FINDINGS AND DISCUSSION

The respondents responded to the evaluation of the reading strategies in the module. Table 2.0 shows the analysis of the respondents' views on the reading module.

In general, the mean score for the reading module ranges from 3.29 to 3.46. All the five strategies that were introduced to the students are categorized as 'very good' in terms of performance. Since the learners are identified as good language learners, they do perceive the reading module as a helpful learning material. Hence, it is possible for learners to be conscious to enhance their reading skills which eventually will help them to become good readers.

The first strategy, 'My Story Chain' teaches the learners to connect events found in a reading text. The mean score for this strategy is 3.46 which signify it is 'very good'. In this strategy, the learners are being taught to use the key ideas found in a text to connect the events accordingly. The strategy also helps them to focus on important information and they are able layout the information the chart. The steps that was indicated, was also easy to follow and straight forward.

The second strategy 'My Info Box' has a mean score of 3.43. This strategy enables learners to classify the differences and similarities in the article. The learners are taught to group the information and also with the assistance of images found on the reading article enabled them to have a mental image of what they were reading about. As Brown (2001) stated, learners are able to understand better if the information are put in the form of diagram or map as it is much organized. Probably this is the reason; the learners find this strategy helpful.

The next strategy 'highlighting ideas' has a mean score of 3.29 which is the lowest among the five strategies but it is still categorized as 'very good'. In this strategy, the learners are able to identify the main idea and supporting details. However, the strategy is not as popular as the rest of the strategies. It is important to take note that the mean score for Q9 is only 2.93. This is possible that the learners are not accustomed to the self-assessment which reflects the whole strategy probably because the learners do not get the whole

idea of the strategy. This eventually leads to the need to further improvise this strategy to facilitate the learners.

'My Title Guessing' which is strategy 4 has a mean score of 3.39 and it is rated as 'very good'. This strategy allows the students to predict the gist of the article by using the title as a clue to guess the essence of the article. This strategy is also straightforward and easy to follow which makes it possible for learners to like this strategy.

The last strategy 'WH-Information' aids students to identify specific information in the text. This strategy allows learners to classify the information using Wh-questions which consists of *who*, *what*, *where* and *why*. This strategy assists learners to identify information using visual aid in order for them to be able to picture the information they are actually looking for. It is also important to focus on Q8 which has the mean score of 2.93. The question looks at whether learners are given opportunity to practice the strategy. This shows that the try-out activity does not facilitate learners' understanding and this also needs to be improvised.

In the earlier part of the overall questionnaire on the suitability, usability and user friendliness of the module, the mean score rated by participants is 3.19 for the item 'the reading module introduces the reading strategies in a meaningful way' and 3.23 for both the items: the contents of the reading module are easy to understand and the layout of the module is well-designed. It is evident that the participants faced problems with both Highlighting Ideas strategy and Wh-Information strategy. This is possible because the strategies might require careful thinking and also the skill to disseminate the information which the learners have not acquired at the moment.

All in all, the reading module was designed to facilitate the learners. Bearing in mind that the learners are from EFL context, the module was designed to make learning easy, comprehensible and at the same time fun.

V. CONCLUSION

As to sum, each student has different strategies and styles in mastering a target language. Good language learners take the initiative to adapt different language learning strategies, styles and also reading strategies to further understand English. It is vital for educators to identify the learners' needs and cater to it. This will eventually allow learners to open up their problem and seek the educators' help in solving their predicament. Designing and developing the reading module is a branch in the tree of knowledge. With more research, this branch will become sturdy and mature enough to deliver better learning aids to readers which eventually make them better language learners.

Table 2.0 Mean Score for the Individual Reading Strategies

Strategies	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Total
My Story Chain	3.45	3.45	3.49	3.45	3.45	3.45	3.45	3.42	3.49	3.59	3.45	3.42	3.52	3.42	3.46
My Info Box	3.45	3.38	3.38	3.52	3.35	3.35	3.38	3.35	3.45	3.56	3.45	3.45	3.45	3.45	3.43
Highlighting Ideas	3.19	3.41	3.42	3.23	3.12	3.19	3.38	3.42	2.93	3.23	3.34	3.45	3.34	3.38	3.29
My Title Guessing	3.38	3.45	3.38	3.42	3.34	3.38	3.35	3.49	3.38	3.30	3.45	3.41	3.42	3.34	3.39
WH-Information	3.41	3.42	3.11	3.42	3.49	3.49	3.45	2.93	3.42	3.49	3.30	3.34	3.30	3.42	3.36

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EVALUATION OF A LEARNING-TO-LEARN GRAMMAR MODULE FOR EFL LEARNERS

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ABSTRACT

This study discusses the evaluation of a learning-to-learn grammar module for English as a Foreign Language (EFL) learner in one of the private institutions of a higher learning. The objective of this study is to evaluate the learning-to-learn grammar module in terms of its usability, suitability and user-friendliness for EFL learners. The sample size consists of 20 EFL learners, studying the Advanced level. The learners were given a set of questionnaires to evaluate the grammar module. They evaluated the grammar module in terms of its usability, suitability and user-friendliness. The learning-to-learn grammar module has received a very good feedback from the learners *(M = 3.5 and 3.6)*. This indicates that the module has met the criteria of the suitability, usability and user-friendliness.

Keywords: language learning strategies • grammar strategies •material evaluation

INTRODUCTION

English language plays an important role in the development of Malaysia to cope with fast-changing developments in science and technology. English is the lingua franca in government and private schools, colleges and universities. Since Malaysia has opened her door for the international trades English has been given more importance and emphasis. According to Mohamed Amin Embi (2000), the government has indicated the usage of English as the medium of instruction for technical subjects in higher institutions. This is because the mastery of the language is an additional factor in excelling in their study.

Language is an innate ability which is unique to the human species and it is made in the mind, and hence grammar is the mirror of the mind (Chomsky, 1965 as cited in Bourke, 2005). Without a proper grammar foundation, both the receiver and the communicator will have difficulties in understanding one another. Moreover, grammar allows us to choose how we present ourselves to the world, sometimes conforming to social norms yet all the while establishing our individual identities (Larsen-Freeman, 2003). Savage et al. (2010) stated that to acquire a new language, learners firmly believe that knowledge of grammar is necessary as most learners have the mindset that a good understanding of grammar will facilitate them to communicate well and develop a promising career.

Grammar is viewed as an essential element for communication to take place because it shows how language is used (Sadiq Abdulwahed Ahmed Ismail, 2010). Savage et al. (2010) claimed that though a skill in its own right, grammar can also be regarded as a necessary mastery skill that enables competence to develop in the areas of listening, speaking, reading and writing. Grammar has gained its prominence in language teaching, particularly in EFL and English as a Second Language (ESL) contexts, in as much that without a good knowledge of grammar, learners' language development will be severely constrained (Widodo, 2005).

LITERATURE REVIEW

Language learning strategies are important for a learner to mould their ability to learn a language. It is impossible that all language learners will have the same strategies to learn a language, but all of them apply a particular strategy to achieve their goal. Lessard-Cloustor (1997) proposed that researchers of EFL/ESL can consider incorporating language learning strategy training in curriculum development and materials for regular EFL/ESL classes, especially for adult language learners. He further claimed that not many researchers have explored the development and use of materials for college and university students.

Abdu Mohammed Al-Mekhlafi & Ramani Perur Nagaratnam (2011) stated that learners feel uncomfortable and sometimes are even terrified when the word grammar is mentioned in the classroom. They even claimed that to make a grammar lesson a non-threatening act, many educators have tried to make grammar an imaginative and useful activity within the English curriculum. Learners should be exposed to ways which they can employ in independent learning. As such, language learning strategies can play an important role

for learners to gain interest in learning the language because it opens a new genre for learners.

The purpose of this study is to help learners master the knowledge of grammar in a fun and interesting way through the Learning-to-Learn grammar module. Thus, the evaluation of the this module is done in terms of its usability and suitability would give a better understanding of how productive the module can be to assist learners in learning grammar.

METHOD

The research population consists of 20 students, studying at Advanced level in the English Language Centre (ELC), in one of the private institutions in Malaysia. These EFL learners have a basic grasp of English language. They were taught English in the classroom and the classroom is the only English speaking environment for them as all of them come from countries where English is not emphasized.

The questionnaire that has been used to evaluate the learning-to-learn grammar module has been adapted from an English language learning website called i-SELL developed by Mohamed Amin Embi (2010). Learners were given the questionnaire to evaluate the grammar module in terms of its suitability, usability and user-friendliness. The questionnaire consists of 14 scale type questions where the response ranges from strongly agree to strongly disagree and the learners would evaluate the performance of all the five strategies.

The evaluation is to evaluate the grammar module or learning-to-learn grammar module that has been developed. The evaluation questionnaires were analyzed based on the date to produce mean scores. The key performance index is adapted from Mohd Zaki (2011) from his research entitled 'Development and Evaluation of Learning to Learn English Module for EFL Learners'. The key index score used in this study is shown in Table 1.2.

Table 1.2 Key Performance Index

Score	Indicator
1.0-1.75	Very Weak
1.76-2.5	Weak
2.6-3.25	Good
3.26-4.0	Very Good

FINDING

Table 4.3 indicates the mean scores for the grammar strategies according to the 14 items.

All five grammar strategies indicate the mean score that ranges from 3.5 and 3.6, which is 'very good' or 'excellent'. According to Oxford and Lee (2007), grammar is very much neglected in language learning strategies research. However, by developing and designing grammar modules for EFL learners, new opportunities are opened for them to learn grammar skills in an interesting and meaningful way.

The first strategy is "The Order of Adjectives", where learners learn how to write or speak out adjectives in a correct order through the use of an adjective chart. This is a memorable strategy because for each adjective, a picture or an object has been used to make the students understand and remember the correct order. This strategy also helps them to use the correct expressive order when they are using more than one adjective either in written or spoken language. Learners might find all the mentioned items relate to the strategy and that might encourage them to give a high score for the strategy.

In the "My Five Senses", strategy, learners learn to recognize abstract and concrete nouns using their five senses (see, smell, hear, touch, and taste). This strategy involves learners' imagery to imagine which nouns can be related to their senses and which cannot. The use of five senses helps them distinguish differences between abstract and concrete nouns. As in for "My Five Senses", the learners might think that all the items are applicable to it and received a positive feedback.

The third strategy is "Clouds of Adverbs", where learners learn adverbs by recognizing those that can give a brief picture of "when", "where" and "how often" an action happens. This strategy requires them to question themselves with "when", "where" and "how often" questions to place adverbs according to its correct expressive order. Once they have identified the adverbs and when to use them, learners can construct simple sentences and apply them accordingly. The strategy not only enables them to identify the adverbs, but also enable them to use it in sentences, which gives this strategy a very good rating.

The fourth strategy is "FANBOYS", where learners learn the coordinating conjunctions through the use a formula. This strategy helps learners to memorize the coordinating conjunctions with the use of formula and applies its rules accordingly. In this strategy learners can use the learnt formula to memorize coordinating conjunctions and apply them correctly in sentences. The strategy achieves this by enabling them to use correct conjunctions when they want to join or link two or more sentences together or two words within the same sentences. Perhaps, this might be the reason for the learners to give very good remarks for the strategy.

In the "My Visual Preposition" strategy, learners learn the prepositions of position by using pictures. This strategy helps them to visualize the position of an object. Later, they replace the objects with pictures. In this way, they can visualize a thing and its position. This strategy also helps learners to use prepositions of position in simple sentences. Learners have given very good remarks for this strategy because they can apply this to focus on objects' position in their conversation.

All the five grammar strategies have gained very good ratings because the module was designed in such a way to capture their attention. As mentioned earlier, grammar has been a much neglected area in language learning research because there are not many grammar strategies that have been

designed and developed to cater to the needs of language learners. Designing and developing suitable grammar module has opened new ways to learn grammar. These learners are adult learners and they know that learning grammar can be frustrating, rigid and boring. Taking all that into consideration, the module was designed for these adult learners and in a way that it looks appropriate for their age. These strategies met all the 14 criteria and have received positive feedback from the learners. Learners probably thought that this is a fun and interesting way to learn grammar as compared to the traditional way of learning grammar and reflected this in their feedback. Moreover, it would benefit them in the mastery of English and help them in their achieving their personal goals.

CONCLUSION

To sum up, this study evaluates a Learning-to-Learn grammar module for EFL learners in one of the private international universities in Malaysia. The Learning-to-Learn grammar module has received positive feedback from learners as can be referred to the mean scores for the grammar strategies. As claimed by Abdu Mohammed Al-Mekhlafi & Ramani Perur Nagaratnam (2011), learners feel uncomfortable and sometimes are even terrified when grammar is mentioned in the classroom. However, introducing this grammar module for EFL learners is an initiative towards learning grammar that can be fun and interesting and even motivate them to learn grammar. The results of this study reveal that learners are able to master the knowledge of grammar in fun and easy way because they can apply the same strategies in future if they were to encounter difficulty, also that they can learn grammar independently. The grammar module can be introduced in schools, colleges and universities to develop a more successful English learning environment.

Table 4. 3 Mean Score of the Grammar Strategies

Mean score according to the items															
Strategies	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Total
Strategy 1	3.5	3.6	3.6	3.6	3.5	3.5	3.6	3.5	3.6	3.6	3.5	3.5	3.5	3.5	**3.5**
Strategy 2	3.6	3.4	3.5	3.5	3.6	3.5	3.5	3.6	3.6	3.6	3.5	3.5	3.5	3.6	**3.5**
Strategy 3	3.6	3.5	3.5	3.5	3.5	3.5	3.6	3.5	3.5	3.5	3.5	3.5	3.6	3.5	**3.5**
Strategy 4	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.4	3.5	3.6	3.6	3.6	**3.5**
Strategy 5	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.5	**3.6**

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Developing Innovative Tools for Delivering High Quality of Engineering Education: Means to Enhance Student's Quality

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***Abstract*— Engineering education in Malaysia has moving fast in creating high quality environment for all higher educational institution graduates through several innovative and creative teaching and learning tools and methods. Stress on the quality of delivery method in higher education was also increased in order to assure that the graduates are really fulfilling the needs of the stakeholders. In this work, we have developed a Course Monitoring and Management System (CMMS) to ease the lecturers in managing and monitoring the class. User survey was conducted to identify the actual requirements and data from the survey was used to construct the CMMS. By reducing the lecturer's loads in the managing and monitoring activities, lecturers can be more focus in delivering innovative and effective teaching techniques that really notable for the production of high quality graduates.**

Keywords-component; engineering education; education management; structural weightage index; quality management

INTRODUCTION

The engineering education in Malaysia has moving forward from traditional educational method which more lecturer oriented to outcome based education (OBE) that requires the lecturer to deeply identify what students should be able to do at the end of the programme [1-2]. According to the Malaysian Qualification Framework (MQF), the educational standardization process must be according to outcome based education (OBE) [3,4] and the accreditation of OBE implementation is done by the Engineering Accreditation Council (EAC). Since the requirement of EAC is getting harder and harder and there are a lot of new requirements nowadays, the responsibilities of lecturers are not only limited to delivering the lecture itself, but also extended to several other requirements namely managing, structuring, delivering, assessing, and so on.

The enhancement of the quality of the students is very essential in assuring the development of human capital towards the realization of Vision 2020 [5]. The implementation of quality management practices by industries, manufacturers and service providers through, for instances Total Quality Management (TQM), Lean Manufacturing and so on has become increasingly widespread due to the awareness of each parties towards the importance of quality management in all working procedures [6]. In the context of higher education in Malaysia, the quality has also becoming one major indicator to ensure that the graduates produced are really meet the industrial requirements in term of knowledge, practical skills and generic skills. The implementation of overall quality loop of OBE requirements which include managing, structuring, delivering, assessing, evaluating, continuous quality improvement (CQI) and analysis of the outcomes is one of the proofs showing that the "quality" is an element that can't be neglected in the higher educational (HE) system in Malaysia [7, 8].

There are several studies in the implementation of quality management in higher education [9-14]. J. Michalska-Ćwiek has stated that quality in educational process is understood as the agreement with settled requirements or the degree of the fulfillment of customers requirements or other interested parties, or also the degree of the fulfillment of the assessment criteria (e.g. to didactic tools, lecturers, the results of teaching, needs, satisfaction etc.) [9]. G. Gordon reported that in many ways the reaction within tertiary education to quality assurance contains elements of conservatism, resistance to change, protection of autonomy and academic freedom, critical questioning and doubting of the appropriateness of a simple transfer of ideas (fads) from other sectors [10]. C.K. Thangiah has stated that students or learners should be regarded as consumers with the right to decide on the quality of 'service' they receive and the way how the Malaysian IHL could make it possible is by developing a proper system of instructional evaluation – a system that incorporates the consumers [11]. K. O'Mahony et al. had identified four factors central to the effective implementation of the quality management system within a HE institution: senior leadership and sponsorship; stakeholder engagement; the management of culture change; and implementing quality processes [12]. The implementation of quality processes can be done through the introduction of innovative teaching tools and course management system.

There are several researches on the development and implementation of so-called course management system [15-17]. There are also commercial and non-commercial course management systems such as Blackboard, Academic Online Resources or authors, rCampus and so on. Most of the systems are web-based systems that has a wide range of tools which

support teaching and learning and enable online delivery of lecture notes, representations, surveys and quizzes, coursework, discussion boards and much more. However, the functions are still common functions and do not include special functions, for instance, warning letter issuance, attendance monitoring and analysis, overall detail achievement analysis etc, that needed by certain institution for certain purposes especially accreditation of the academic programme.

Thus, our project is focusing on the development of innovated user-friendly monitoring and management tools for the engineering education using Visual Basic Editor (VBE) and Microsoft Excel to facilitate lecturer in delivering the lecture. The VBE was approved as a powerful tool in developing programming in wide range of field [18-19]. The system is equipped with several functions that were requested by the academic staffs in Faculty of Mechanical and Manufacturing Engineering UTHM. By implementing this tool, delivery of high quality lecture can be expected that is not only important for the student, but also important to the academic staffs themselves in order to ease their management and lecture loads.

METHODOLOGY

This study had been divided into several phases which were:

i. Identifying problems and requirements by user survey
ii. Identifying suitable tool
iii. Construction of system interface
iv. Building of VBE coding
v. Test run
vi. Actual implementation
vii. Assessment

Figure 1. Example of online questionnaire for the user survey.

The study was started by identifying problems and user requirements to assure that the system developed is truly meet the needs of target user. This had been done through online questionnaire among academic staffs in Faculty of Mechanical and Manufacturing Engineering (FKMP), Universiti Tun Hussein Onn Malaysia. Figure 1 shows the example of user survey conducted previously.

The next phase is identifying suitable tool to construct the CMS. There are several options for the construction of the system such as online and web based application to store and extract data, and another one is the stand alone application such as MS-Access and MS-Excel. Here we choose to develop the system using MS-Excel with Visual Basic Editor (VBE) coding because it can be easy to use and enable data storage, processing and analysis on the same system. The user can also works with their course management anywhere because the software is stand alone software and not depended on the internet connection.

Then, the system interface was constructed using the VBE UserForm editor. Several interfaces had been created to suit the needs of the users before we use the VBE coding to enable all functions in the system. After enabling the functions, test run was conducted among selected academic staffs and their responses in improving the system were taken. This is very important step before the system can be implemented by all academic staffs.

RESULTS AND DISCUSSION

A. Current Problems and User Requirements

TABLE I. RESPONDENT FOR THE USER SURVEY

Number of active academic staffs	131
Number of reply	36
Percentage of reply	27.5%

Table I shows the number of respondents for the user survey. From 131 active academic staffs, 36 respondents or 27.5% have given their feedback on the proposed CMS system.

The respondents' background in term of teaching experience is shown in Figure 2. The highest number which were 9 respondents each were recorded by the respondent with 1~2, 3~4 and 7~8 years teaching experience. For 5~6 and 9~10 years teaching experience, the number of respondent were 3 and 6 respectively. There was no respondent from those who already exceeded 10 years teaching experience.

Figure 3 shows the distribution of respondents by age. 34% respondents aged ranging from 26 to 30 years old, 58% for 31~35 and 8% for 36~40 years old. No response received from respondent over 40 years old. From the survey, it was found that all respondents agreed that the development of course management system that will help them in managing and delivering course is very necessary.

From the above two figures, it can be concluded that the group of users that can be assumed as a potential user for this system since it is not compulsory are those who aged less than

40 years old with teaching experience of not more than 10 years. Considering the population of this group of staffs in the faculty which is about 80%, it can be said that the development of the system is really worthwhile with huge number of potential users.

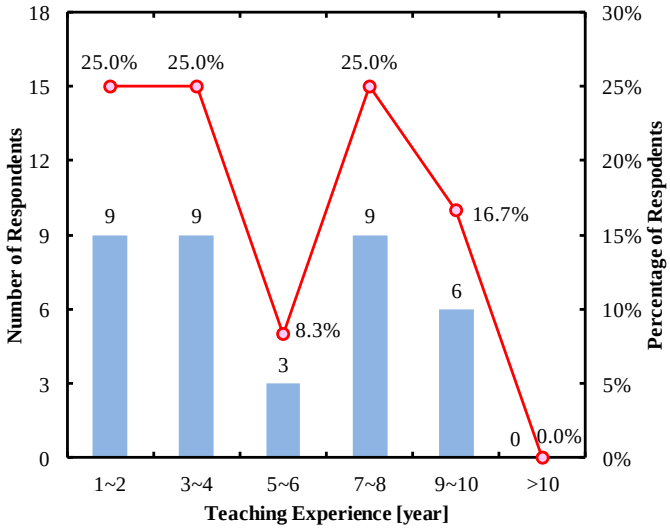

Figure 2. Respondents background in term of teaching experience.

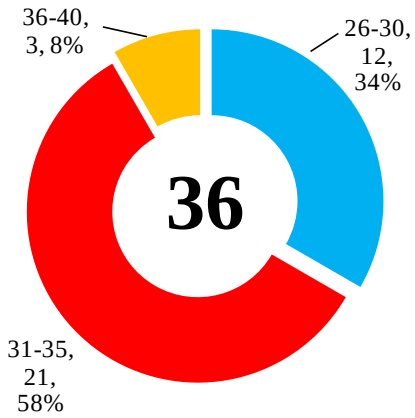

Figure 3. Distribution of respondents by age.

TABLE II. PROBLEMS IN MANAGING COURSE

No.	*Problems*	*Respondent*	*Percentage*
1	No specific T&L managing tools	24	66.7%
2	Too many T&L files need to be updated	18	50.0%
3	Too busy with other works	15	41.7%
4	No tools to analyze problems	15	41.7%
5	Difficulties in producing management tools	15	25.0%
6	No time to check student attendance	9	25.0%
7	Current tool is not user friendly	9	25.0%
8	Do not understand how to manage course well	3	16.7%
9	No problem at all	3	8.3%

Table II shows the problems faced by the respondents in managing course. These are only the problems related to the management of course and not others. 66.7% respondents stated that there is no specific teaching and learning (T&L) management tool available currently. The current E-learning system used by the university is more on the management of course in general and it is limited to certain common functions; assignment, forum, Q&A and so on. The proposed CMS system will be providing functions that are still not available in the commercial system and these will be explained later. Other problems faced are as shown in the table. Only about 8.3% respondents stated that they have no problems at all in managing courses.

TABLE III. USER REQUIRMENTS

Requirement	*Mean*
User friendly	4.83
Has various functions	4.75
Easy to view, update, import and export files	4.75
Stand alone	4.58
Able to store huge amount of data	4.50
Attractive interface	4.25

Table III shows the user requirements toward the development of the CMS. The most important requirement is the system must be user friendly. It was followed by the system must has various functions, easy to view, update, import and export files, stand alone, able to store huge amount of data, and has attractive interface. Thus, the system proposed has to consider all these requirements to assure that the target users will use the system.

B. VBE Coding

The advantage of using Visual Basic Editor or VBE is that the application is pre-installed in the MS Excel. Thus, no other commercial programming software is needed to construct the coding of the proposed program.

The construction of user interface in the system involves the building of userform and modules within the VBE. The examples of VBE screenshot to construct the userform and the modules and the coding used in the development of the system are shown in Figure 4 and Figure 5 respectively.

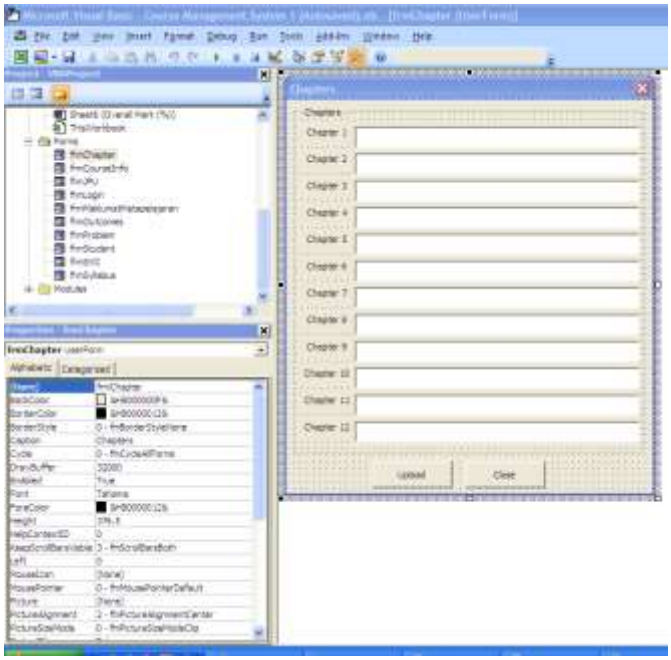

Figure 4. Screenshot for construction of userform using VBE.

```
Private Sub cmdUpload_Click()
   ActiveWorkbook.Sheets("**********").Activate
   Range("A8").Select
   Do
   If IsEmpty(ActiveCell) = False Then
      ActiveCell.Offset(1, 0).Select
   End If
   Loop Until IsEmpty(ActiveCell) = True
   ActiveCell.Value = cboCLO.Value
   ActiveCell.Offset(0, 1) = txtContent.Value
   ActiveCell.Offset(0, 2) = cboDomain.Value
   ActiveCell.Offset(0, 3) = cboTaxonomy.Value
   ActiveCell.Offset(0, 4) = cboPLO.Value
   ActiveCell.Offset(0, 5) = txtKPi1.Value
   ActiveCell.Offset(0, 6) = txtKPi2.Value
   If CheckBox1 = True Then
      ActiveCell.Offset(0, 8) = "Quiz"
   End If
   If CheckBox2 = True Then
      ActiveCell.Offset(0, 9) = "Individual Assignment"
   End If
   If CheckBox3 = True Then
      ActiveCell.Offset(0, 10) = "Group Assignment"
   End If
   If CheckBox4 = True Then
      ActiveCell.Offset(0, 11) = "Test"
   End If
   If CheckBox5 = True Then
      ActiveCell.Offset(0, 12) = "Log  Book"
   End If
   If CheckBox6 = True Then
      ActiveCell.Offset(0, 13) = "Project Report"
   End If
   If CheckBox7 = True Then
      ActiveCell.Offset(0, 14) = "Lab Report"
   End If
```

Figure 5. Example of VBE coding.

C. System Interface

Based on our study, we have developed a Course Monitoring & Management System (CMMS) to assist lecturers from start till the end of their lecture session. Figure 6 shows the user login screen of the system. Users have to register their username first through the link given by the administrator before being able to use the system.

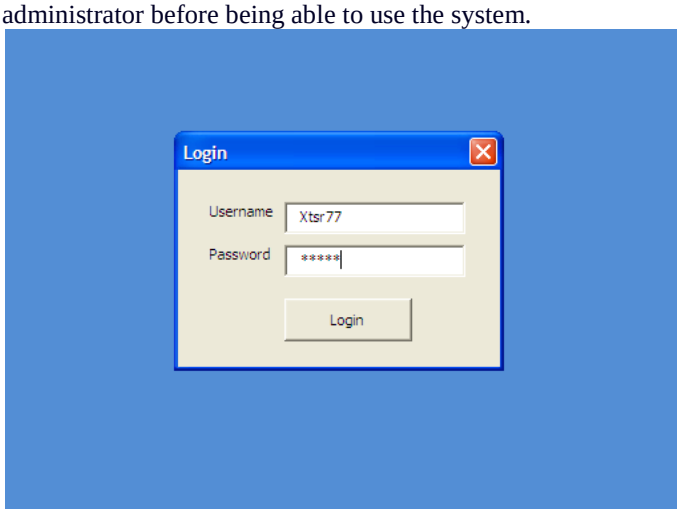

Figure 6. User login screen

Figure 7 shows the main interface for CMMS after the user login into the system. It was divided into 5 main parts;

i. General Information
ii. Course Management
iii. Student Monitoring & Management
iv. Problem and Countermeasure
v. Preparation of P&P Files

The descriptions of each part are as given in Table IV.

TABLE IV. DESCRIPTION OF MAIN PARTS IN CMMS

Part	Description
General Information	To key in and view all general information of the course; lecturer name, course name, course code, section, course learning outcomes (CLO), KPI for each CLOs, assessment method, student list, syllabus and course plan.
Course Management	To manage course based on Structural Weightage Index which enable the user to set the appropriate teaching time and assessment weightage to the student, updating course schedule and issue the test determination table.
Student Monitoring & Management	To monitor and manage student's attendance, warning letter, project monitoring, student achievement and report preparation.
Problem and Countermeasure	To record all problems faced during the lecture session in term of man, method, machine, materials and other factors. With this, lecturer can analyze the problems and then find the best countermeasure to solve the problem.
Preparation of P&P Files	To check all the documents required for the quality audit, accreditation purposes and the preparation of lecture file. Lecturer can just click the button to print the required document.

Figure 7. CMMS main interface

Figure 8. Course information

In each part, there are several buttons related to the part, e,g, Figure 8 shows the interface appeared when the Course Information button is pressed. The user can key in all general information regarding to the course and the data will be placed in the "Database" sheet in the file.

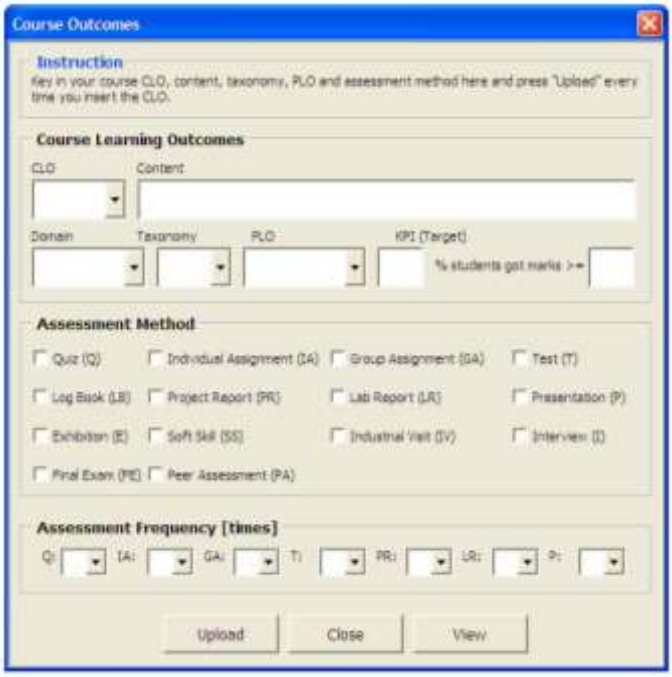

Figure 9. Course Outcomes

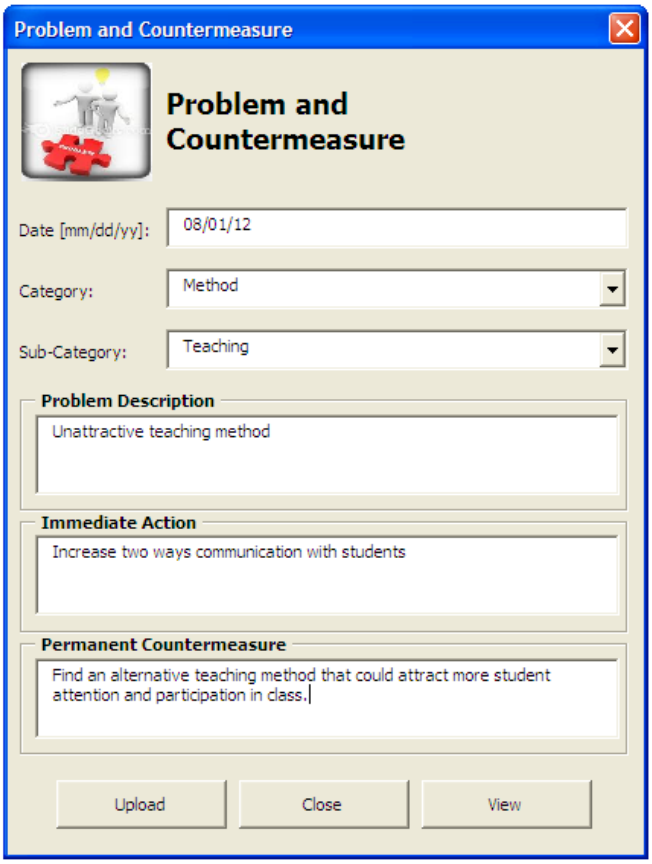

Figure 10. Problem and Countermeasure

Figure 9 is the interface for the Course Outcomes. It enables the user to key in all information on course outcomes; course learning outcomes (CLO), domain, taxonomy level, Programme Learning Outcomes (PLO), and KPI. It also visualizes all assessment methods along with the assessment frequency to facilitate lecturer in determining the suitable assessment method.

Figure 10 is the interface for the problems and countermeasure of the course. The problems were divided into 5 categories which are man, method, machine, materials and others to key in problem countered during lecture session along with the immediate action and permanent countermeasure taken. This is very important tool in order to identify the real problem and effective countermeasure to solve the problem. Lecturers have a tendency to solve any problems only by immediate action that they mistakenly assumed as permanent countermeasure. Permanent countermeasure requires lecturer to study in depth about the problem by applying 4W1H as also implemented in industry (what, when, who, why, how). This will also polish the lecturer's ability on the critical thinking and problem solving.

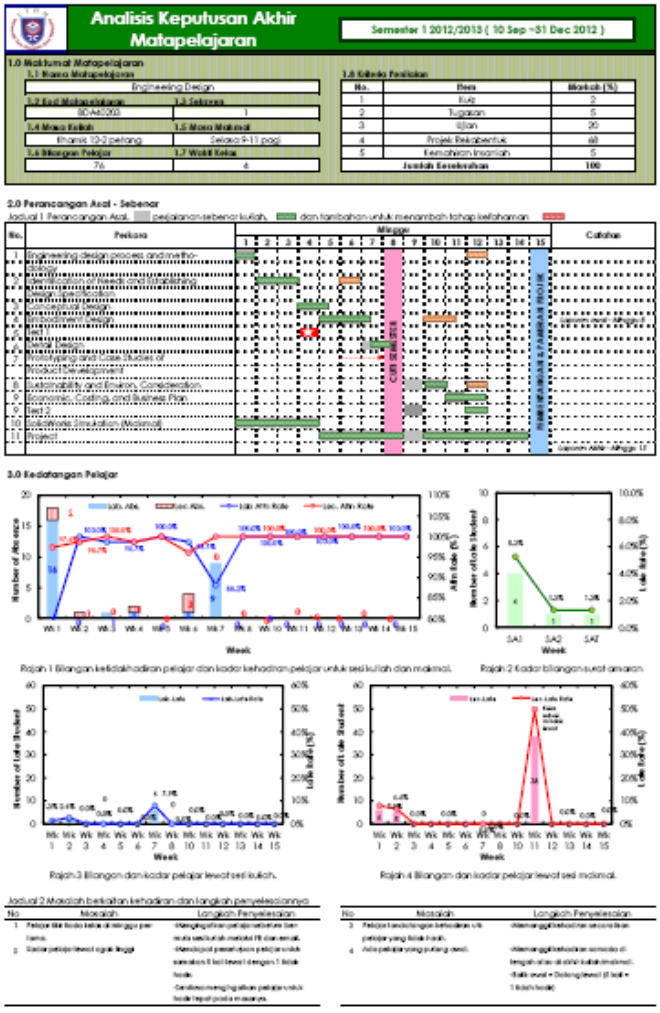

Figure 11. Course Progress and Student Attendance Report

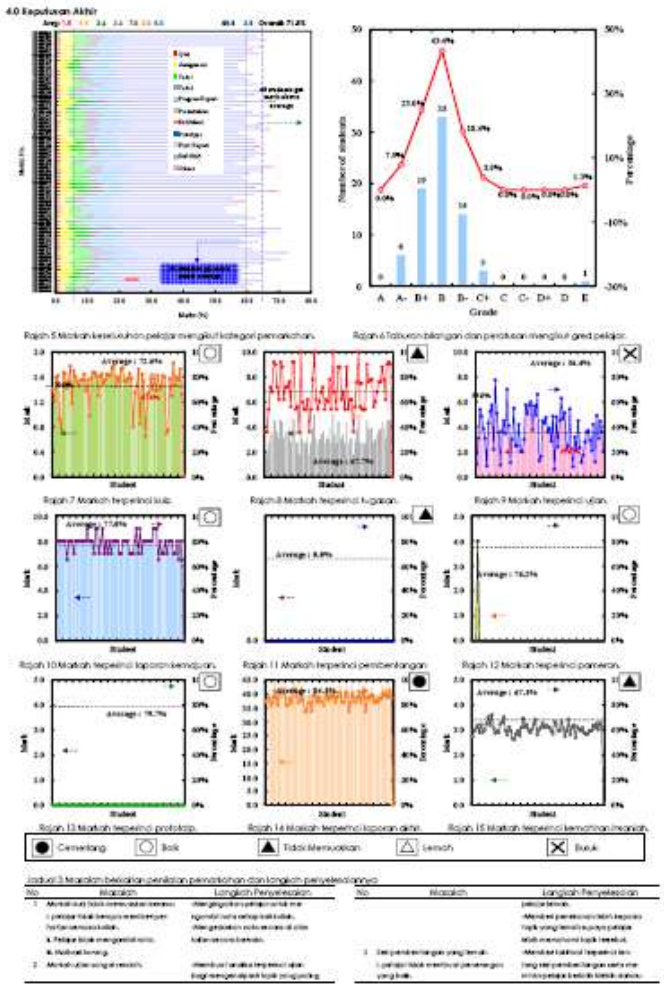

Figure 12. Student Achievement Report

Figure 11 and Figure 12 show the example of one of the viewable assessment reports. Figure 11 shows the report on the overall lecture progress and attendance rate along with the warning letter issuance status. Lecturer also can key in the problem, cause and countermeasure regarding to the attendance problems. Meanwhile, Figure 12 shows the student's achievement based on assessment method; quizzes, assignment, test, progress and final report, presentation, exhibition and so on. Special signage is also placed on each graph to indicate the performance of all students for each assessment method with one glance. For example, for the assessment method that recorded average mark more than 80 percent, black circle will be marked. For those with average mark lower than 40 percent, "**X**" mark will be given. This helps lecturers in identifying the weaknesses of students in term of assessment method which then could be used in identifying the best countermeasure for the continuous improvement of the course.

CONCLUSION

The CMMS system developed was initiated from the industrial perspective where all activities must be monitored

very closely in order to continuously make improvement and continuously deliver high quality of teaching and learning activities. In our case, the main priority is how can we enhance student's achievement and at the same time improve the way how lecturers delivering their class. The CMMS can also ease lecturer's burden in organizing the lecture. Analysis of student's achievement was made in detail so that better improvement could be done. Data stored in the database can be reviewed back for continuous improvement in the future. Feedbacks from the academic staffs show a good response and better improvement on the system will be done to increase the user friendliness features of the system.

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TRACK 5: SOFT SKILLS

Communicative Language Teaching: Difficulties, Problems and Limitations Regarding Its Implementation in the Malaysian ELT Context.

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Abstract-**Being perceived as the most 'appropriate' and 'productive' way to teach English for more than 30 years, Communicative Language Teaching (CLT) continues to play an important role within the realm of English Language Teaching (ELT) particularly in ESL and EFL contexts. However, CLT is not without its problems and this has led to different critiques of the approach. Many ELT scholars now believe that the problems facing CLT are caused by misconceptions regarding *how* to implement it in the English language classroom. Hence, due to inaccurate and unrealistic expectations of CLT by a section of English language teachers around the world, the approach as a whole is being blamed. Through a series of focus group discussion sessions with senior English language teachers in selected Malaysian secondary schools, this empirical study presents the collective views of these teachers to critically evaluate if indeed the criticisms directed towards CLT is due to its weaknesses or perhaps the problems are caused by misconceptions regarding CLT by local teachers in Malaysian classrooms. The qualitative results from the data collection sessions can be grouped into four salient themes. These are presented, discussed and evaluated together with reflections on CLT based on our own professional experience in teaching English at both secondary and tertiary levels in Malaysia.**

Keywords: Communicative language teaching, misconceptions, Malaysia.

I. INTRODUCTION

Communicative Language Teaching (CLT) is an approach that has gained currency in language classrooms around the world in the past 30 years. It is now seen in some countries and teaching contexts as the 'best' way in which learners could learn a target language particularly in ESL and EFL situations. Many different linguists have contributed to this approach, amongst them Hymes (1972) with his idea of communicative competence and Canale and Swain (1980) who provided the theoretical base for CLT. The works of these linguists have also contributed towards actual CLT pedagogy beginning from the early 1980s.

On the other hand, CLT is not without its problems and this has led to different critiques of the approach. For example, Medgyes (1986) argues that CLT makes unrealistic demands on teachers, forcing them to work at levels beyond their capabilities whilst simultaneously attempting to teach 'communicatively'. In addition, Nolasco and Arthur (1986) both criticise CLT for not being sensitive to the socioeconomic settings of different language classrooms globally because CLT assumes a normative view of the world and one superior methodology of language teaching and learning.

More recently, this interesting (and ongoing) debate has been reignited in the academic sphere. Citing the ELT Journal as an example, on one side Bax (2003) believes that CLT as a method should be abandoned since the methodology has failed to take into account the context of language teaching around the globe. On the other side of the debate, Liao (2004) argues that CLT is still *the* best method to teach English in second or foreign language situations. That said within the broad theoretical position on which CLT was built upon many years ago, different understandings of CLT exist. This makes it quite hard for the average English language teacher to understand what elements of CLT these researchers seem to reject or to advocate.

Even more recently, Hamid and Baldauf (2008) and Liu (2009) continue to highlight the failings and inadequacies of the communicative method in their own sites of research. All of these researchers view CLT as a method that is already outdated and in need of replacement. On the contrary, other linguists like Savignon (2002), Harmer (2003) and Hiep (2007) continue to see a need for CLT albeit as a more responsive methodology that is more suited for post 21st century societies around the world. Without these important changes, perhaps CLT might be soon replaced by newer and more current English language teaching methods in English language classrooms.

Based on these preceding paragraphs, it could be argued that possibly CLT as a whole is an approach with limited applications in the real world. On the contrary, based on some of its merits it could also be that the problems now facing CLT is caused by some misconceptions on how to actually implement it in the classroom. In other words because of inaccurate and unrealistic expectations of CLT

by English language instructors and their failure to deliver communicative lessons – the approach as a whole is being blamed.

II. OUR RESEARCH OBJECTIVES AND GUIDING QUESTIONS

The main objective of our research was to critically evaluate if indeed the criticisms directed towards CLT is because of its weaknesses as an approach, or perhaps the problems we are seeing now is caused by misconceptions about CLT in the classroom. We also wanted to highlight the many different viewpoints of English language teachers in Malaysia regarding CLT, given that as a teaching philosophy CLT employs a broad methodology that is quite open to different interpretations (and also misinterpretations). To realise our objectives, our research effort was guided by three questions as below:

First: What do highly experienced English language teachers in Malaysia have to say about CLT in terms of its implementation in local English language classrooms?

Second: What are the actual strengths and weaknesses of CLT as perceived by these highly experienced English language teachers in the Malaysian context?

Third: How do these highly experienced English language teachers interpret teaching English 'communicatively' and what have they done to realise the target of a 'communicative' English language lesson?

III. PARTICIPANTS, (QUALITATIVE) DATA COLLECTION AND ANALYSIS PROCESS

3.1. Research participants, access and ethics

A total of eleven senior secondary school teachers with a minimum of fifteen years of teaching experience were our research participants and they all worked at different schools in two Malaysian states. The common traits between all of our participants are: (1) they are all practising English teachers in 'A' grade schools in urban catchments areas; (2) they are all very familiar with CLT; and (3) they have all held, or are currently holding, senior positions in their respective schools (for example as Head of English Unit/Department or some other managerial related posts).

Initial contact was made with all the participants face-to-face by one of us (Airil) during a formal Ministry of Education assessment exercise that he was involved in. Prospective participants were then approached officially and all the information regarding this study was provided to them. Later on, the participants were divided into three smaller groups, one in a northern Malaysian state and the other two in the central region of the Malaysian Peninsular.

This grouping system was to aid in the data collection process using focus group discussion sessions. As focus groups entail the sharing of thoughts and opinions within the group, all the participants we briefed beforehand and provided with information sheets and confidentiality agreement forms. All the focus group sessions were then held off-site and audio recorded. Every group had to attend two sessions, the first for actual data gathering and the second to perform member checks to ensure the accuracy of data transcription and meaning-making by us. At every juncture, care was taken to ensure that ethical issues were given priority mainly to ensure the fullest participation by all the teachers involved and to keep their minds at ease.

3.2. Qualitative data collection and data analysis process

All in all, the six focus group discussion sessions managed to collect useful and useable data for our study and all sessions lasted between 80 minutes to 105 minutes approximately. The sessions gave the participants the opportunity to share their experiences and even air their grouses regarding CLT not just in their classrooms and schools but also as a general approach in English language teaching.

Fielding and Thomas (2001) believe that this is one of the strengths of using focus group sessions in collecting qualitative data in that it allows a research participant not just to provide data but also to be very personal and in-the-moment as it were, as the participant interacts with others in the group. In addition, according to Ho (2006) even though applied linguistics research data collected through focus groups have often been criticised on the grounds of reliability and validity, focus group discussions (or focus group interviews) are very useful depending on the participants involved, an idea supported by Vaughn, Schumm and Sinagub's (1996) authoritative volume on focus groups as research instruments.

Ho finds that focus groups help in gathering the viewpoints and opinions of research participants who might be not be 'performing' well during one-to-one interview sessions. Consequently, Ho strongly believes that the focus group is a practical and verifiable tool in contemporary applied linguistics research. Based on her previous studies that employ the use of focus group discussion sessions, Cheng (2007) also claims that this qualitative instrument will provide spontaneous and more natural comments in a short period of time.

Data from the focus group discussion sessions was broadly transcribed, and then analysed manually and using NVivo based on the key statements, main ideas and shared attitudes expressed by the participants for each sub-topic of discussion. The data we collected is presented thematically and discussed at length in the following section.

IV. PRESENTATION OF QUALITATIVE DATA, DISCUSSION AND IMPLICATIONS OF DATA

Based on the responses of the research participants during the focus group discussion sessions, we managed to uncover four broad themes that ran through all their responses. These four themes could also be viewed as problem areas or misunderstandings of CLT as experienced by these senior teachers during their many years of teaching.

These four themes are presented and discussed in turn in the following sub-sections together with actual quotes where appropriate. Where names are provided, these are pseudonyms chosen by the respective teachers.

4.1. 1st theme: "CLT [is] sometimes just impossible!"

This first theme or problem area is agreed upon by nearly all the research participants. Many of them believe that CLT is an approach which makes a lot of unrealistic demands on English teachers not only with reference to lesson planning but also in terms of classroom management. As 'Miss Leong' argues:

> Imagine […] you have to teach English, the class next to you also having English. The noise is just so loud [with] everyone talking. I don't know. Maybe this is because of this communicative thing? We never had this problem when I started teaching.

This issue is viewed as a serious one by all the research participants. They all believe that the communicative classroom is one where levels of noise are usually high and is likely to disturb nearby classrooms.

Indeed, this was our greatest challenge when teaching communicatively – trying to keep noise at an acceptable level but still audible enough for students to communicate effectively. Although noise level could be seen as a relatively minor problem, it has created animosity in Malaysian secondary schools whereby English teachers are stigmatised as teachers with ineffective classroom management techniques and English language classes as those most prone to high levels of noise. For both of us at least, this has certainly been the experience from our school years until today.

From a different viewpoint, sometimes from the outside looking in we fail to realise that in many teaching contexts particularly where the syllabus must be adhered to at all costs, teachers will be pre-occupied with practical issues like lesson preparation and also deal with much managerial work at the same time. Moreover, not all teachers will have the privilege of teaching a class of twenty or twenty five students, and most have to contend with a minimum of forty students at a time in Malaysia. As Miss Leong adds:

> It's okay I think if our classes are small. But you know, nowadays I think forty is the minimum number. In my school fifty also [sic] considered normal. The new ones [English teachers] all get so surprised when they walk into the classroom.

Another sub-issue is that in non-native ELT settings teachers have to develop a greater degree of language ability but also need to be flexible at the same time as they deal with classroom communication as it occurs. Although this is a minor problem for some, for many this means that teachers practically have to re-learn English so as to ensure that they can develop their greater degree of proficiency that is crucial for the success of CLT. This is summarised succinctly by 'Madam Pillay':

> Communicative is one thing. But you must also understand that here in Malaysia most our students [sic] have very basic English. No matter if you're a good teacher or not, how can we [teachers] teach communicative things only all the time?

Given these constraints, it is possible to understand the arguments of Nolasco and Arthur (1986) that perhaps in many situations CLT is unrealistic as an approach. Although there are teachers who do not wish to embrace change and would prefer to work as they have always had, in many cases even the most motivated and energetic teachers will find that CLT in its purest form is simply impractical in their classrooms.

From a personal standpoint, though our experience as ELT professionals have been largely positive (having taught in ideal and even privileged situations), we would not be so bold as to promote CLT across *all* teaching contexts in Malaysia, for example in rural settings where students are struggling from the start to make meaning out of English and perhaps even seeing no reason to study the subject apart from trying to gain a passing grade in their examinations.

4.2. 2nd theme: "CLT is mainly speaking... right?"

The second misconception about CLT is that for some English teachers, it means teaching mainly the productive skill of speaking. Indeed, this has certainly been our own professional experience in preparing communicative lessons in Malaysia. This misconception is due to two reasons according to our research participants. Firstly, because of the focus on real communication, CLT inevitably starts by looking at oral language performance. Secondly, CLT stresses the need for real communicative practice and the main way this is achieved is through pair and group speaking activities. As 'Madam Lim' recounts:

> When I tell the juniors to teach communicatively they ask me what cassette they must use? They ask me can I do drama in class? It's like they all think about speaking only. But we seniors know that's not true […] CLT is more than that. But how to change their mindsets right?

It is true that CLT usually gives primacy to oral communication and it is expected that students will be motivated to learn English when they could practice using language in functional situations like 'in a bank or 'asking for directions'. The problem is just because these two situations (and others like them) deal with snippets of the real world, this does not mean that they will have *real* meaning for Malaysian students who in reality, do not have a critical need for English other than passing the subject in their major examinations.

The reason behind this is largely a sociolinguistic one because *Bahasa Malaysia* the national language is more widely used at all levels and there is a vigorous move to promote that language. Perhaps in this situation, oral communication is not so important as being able to develop academic reading and writing skills. Furthermore, the emphasis on pair and group work ignores research findings that mistakes in both situations are likely to lead to fossilised errors that will be difficult to ameliorate. That said, pair and group speaking tasks seem to be the method of choice in Malaysian school as 'Cikgu Yusof' observed:

> Yes, it's true. CLT classes are normally speaking classes only. Pair work, group work and all the time doing discussion tasks. I always tell our teachers [English teachers in his school] that we must do a variety of tasks. Speaking only is not enough […] also who says CLT is only teaching speaking? What about the other skills? What about things like grammar and using dictionary?

4.3. 3rd theme: "It's hard to teach grammar in CLT [classes]"

Does CLT really mean not teaching grammar overtly? This is perhaps the most prevalent misconception of the communicative method, exacerbated perhaps by the research efforts of Prabhu (1987) and Krashen (1988). The former believes that grammar teaching is impossible because of its complexity whilst the latter posits that there is no actual need to learn grammar at this happens naturally during language exposure, at the subconscious level.

What follows is that pedagogy without specific emphasis on grammar was developed, much to the confusion of language teachers who realise the importance of such a focus, particularly as learners become more mature and efficient in their learning. This confusion is also apparent in the Malaysian English as a Second Language context as the Ministry of Education struggles to incorporate the most up-to-date research in language learning in the secondary syllabus. To exacerbate matter further, what is introduced in one year could easily be changed in the next, particularly ways of incorporating grammar into the syllabus as Cikgu Yusof laments:

> I think nowadays there's just too much experimenting. So many new directives [and they] keep changing direction. Like for CLT they [the Ministry] say teach grammar through communication. What does that mean? No need for drills [and] grammar practice?

For local English language teachers, the problem is not so much as keeping abreast with recent developments in ELT research but to translate this into effective methods to teach grammar in ways that will not contradict the aims of the secondary syllabus that never stands still. This is because as the syllabus tries to be more 'communicative', this is translated as a focus more on communication and not actual language structure or grammar points. Yet at the same time, students can expect to be severely tested on grammar come major examination periods, a point made by Madam Pillay during her focus group sessions:

> Yeah, it's always not matching one [sic]. Teach communication skills but then all the exam papers are all testing grammar. They tell us not to do grammar drills. How to make sure students really understand [grammar] then?

In reality, most teachers still focus on grammar because grammar is necessary for communication to take place. This is due to the fact that students will also come to a point when they will explicitly ask for grammar instruction particularly students at upper secondary level adds Madam Pillay:

> I don't care too much about all these new methods. I stick with my old grammar drills and I balance the skills. Also my students they all want to learn grammar you know. They don't want to waste time discussing and talking all the time [but] some other teachers really still don't care about this. They all think grammar will come after communication. How can one [sic]? It's impossible like that. Just you try!

Good students (and communicators) who realise the importance of English grammar in everyday communication, particularly when communication itself in based on the provision that a message needs to be conveyed in a way that is easily understood by the recipient – will always want to learn and master grammar. A standard convention of relaying messages in communication whether

spoken or written is therefore inevitable, and it is grammar that realises this function in human communication.

4.4. 4th theme: "Who says it's [CLT] just about role plays and discussions?"

There are still a number of local teachers who believe that CLT must involve lots of role plays and discussion sessions. This was a shared observation by all our research participants. As such, they believe that role play is also the technique that English teachers fall back on when they run out of ideas. Role play is also seen as the 'best' way to achieve communicative competence in the Malaysian context. Sadly, the biggest problem with this is even the best techniques can be overused as Madam Lim argues:

> Role play all the time? You can't be serious. If it's not that […] it's discussions in smaller groups. After that they present to the class. In reality nobody listens. Their friends don't even care. Day by day just the same routine […] I've observed this and I think this is just rubbish!

One of our biggest criticisms with how role play is presented in Malaysian secondary English textbooks is that, it is usually presented in isolation from the lesson as a whole. There is a feeling that such activities are included just for the sake of making the textbook more 'communicative' – a common problem of textbooks in some parts of the developing world (Gilmore, 2007). The problem is, this is also reflected in the lesson plans of teachers even the more experienced ones.

One of us (Airil) has even observed a double period being spent on a whole class role play task (assuming that this was possible in the first place). Students were supposed to discuss ways in which the school could make money through student led activities. Although this was intended as a free exercise in a class that is highly proficient in English, as expected the lesson loses its focus early on.

This is another practical problem to highlight, in that role plays could turn out to be counter-productive without careful planning by teachers. Perhaps because most Malaysian teachers (including ourselves) see speaking and listening skills as the easiest to teach, we tend to turn to uncontrolled role plays with disastrous results. But not all our participants see role plays and discussions as a waste of time, as Miss Maria comments:

> Well I think it's all about balance. It's okay to have these [role plays and discussions] activities. But make sure it's with a purpose and also make sure the tasks are semi-controlled or something. After this task, follow up with reading and writing. Or you can even record the tasks and do focus-on-grammar exercises with these real examples. It's up to the teacher really to see CLT from a broader viewpoint I think.

According to our research participants, the more positive side of pair work, role play and even larger group activities is that they also help foster positive group dynamics and could instil positive social skills in students. This could be achieved as learners are put through their paces discussing not only the task at hand, but possibly observing grammar points, evaluating sentence structures, and other tasks that are usually done individually.

With careful planning and thinking, even the most difficult language task could be turned into a pair or group activity, based on the old adage that two heads are always better than one. Surely, this will be more productive than merely using pair and group work just for the sake of making the lesson more 'communicative' – without even understanding what it entails in the first place.

V. CONCLUSION

To conclude this research paper, we believe that in some respects CLT has suffered due to misconceptions about its implementation in the classroom and this should not be used as reasons to simply reject the approach without even trying to use it in the first place. As an approach CLT has many merits for example, in helping to develop positive social skills and group dynamics and it also signals a move towards 'real' communication through the inclusion of authentic materials in the language classroom.

On the other hand, in the local English language teaching and learning scene CLT could possibly be ignoring many practical constraints that English language teachers have to face in less-than-ideal teaching situations. Even in a country with a relatively developed education system like Malaysia, the approach is sometimes impractical for classroom teachers because of the constraints of resource, time and even skill.

In truth, perhaps we should not be too quick to label the comments and opinions of these research participants as observed misconceptions or misunderstandings per se. What they have shared within the limits of this empirical study are real and valid issues arising from the practicalities in teaching English to Malaysian students. Last but not least, these local issues have to be ironed out given the fact that until today CLT is still viewed by some in the business of ELT as the best way to teach the English language in classrooms the world over.

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Employing Role Play to Meet The Specific English Language Needs of Malaysian Students With Reference To Speaking

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Abstract-**In this position paper, we describe and evaluate one of the most common techniques used in communicative English language classes: role play. There are, of course, many methods and techniques that help extend the English language skills of students in reading and writing, listening and speaking. For speaking specifically, role plays are beneficial and productive as a way to meet the specific English language needs of Malaysian students. Starting with a general overview of role play, this paper also discusses its sub-types and related methods. Then, we review the use of this technique in developing the speaking skill of students in upper secondary classrooms in Malaysia. Empirical evidence that supports the use of role play in this specific context is also provided. In the next half of this paper, the strengths and weaknesses of this technique are critically evaluated with reference to developing the speaking skills of Malaysian upper secondary students. This is supported with actual textbook examples of role play activities within this given context. Our position paper ends by looking at the bigger picture concerning role plays, and tries to account for and justify its use in the Malaysian upper secondary English classroom to teach/develop speaking skills.**

Keywords: Role play, speaking, Malaysian context.

1. INTRODUCTION

There are various techniques to help develop the language skills of students particularly in English as a Second Language (ESL) and English as a Foreign Language (EFL) classes. From debates to discussions and from role plays to information gap activities, the general 'movement' within the ESL and EFL classroom is towards one that is more communicative and focusing on the functional and strategic aspects of second language (L2) acquisition and use.

The aim of our paper is to describe and evaluate one of the techniques used in communicative classes, namely role play. First, it will try to develop a general definition of role play before moving on to study its sub-types and related techniques. Then the paper will try to look at the possible uses of this technique especially in developing the speaking skill of students in ESL classes in a particular setting. The setting that has been chosen is Upper Secondary students learning English as a Second Language in Malaysia. There will also be an examination of empirical evidence in the use of this technique.

In the next half of the paper, the strengths and weaknesses of this technique will be evaluated with reference to developing the speaking skills of these Upper Secondary students (aged between sixteen and seventeen) in Malaysian Integrated Secondary Curriculum (KBSM) English Language classrooms. This will be supported with some examples of role play activities, and to consider the limitations of the technique within this given context. The paper will conclude by looking at the whole picture of role play and try to account for, and justify, its use in the KBSM English Language classroom with reference to developing the language skills of Malaysian students.

2. DEFINING 'ROLE PLAYS'

There is little consensus regarding the terms used in the role playing literature. Different authors have come up with different definitions of role play (Littlewood, 1981). Nonetheless, there is a general gist that could be understood from looking at different texts. Firstly, role play is one of the techniques that are generally connected to Communicative Language Teaching. Perhaps it could also be argued that, role play embodies the very principles underlying the Communicative Approach by focusing on the act of communication and the process of making-meaning from spoken language. Doff (1990) adds that "role play is a way of bringing situations from real life into the classroom" (p. 232).

Secondly, the technique is seen as a good way of developing interaction skills in students, particularly social interaction skills. According to Richards and Rodgers (1992), these skills allow students to engage in real communication by helping them to be proficient in sharing information and negotiating meaning. It is also possible that these skills will help students as they try to communicate in the target language outside of the classroom, provided they are motivated enough to do so.

In order for role play to take place, participants must accept the duties and responsibilities of their roles and functions, and do the best that they can in the situation in which they find themselves (see Palmer, 2011). So as to suit their roles and responsibilities, students have to interact with others in the role play, employing the most effective social skills they possess.

Finally, role play is also seen as having a set methodological framework no matter how it is used in the language classroom. Normally according to Nunan (1990), role plays "can be wholly scripted or wholly improvised, students are given choice in what to say and there is a clear aim to be achieved" (p. 68). This given framework could be useful to teachers as it provides them with a clear structure on how to prepare a useful role play activity for a lesson.

2.1. SUB TYPES OF ROLE PLAY

As we have discussed, role play normally "involves simulating processes in real language use particularly in transferring information and decision making" (Johnson, 1996, p. 173). This is possible because given different (preferably authentic) situations, students are made to practice speaking in the target language and they are forced to exchange information while carrying out the aims of the task. Due to this, the main language skill focused on by role play is speaking and to a lesser extent listening. As Crookes and Gass (1993) observed, role play is indeed a good way to get second language learners to speak and interact. This is also agreed upon by Scarcella and Crookall (1990) whose research have shown that role play assists second language acquisition by helping student to:

a) Be exposed to large quantities of comprehensible input,
b) Be actively involved in the acquisition of speaking/listening,
c) Promote positive affect which include desires, feelings and attitudes.

Now that we have a general idea of what role play is about, it would be helpful to consider the actual form that role play takes. According to Lee (1986), role play is an aspect of simulation and it could contain within it different language tasks like information gap, debate, drama, discussion and decision making. Due to this common presence of other language tasks within the technique, it would be more helpful for us to divide role play into six sub-types:

- Role play controlled through cued dialogues
- Role play controlled through cues and information
- Role play controlled through situation and goals, scripted dramatisations
- Role play through debate and discussion
- Large scale simulation activities
- Improvisation, unscripted dramatisations (Bygate, 1997, p. 69)

The existence of these sub-types means that role play is often confused with other activities. Bailey (2005) for example, found that some classroom activities that are commonly confused with role play include play acting, group discussion, and dialogue work between pairs of students. In addition Doff (1990) argues that through role play, students will need to visualise a role, a context, or sometimes both, before creating a conversation. The context is often pre-determined, whereas the dialogue is built on as the students work on the task.

2.2. AIMS AND OBJECTIVE OF ROLE PLAYS

As mentioned earlier, the goal of role play is usually to help develop the speaking skills of students. This is possible because role play helps students to practise their spoken language in different situations through a variety of simulated activities. According to Golebiowska (1990), this variety lends to the communicative value of role play especially when the teacher succeeds in making the role students play more unpredictable and lively, for example by incorporating opinion gap and information gap elements or aspects of drama.

This notion of variety is also supported by Bygate (1997), who argues that role play could even help develop several language skills simultaneously. The reason is, "depending on what kind of activity is being considered a single activity often [develops] several different language skills" (p. 80). As such, role play activities could also be used to develop listening, reading or even writing skills if lessons are developed progressively for a longer period of time, and also by integrating specific skills focus in the role play activities.

Indeed, research into the use of role play in the communicative classroom is generally integrated with other techniques such as information gap, discussion, problem solving, decision making and opinion exchange (Johnson, 1996). This integration might also reflect the real classroom usage of role play activities by language teachers, where an individual language skill is not developed in isolation. Instead, it is a common practice to combine the development of both listening and speaking or reading and writing skills during a lesson. Not only does this have practical value, but it also caters for more varied skill development that is useful when direct-contact time with students are limited like in the KBSM teaching context. From another perspective, one that focuses on increasing the motivation of students to learn a target language, Lee (1986) argues:

Role play activities are valuable aids to learning and in some countries are established in their schools. In recent

years, increasing attention has been paid to their use as a means of bringing more interest into the classroom. (p. 147)

2.3. BENEFITS OF ROLE PLAYS

The motivation factor is one that should never be ignored especially when dealing with higher secondary students who might be less ready to actively engage in language tasks compared to younger learners of English. Provided teachers allow for a variety of language tasks, it is a real possibility that role plays do bring more interest into the language classroom, even in Malaysia. Role plays can simply be fun.

This notion of 'interest' is possibly true because even when role play activities are directed towards a specific outcome and are highly scripted by the teacher, students are usually found to engage in the ensuing discussion and exchange of ideas. What could be derived from this is that role play activities provide the opportunity for students to practice their language skills during communication.

Nation and Newton (2009) observed that role play could create a need to communicate and interact especially when it is based on real-life situations that might be connected to the real lives of students in the classroom. In this context, role play bridges the gap between the confined classroom and the world beyond. By modelling reality too, role play will let students feel that they are really using the language, which adds confidence in them.

The immediacy of subject matter is a particular strength of using role play that is difficult to simulate with other available techniques. For example, in a typical opinion giving or sharing activity what usually happens is that because there is no real requirement for interaction, students are less likely to want to actively communicate with their partners or within groups unless the activity is scripted in such a way to make the opinion giving or sharing compulsory (Crookes and Gass, 1993).

Nevertheless, not all language tasks could easily fit within role play activities as Crookes and Gass (1993) found out. When they compared tasks that could be integrated into role plays, they found that even if many tasks could provide the same chances for interaction and communication, generally decision making and opinion exchange are best suited for integration into role plays. Although a direct correlation is not possible, it could be that these two tasks if integrated within role play activities might encourage most students to produce the language needed to deal critically with the given subject matter by distancing students from the given subject.

Role play is also beneficial in developing interaction skills for L2 students who are normally reluctant to speak in the target language (Harmer, 1983). It is possible that due to the collaborative nature of role play activities, students who are prone to anxiety (whilst speaking) will find is easier to produce the target language, particularly when the role play is done within a group and a setting familiar to them. It could also be that because role play activities allow for individual creativity, students find it easier to contribute especially when they are given the freedom on what to say, albeit within the context of the lesson.

This collaborative and creative nature of role play is also examined by Nunan (1990), who found that in role plays "students participate more willingly and learn more thoroughly than when they are told to simply repeat a given dialogue in pairs" (p.68). This finding supports several of the earlier notions about the strength of role play in comparison to other similar techniques for language learning.

It is also possible to connect role play to the interactive approach to language learning developed by Di Pietro (1987). The technique has all the qualities of what Di Pietro terms as "strategic interaction" (p. 1), whereby language learning is done through a given scenario or context. The opportunities for collaboration and discussion that might not be available in real life encounters are normally available during role play. Thus, indirectly role play can increase students' self esteem alongside enhancing their capability to work more cooperatively.

Other than that, role play also permits students to 'experiment' the language elements that they have learnt. It offers a unique space for students to test their language proficiency. In addition, role play too lends the students the chance to discover and explore their own personal communication style and sense of humour. For teachers, role play can also be one of the avenues that can be used for assessment and feedback purposes at the end of a topic/ chapter. It is also a good listening practice. And, finally, because role play often involves the students physically, it is therefore a big help in language retention as students are wholly engaged in the activity.

Coupled with its strength in variety, possibility of integration with other language tasks and skills, and the notion of interest brought by the immediacy but at the same time distancing of difficult subject matters; role play is a technique with a lot of potential for use in the Malaysian KBSM classroom. This will be examined next in considering the possibilities and limitations of the technique in the Malaysian ESL context.

3. ROLE PLAYS WITHIN THE MALAYSIAN KBSM ENGLISH SYLLABUS

It should be stressed from the outset that the KBSM English Language syllabus is built around the notion of Communicative Language Teaching, and so role play and

other communicative or interactive activities are seen as important in the actual process of language teaching and learning. Nevertheless, that does not mean that the use of role play will be without any complications, as some Malaysian English Language teachers will attest to. This is possibly true when we begin to consider the importance of cultural factors that might underpin second language learning in Malaysia.

Malaysian students are brought up with a firm belief in so-called 'Asian Values' which amongst others, view the learning process as a transmission of knowledge from teachers to students. This means that apart from the traditional teacher-centred lessons, student-centred learning is quite difficult to implement particularly when based on communicative ideals whereby students are actively encouraged to shape the (language) learning process with their own initiatives.

From our experience, there are other factors as well that impinge upon the use of role play, amongst them gender issues and how supportive students are of each other in the class. The Asian Values of deference and shyness might also cause problems to teachers who may like to use role play to develop the speaking skills of their students. The implications of these factors will be discussed later.

3.1. ROLE PLAYS IN MALAYSIAN ENGLISH LANGUAGE CLASSROOMS

One of the main strengths of role play is that it could be fused with other language or learning sub-tasks like decision making and opinion giving, for the development of other language skills simultaneously and not just speaking (see Dawes 2008).

This allows for a variety of individual learning styles to be catered for, and ensures that role play activities are not just used in isolation during language lessons which is arguably a common practice in Malaysia when role play is made compulsory in the KBSM English Language syllabus for upper secondary students.

This fusion of different sub-tasks within a role play also means that it is possible for students to develop the ability to use language within a wider variety of situations instead of just focusing on one particular context or task at a time. According to Richards and Rodgers (1992):

Such exercises enable students to attain the communicative objectives of the curriculum, engage students in communication and require the use of such communicative processes as information sharing, negotiation of meaning and interaction. (p. 76)

On the other hand, if for example more than one sub-task is used to develop several language skills at a time, students might not be getting in depth knowledge of the language needed to perform in a given situation. This is mainly due to the constraints of time as the average lesson period for KBSM English teachers is only around forty five minutes. Therefore, it could be counter-productive to integrate many different sub-tasks in role play activities as this could create confusion for students and impede upon their progress in completing the role play activity. This also depends on the language abilities of all students in the class, and their motivation and willingness to deal with developing more than one language skill at a time and to complete several sub-tasks simultaneously.

Finally, as Epstein and Ormiston (2007) posited as teachers we must always consider the two main foundations for role play namely functions and grammar in order to determine the use of role play in our own classroom. The former refers to the common situations where students need to function in the target language. For instance going shopping, making appointments and attending meetings. Another basis is to practise grammar or structures. For example, a doctor-patient role play can be a good way of practicing questioning structures and past and past continuous tenses.

3.2. PROS AND CONS FOR USING ROLE PLAYS IN MALAYSIAN ENGLISH LANGUAGE CLASSROOMS

One of the main goals of a communicatively structured lesson is to help students to be able to interact effectively in the real world that exists outside of the classroom (O'Malley and Chamot, 1990). Role play is a technique that can help achieve this by moving students "a step closer to the conditions of real communication when they become involved in conveying new meanings" (Littlewood, 1992, p. 86).

This technique might also move students a step further by helping them to express intentions that are their own rather than those scripted or determined by the activity and the teacher. According to Littlewood, this is because "role plays can provide contexts in which progression can take place" (p. 86), from just the exchange of given information to exchanging real information based on the intended message of the interlocutors. Consider the example, which is a typical highly-scripted role play activity found in Malaysian textbooks:

TASK: In this role play, you are in a clinic because you have been getting severe headaches every time you go to bed at night:

1. Enter the clinic and greet the Receptionist, explain the situation.
2. Find out if the Doctor is in.
3. Ask to see the Doctor immediately.
4. Greet the Doctor, explain why you are here.

5. Tell her/him about the urgency of your health problem and seek help.

The weakness of this made-up example should be apparent now that we have seen the real possibilities of role play use in developing the speaking skills of students. Role play scripts such as the above, needs more careful planning especially in balancing between giving contexts for free expression and guiding the students on the accepted and correct ways of expressing themselves. This could also mean that students who are able to tackle these typical KBSM role play activities are only practising areas like polite forms of enquiring or correct ways of greeting or asking for information, instead of engaging in any forms of communication that could be seen as psychologically and contextually real.

This heavy emphasis on accuracy perhaps does not allow room for creativity or to enable students to learn about real communication. Human communication is such that we will endeavour to relay messages across to the intended recipient(s), even without explicit knowledge of the rules governing the language we are using. This uneasy relationship between accuracy and fluency in role play activities brings into light a possible limitation in the use of role plays, due to the errors students are bound to make.

As Golebiowska (1990) rightly points out with reference to role play activities, "getting involved means making mistakes" (p. 26). This should not be a major problem if students do not share their mistakes with each other, but the collaborative nature of role plays could make it easier for students to actually fossilise each other's mistakes if those mistakes are not corrected. This is even worse for higher secondary Malaysian students who will have to sit for the Malaysian Certificate of Education (GCSE equivalent) in their final year of secondary school.

As a Malaysian teacher and based on our own classroom practice, we would suggest that a good way to counter the problem of errors in role play activities is by focusing on the fluency aspect of the activity beforehand and then moving on to improve accuracy once the activities have been completed. This method is also proposed by Finocchiaro and Brumfit (1983), who believe that "without opportunities for correction, fluency practice runs the risk of producing nothing but a fluent classroom pidgin" (p. 98).

This method also aids in the implementation of role play activities, as it means that during focus on accuracy the teacher will have the attention of all students in the classroom and possibly with the use of recordings, students will be able to reflect on the real mistakes that they might have made. Meanwhile when the fluency practice is being done, students are not being forced to pause all the time in order for corrections to be made to their spoken language by the teacher.

Younger students in general like any sort of role play particularly if it has elements of drama and music in it. Teenagers however seem to prefer role plays that incorporate dramatisations of what they take to be real life situations like for example 'On a bus to school' or 'Finding a wallet by the roadside'. As discussed earlier, role play helps to bring the target language to life and to give students some experience of its use as a way of communicating. Bringing language to life is at the centre of all role play activities, because "it is by nature, engaging and is fun to do" (Lee, 1986, p. 147).

This is another advantage of using role play in teaching. If the teacher could find situations that appeal to her or his students, situations from any possible events in their daily lives that is interesting and engaging, then students will usually enjoy the activity and will be all too happy to participate. Of course this also means that each student will have to be motivated enough to participate actively in the lesson, which might be difficult to achieve.

Nevertheless, role play activities seem to have a particular strength in this area especially when we consider the complex psychological processes that occur when two or more people interact with each other. As Bailey (2005) noted, during role play related activities students are actively forced to focus on formality, register, function, attitude, appropriacy, paralinguistic and also extralinguistic features.

Hence in a typical role play, formality is addressed based on the relationship between interlocutors. The notion of register is also addressed as students will have to decide on which special register to use. They will have to rely upon their schemas and knowledge of the world to do this, for example to consider what do people say in a funeral ceremony, or how language is used in a courtroom by legal professionals, and so on. Function is another aspect of language that is practised on during role play.

For instance, what is the best way to ask for help in this particular situation or how do you refuse to give help to people in a polite manner. Attitude towards other people will also arise during role play activities, for example how would the conversation be different if the person is sad and not happy. It follows that the notion of appropriacy must also be considered during the role play, due to the fact that L2 learners are commonly misunderstood or misjudged by others even if the language they use in real communication is seen as grammatically correct.

3.3. STUDENT ABILITY LEVEL, NOTION OF CULTURE AND GENDER RELATED ISSUES

At a more practical level, not all role play activities will end up a joy at the end of the lesson. The teacher has to take

into account all the individual differences in the makeup of the class and consider issues that could appeal to all students to be able to organise a successful role play. As aforementioned, cultural issues, notions of gender and the supportiveness of the members of a class will impinge upon the success of a role play or indeed any other communicative or interactive activities that are used in the KBSM English Language classroom.

With reference to cultural issues, in the Malaysian context certain sensitive subject matters are to be avoided and students are generally quieter or slower to react to the lesson if such areas are explored. Some students might even refuse to participate from the start. In our experience this usually involves issues like racial discrimination, sexual abuse, poverty, disability and other socially stigmatised issues. Nevertheless, we would argue that teachers must tackle these issues to play a more active role in the democratic process and to contribute towards social justice. Ignoring them will mean that lessons will be devoid of any reality except maybe to develop real language skills.

Gender is another problem area because in schools where students are mixed, there is usually a hidden conflict between girls and boys. So in classrooms, role play might not work especially when both sexes are mixed in an activity. In such classes students are more likely to be non-supportive of each other. It could even lead to serious disruptions when students are actively intimidating each other, something that seem to occur more readily whenever interaction is forced upon students. Although these are just generalisations, they have surely been our experience in all the Malaysian schools that we have taught in.

Finally, experts like Littlewood (1992) believe that role play might just breed faux communication in that students "are not being themselves in these situations and are adopting the conventional behaviour in those situations" (p. 91). This in turn means that the whole idea of using role play in the classroom is a paradox, in that students are not actually learning to communicate and interact authentically but rather are just learning conventional interactional patterns and clichés of what they perceive as being real language.

On the contrary, as English language instructors we both feel that role play is one of the best techniques available to develop the speaking skills of students. Provided the technique is used sparingly, students, in our opinion will enjoy learning English through role plays. Furthermore because whole lessons could be structured around role plays, this also means that other language skills could be developed simultaneously by the teacher, which is of real practical value to Malaysian teachers who are required to complete the whole syllabus for their subjects by the end of an academic year.

4.0 CONCLUSION

With all the evidence gathered it is clear that role play is a very useful technique to use in English Language Teaching because it is proven to get second language students to communicate, even in the Malaysian second language context. Role play also has many sub-types that could cater to the individual needs of students and to facilitate what the teacher is trying to teach.

The technique is particularly useful in helping to develop the speaking skill of students and due to its ability to be integrated with other tasks, role play could also be used to develop the other three language skills, namely listening, reading and writing. This has been proven by studies and is also suggested by many proponents of the communicative approach to language teaching.

Role play is an exceptionally creditable technique for second language learning. It promotes reasoning and creativeness, alongside letting students progress and perform language skills in a relatively non-intimidating situation. It also builds the enthusiasm and participation which are vital for learning to transpire. The strengths of this technique clearly outweigh its weaknesses particularly in the context of ESL teaching in the Malaysian classroom. The idea of using role play in teaching is in itself appealing to teachers, but even more so for students especially if they are given the freedom to express their own intentions.

In summary, role play helps make the lesson more interesting and enjoyable for students; it could be integrated with other tasks like discussion and decision making; it helps students move further in their language continuum to begin to express their own intentions; and it could be tailored to meet the needs of all students. In language learning and teaching, role play is undoubtedly a very useful technique to employ. Although there are some limitations to its use in the Malaysian KBSM context, the possibilities that role play presents is endless.

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Engineering Students' Perceptions of the Related Soft Skills in Engineering Design Courses: Preliminary Studies

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Abstract—**"Soft skills" are generic skills across the various domains of learning, encompasses good manners as well as positive and pleasant disposition. Soft skills often relate to the abilities such as communicating, team working and having leadership qualities. Therefore, engineering design courses have been introduced so that engineers not only have the skills and competencies, but also have the ability to design well. Design is central to engineering activity because it requires students to apply the theoretical knowledge into practice. The objective of this study is to identify the related soft skills in engineering design among Malaysian undergraduates. Online questionnaire has been distributed to engineering students at public and private universities in Malaysia. It consists of five sections covering demographic, perception, strategy design, related skills, design activities and comments from the participants on their experience in learning design and their future in engineering design. Forty four respondents have answered the questionnaires. The result has indicated that more than eighty percent (80%) of the respondents has stated that the most related soft skills in engineering design courses are communication, team work and leadership skill.**

Keywords- engineering; student; soft skills;engineering design

I. INTRODUCTION

To transform Malaysia into a fully developed nation in year 2020, the country needs engineers with a first-class mentality and intellectual capacity. In 2011, the Malaysian Prime Minister in tabling the Tenth (10^{th}) Malaysian Plans with Malaysian Transformation Plan reinforced that the development of human capital and the upgrading of the mentality and intellectual capacity of a nation must be the priority. Therefore, all parties should focus on these areas that enable the country to raise her capacity for knowledge, creativity and innovation, which are essential elements in the context of globalization [8]. The Minister of Higher Education has announced that all higher institutions especially the public Universities in Malaysia must introduce soft skill elements in the higher education curriculum. "Soft skills" are generic skills across the various domains of learning encompasses good manners as well as positive and pleasant disposition. Due to their importance, the Ministry of Higher Education, Malaysia recently has announced that the soft skills are to be introduced to undergraduates of Institutes of Higher Learning in Malaysia [8]. In addition to solid technical skills, there are some soft skills that must be mastered by engineers. Therefore, engineering design courses have been introduced so that engineers not only have the skills and competence, but also have the ability to design well. [5] have agreed that mastery of soft skills combined with an ability to innovate will add sufficient value to engineering graduates.

II. SOFT SKILLS

A. Importance of Soft Skills

Soft skills are normally referred to people's skills. These skills are not easily taught although they are very much needed in daily working life. According to [8] skills can be categorized into three major categories namely personal attributes, interpersonal skills, and problem solving and decision making skills. All graduates regardless of fields of study must acquire the soft skills. Soft skills are generic skills, qualities and trait that a person has to master in order to be successful in their studies [1]. Malaysian Institute of Higher Learning has interpreted soft skill as generic skills which include non-academic skills such as leadership, teamwork, communication and lifelong learning. The Institute of Higher Learning has outlined seven traits of soft skills namely communication skills, critical thinking and problem solving, team works, lifelong learning, entrepreneurship, ethics and professional moral and leadership skills.

Communication skill outlined by expecting students to communicate fluently and effectively in *Bahasa Malaysia* and

English language. Students should also be able to convey their thoughts with confidence and clarity both in written and oral forms. In addition, they are also expected to be active listeners while providing the necessary responses. [8] have stated that the graduates can provide and use current technology presentation confidently.

With the critical thinking and problem solving skills, students should be able to think critically, creatively, innovatively and analytically. This includes the ability to apply knowledge [8]. Besides that, graduates must able to identify and analyze complex situation as well as making evaluations that are justifiable. They should also have the ability to expand and improve thinking skills, to provide ideas, and alternative solutions [6].

According to [6], team work skills involve the ability to work and cooperate with team members from various social and cultural backgrounds so as to achieve the team goal. In order to build a good working relationship between the group members, it is essential that graduates are respectful toward others' attitude, behavior, and belief. Graduates are also expected to undertake the role of a leader and a group member interchangeably [6].

Graduates should be able to do self-regulated learning independently to acquire skills and knowledge. They should have skills to search for relevant information from various sources and able to manage them effectively [6]. They should also be receptive to new ideas and able to develop an inquiry mind [6].

According to [8], entrepreneurship skills involve the ability to venture into business and work-related opportunities while creating risk awareness. This skill includes the ability to identify business opportunities and be able to prepare, build, and explore business plans which eventually leads to self-employments [6].

With ethics and professional moral skill, graduates should be able to practice high moral standards in the relevant professional practice. Besides that, they should also be able to understand the effects of economy, environment, and social-cultural factors on their respective professional practice. In relation to ethical issues, graduates should be able to analyze and arrive at decisions in matters concerning ethics [8]. [6] State that graduates should be able to practice good ethics while having a sense of responsibility towards the society.

Leadership skill entails the ability to lead in various activities [8]. Graduates should have basic leadership knowledge which will enable them to lead a project. It is also essential that graduates are able to understand the role of a leader and a group member and be able to carry out those roles interchangeably [6].

B. Soft Skills for Engineering Student

Modern engineers in the 21st century must be willing to learn, unlearn and then relearn in order to keep abreast of latest developments and changes in society. As engineers, soft skills are also important in applying their technical knowledge at work effectively. Engineers also need communication and persuasion skills to lead and work effectively as team membesr. Graduates should be able to work comfortably with people from others cultures, solve problems creatively, write and speak well, think in a multidisciplinary way and evaluate information critically [8]. Therefore, their technical skill must complement their soft skills.

III. ENGINEERING DESIGN COURSES

Engineering can be defines as the design of a commodity for the benefit of mankind [7]. Observably, the word design is the key to definition of engineering. Design engineers are expected to solve everyday problems and improve the quality of our lives. According to [7], design is a process through which one creates and transforms ideas and concepts into a product that satisfies certain requirements and constraints.

Design is a fundamental aspect of engineering and is important in preparing students for industrial demands.Design can be defined as the process of making and creating new objects and also called the end result of a creative process, either as an article, paper, presentation, modeling, or in the form of real objects. Others definition of design is the systematic, intelligent generation and evaluation of specifications for artifacts whose form and function achieve stated objectives and satisfy specified constraints [10]. According to [4], engineering design is the process of devising a system, component, or process to meet desired needs. It involves a decision-making process, in which the basic sciences, mathematics and engineering sciences are applied to convert resources optimally to meet a stated objective. Among the fundamental elements of the design process are the establishment of objectives and criteria, synthesis, analysis, construction, testing, and evaluation [5].

According to [7], teaching engineering design is very challenging because the necessary skills and attributes such as technical and soft skills must complement each other. For example, technical skills are the ability needed to define real world problem in practical terms, to investigate and evaluate prior solution, and to develop constraints and criteria for evaluation. While for the soft skills are the communication, teamwork and ethics [7].

Design covers multiple engineering disciplines including electrical, mechanical, architectural and building engineers.One required course for engineering students is the engineering design course. Engineering design can be defined as organized, thoughtful development and testing of characteristics of new objects that have a particular configuration or perform some desires functions that meet the aims without violating any specified limitations [2]. This course requires a number of soft skills to produce good engineers in the design skills.

According to [7], design requires clear and effective communication between team members and also between the team and third parties (management, customers, etc.). Communication usually divided in two forms, oral and writing. It can be formal such as the team presents information to third parties or informal such as communicate between team members. Good verbal communication requires the ability to

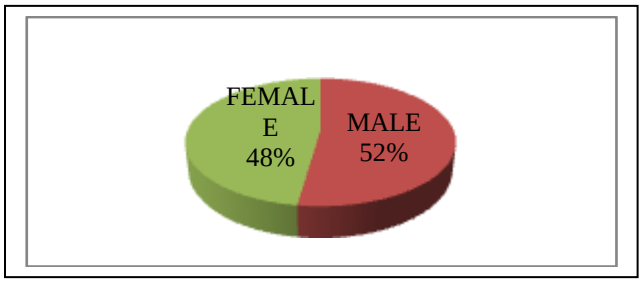
express one's ideas clearly, the ability to listen carefully and understand ideas and concerns expressed by others.

The others soft skill element is team working. Team skills needs to be taught explicitly, practiced regularly, and assessed periodically just like any other set of skills. Team work closely together to meet the same set of mission and make sure there are no conflicts between the various background.

The objective of this study is to identify the most related soft skills in engineering design among Malaysian undergraduates.

IV. METHODOLOGY

In this study, an online questionnaire was distributed to engineering students at public and private universities in Malaysia. This online questionnaire consists of five sections covering demographic, perception, strategy design, related skills, design activities and comments from the participants on their experience in learning design and their future in engineering design. In these preliminary studies, we focused on the section of related skills. In this section we outlined nine (9) questions. Forty four (44) respondents were involved, 52% male and 48% female (Figure 1) answered the questionnaires.



The respondent gender

Table 1 summarizes the percentage of the responses from several of engineering programme. Thirty four percent (34%) of the respondents are Civil Engineering students, 23 percent Architecture, 18 percent Industrial Design, 9 percent each for Mechanical and Computer Science students, while the rest were 5 percent Mechatronic and 2 percent electrical engineering students.

TABLE 1: PERCENTAGE OF RESPONSES

Engineering Programme	Number of respondent	Percentage
Civil Engineering	15	34
Computer Science	4	9
Industrial Design	8	18
Architecture	10	23
Mechanical Engineering	4	9
Mechatronic Engineering	2	5
Electrical Engineering	1	2

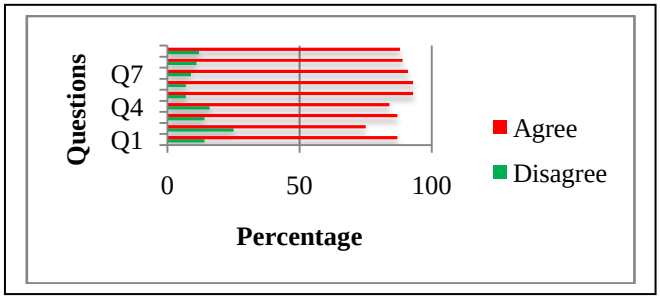
V. RESULTS

From the pilot test, the data was analyzed using computer software for statistical analysis, Statistical Package for Social Science (SPSS). A simple reliability test was run to obtain the Cronbach's Alpha coefficient (Table 2). An instrument with a good internal consistency should yield a Cronbach;s Alpha value of 0.70 and above. The analysis of this instrument generated a value of 0.955 which shows that the instrument demonstrated a good internal consistency.

TABLE 2: CRONBACH'S ALPHA ANALYSIS

N		Cronbach Alpha	Item N
Valid	36	0.955	76
No Valid	0		
Total	36		

Findings from the analyses revealed that there were three (3) soft skills elements related to engineering design that is communication, team work and leadership skills. Only these three elements will be discussed in this paper. Figure 2 shows the result for each question which has been answered by respondents. The set of questions are shown in Table 3.



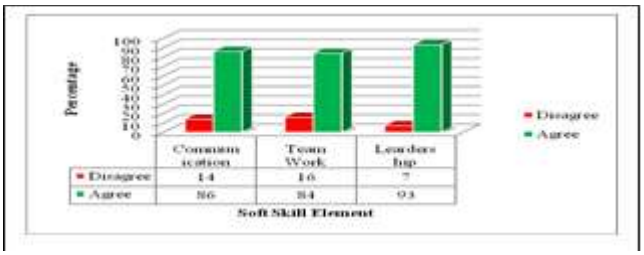
The percentage of question answered

TABLE 3: SET OF QUESTIONS

No. Item	Questions
Q1	Able to negotiate well with others
Q2	Able to follow what my friends say
Q3	Can make my team members understand
Q4	Able to talk confidently
Q5	Working in team
Q6	Able to lead a discussion
Q7	Sharing my ideas with others
Q8	Usually make decisions together
Q9	Responsible for completion of a quality product

Figure 2 shows that eighty seven percent (87%) of the respondents agreed with item Q1 that they able to negotiate well with others. Only fourteen percent (14%) disagreed on having no confidence to negotiate well with others. Seventy five percent (75%) of item Q2 followed what their friends said and 25% didn't follow what their friends said. For item Q3 eighty seven percent (87%) of the respondents agreed that they can make their team members understood what their friends were sayings. While fourteen percent (14%) disagreed that they were able to make their team members understood. Eight four percent (84%) of the respondents agreed (item Q4) that they can talk confidently, while another 16% could not.

Ninety three percent (93%) agreed with item Q5 and Q6 that they can work in team and lead a discussion, and only 7% can't work in team. Ninety one percent (91%) in item 17 agree that they can share their ideas with other team member compared to 11% can't share their ideas with team member. Item Q8 shows that eighty nine percent (89%) respondent usually make decision together compared to others 11% respondent which usually make own decision. Eighty eight percent (88%) students agree that they are responsible for completion of a quality product compared to twelve percent (12%) student disagree.



	Communication	Team Work	Leadership
Disagree	14	16	7
Agree	86	84	93

The soft skill elements for engineering design course

Overall soft skill evaluation for engineering design course is shown in Figure 3. Figure 3 shows that more than eighty percent (80%) of the respondents agreed that the most related soft skills in engineering design courses are communication, team work and leadership skill.

VI. CONCLUSION

Engineering design is an exciting, challenging, satisfying, and rewarding course because engineers have to compete in world market by giving the best of their engineering products. It is challenging because future engineers have to find solution by using their creativity to synthesize new ideas and utilize knowledge and skills in mathematics, sciences, and manufacturing. This is to predict how well the new designs will behave before they are built. Another aspect of engineering design is rewarding. Through rewarding we can perceive how our hard work leads to realization of new products that satisfy the needs of human beings [9]. Engineering is a field that requires both technical skills and soft skills. Technical skills are basic knowledge in all engineering courses. On the other hand, soft skills can only be mastered through experience and frequent use in the workplace. This preliminary study used a small sample size of 44 students in a particular field of engineering. The result has showed that soft skill elements such as communication, team work and leadership are the most related soft skill that students need in the engineering design courses. In conclusion, graduates must equip themselves with various skills and not only focus on academic achievement alone. Thus, they should equip themselves with acquiring soft skills as much as possible through academic or non academic activities. It is clear that the course curriculum has great potential as a platform for students to apply soft skills.

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Soft Skills Implementation in Basic Vocational Education: Transformation of Malaysian Education System

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Abstract— **This concept paper describes the implementation of Basic Vocational Education which is also a stream in the lower secondary system at the Academic Secondary School. The main focus is related to soft skills implementation in Curriculum Structure of Basic Vocational Education which includes three components namely Self-esteem, Vocational Technology and Vocational Skills apart from the Entrepreneurial Skills across the curriculum taught during the three years of study. Implemented curriculum also focused on building self-esteem, development of entrepreneurial competencies and competency development of Vocational Skills at Level 1 and Level 2 in the Malaysian Skills Certificate. In fact, the transformation of Vocational Education in Academic Secondary School was also highlighted by the addition of Vocational Education opportunities are offered starting with the Living Skills Course is taught from Form 1 to Form 3 as pre-technical and vocational education. Then offering Vocational subjects for students from Form 4 to Form 5 as an extension and expansion of Living Skills Course and also provides opportunities for students who are more likely to vocational programs in the form of hand skills. Basic Vocational Education is introduced at the earliest stage which is starting from Form 1 to Form 3 in preventing student dropout rates and also increases student enrollment vocational and skills in the country. This concept paper has proposed the improvements of soft skill adoption in the curriculum implementation in order to improve the effectiveness of the Basic Vocational Education. Finally through the inculcation of soft skills is able to produce students with critical thinking, creative and innovative, skilled and prepared with the noble values which will be a contribution to the success of Malaysian Vision 2020 to increase productivity and advancing the national economy.**

Keywords-soft skills; Basic Vocatonal Education

I. INTRODUCTION

Applications of soft skills are often dealt with in Institutions of Higher Education (IHL) to produce graduates who are ready to step into the working environment. However, it is highly appropriate Soft Skills began to apply at the school at present as they are easily flexed and this practice continued until they continued high level of education consistent with the teachings of Islam that is demanded of His people doing well. Through the application of Soft Skills at the school will be able to prepare and complete the package in students with communication skills, have well personal appearance, good command of English, social skills and motivated as a preparation for the working environment. However, there is no specific list of soft skills, but mostly related to the soft skills such as teamwork, leadership, communication and continuous learning. These skills are important to enable students to become workforce that can contribute to productivity and will provide a positive impact on the organization, especially in terms of productivity and the services offered to customers or users.

Soft skills have been incorporated into the Basic Vocational Education (PAV) through the curriculum outlined by the Ministry of Education Malaysia (MOE), which led to the construction of self-esteem, the development of entrepreneurial competencies and competency development of vocational skills suited for the application of Soft Skills that emphasize moral values in life. PAV is a program that was initially implemented starting 2012 in Academy Secondary School as an extension of the Living Skills subject (KHB) in Primary 4 to Primary 6 in Primary Schools (Ministry of Education Malaysia, 2011b). With adoption of Soft Skills are also extremely necessary in inducing noble values of the student consistent with Salleh (2007) who state that is highly necessary soft skills are applied to students from the school to prevent misconduct and build the character of Malaysians. In this way the potential of students will be able to expand because according to Mok (1996), an effort to develop their potential is not only depends on the positive attitude of the individual, but also skills such as learning skills, thinking skills, social skills, communication skills and coping skills problems and challenges.

II. BASIC VOCATIONAL EDUCATION

PAV is a vocational program conducted as a stream system of education in lower secondary school from Form 1 to Form 3 and the implementation of this pilot program conducted at the 15 selected schools from the year 2012. This program is to provide the opportunity and space education in helping those who inclined, talented and interested in vocational education and special programs for students which are not in the form of academic learning. Stipulated curriculum is compatible with the implementation of skills-oriented program that is able to provide wider career opportunities for students and prevent them to dropouts from the current mainstream education.

Through this program, Jab (2012, January 4) considers that the implementation is in accordance with the government's desire to produce more highly skilled young talents since not all students are inclined towards an academic-oriented examination. With the student involvement in the skill in this PAV will be able to qualify them to pursue interesting work, challenge and provide a decent return. According to the Ministry of Education Malaysia (2011c), PAV performance goal is to provide opportunities for post-UPSR students become skilled human capital to work and ready to continue learning to a higher level. If review of the objectives of PAV, this program is generally to prevent dropout of pupils at primary and lower secondary levels caused by a variety of causes such as weak students, student discipline problems, student socioeconomic problems and so forth.

Courses offered in the implementation of PAV enacted with reference to the National Occupational Skills Standard (NOSS) will entitle the student was awarded two certificates of Malaysian Skills Certificate (SKM) Level 1 and Level 2 for students according to their performance on skills for each task contained in each NOSS course after completing form 3. This situation seems to reflect the opinion Mohd Noordin (1993) who state that the goal to be achieved in the era of 2020 can be implemented through a comprehensive human resource development, balanced and integrated. Through the implementation of this program, the country will be able to produce workers who have work ethics and culture, and its high productivity to help the country's industrial sector and competitiveness in the international arena. With the supply of these certificates, career opportunities are also very bright students because of skill, whether semi-skilled or skilled in the field of employment offers exciting, challenging and provide a decent return (Mustor, 2006).

III. APPLICATION OF SOFT SKILLS IN HIGHER EDUCATION

According to Mustapa Mohamed (2007, July 13), the failure of graduates to get a job is because they do not have the necessary soft skills employers such as low English proficiency, the graduate is narrow-minded, no leadership, no sense of belonging and communication skills. The objectives of PAV, this program is generally to prevent dropout of pupils at primary and lower secondary levels caused by a variety of causes such as weak students, student discipline problems, student socioeconomic problems and so forth.

According to the Ministry of Higher Education (2006), key elements in soft skills to perform in Institutions of Higher Education are Communication skills, Professional Ethics and Moral, Leadership Skills, Critical Skills and Problem Solving Skills, Continuous Learning and Information Management, and Teamwork Skills. The writer is going to explain the implementation of Soft Skills in PAV using the element in soft skills to perform in Institutions of Higher Education because of the both elements is slightly the same.

IV. APPLICATION OF SOFT SKILLS THOUGH CURRICULUM IN BASIC VOCATIONAL EDUCATION

These skills are applied in the implementation of Vocational Education in Singapore at the Lower Secondary Vocational Education System of Singapore has introduced North Light School Program in 2006 to implement a curriculum designed for students who fail to meet minimum requirements for continuing their studies after secondary school sit examination Primary School Leaving examination (PSLE) (Ministry of Education Malaysia, 2011b). The teaching and learning in North Light School Program is to practice learning through experience that lead to the strengthening of self-esteem and emotional nourishment soft skilled in accordance with a very important application in the form of the people who can contribute to national development.

SOFT SKILLS IN BASIC VOCATIONAL EDUCATIONAL

Component of PAV	**Dimension of PAV**	**Subject of PAV**	**Soft skills**
Self-esteem	Communication	Bahasa Melayu Komunikasi	Communication skills
		English Communication	
	Patriotism	History	Professional Ethics and Moral
	Personality Traits	Islamic Studies	Professional Ethics and Moral Leadership Skills
		Moral Education	
		Health and Physical Education	
Vocational Technology	Spiritual Advancement	Vocational Science	Critical Skills and Problem Solving Skills
		Vocational Mathematic	
		Vocational ICT	Critical Skills and Problem Solving Skills Continuous Learning and Information Management
Vocational skills		Basic Vocational Skills	Teamwork Skills
		Specific Vocational Skills	
Entrepreneurial skills		Cross the curriculum	Entrepreneurial skills

PAV curriculum designed to produce skilled human capital, critical, creative and innovative through experience-oriented learning environment of work. Implemented curriculum also focused on building self-esteem, development of entrepreneurial competencies and competency development of vocational skills. Skills provided to students PAV is compatible with the progress the country is increasingly developing to get the desired job opportunities and develop a workforce that is able to face new economic challenges to increase productivity and competitiveness of the economy

(Ministry of Education Malaysia, 2011c). Standard curriculum that focuses on PAV produce skilled human capital in many aspects, such as technical and vocational skills, employability skills, able to communicate effectively, can work as a team and can make decisions when needed.

According to the Ministry of Education Malaysia (2011a), PAV curriculum designed to produce skilled human capital, critical, creative and innovative through experience-oriented learning environment of work. Implemented curriculum also focused on building self-esteem, development of entrepreneurial competencies and competency development of vocational skills at the level of Malaysian Skills Certificate (SKM) Level 1 and 2. It is suitable to the opinion Ku Seman (2006, December 24) of the skills that will be necessary in accordance with the progress the country is increasingly developing to get the desired job. Students are exposed to appropriate knowledge, technical skills and skills relevant to industry needs as asserted by Warwick (1998) and Abbott (1997). As such, the implementation of the curriculum in schools is the main way to incorporate values in every student in the Standard Curriculum that focuses on PAV produce skilled human capital in many aspects, such as technical and vocational skills, employability skills, can communicate effectively, can work as a team, can make decisions when needed (Ministry of Education Malaysia, 2011a). There are three components in the structure of the curriculum that emphasized the PAV self-esteem, Technology and Vocational Education and Vocational Skills. Meanwhile Entrepreneurial skills will be taught across the curriculum during the three years of study.

A. Communication Skills

The application of moral values that are global will also form a virtuous young and noble and consistent with the religious, cultural and community norms Malaysia (Ee, 1995). Communication skills this can be applied in this program through Self-esteem Component that aims to provide a student with the skills communicate, appreciate and practice the teachings of religion, attitude and noble values in life. In fact, consistent with the findings Mohd, Nuruddin & Yong (1995) in which there are several elements of the necessary skills available to graduates of vocational and technical skills who are able to communicate, initiative, confidence in facing the challenges of globalization. Components of Self-esteem consist of three dimensions of Communication, Patriotism and Spiritual Advancement. Apart of it, there are two subjects in the dimensions which are Bahasa Malaysia Komunikasi and English Communications. The curriculum structure is formed in the two subjects that are enables students to communicate effectively in Malay and English in addition to honing the students' ability to communicate ideas clearly, effectively and with confidence, both orally and in writing.

B. Critical skills and problem solving skills

Critical thinking and problem solving skills (CTPS) involves the ability to think critically, analytically as well as the ability to apply knowledge and understanding to new and different problems. Application of these skills can be seen clearly through the components of Vocational Technology is aimed at strengthening science, mathematics and Information and Communication Technology (ICT) and this component consists of one dimension of technology through Vocational Science, Vocational Mathematics and vocational ICT. Through the dimensions can hone the students' ability to identify and analyze problems in complex and ambiguous situations, and make an assessment justified. By learning these subjects, students will be able to stimulate the ability to find alternative solutions to solve a particular task.

Even through this subject, student opportunity to expand and improve thinking skills such as explains, analyze and evaluate the discussion. Through these skills, students can generate ideas beyond the boundaries of decision-making based on strong evidence. Critical thinking refers to the ability to use the mind to make judgments or assessments with care (Azlena Shuib Zainal & Munir, 2004). Critical thinking is one of the micro skills often associated with problem solving or decision making.

C. Teamwork Skills

Ministry of Human Resources (2001) reported that the rate of workers with vocational skills to enter the job market is in a small number and many students from a variety of skills training centers fail to put themselves in the relevant industry which is the skills acquired are insufficient or do not match the industry needs . Thus, though, Vocational Skills component of the Basic Vocational Skills and Specific Vocational Skills that emphasize the development of vocational education in the proficiency-based curriculum to suit the needs of working people for the development of energy. It is compatible with the Specific Vocational Skills pressing on three important aspects to make the individual ready with the work of employability skills, skills, entrepreneurial skills and job specific skills that are hands-on. Both workability and entrepreneurial skills are also a soft skill, which will be applied to learning specific skills.

By emphasizing the importance of employability skills, students will be able to complete the task in connection with a job. This is consistent with the findings McDaniels (1992) in which the employability skills required by employers, including self-reliant, honest, smart, timely, effective connectivity capabilities, the ability to work in a group, ambitious, have good work ethics, loyal and can make modifications. In carrying out hands-on component carried out in the Vocational Skills, teamwork skills involve the ability to collaborate with others from different socio-cultural background can be achieved. In addition, students can also develop an ability to build relationships, interact with others and work effectively with them to achieve the same objectives of a project that has been assigned. Ability to understand and take the role of alternating between group leader and group members can also be nurtured in students that when making a group project that requires students to contribute to planning and coordinating the efforts of the group.

D. Entrepreneurial Skills

According to Joseph (1998), each individual has the opportunity to become entrepreneurs. The difference between entrepreneurs and non-entrepreneurs is their willingness to

combine creativity, innovation, risk taking efforts to assist, develop and maximize their potential to take advantage of the opportunities available. In fact, according to Faoite *et al.* (2003), awareness of the importance of entrepreneurship can be seen through the increased supply of courses, programs, research and publication by the IHL and demand by students around the world since the 1980s. This can be seen by nurturing a culture of entrepreneurship across the curriculum that is relevant to current needs and future challenges to students PAV. This is because the execution was carried out entrepreneurial skills through the activities of teaching and learning to be a culture of entrepreneurship in their daily lives.

Entrepreneurial skills involve the ability to explore and develop awareness of the risks, creativity and innovation in business and employment related activities. A Component of Entrepreneurial Skills taught across the curriculum so that students can adopt entrepreneurial mindsets to adopt towards producing ideas, skill and knowledge in a business context, resulting in a product based technology and vocational skills, and has a moral behavior with ethical values by using the relevant subjects, and they learn in school. This is consistent with the findings Davidsson (1995) who found that the experience was gained with little impact on entrepreneurship in terms of practical knowledge. Kolvereid (1996) also found that respondents with entrepreneurial experience are more inclined to be entrepreneurs than those who do not have entrepreneurial experience.

Through the application of this skill, students who have a culture of entrepreneurship and good work and can result in innovation, design, and have a tendency to trade will be achieved. This is in line with the demands of national economic growth increased the number of graduates in technical and vocational fields and strive to create many of the entrepreneurs. This means that if the students are exposed to entrepreneurship courses during their studies, they will be keen to become entrepreneurs after their graduation. In the meantime, Turker & Selcuk (2009) also found that education and support factor structure of the various sectors in a country that affect the entrepreneurial intention. Through entrepreneurship education across the curriculum allows students to develop, explore and capitalize on business opportunities and employment and develop their business plans after graduation. This will produce students who can work on their own by identifying a business opportunity that fits their skills provided during the three years of study at Academic Secondary School.

E. Continuous Learning and Information Management

PAV program curriculum, students are exposed to technology so that they are not left out of the technologies and obtain new skills and knowledge. According to the Ministry of Education Malaysia (2011a), Components of Vocational Technology are aimed at strengthening science, mathematics and Information and Communication Technology (ICT). ICT for Vocational between the subjects in vocational technology component allows students to find and manage relevant information from various sources. In this way, students will receive new ideas and further develop inquisitive mind. Computer use in education was increasing in the period a decade ago. Thus, the formation of the knowledge society should be applied to ICT is capable of generating rich people with information overload as this component is a component that supports the learning of vocational skills. In the meantime, according to the Ministry of Education Malaysia (2001a), the use of ICT in teaching and learning to produce students who are studying according to their own abilities and increase their motivation to learn.

F. Professional Ethics and Moral

The application of moral values that are global will also form a virtuous young and noble and consistent with the religious, cultural and community norms Malaysia (Ee, 1995). Learning through the Self-esteem Component can develop physical and aesthetic aspects of the pupils. This dimension of Islamic Studies or Moral Education, and Health and Physical Education, but also contains curricular activities including sports, uniformed bodies, clubs and associations (Ministry of Education Malaysia, 2011a). There are many positive effects on student involvement in extra-curricular activities, among them self-control, mutual help, rational, skilled, independent and creative (Abdul Rahim, 1999). In this way, students will learn in an environment that has always been practicing ethical behavior and thus have a sense of responsibility to the community. In fact, the social ills among students will be able to overcome to be able to make decisions in solving problems related to ethics. For example, do not engage in vandalism and involvements with the criminal as always adopt a high moral standard in the practice of social interaction.

G. Leadership Skills

According to the Ministry of Education Malaysia (2011a) Identity component is to provide students with skills to communicate, appreciate and practice the teachings of religion, attitudes and values in life. In fact, consistent with the findings Mohd, Nuruddin & Yong (1995) in which there are several elements have the necessary skills in technical and vocational graduates who are able to communicate, initiative, confidence in facing the challenges of globalization. In addition, through the Identity component can develop physical and aesthetic aspects of the students. Self-esteem Component consists of three dimensions of communication, Patriotism and Personality Traits. Meanwhile, Personality Traits dimensions aspect, this dimension of Islamic Studies or Moral Education, and Health and Physical Education, but also contains curricular activities including sports, uniformed bodies, clubs and associations (Ministry of Education Malaysia, 2011a). There are many positive effects on student involvement in extra-curricular activities, among them self-control, mutual help, responsible, considerate, tolerant, ambitious, hygiene, self-confident, sharp-minded, rational, skilled, independent and creative (Abdul Rahim, 1999). With student involvement in extra-curricular activities as well as to foster leadership qualities to lead a project in which these skills involve the ability to practice leadership skills in a variety of activities. In this way, the students themselves discipline to be able to understand and take the other alternating between team leaders and team members to familiarize students to supervise team members.

V. ISSUES AND CHALENGES

PAV is a new program that emphasizes skill competency as students enter the program offered PAV consisting of pupils with low academic achievement are designed to maximize the content relevant to the content that can accommodate the sharpening. Therefore, the balance between the application of soft skills with the skills to help students improve achievement PAV their knowledge as well as the people who can contribute to national progress. In addition, the curriculum should also take into account the age and fitness level of students' thinking skills needed for students with basic knowledge of the medium and low bit slow to understand the subject matter presented by teachers and slow in acquiring a skill and thus less willing to follow learning in school.

Since this program began conducted in 2012, teachers are still in the process of adaptation for implementing this new program. PAV teacher preparation based on areas of specialization in accordance with PAV subjects at degree level, clearly a priority in the specialized field of view will produce highly skilled teachers who form the student in mastering the Soft Skills that can make students more ethical, when in the world of work and in their daily life. With the acquisition of knowledge related to Soft Skills can guarantee the quality of students' skills in enhancing the country's energy resources in the near future. However, as the first step of the program of related subjects can be implemented by offering new subjects in existing programs in Institutions of Higher Learning (IHL).Review the curriculum need PAV made from time to time to meet the needs of the workplace and meet the types of skills needed by industry.

VI. CONCLUSION

Through this concept paper describes in detail the application of soft skills in the implementation of PAV. It is hoped that through the effective implementation of PAV to produce students who are critical thinkers, creative and innovative, skilled, prepared with the natural world and the important work is a noble values to increase productivity and improve the economy. It is hoped that students who were enrolled in this program can live a good life in the tech world is complex and constantly changing and expanding.

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Critical thinking, problem solving, lifelong learning and information management skills: a survey of Malaysian ICT students and their learning of soft-skills

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Abstract— **beginning from the middle of the last decade, the Malaysian government institutionalised policy-level initiatives at tertiary level with an express aim to create competent future workers out of university graduates. This is due to the fact that graduates from Malaysian tertiary institutions were perceived as not very competent in the world of work based on the input provided by businesses and industries that are operating within the borders of this country. One of the most common complaints by these organisations is Malaysian tertiary graduates seriously lacked 'soft skills' to make them efficient and productive staff members. Working with a sample of technical-technological ICT students in private tertiary education colleges in a state in central Malaysia, we surveyed these respondents using items adapted from similar instruments employed in Australia and the United Kingdom to gauge reported ability levels in four skills areas: critical thinking, problem solving, lifelong learning and also information management. Our own survey tool thus probed some of the critical soft skills areas identified by the Malaysian Ministry of Higher Education. Results from this large-scale survey revealed a mix of reported ability levels indicating different levels of readiness for different individuals. In addition, although on the whole the respondents seem to feel that soft skills are important for their future careers in ICT related fields there are also those who believe that they have not acquired sufficient skills from their studies, and that they might face some difficulties when they actually start working due to their lack of skills in the four aforementioned areas.**

Keywords- critical thinking; problem solving; information management; ICT students; soft-skills

I. INTRODUCTION

A research literature search on 'soft skills' in higher education will reveal Malaysia's policy initiative that began approximately in the middle of the last decade [1] where the discourse of soft skilling Malaysian undergraduates rose to prominence in the corridors of power and became accepted as common sense by the wider Malaysian population.

The soft skilling discourse is twofold: firstly, is it due to the fact that most graduates from Malaysian universities and colleges are ill-equipped to become 'knowledge workers' that can contribute productively to workplace organisations and thus must be retrained to become more effective staff members; and secondly, these graduates are not too productive and effective in their workplaces because somehow along the way they have not acquired all the necessary soft skills from their tertiary studies at their respective universities and colleges.

Since the beginning of that discourse, the Malaysian government through its Ministry of Higher Education has been actively promoting the soft skilling of all Malaysian tertiary students to prepare them for the real world of work. Consequently, Malaysian scholars interested in the implications and on-the-ground effects of these initiatives at institutional level started to look for hard data on the subject matter at hand.

Studying the perceptions of graduating Malaysian public university students on the integration of soft skills in their formal curriculum, Devadason, Subramaniam and Daniel [2] found that on the whole these students either do not see the importance of soft skills or they are selective in their appreciation of these skills. These scholars believe that, as such, Malaysian universities must rectify existing strategies within the teaching–learning dyad to ensure that soft skills are integrated more successfully in their tertiary curriculum. In another study in East Malaysia, Nikitina and Furuoka [3] found that with reference to soft skills, the expectations of university students were varied and diverse. Hence, even though they generally consider learning and practising soft skills as an important part of their tertiary education, not all

of the skills identified by the Ministry of Higher Education were deemed useful in the eyes of students in this study.

There are, of course, other empirical studies on this subject matter. At the same time, these studies generally work on the assumption that learning and practising soft skills is largely a top-down approach based on a given inventory of skills that must be acquired by tertiary students [4]. As a result, the Ministry of Higher Education has even commissioned the setting up of a general inventory of soft skills based on a large intra-national comparative study between private and public university students [5]. However, are these skills identified by the government truly generic so as to be useful to *all* tertiary students across the board? And most importantly, are the skill areas identified as being generic (Ministry of Higher Education, Malaysia, 2006) really related to the real needs of young professionals-to-be as they begin their careers in the future? These are some of the questions that this present study aims to investigate.

II. LITERATURE REVIEW

Although relevant research literature on the Malaysian context has been introduced in the introduction, in this section the notion of soft skills will be framed within a global perspective. Starting with a discussion of the common definitions of soft skills, this section also considers that fact that not all scholars see soft skills as being critical to the personal and professional development of tertiary students. Lastly, the notion of soft skills will be connected to the world of ICT and this present research effort.

Roselina (2009) in her review of soft skills argue that these skills are quite different from the core or 'hard skills' that tertiary students need to master. Hard skills are administrative, technical procedures related to the core business of an organisation. Compared to soft skills, core or hard skills are normally easy to observe and evaluate because they involve specific skill sets related to the particular job position of a worker (Pool & Sewell, 2007). In comparison, soft skills (sometimes referred to as 'people skills') are on average harder to observe and evaluate. These skills are arguably needed for everyday life as much as they are useful in the workplace; these are skills involved when staff members communicate and interact with each other, cooperate to achieve set tasks, and when they engage in dialogues to provide feedback, solve problems and resolve work-related issues (Rainsbury, Hodges, Burchell & Lay, 2002).

The preceding paragraph raises a very pertinent point and one that must be seriously considered by all stakeholders involved in the soft skilling discourse – If soft skills are useful in the workplace and have all to do with becoming effective and efficient staff members *in* the workplace, why are soft skills not explicitly taught and trained in workplaces? From a different angle, why should soft skills be taught and trained in tertiary institutions when in truth they fall under the purview of work organisations? This is due to the fact that universities and colleges should rightly concentrate on the teaching and learning of core or hard skills, necessary skills that will ensure tertiary students might all become successful (future) workers in the world of work (Naidoo & Jamieson, 2005).

This is, without a doubt, an important point to consider and it has been raised time and again by other scholars who are critical of the soft skilling discourse in tertiary education institutions (Star & Hammer, 2008). Like many others in the same camp, Atkins (1999) believes that preoccupation with soft/people/generic skills is based merely on the primary assumption that these skills are all transferable to employment contexts. On the contrary, Atkins questions whether these skills should be developed in universities and colleges rather than in real employment situations. Scholars like Atkins believe that based on evidence and hard facts, more attention should be given to these skills after graduation and during the actual workplace induction period rather than focusing on then solely during the pre-graduation stages.

In the world of Information and Communication Technologies (ICT), Al-Mahmooda and Grubaa (2007) find most of these assertions to be applicable. In their study on various Australian universities they suggest that although the development of 'employability skills' (soft skills) begins when students step into these institutions, these skills will only prove to be useful when these students enter the real world of work. Therefore, although these skills might be integrated in some ways in the curriculum they only become relevant and useful based on the perceived needs of students as they prepare to graduate and be inducted into workplace organisations. It is based on these precepts that this present empirical research was conceptualised and operationalised to explore:

1. What soft skills mean to local technical-technological IT undergraduates who are finishing their diplomas and preparing to enter the labour market.

2. What these students feel and think about their level of preparation with reference to acquiring and practising skills related to critical thinking, problem solving, lifelong learning and information management.

III.METHODOLOGY

Instrument development and verification procedures – Based on the work of Al-Mahmooda and Grubaa (2007) that focuses on ICT students and their acquisition of soft skills through the formal and informal curriculum at tertiary institutions in Australia together with self-report survey instruments employed at the University of Sussex, England to gauge the generic or soft skills of university leavers as

they prepare to enter the world of work, a 31-item survey was developed and deployed for this present study. To increase the validity of this instrument, the sole developer in the team (Airil) turned to several international experts in the area of academic development who are familiar with the soft skilling discourse to comment on the survey and verify or suggest changes to, or omissions of, individual items. This survey building and verification procedure is highly recommended by scholars like Creswell (2003) and Sapsford (2007). Altogether five senior university scholars at a reputable New Zealand and also Australian institution provided their feedback before the survey instrument was finalised.

As soon as the survey instrument was finalised, it went through rigorous field-testing for usability (by Nurulhayati and Sangeeth) and statistical reliability (by Tahirah) as suggested by Fraenkel, Wallen and Hyun (2006) in their seminal text on designing and evaluating research in the field of education. After this final step, further changes were implemented as follows. First, the four aspects of soft skills to be surveyed (critical thinking, problem solving, lifelong learning and information management) were jumbled up instead of being kept together in their respective categories. Second, the final three items in the survey were reworded to gain useful insights into what respondents have to articulate about their needs and preparedness with reference to soft skills. In addition, *Bahasa Melayu* translations were also added for the final three items to ensure that meaning is not lost on respondents as these items are short essay-like open questions regarding soft skills. And third, it was decided that instead of leaving respondents to complete this instrument on their own, for all data collection sessions at least two of us should be present to assist if clarification and further explanation is needed with regards to the survey as it is being administered.

Respondent information and instrument administration – The respondents who were selected for this research are the final semester technical-technological students from a tertiary college. We have only focussed on the final semester students as this is the group of students who will step into the working environment once they have completed their final year of study and we intended to investigate the respondents' different level of readiness towards the soft skills. We strongly believed that these are the students who need to master the soft skills such as critical thinking and problem solving skill and also lifelong learning and information management skill. All these students need to ensure that they are fully prepared to acquire and practice the soft skills as outlined by the Malaysian Ministry of Higher Education.

About 56 respondents have been randomly chosen for this study and the exit survey has been distributed to all these students. Respondents' identities were not revealed since their responses to interview questions are strictly kept confidential. The researchers have discussed with some of the lecturers who are teaching these groups of students so that the surveys can be administered during their teaching sessions. Two of the researchers have been in charge to provide the instructions to the respondents before they start to respond to the survey questions. These two researchers also were responsible to assist and explain to the respondents if they need any further clarification pertaining to the survey.

The survey was carried out within one week. It so happened that the time the survey was carried out is the first week of a new semester. Therefore, the researchers encountered some problems especially in gathering for more participants. Students were still in their move-about updating their subjects' registration and due to that, most of them did not turn up in their respective classes. We expected at least 100 participants but managed to get only 61 respondents.

IV. DATA PRESENTATION

The data and the findings of the first section of the survey was analyzed and presented using SPSS Version 17.0 whereas the second section of the survey was analyzed qualitatively as this section involves the participants' perception with regard to their needs and preparedness with reference to soft skills. The main findings of this quantitative research were categorized into four important aspects of soft skills namely critical thinking, problem solving, lifelong learning and information management. About seven questions have been prepared related to each aspect so that the researchers can examine to what extent these respondents are ready in terms of all these soft skills.

Reliability of the questionnaire – The questionnaire consisted of 28 test items using a five-point likert scale. The researchers utilized Cronbach Alpha analysis to evaluate the internal consistency of the questionnaire. According to Sekaran (2000), reliabilities less than 0.6 are considered to be poor, those in the 0.7 range, acceptable, and those over 0.8 good, the closer the reliability coefficient gets to 1.0, the better it is. The consistency of the questionnaire is 0.838 which is considered to be good.

TABLE V. RESPONDENTS' CRITICAL THINKING SKILLS

#	Questions				SD	D
	NTS	A	SA	Average		
CT1	I am able to check whether				0	0
	9	28	8	3.73		
	other people use logical					
	33.9%	50%	14.3%			
	reasoning to support their ideas					
CT2	I am able to clarify my				0	7
	20	22	5	3.34		

	own point of view if others				12.5%
	35.7%	39.3%	8.9%		
	do not support my opinions				
CT3	I am able to draw conclusions			1	3
	16	27	8	3.62	
	with examples to support my			1.8%	5.4%
	28.6%	48.2%	14.3%		
	own ideas				
CT4	I am able to look for evidence			1	5
	25	21	4	3.39	
	to separate facts from opinions			1.8%	8.9%
	44.6%	37.5%	7.1%		
CT5	I am able to separate hard facts			1	10
	22	22	1	3.21	
	from people's opinions			1.8%	17.9%
	39.3%	39.3%	1.8%		
CT6	I am able to understand other			1	3
	17	26	9	3.70	
	viewpoints, interpretations and			1.8%	5.4%
	30.4%	46.4%	16.1%		
	perspectives				
CT7	I am able to understand the			0	5
	18	25	8	3.64	
	language that others use to				8.9%
	32.1%	44.6%	14.3%		
	present their ideas				

SD=Strongly Disagree, D=Disagree, NTS=Not Too Sure, A=Agree, SA=Strongly Agree

With respect of the critical thinking skill shown on Table I, it is indicated that the respondents have acquired most of the critical thinking abilities as the average point for the most of the items is more than 3.50. Nevertheless, the respondents are need to improve more in terms of differentiating between facts and opinions as well as clarifying their own point of view with others as the table showed less than 3.50 average point for CT2 and CT5.

TABLE VI. RESPONDENTS' PROBLEM SOLVING SKILLS

#	Question				SD	D
	NTS	A	SA	Average		
PS1	I am able to be patient as I				2	2
	15	32	5	3.64		
	deal with day-to-day issues				3.6%	3.6%
	26.8%	57.1%	8.9%			
	and problems in my					
	workplace					
PS2	I am able to choose the best				1	2
	9	36	7	3.77		
	alternative to solve issues				1.8%	3.6%	16.1%
	64.3%	12.5%				
	and problems in my					
	workplace					
PS3	I am able to face job-related				1	2
	19	28	4	3.46		
	issues and problems in my				1.8%	3.6%
	33.9%	50%	7.1%			
	workplace					
PS4	I am able to list down				1	4
	16	31	3	3.50		
	alternatives to solve issues				1.8%	7.1%
	28.6%	55.4%	5.4%			
	and problems in my					
	workplace					
PS5	I am able to see job-related				3	2
	16	28	7	3.61		
	issues and problems before				5.4%	3.6%
	28.6%	50%	12.5%			
	they arise					
PS6	I am able to solve issues and				7	18
	24	7	0	3.55		
	problems on behalf of my			12.5%	32.1%	42.9%
	12.5%					
	workplace administration					
PS7	I am able to understand why				1	2
	23	24	6	3.57		
	job-related issues and				1.8%	3.6%
	41.1%	42.9%	10.7%			
	problems arise in the					
	workplace					

SD=Strongly Disagree, D=Disagree, NTS=Not Too Sure, A=Agree, SA=Strongly Agree

Based on Table II, most of the respondents seemed to have the skill on choosing the best alternative to solve problems as 36 of the respondents chose "Agree" for this particular item. The above table also depicted that most of the respondents have some sort of problem solving skills as the min for the seven items above is between 3.5 to 4.0 and this can be definitely considered as quite high.

TABLE VII. RESPONDENTS' LIFELONG LEARNING SKILLS

#	Question				SD	D
	NTS	A	SA	Average		
LL1	I am able to discuss my				1	3
	6	33	13	3.96		
	ideas with people who are			1.8%	5.4%	10.7%
	58.9%	23.2%				
	quite intellectual					
LL2	I am able to learn in large			4	36	12
	4	0	2.29			
	groups and share my ideas				7.1%	64.3%
	21.4%	7.1%				
	with members of those					
	groups					
LL3	I am able to make learning				0	4
	17	24	9	3.57		
	a priority in my own					7.1%
	30.4%	42.9%	16.1%			
	professional life					

LL4	I am able to put most of the knowledge that I know into practice	0	2	9	36	9	3.93
		0	2	16.1%	64.3%	16.1%	3.6%
LL5	I am able to read constantly to find out new information	1	3	14	33	5	3.68
		1.8%	5.4%	25%	58.9%	8.9%	
LL6	I am able to search for the best job where I can learn new things while I am working	2	3	13	24	14	3.80
		3.6%	5.4%	23.2%	42.9%	25%	
LL7	I am able to share and teach other people most of the things that I know	0	1	11	26	18	4.09
		0	1	1.8%	19.6%	46.4%	32.1%

SD=Strongly Disagree, D=Disagree, NTS=Not Too Sure, A=Agree, SA=Strongly Agree

As shown in Table III, the average rating in item LL7 was comparatively higher than the other items. This indicated that most of the students have acquired the skill to share and teach other people what they know. However, the average rating for item LL2 was 2.29 which were the lowest in Table III. This result is indicating that respondents are still lacking in terms of learning in large groups and sharing their opinions with other group members.

TABLE VIII. RESPONDENTS' INFORMATION MANAGEMENT SKILLS

#	Question	SD	D	NTS	A	SA	Average
IM1	I am able to assist my work organization in keeping and managing its records	1	4	14	33	2	3.45
		1.8%	7.1%	25.0%	58.9%	3.6%	
IM2	I am able to find the things that I need to find from simple computer databases	2	5	16	25	8	3.57
		3.6%	8.9%	28.6%	44.6%	14.3%	
IM3	I am able to identify things that must be recorded and kept for future references	1	1	12	34	8	3.84
		1.8%	1.8%	21.4%	60.7%	14.3%	
IM4	I am able to input and save new data into simple computer databases	1	1	11	38	5	3.80
		1.8%	1.8%	19.6%	67.9%	8.9%	
IM5	I am able to keep all of my personal records in a safe and secure manner	0	0	13	22	1	4.14
		0	23.2%	39.3%	37.5%		
IM6	I am able to keep different types of records that other people can easily check	2	2	17	29	6	3.63
		3.6%	3.6%	30.4%	51.8%	10.7%	
IM7	I am able to keep different types of records that others can easily understand	1	3	20	25	7	3.61
		1.8%	5.4%	35.7%	44.6%	12.5%	

SD=Strongly Disagree, D=Disagree, NTS=Not Too Sure, A=Agree, SA=Strongly Agree

According to the Table IV, the average rating for all the seven items pertaining to Information Management skill is quite high. This indicated that the respondents know how to manage and retrieve their information and online record to a certain extent.

V. DATA ANALYSIS

The main objective of this research is to investigate what soft skills mean to the local technical-technological IT undergraduates and what these students feel and think about their level of preparation with reference to acquiring and practising skills related to critical thinking, problem solving, lifelong learning and information management. According to the result of this empirical research, it has been found out that most of the respondents have acquired the soft skills to certain intensity as the mean value for each and every category of the soft skill is higher than average. Nevertheless, there are few skills that the respondents need to enhance and develop especially the ones related to life long learning.

Based on the findings from the final three items in the questionnaire, it has been revealed that most of the respondents agreed that soft skills are very essential in a life as a student as well as a future IT professional. Some of the respondents perceived these soft skills as an advantage for them when they step into their working world in order to succeed in their career as an IT professional. They strongly believe that the soft skills such as critical thinking, problem solving, lifelong learning and information management are beneficial in order to create an excellent student as well as a successful IT professional. One of the respondents stated that soft skills are very significant in workplace especially when it comes to interacting with people and responding to

others and this is also supported by Rainsbury, Hodges, Burchell & Lay, 2002. As some of the respondents stated:

"Soft skills are very important for us especially when dealing with people…"

"Soft skills help us to understand people, interact and react to others…"

Apart from that, the feedbacks provided by the respondents also depicted that most of the students have not acquired enough soft skills from this institution in order to succeed in the working world. Although some of the courses in this institution have exposed the students to certain extent of these soft skills but the respondents feel that there are still a lot to learn and acquire about soft skills to enable them to perform well in their future careers.

VI. CONCLUSION

Although the mass media, industry spokespersons and political figures often report on the lack of 'soft skills' by Malaysian graduates, this study has shown that there are some different levels of readiness shown by the students. Although it be concluded that most of them realize the importance of developing soft-skills in preparing them to succeed in their future career, the results shows an overall level which is slightly beyond average point. Studying the perceptions of these graduating Malaysian private college students on the integration of soft skills in their formal curriculum, we found that on the whole these students selective in their appreciation of these skills. Even though they generally consider learning and practising soft skills as an important part of their tertiary education, not all of the skills identified by the Ministry of Higher Education were deemed useful in the eyes of all students in this study. Therefore, Malaysian universities must rectify existing strategies within the teaching–learning dyad to ensure that soft skills are integrated more successfully in their tertiary curriculum.

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