

Excellence in Teaching and Learning DS45

Prof Madya Dr. Jariah bt Mohamad Juoi

20th July 2016

Training Outcome

Participant able to:

- ▶ Describe the intended outcome of students' education at higher institution
- ▶ Identify the role of lecturer in teaching and learning
- ▶ Aware on the challenges of education student in achieving the intended learning outcome

Outline:

Adjusting mindset, clarify motivation, setting and achieving training outcomes

- ▶ Teaching and Learning: Self-review and Reflection
- ▶ Outcome Based Education (OBE) & Student Centered Learning (SCL)
- ▶ Malaysia Education Blueprint (Higher Education) 2015-2025
- ▶ UTeM's Vision, Mission and General Education Goal
- ▶ UTeM's Strategic Plan 2012-2020
- ▶ PEO, PO, LO
- ▶ Teaching Plan

Facilitate students to experience learning more effectively through OBE approaches.

- ▶ Roles of Lecturer
- ▶ Teaching Portfolio

Challenges on implementing OBE in teaching and Learning

- ▶ Constructive alignment of assessment & learning activities
- ▶ Delivering course effectively
- ▶ Assessing course outcome
- ▶ Continual quality improvement (CQI)

Reflection :

Roles of Lecturer in Teaching and Learning

Activity 1:
Explain your role as a lecturer to achieve
Malaysia Education Blueprint (Higher
Education) 2015-2025

INTRODUCTION



FALSAFAH PENDIDIKAN KEBANGSAAN

Pendidikan di Malaysia adalah satu usaha berterusan ke arah memperkembangkan lagi potensi individu secara menyeluruh dan bersepadu untuk mewujudkan insan yang seimbang dan harmonis dari segi intelek, rohani, emosi, dan jasmani berdasarkan kepada kepercayaan dan kepatuhan kepada Tuhan. Usaha ini adalah bagi melahirkan rakyat Malaysia yang berilmu, bertanggungjawab dan berkeupayaan mencapai kesejahteraan diri serta memberi sumbangan terhadap keharmonian dan kemakmuran masyarakat dan negara.



To achieve these system and student aspirations, the MEB (HE) outlines 10 Shifts that will spur continued excellence in the higher education system. All 10 Shifts address key performance issues in the system, particularly with regard to quality and efficiency, as well as global trends that are disrupting the higher education landscape.

The first four Shifts focus on outcomes for key stakeholders in the higher education system, including students in academic and TVET pathways, the academic community, as well as all Malaysians participating in lifelong learning. The other six Shifts focus on enablers for the higher education ecosystem, covering critical components such as funding, governance, innovation, internationalisation, online learning, and delivery.

10 Lonjakan



PPPM (PT) menggariskan 10 Lonjakan bagi mencapai aspirasi sistem dan aspirasi pelajar. Lonjakan ini akan mendorong kecemerlangan berterusan dalam sistem pendidikan tinggi. Lonjakan ini juga akan menjelaskan kaedah untuk menangani isu berkaitan prestasi utama sistem, terutamanya kualiti dan kecekapan serta pengaruh persekitaran global yang semakin mencorakkan landskap pendidikan tinggi.

Empat Lonjakan yang pertama memfokus pada keberhasilan warga pendidikan tinggi, termasuk pelajar dalam laluan akademik dan TVET, komuniti akademik dan seluruh rakyat Malaysia yang mengikuti pembelajaran sepanjang hayat. Enam Lonjakan seterusnya memberi tumpuan pada pemboleh (enabler) ekosistem pendidikan tinggi, merangkumi pembiayaan, tadbir urus, inovasi, pembelajaran dalam talian, pengantarabangsaan dan penyampaian.

Holistic,
Entrepreneurial
and Balanced
Graduates

Aspirasi Pelajar

Kementerian akan terus menjadikan Falsafah Pendidikan Negara sebagai asas kepada pendidikan seimbang untuk mem bangunkan aspirasi pelajar. Sistem pendidikan daripada peringkat prasekolah hingga pendidikan tinggi mempunyai visi yang sama dari segi keberhasilan dan kepentingannya kepada setiap pelajar. Kementerian memberi penekanan untuk mengimbangi antara ilmu dan akhlak. Aspirasi pelajar dalam PPPM mempunyai enam atribut: etika dan kerohanian, kemahiran memimpin, identiti nasional, kemahiran bahasa, kemahiran berfikir, dan pengetahuan. Inilah juga enam atribut bagi pelajar pada pendidikan tinggi.



Etika & Kerohanian

Beretika dan bermoral, mempunyai kerohanian mantap, penyayang dan prihatin; menghayati pembangunan mampan dan gaya hidup sihat



Kemahiran Memimpin

Komunikator yang berkesan, cerdas emosi dan mampu berinteraksi merentas budaya; bertanggungjawab, berdaya saing, cekal dan yakin

PENDIDIKAN TINGGI

PENDIDIKAN PRASEKOLAH HINGGA LEPAS MENENGAH

Mempunyai asas moral yang kukuh dan keberanian membuat keputusan yang betul

Mempunyai kemahiran berkomunikasi, berciri keusahawanan, cekal dan boleh memimpin serta bekerja secara berpasukan

AKHLAK (Etika dan Moral)

Malaysia Education
Blueprint (Higher
Education) 2015-2025
:6 Student's Attributes



Identiti Nasional

Mempunyai jatidiri kebangsaan dan memahami aspirasi negara

Mempunyai jatidiri kebangsaan dan menghargai kepelbagaian



Kemahiran Bahasa

Mahir dalam bahasa Melayu dan Inggeris, dan teruja untuk mempelajari satu bahasa global tambahan

Menguasai bahasa Melayu sebagai bahasa Kebangsaan, dan bahasa Inggeris sebagai bahasa kedua dan bahasa komunikasi antarabangsa



Kemahiran Berfikir

Menghayati pendapat yang pelbagai, berfikir secara kritikal dan inovatif, dan berkemahiran menyelesaikan masalah serta berciri keusahawanan

Bersikap ingin tahu dan inovatif, boleh mengaplikasi dan menjana pengetahuan bagi penyelesaian masalah



Pengetahuan

Menguasai bidang pilihan, mampu memanfaatkan, menghubungkan dan mengaplikasikan pengetahuan yang dipelajari, dan mampu menghargai kesenian, kebudayaan, serta sains, teknologi kejuruteraan dan matematik (STEM)

Menguasai mata pelajaran teras dan pengetahuan umum tentang dunia.

IMBANGAN

ILMU
(Pengetahuan dan Kemahiran)

Vision

To Be One of the World's Leading Innovative and Creative Technical Universities

Mission

UTeM determined to lead and contribute to the wellbeing of the country and the world by:

1. Promoting knowledge through innovative teaching & learning, research and technical scholarship;
2. Developing professional leaders with impeccable moral values;
3. Generating sustainable development through smart partnership with the community and industry.



VISI **Menjadi Universiti Teknikal yang kreatif dan inovatif terkemuka di dunia**

UTeM bertekad untuk menerajui sumbangan kepada kesejahteraan negara dan dunia dengan :

01 **Memartabatkan ilmu** melalui pendidikan, penyelidikan dan keserjanaan teknikal yang inovatif

02 **Membentuk pemimpin** bersahsiah murni yang profesional

03 **Menjana pembangunan** lestari bersama industri dan komuniti

Our Core Values



Our Tagline

tagline:
*Always a Pioneer
Always Ahead*

**Sentiasa Merintis
Sentiasa Menerajui**



Tranformasi UTeM

TEMA & RANGKA STRATEGIK UTeM

Agenda transformasi UTeM telah dirancang mengikut enam tema serta rangka strategi seperti di bawah



Melonjak Kecemerlangan Pendidikan Teknikal - Pendidikan teknikal premier yang diiktiraf seluruh dunia



Merintis Teknologi Masa Hadapan – Ilmu dan inovasi strategik untuk masa hadapan



Membentuk Pemimpin Berciri Teknousahawanan – Graduan Teknousahawanan yang profesional dan beretika



Memacu Potensi Komuniti dan Industri – Pusat rujukan setempat bagi memakmurkan komuniti



Pengurusan Bakat – Menginstitusikan ekosistem yang menarik bakat-bakat yang kreatif dan inovatif



Kelestarian Kewangan – Kurang kebergantungan kepada dana kerajaan

OBE

OBE implementation

- KUTKM & UTeM
 - i. KUTKM –Practice and Application Oriented (PAO)
 - ii. Accreditation Evaluation
 - Malaysia Qualification Framework (MQF), 2005, emphasizes on learning outcomes.
 - Programme standards, Engineering Program Accreditation Manual
 - Accreditation Panel: MQA, EAC
 - Code of Practice for Programme standard (COPPA)
 - First accreditation visit in 2005 (FKE)



OBE “Revisit”

- OBE Philosophy
- OBE Process
- Constructive Alignment
- UTeMs’ Vision
- UTeMs’ Mission
- General Education Goal



Outcome Based Education

- “OBE means clearly focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. This means starting with a clear picture of what is important for students to be able to do, then organizing the curriculum, instruction, and assessment to make sure this learning ultimately happens” (Spady, 1994).

**What do we
bring into
the system?**

**What are we
doing with
the inputs?**

How many?

**What is the
effect?**

Inputs	Processes	Outputs	Outcomes
Students credentials	Programs and services offered	Students grades; graduation rates, employment statistics	What have student learned? What skills have they gained? Attitudes developed?
Academic and support staff	Teaching and research environment	Research outputs; courses per staff	Research Citation; staff development
Campus resources	Policies, procedures, governance, quality system	Statistics on resource availability; participation rates	Student learning and growth

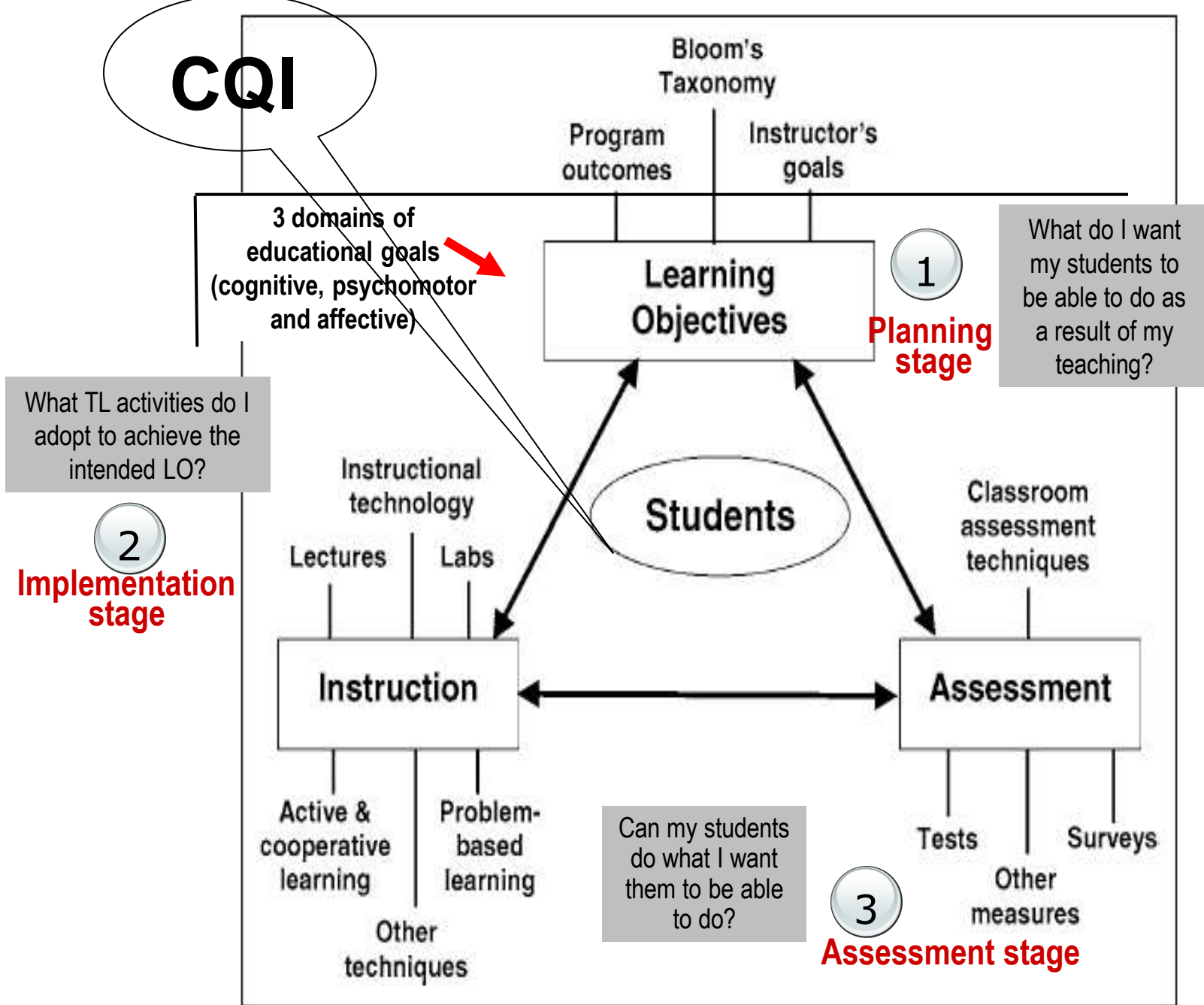


Figure 1. Elements of course design.

Objectives vs. Outcomes

Objectives	Outcomes
Describes what a teacher needs to do to teach, and what needs to be planned to teach	Describes what students should know, understand and able to do upon completion of a study period
Requires the use of basic thinking skills-knowledge, comprehension and application.	Requires the use of higher thinking skills-analysis, synthesis and evaluation
Do not necessarily result in a product.	Result in a product that can be measured and assessed

Learning Outcomes

Abilities in various domains of learning that students are expected to demonstrate as evidence of competency.

MQF Domain of Learning

1. **Mastery of body of knowledge (depth, breadth and relative difficulty of specific content)**
2. **practical or psychomotor skills (range and complexity),**
3. **scientific method, critical thinking, problem solving, autonomy in decision-making**
4. **communication skills, leadership and team work**
5. **information management and life long learning skills**
6. **personal attributes, ethics, shared values and professionalism**
7. **social responsibility and accountability**
8. **Entrepreneurial and managerial skills**

Learning Outcomes

Competency level

Credits

**PSYCHOMOTOR/
PRACTICAL/
TECHNICAL
SKILLS**

**SOCIAL SKILLS &
RESPONSIBILITY**

KNOWLEDGE

**Life
Long
Learning &
Information
Management**

**Communi-
-cation
& team
skills**

**Critical
Thinking &
Scientific
Approach**

**Managerial &
Entrepreneu-
-rial
Skills**

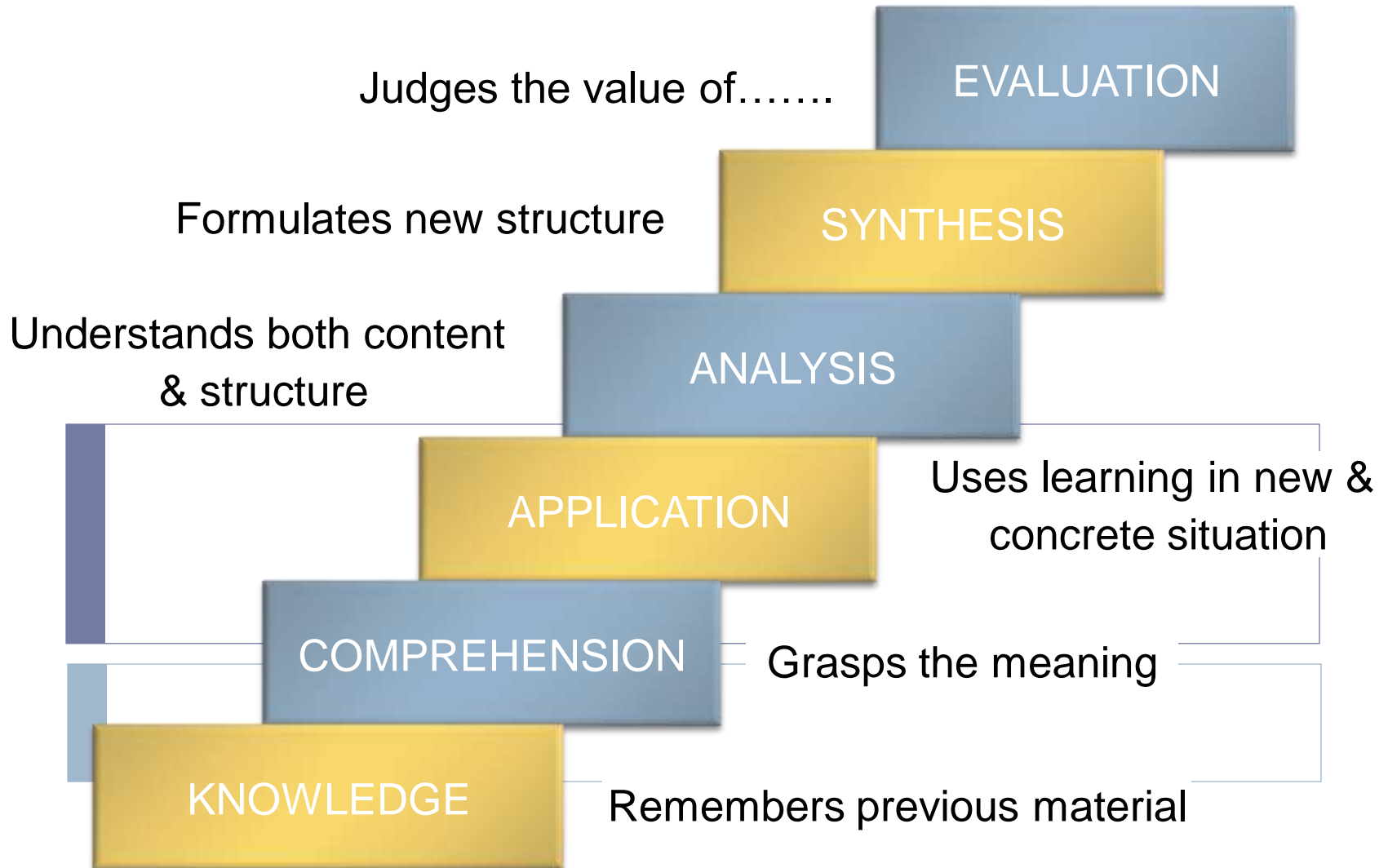
**PROFESSIONALISM,
VALUES,
ATTITUDES,
ETHICS**

Learning Outcomes

- ▶ The LEVELS are distinguished from each other principally by learning outcomes
- ▶ Other distinguishing characteristics may include:
 - ▶ minimum entrance requirement,
 - ▶ typical duration
 - ▶ cumulative duration in full time equivalent (part-time courses)

Cognitive Domain

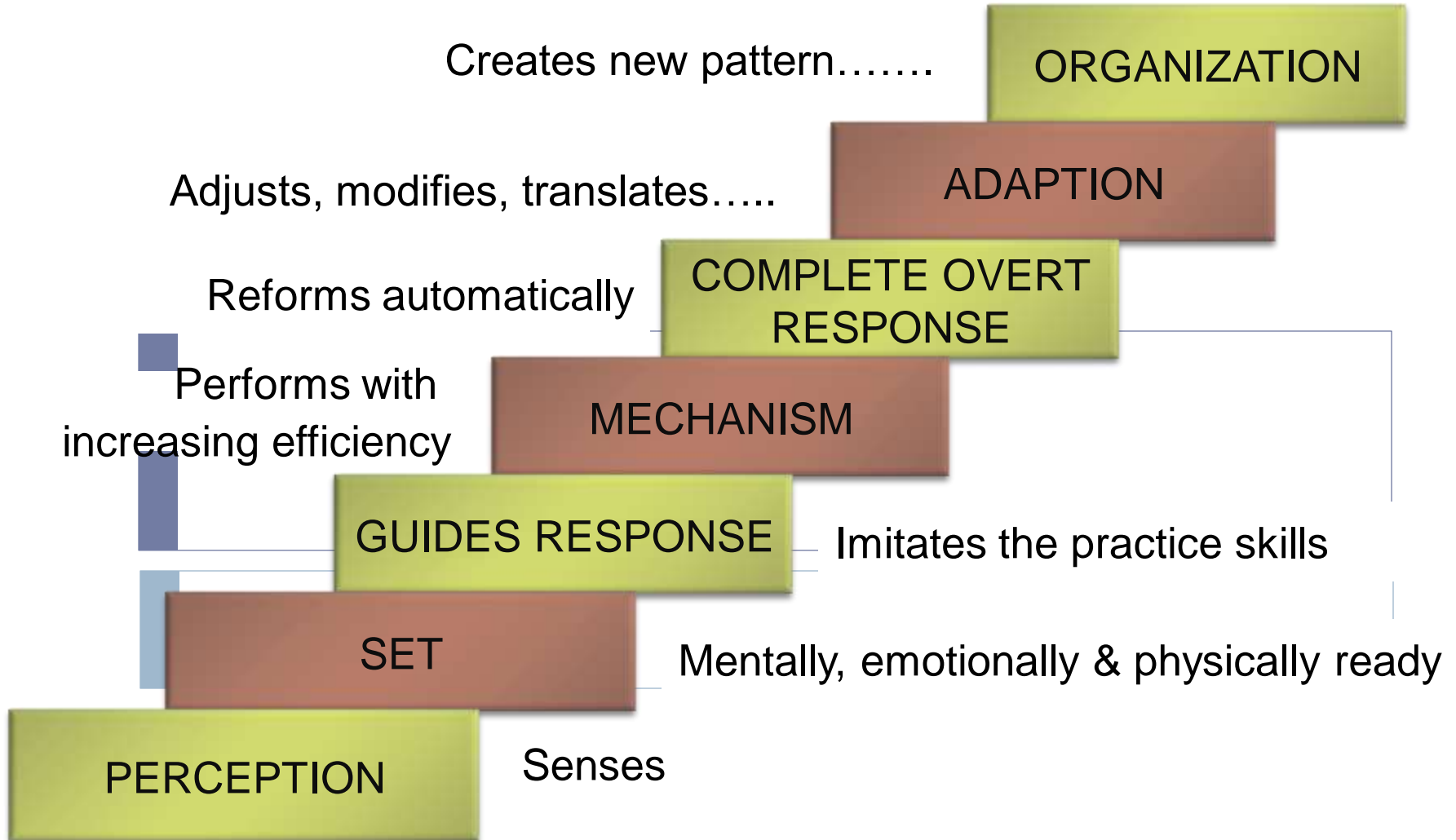
(Thinking, Knowledge)



(Benjamin S. Bloom, 1956)

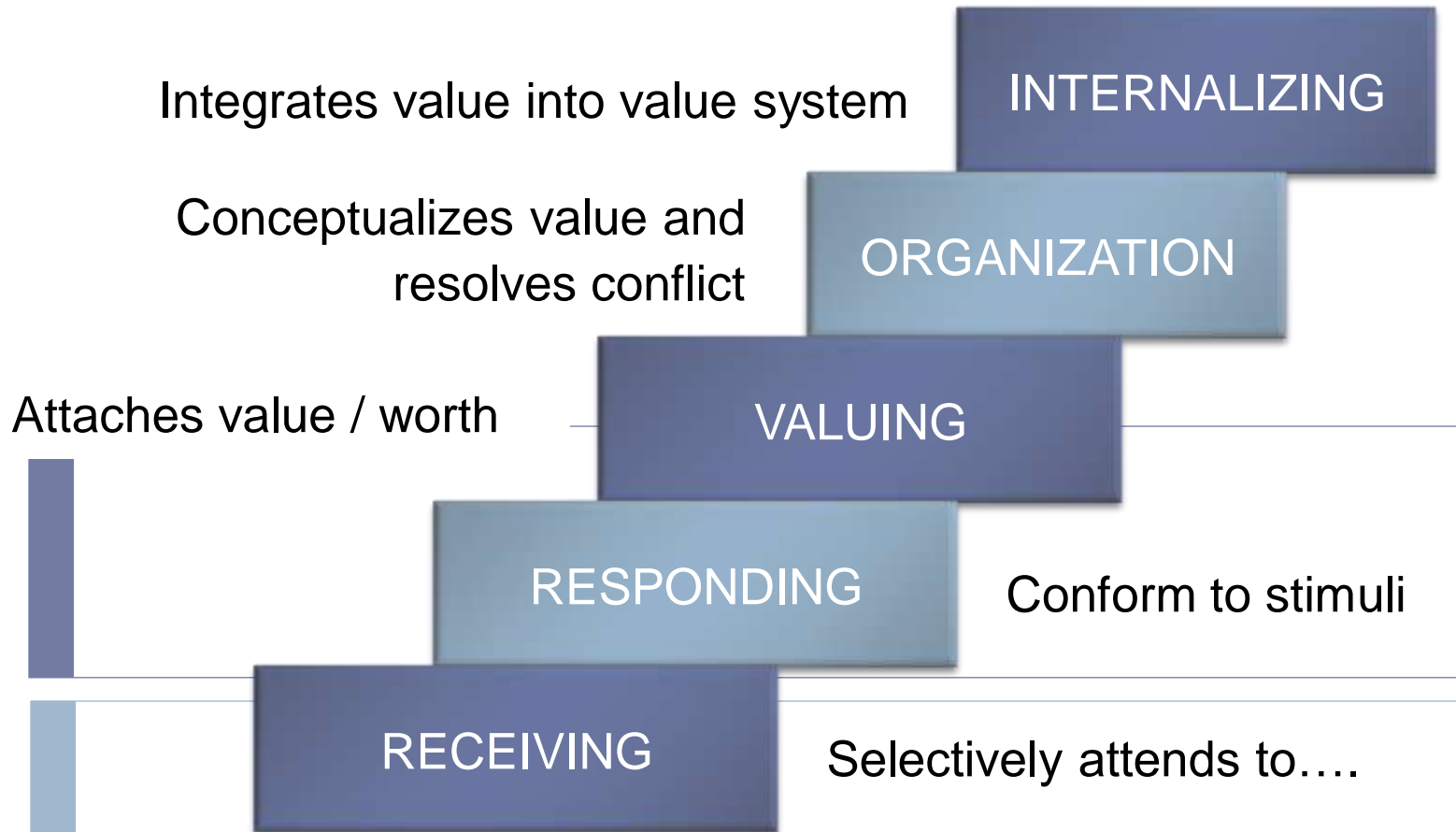
Psychomotor Domain

(Doing, Skills)

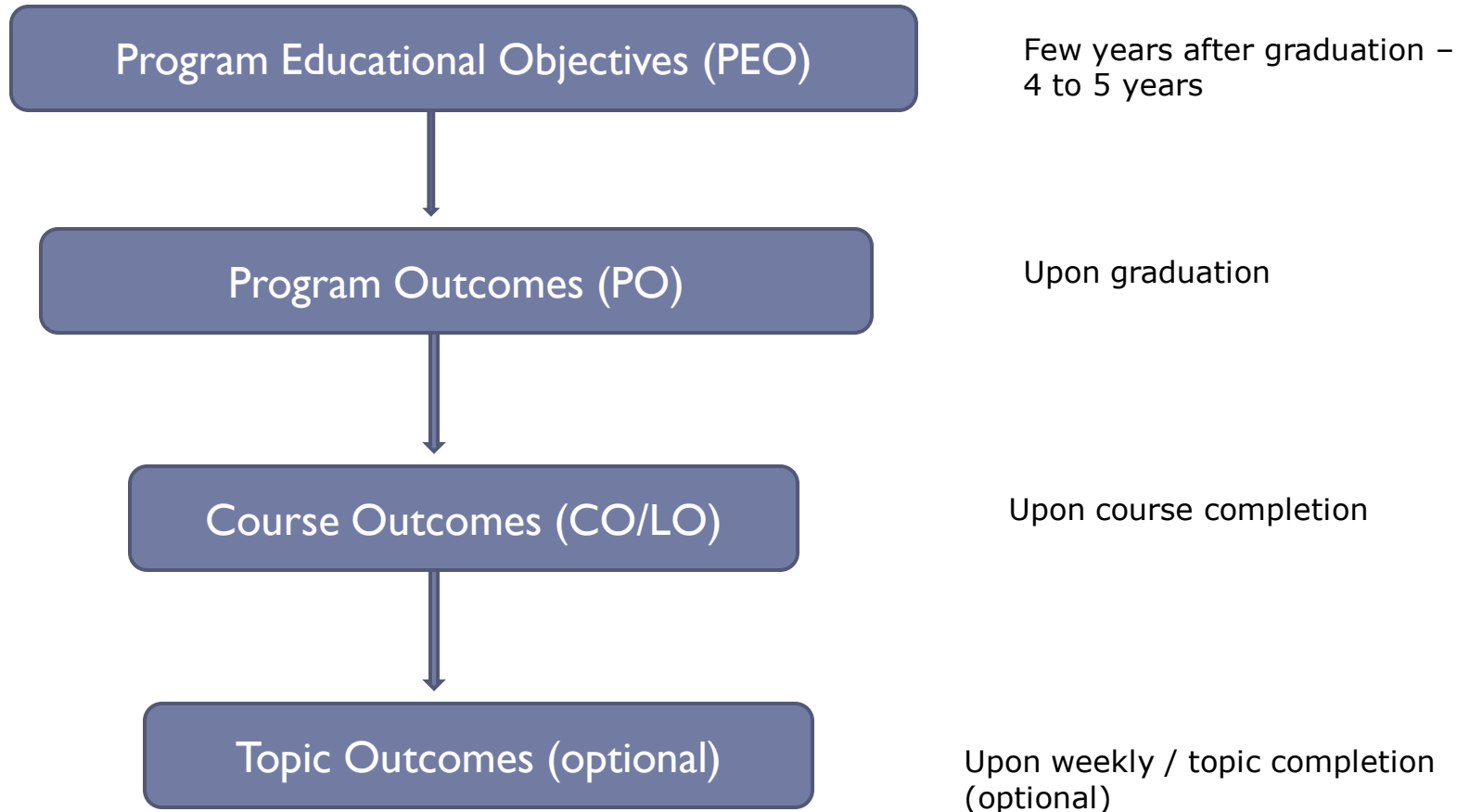


Affective Domain

(Feeling, Attitude)



Different Levels of Learning Outcomes



MQA COUNCIL 03/2010

August 6, 2010

Appendix 5: The Global Picture for an Outcome Based Learning Teaching

THE GLOBAL PICTURE – the 'where'



Program Educational Objectives (PEO)

- Definition of **Programme Objectives**:
 - “...broad statements that describe the career & professional accomplishments that the program is preparing the graduates to achieve.” (*ABET Criteria 2004*)
 - “Broad goals that addresses institutional and program mission statements and are responsive to the expressed interests of various groups of program stakeholders” (*Felder & Brent, 2003*)
 - Broad outcomes at career & professional level

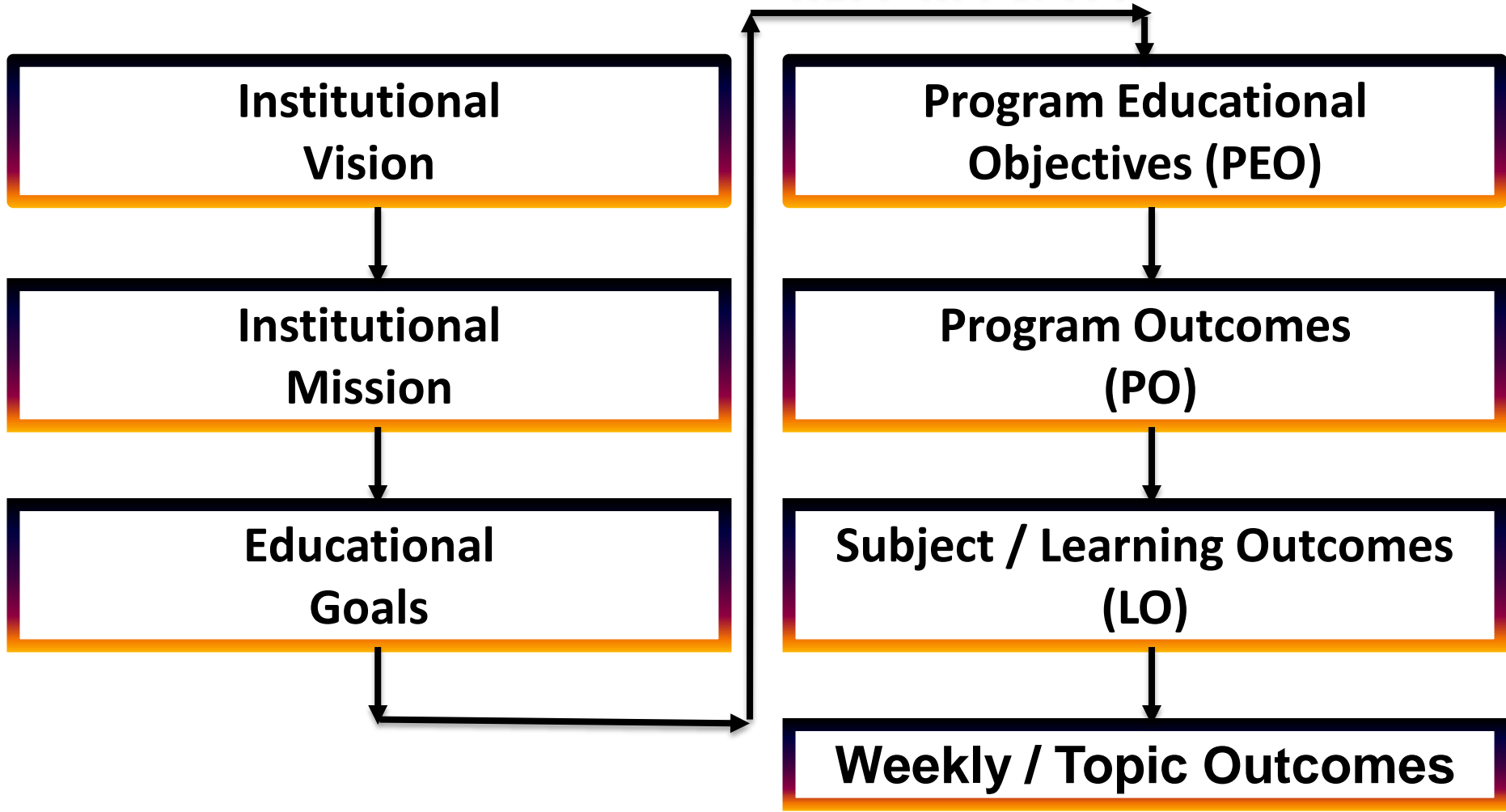
Program Educational Objectives (PEO)

- Beyond graduation and during professional development (typically between 4 -6 years of employment);
- Minimum graduate registration of 4 years from accredited engineering programs before sitting for professional interview;
- Minimum graduate registration of 6 years from non-accredited engineering programs after bridging programs before qualifying for professional interview

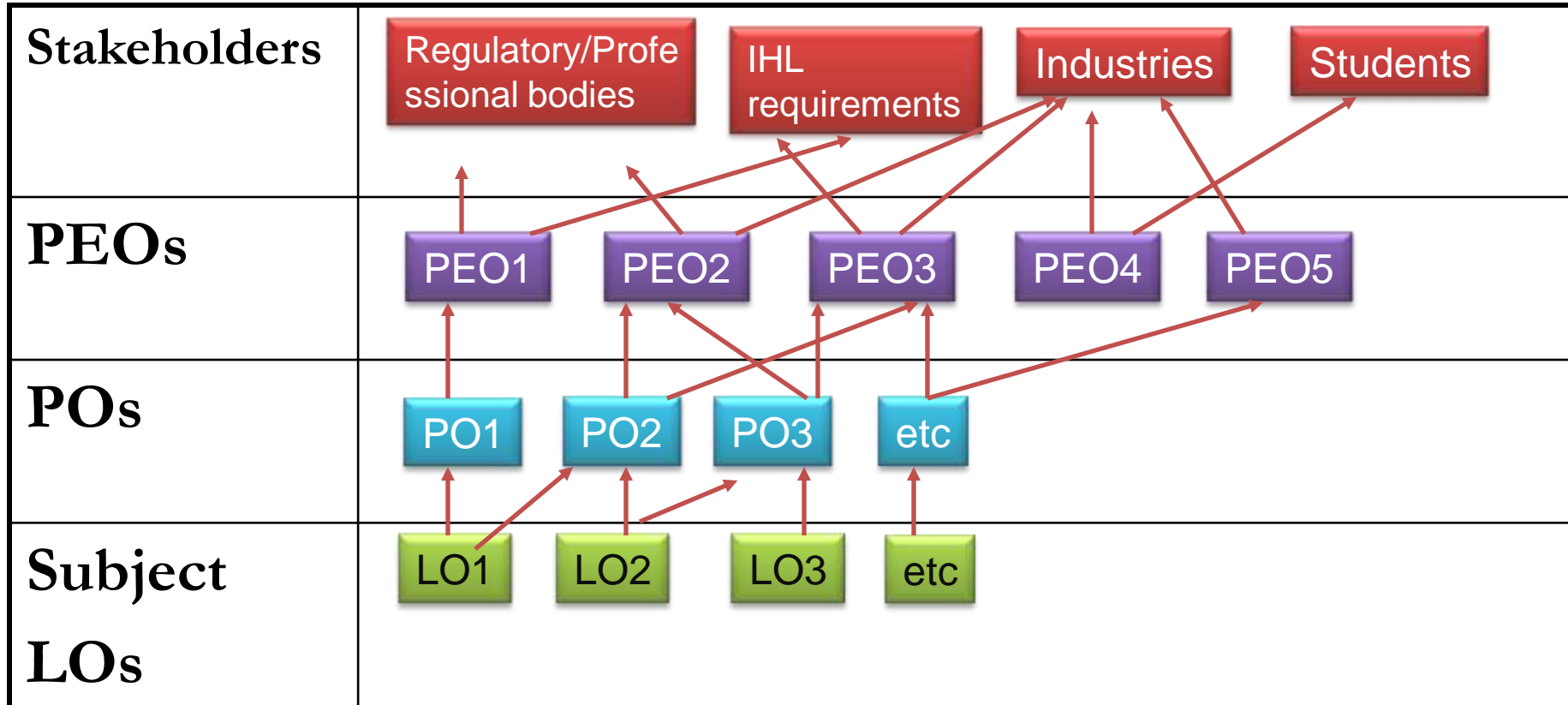
PROGRAM OUTCOMES (PO)

- “Statements that describe what students are expected to know or be able to do by the time of graduation” (*ABET Criteria 2004*)
- Knowledge, skills and behaviors that students acquire throughout the program
- Typically 4 years of B.Eng. Program
 - Intake after STPM/Matriculation = 4 years

HIERARCHY OF VISION, MISSION, EG, PEO, PO & LO



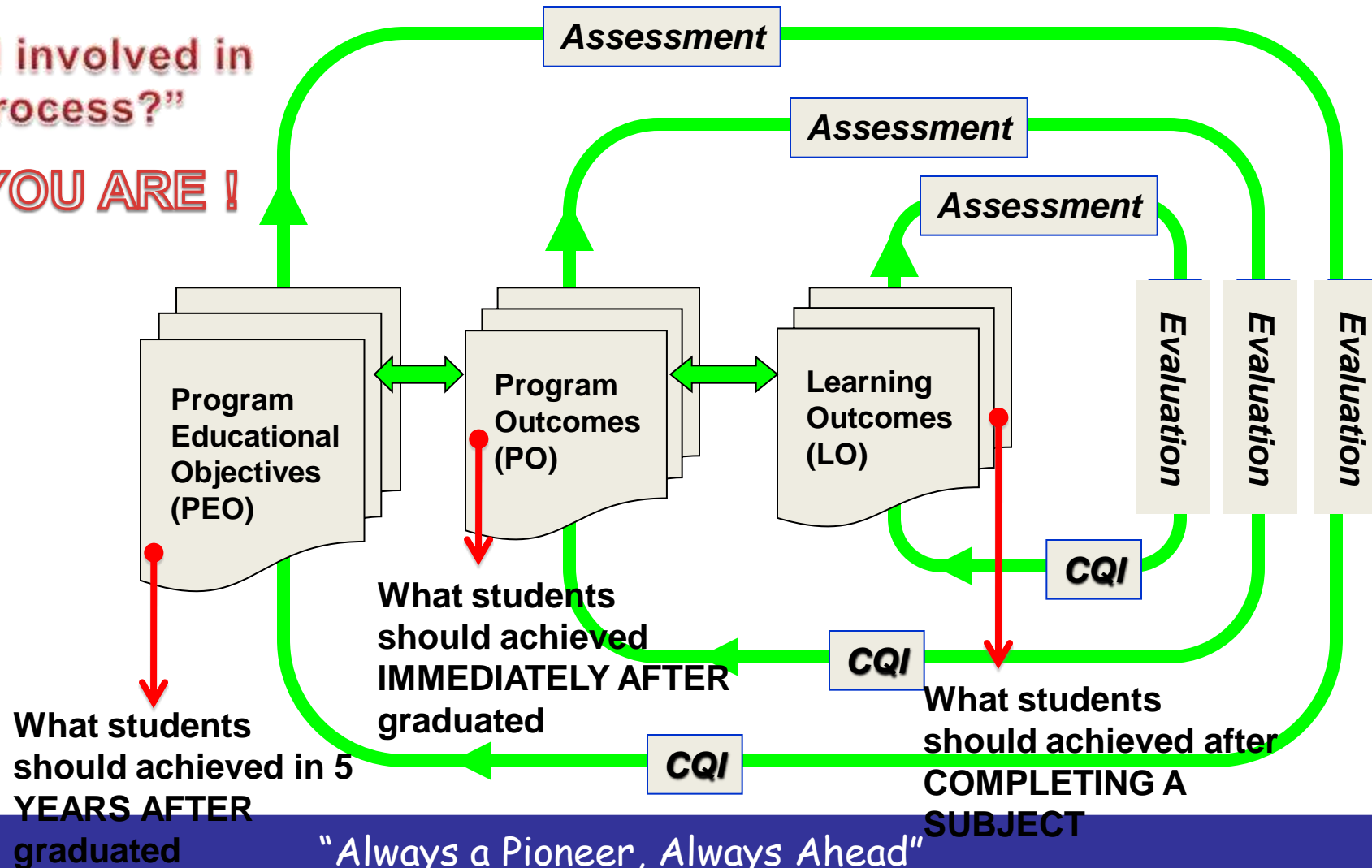
Relationships – PEO, PO, LO and Stakeholders



Assessment, Evaluation & CQI Cycle – The Loop

“Am I involved in the process?”

YES YOU ARE !



OBE & SCL

- ▶ It is not what we teach, It is what they learn
- ▶ Students are equally responsible for their own learning.
- ▶ Teacher-centered vs. student-centered
- ▶ Traditional teaching vs. SCL based teaching
- ▶ Teacher delivered content and answers vs. teacher as a facilitator who provides guidelines for the acquisition of knowledge.

Key Questions:

- ▶ What do we want our students to have or to be able to do?
- ▶ How can we best help students to achieve it?
- ▶ How do we know whether they have achieve it?
- ▶ How do we measure the attainment of the outcome?

Roles of Lecturer



Teacher-Centered (TC) vs. student centered (SCL)

TC	SCL
Course objective is the learning target	Learning outcome is the learning target
No mapping of learning outcome	Mapping of learning outcomes is necessary
Student independent learning not calculated	Student independent learning time is calculated
Contact hours reflects credit value	Total student learning Time (SLT)reflects credit value

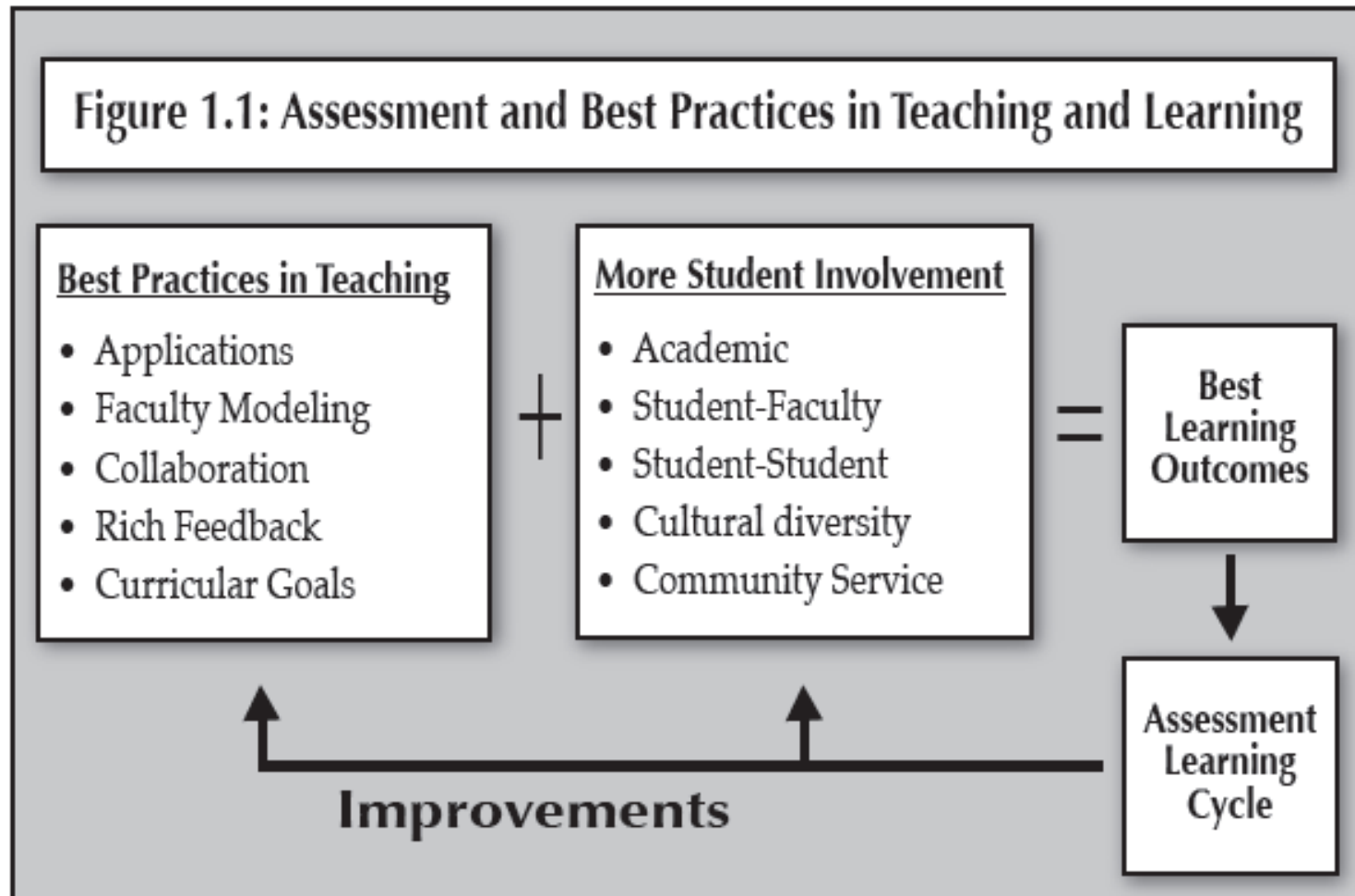
Table 1.1: Teacher-centered versus Learner-centered*

Domain:	Teacher-centered	Learner-centered
Knowledge:	Transmitted by instructor	Constructed by students
Student participation:	Passive	Active
Role of professor:	Leader / authority	Facilitator / learning partner
Role of Assessment:	Few tests—mainly for grading	Many tests—for ongoing feedback
Emphasis:	Learning correct answers	Developing deeper understanding
Assessment method:	Unidimensional testing	Multidimensional products
Academic culture:	Individualistic and competitive	Collaborative and supportive

*Huba & Freed (2000).

http://pandora.cii.wvu.edu/cii/resources/outcomes/best_practices.asp

Figure 1.1: Assessment and Best Practices in Teaching and Learning



(Understanding Lecturers Role)

- ▶ The seven principles for Good Practices in Higher Education.
- ▶ Models of student Development : Bloom Taxonomy, Perry Scheme.
- ▶ Characteristics of Effective Lecturers.
- ▶ Reflections on Teaching.
- ▶ Learning Outcome-Delivery/ Instructional- Assessment Loop
- ▶ Roles of Lecturer in facilitating knowledge acquisition by students.

Self Assessment: Characteristics of Effective Teachers

- ▶ [Self assessment_effectivelectr.doc](#)

The seven principles for Good Practices in Higher Education.

1. Encourages contacts between students and lecturers.
2. Develop reciprocity and cooperation among students.
3. Uses active learning techniques.
4. Gives prompt feedback.
5. Emphasizes time on task.
6. Communicate high expectations.
7. Respects diverse talents and ways of learning.

Western Washington University Program handbook

Teaching Excellence Award

Anugerah Pengajaran bertujuan memberi pengiktirafan dan sanjungan kepada para pensyarah dan tenaga pengajar yang telah melaksanakan tanggungjawab pengajaran dan bimbingan pelajar dengan penuh dedikasi, komited, dan sempurna selama sekurang-kurangnya lima (5) tahun, untuk menghasilkan siswazah yang berkualiti tinggi.

Pengajaran dalam konteks ini didefinisikan sebagai aktiviti kreatif yang direka bentuk untuk meningkatkan keberkesanan pembelajaran dan mengembangkan kebolehan, bakat serta minat pelajar.

Penilaian calon bagi Anugerah Pengajaran adalah berdasarkan kepada elemen INOVASI dan KESARJANAAN dalam kriteria berikut :

- Falsafah pengajaran
- Pengetahuan dan kemahiran berkaitan pengajaran
- Persediaan pengajaran
- Kaedah pengajaran
- Kaedah penilaian hasil pembelajaran
- Bimbingan dan penyeliaan

Calon perlu mengemukakan portfolio pengajaran, melaksanakan pengajaran mikro (akan dibuat dalam kelas).

Appendix 10: Sample of A Teaching Portfolio

Name of Institution

Name :
Department :
Programme :
Year :

Contents

1. **Personal Teaching Philosophy and Goals**
2. **Teaching Responsibilities**
 - 2.1 On-going
 - 2.1.1 Courses Taught
 - 2.1.2 Grading and Feedback
 - 2.2 Past
 - 2.2.1 Courses Taught
 - 2.2.2 Grading and Feedback
3. **Teaching Methods**
 - 3.1 Lessons
 - 3.1.1 Lesson Planning and Schedules
 - 3.1.2 Group or Individual Discussion
 - 3.1.3 Group or Individual Written Analysis
 - 3.2 Formative and Summative Assessments
 - 3.3 Uses of Technology
4. **Programme Information**
 - 4.1 Teaching Plan
 - 4.2 Timetable
 - 4.3 Curriculum
5. **Teaching Evaluation**
 - 5.1 Students
 - 5.2 Management
 - 5.3 Peers
6. **Teaching Improvement and Future Plans**
 - 6.1 CPD Requirements
 - 6.2 Future Modules
7. **Aspirations**
 - 7.1 Self
 - 7.2 Students
 - 7.3 Institutions

TEACHING
PORTFOLIO
Teaching
Portfolio_JMJ[1]
.docx

Models of student Development : Bloom Taxonomy, Perry Scheme.

Table 1.2: Bloom's three learning domains

Cognitive domain:	Acquisition, integration, and application of knowledge.
-------------------	---

Affective domain:	Evolution of attitudes, values, and feelings alongside cognitive development.
-------------------	---

Psychomotor domain:	Acquisition of motor or physical skills.
---------------------	--

Table 1.3: Bloom's cognitive domain

Remember	Understand	Apply	Analyze	Evaluate	Create
Demonstrate recall and recognition.	Comprehend the meaning and interpretation of instructions and problems.	Apply learning to concrete situations.	Separate concepts into component parts.	Make judgments about the value of material or methods for a given purpose.	Put parts together to create new meaning.
recall recognize identify retrieve	interpret exemplify classify explain summarize compare infer	apply execute implement carry out use	analyze associate attribute differentiate discriminate organize interpret	assess critique check evaluate interpret judge justify	compose create, design integrate, plan originate, relate invent, revise synthesize
Keywords					

Table 1.4: Bloom's affective domain

Receiving phenomena	Responding to phenomena	Valuing	Organizing	Internalizing values
Sensory availability, directed attention, willing participation.	Engaged participation; attends to and interacts with phenomena; motivated to respond.	Motivated by worth or value attached to an object, phenomenon, or ideal; expressed in overt, identifiable behavior.	Organizes, compares, and synthesizes values into priorities, resolves conflicts among them, and creates a unique value system.	Internalizes a personal, consistent, and predictable value system that guides behavior.
ask, choose attend, listen select, reply observe	answer, assist comply, discuss practice present, read recite, report select, tell write	accept, adopt approve commit, endorse join, justify share, study work	adapt, combine categorize compare, defend generalize integrate organize systemize	discriminate, perform, act, practice, question, revise, serve, solve, verify
Keywords				

Table 1.5: The Perry Model of Intellectual Development

1-2	3	4	5
Dualism	Multiplicity 1	Multiplicity 2	Contextual Relativism
Truth is absolute and defined by an Authority.	Truth is absolute and knowable, but incompletely defined by Authority.	Truth can never be known with absolute certainty.	Any act of knowing requires taking a point of view.

Table 1.6: Bloom and Perry models compared

Bloom's cognitive domain



Remember Understand Apply Analyze Evaluate Create

Bloom's affective domain



Receiving phenomena Responding to phenomena Valuing Organizing Internalizing values

Perry positions



1-2 = Dualism	3 = Multiplicity 1	4 = Multiplicity 2	5 = Contextual Relativism
Truth is absolute and defined by an Authority.	Truth is absolute and knowable, but incompletely defined by Authority.	Truth can never be known with absolute certainty.	Any act of knowing requires taking a point of view.

Lecturer-Centered to Student-Centered (incorporating SLT)

	Academic Activity	Face to Face Learning	Student Self Learning	Total
1	Lecture	1	2	3
2	Tutorial	1	2	3
3	Laboratory/Practical	3	2	5
4	Assignment-2000 words	0	20	36
5	Presentation	1	4	5
	Total	6	30	36

Teaching and Learning Challenges :

Achieving the learning outcomes

Categories and Mapping of Learning Outcomes (LO)

Categories of LO	Evidence/ Mapping of LO
Qualifications	Guided by qualification Descriptors (MQF)
Fields of study	Relevant to the specific requirements of the field of study
Programme	Map to curriculum and MQF qualification descriptors
Subject	Map to assessment

RELATIONSHIP OF SLT ,CREDIT AND STUDENT ACHIEVEMENTS



Activity 2:

Describe the Teaching plan of your subject

- Learning Outcome
- Course Implementation
- Course Assessment
- Student Learning Time
- Evaluation

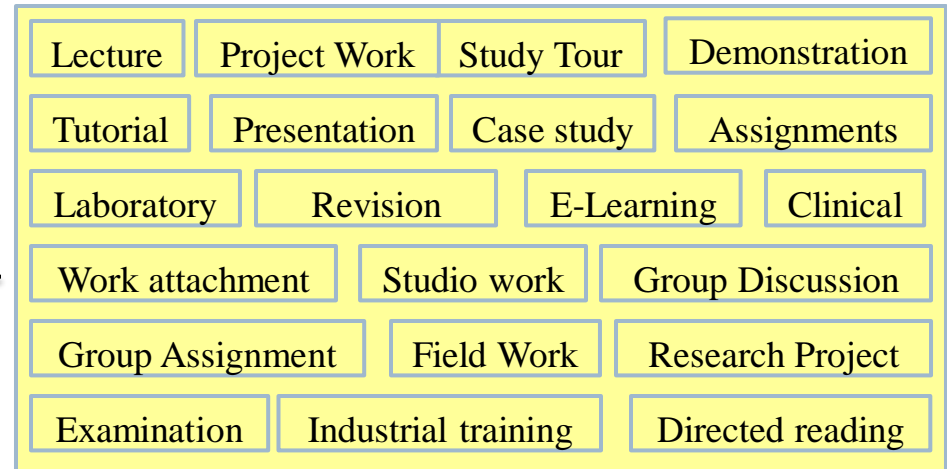
Example:
Engineering
Ceramic

A credit the agreed-upon value used to measure a student workload in terms of learning time required to complete course units, resulting in learning outcomes' (UNESCO, 2004)

Credit =

the measurement of
students'
academic load

Teaching Learning
Activities



**Achievement of Learning
Outcomes**

Teaching/Learning + Assessment

e.g. 4 800 notional SLT = 120 credits

Total SLT \div **40** $=$ **Credit**

Student Learning Time (SLT)

Factors In Calculating Credit

Face to Face / Guided Learning Time

+

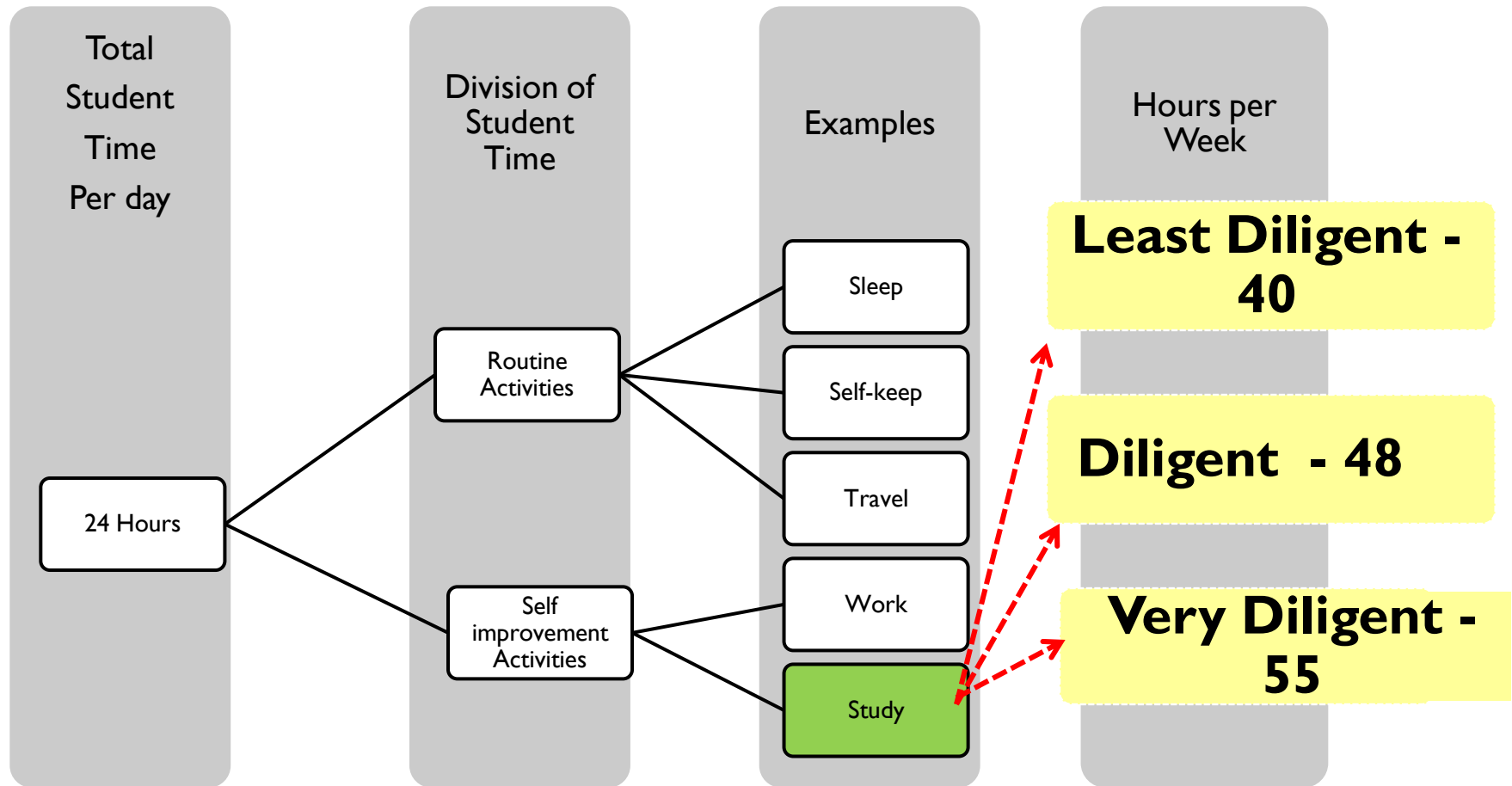
Student Self Learning Time

+

Total Assessment Time



Student Categories and Learning Time



Good = diligent; weak = least diligent





Examples

Recommended Student Learning Time

(For a diligent student & 17-weeks Semester)

8 hours a day

48 hours a week

816 hours for 17-weeks*

20.4 credits per semester

5.8 semesters for a 120 credits bachelors

*17 weeks = 14 weeks of teaching, 1 week each for
semester break, study break and examination

Proposed student independent learning time

Item	Duration (hours) or requirements	Proposed Student Self Learning Time (hours)
Lecture	1	1-2
Tutorial	1	1-2
Tutorial (involving case studies)	1	3
Laboratory (including report writing)	3	2-3
Undergraduate Final Year Project/ Dissertation	6 - 10 credits	240 - 400
Industrial training (effective learning per day × no of day per week × no of industrial training week)*		
Hands on program- only official/guided learning hours is counted, self learning hours is considered not needed*		
Studio Work	2	2
Presentation	1	3-4
Coursework/Assignment	2000 words	10 - 12
Creative Writing (or a project that last a whole semester)	100 – 150 pages	8-10
Examination	3	10 – 20*

* Proposed by MQA, depending on the field of study and the intensity of the examination. * JPT Guideline

Credits per semester

	Modules	Face to Face Learning	Independent Learning	Lab Hours	Evaluation	Total SLT	Credit
1	Genetics	42 (2+1)	42	26	16	126	3
2	Biochemistry	42 (2+1)	42	26	16	126	3
3	Cell Biology	42 (2+1)	42	12	16	112	3
4	ICT	28 (2+1)	28	14	10	80	2
5	English	42 (2+1)	63	14	7	127	3
6	Moral/Islamic Studies	28 (1+1)	42	0	10	80	2
7	Anatomy	70 (3+2)	42	0	16	128	3
	Total	294	301	92	91	778	19

Learning Outcomes and Student Learning Time

(A subject with 6 learning outcomes and 1.5 credit hours)

	Learning Outcomes	Lecture	Tute	Self - learning	Total SLT
1	explain the types of contracts;	2	1	3	6
2	distinguish between offer, acceptance and an invitation to treat;	3	2	5	10
3	differentiate the types considerations;	2	1	3	6
4	describe the principles concerning termination and breach of contract;	4	2	4	10
5	Summarise principles of damages;	2	1	3	6
6	Examine, analyse, compile, apply and justify the principles of contract in given scenario.	0	3	6	9
-	Assessment (1 coursework and one 3-hour examinations)	0	4	12	16
	Total				63

Student Learning Time (SLT) Calculation: Example 1

No.	Session	Hours	Freq	Face to Face Learning	Self Learning Time Hours	Freq	Student Learning Time (SLT)
1	Lecture	3	14	42	1	14	14
2	Tutorial	1	5	5	0.5	5	7.5
3	Case study				5	2	10
4	Presentation	3	4	12	4	2	8
5	Assignment				2	2	4
6	Quiz	1	2	2	1	2	2
7	Test	1	2	2	2	2	4
8	Final Exam	2.5	1	2.5	10	1	10
TOTAL				60.5			59.5
GRAND TOTAL		120 hours					

CHALLENGES

- ▶ Constructive alignment by lecturer during planning-delivery-assessments.
- ▶ Engaging students actively in the learning process.
- ▶ Implementing Continual Quality Improvement

(Concluding Remarks)

- ▶ Roles of Lecturer in facilitating knowledge acquisition by students.
 1. Explain the PO, PEO and LO to the students
 2. Ensure learning outcomes achieved according to PO.
 3. Ensure academic activity is coincide with SLT.
 4. Guide the students in planning and managing their academic life.
 5. Ensure the alignment of teaching delivery with the intended LO
 6. Develop creativity in teaching
 7. Monitor students' assessment
 8. Monitor students' academic performance.

Activity 3:
Reflect your role as a lecturer during
teaching and learning in last semester
subject
suggest for CQI to improve students'
learning outcome achievement

Constructive alignment

LO-deliveries-assessment

PDCA Approach

Communicate the results

- Identify problem and find solution
- Make some necessary

change to the plan

**PEO, PO, Matrix,
SLT, LOKI, TP**



- Analyze the data
- Compare result with plan / achievement
- Monitoring/ reviewing process

- T&L activities
- Assess students learning
- Collect appropriate

data

PLAN



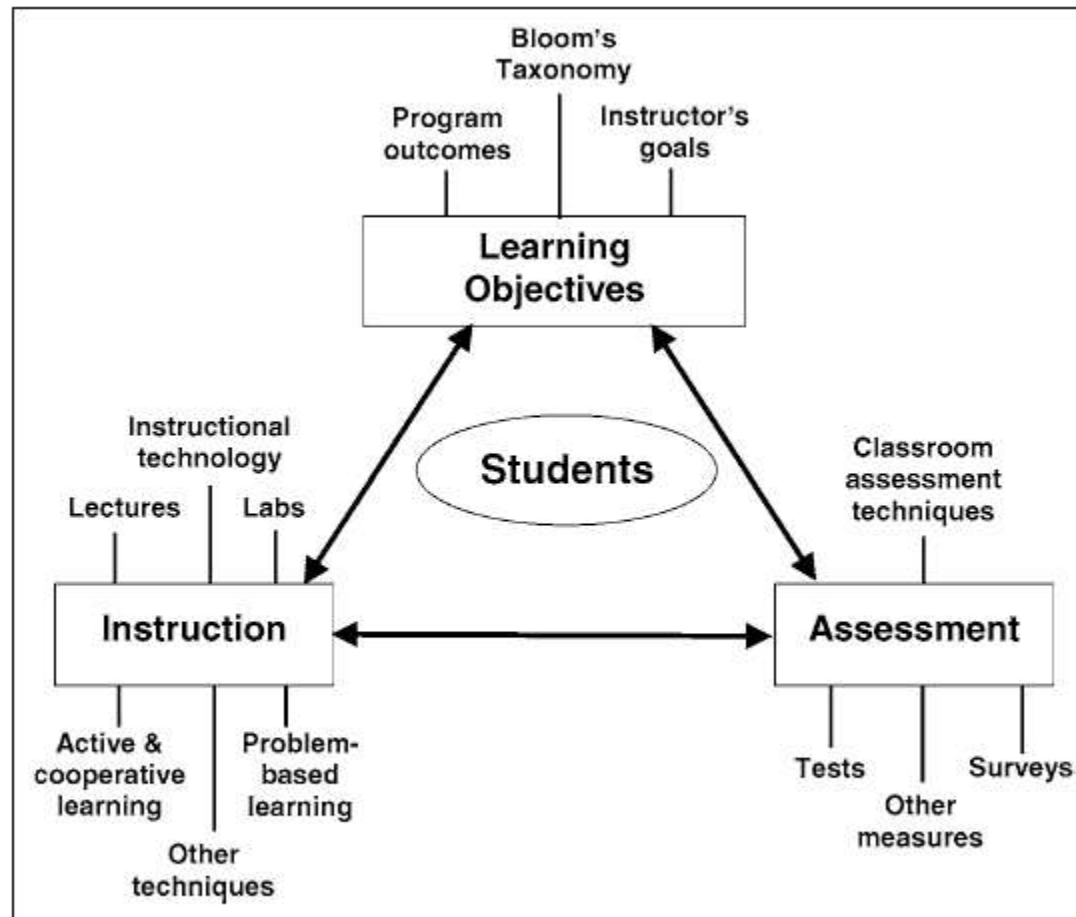
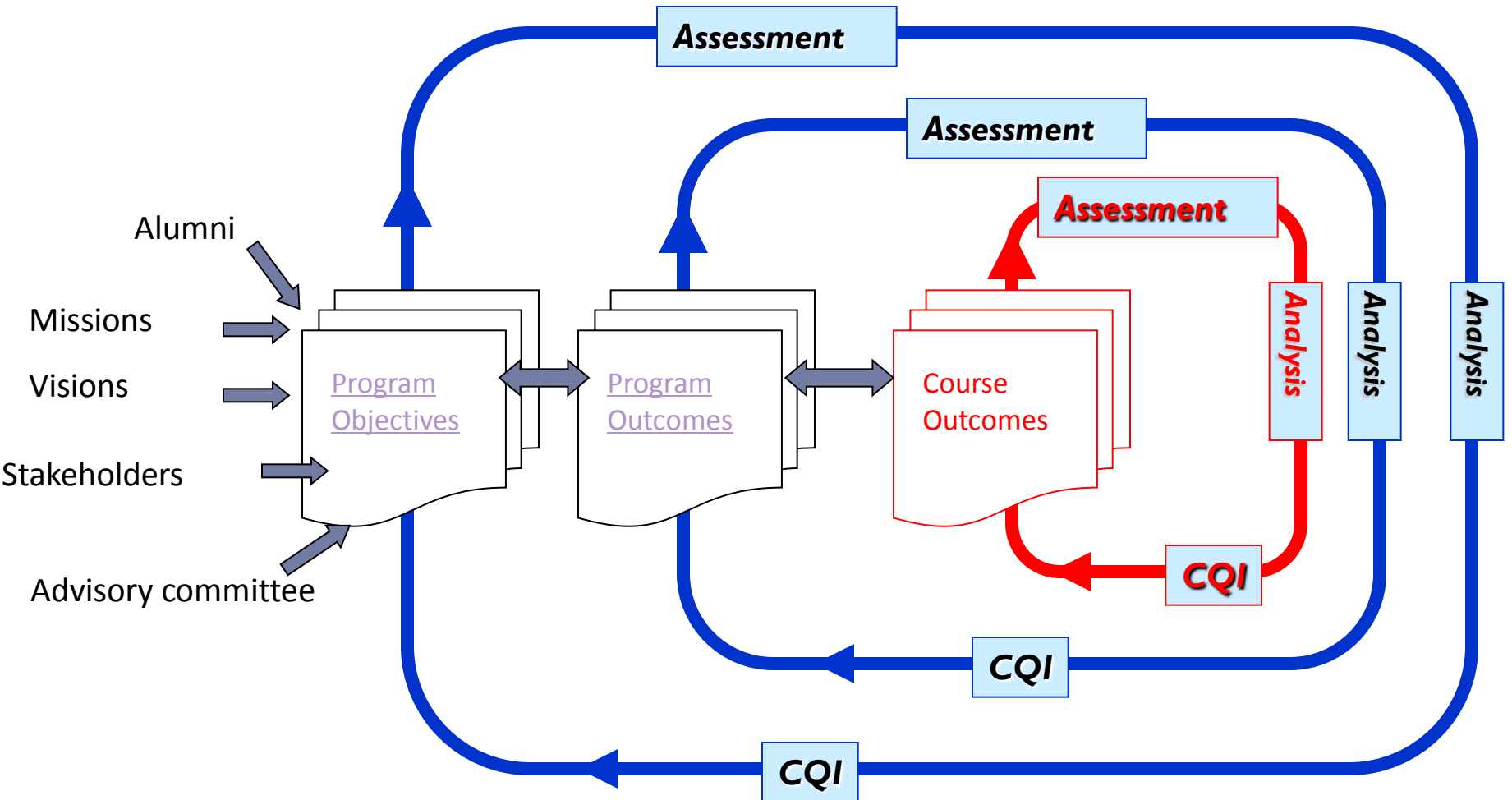


Figure 1. Elements of course design.

DIFFERENT LEVELS OF OUTCOMES



"If you can't measure it, you can't manage it,
If you can't manage it, you can't improve it."



DO & CHECK

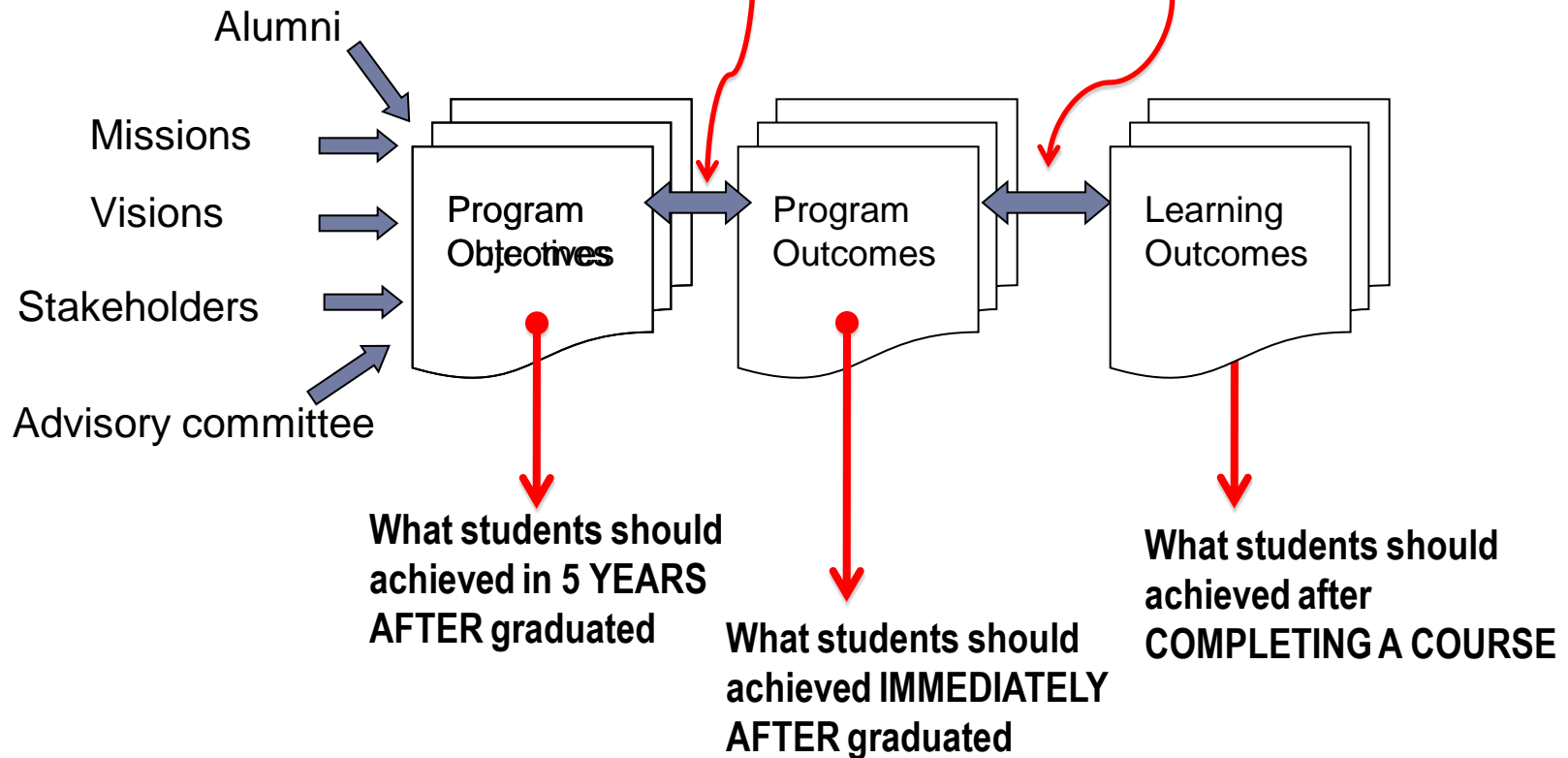
▶ **IMPLEMENT THE CHANGE**

- ▶ **Who need to perform the changes?**
- ▶ **What to implement?**
- ▶ **What works well?**
- ▶ **What does not work well?**
- ▶ **How to assess?**
- ▶ **How to put things together**
- ▶ **How to close the loop?**

What do you want the students to have or able to do ?

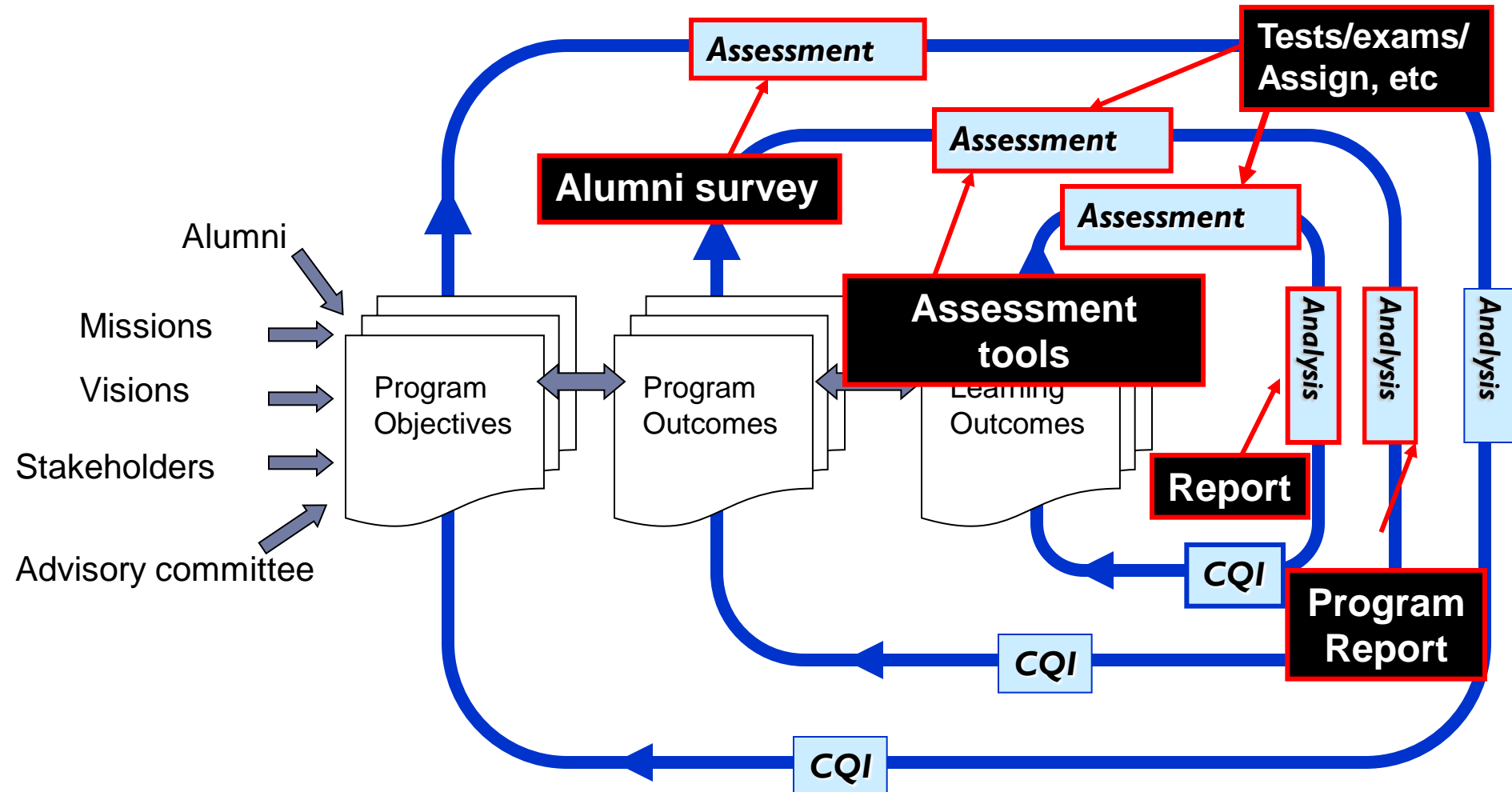
Students graduating with
PO should be able to
achieve PEO

PO and CO mapping



“Am I involved in the process ?”

“Am I involved in the process ?”



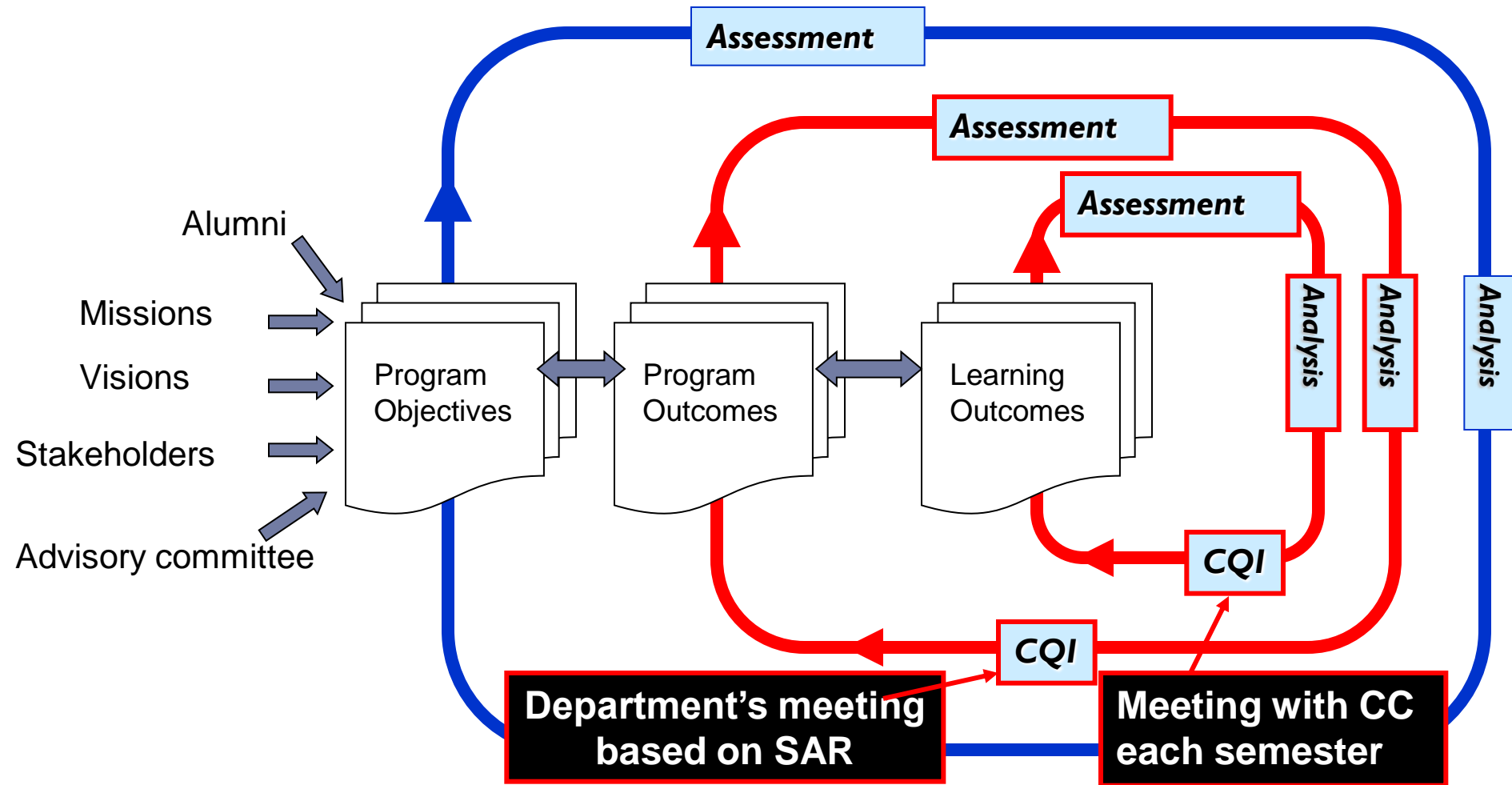
MQA concern

- ▶ IHP procedures / policies & procedures / mechanism for review & update program to ensure quality.
- ▶ Proper mechanism in department level to support above issues.
- ▶ The contribution of stakeholders (Industry / Expert / Alumni / Student / Staff) to complements above issues.
- ▶ The frequency of subject review / program review / external review (TAC) / etc
- ▶ Recent & projection activities to upgrade quality of subjects / program

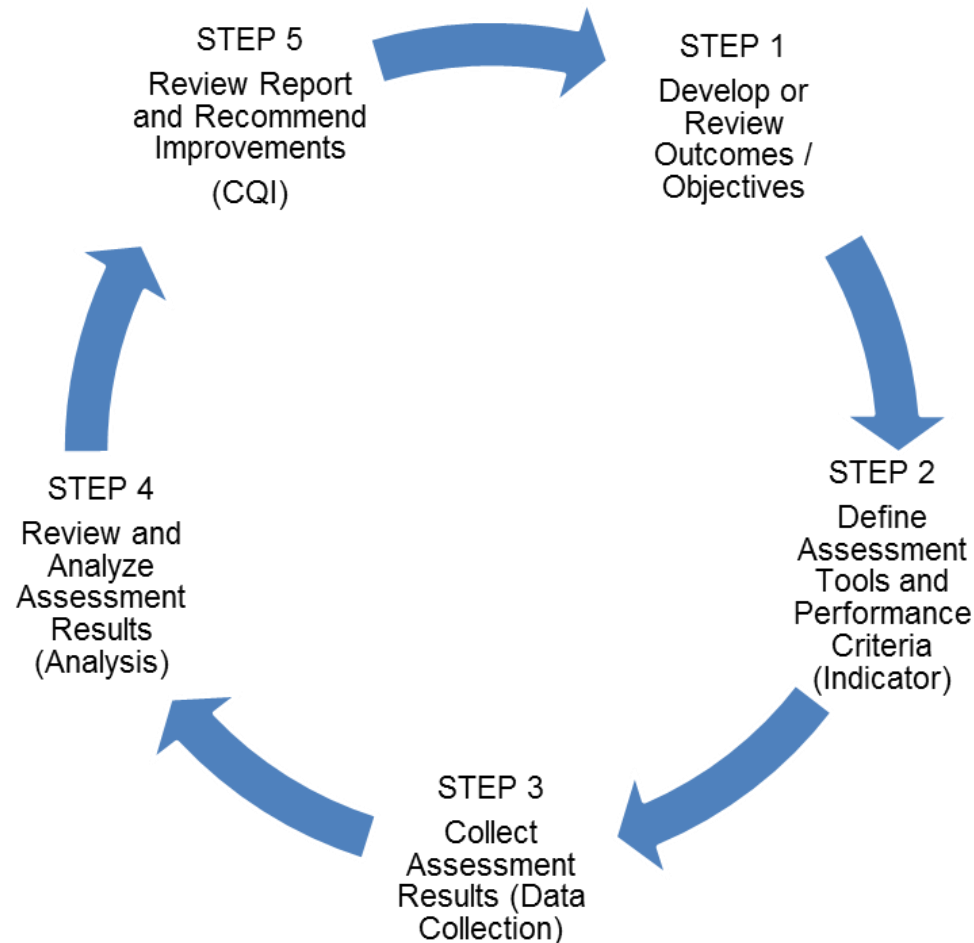
OUTCOME-BASED EDUCATION

“Am I involved in the process ?”

YES YOU ARE !



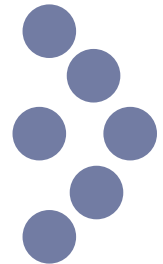
ASSESSMENT CYCLE



Terms	Definition	Some other terms for same concept
Objectives	Broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.	Goals, outcomes, purpose, etc.
Outcomes	Statements that describe what students are expected to know and able to do by the time of graduation.	Objectives, standards, etc.
Performance Criteria	Specific, <u>measurable</u> statements identifying the performance(s) required to meet the outcome; confirmable through evidence.	Standards, rubrics, specifications, metrics, outcomes, etc.
Assessment	Processes that identify, collect, use and prepare data that can be used to evaluate achievement.	Evaluation
Evaluation	Process of reviewing the results of data collection and analysis and making a determination of the value of findings and action to be taken.	Assessment

ASSESSMENT TOOLS

DIRECT ASSESMENT



INDIRECT ASSESMENT



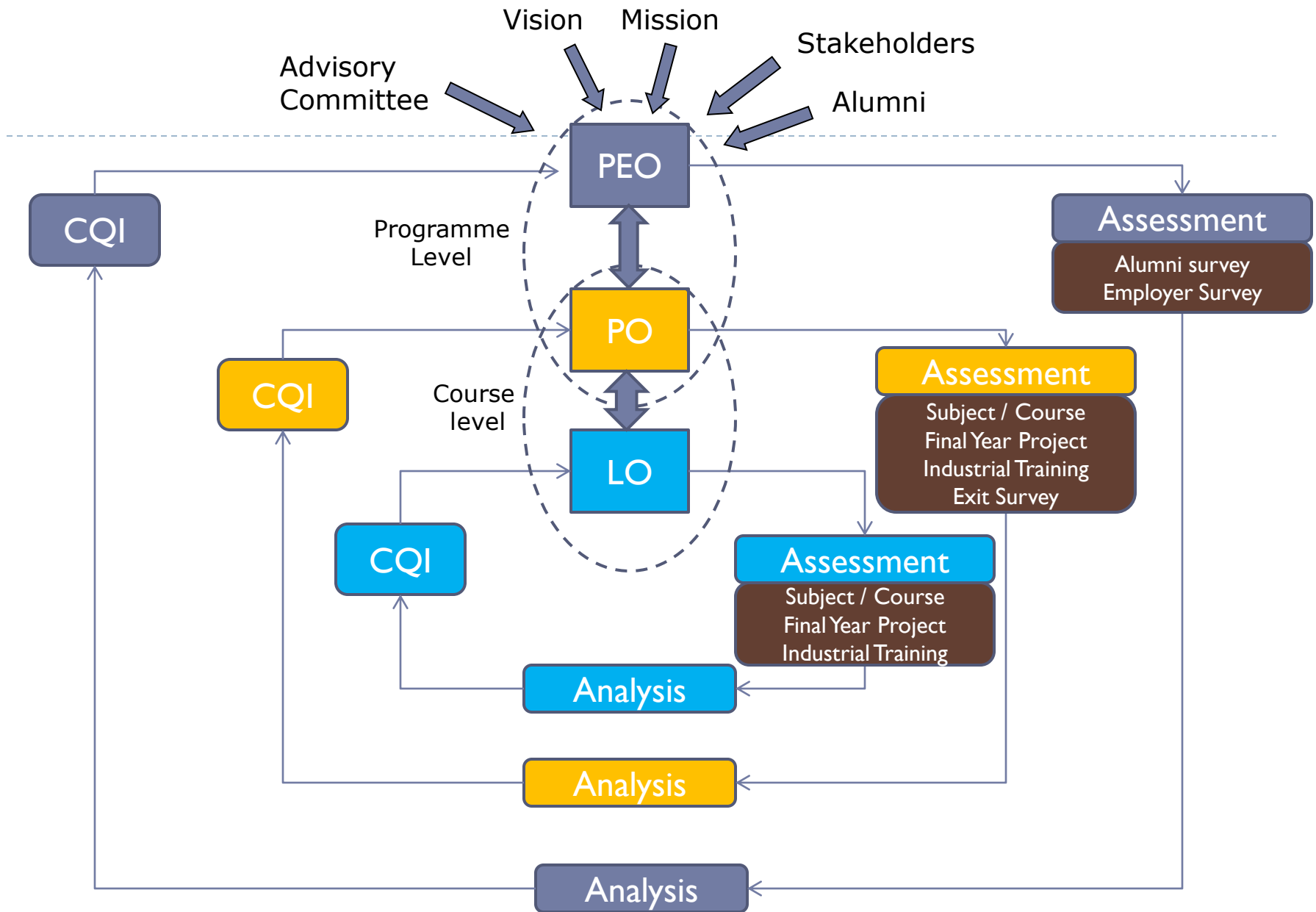
STEP 2: DEFINE ASSESSMENT TOOLS & PERFORMANCE CRITERIA

DIRECT ASSESSMENT

- **Test/ Final Exam Questions** – PO and LO assessment by lecturer based on student performance in test or exam questions.
- **Assignment / Laboratory Reports** – PO and LO assessment by lecturer based on student performance during course assignment / laboratory activity.
- **Final Year Project (FYP)** – PO assessment conducted by project supervisor based on student performance in conducting / completing their FYP.
- **Final Year Project Seminar / Presentation** – PO assessment by appointed staffs based on student performance during FYP seminars.

INDIRECT ASSESSMENT

- **Student Survey** – LO assessment conducted at the end of semester (End Of Semester Survey).
- **Industrial Survey** – PO assessment by industrial supervisor based on student performance during industrial training.
- **Senior Exit Survey** – PO assessment by outgoing seniors at / near the end of their last semester.
- **Alumni Survey** – PEO assessment by alumni after 4 years of graduation time.
- **Employer Survey** – PEO assessment by faculty's graduates employer.



ASSESSMENT CYCLE TIMELINE

CYCLE PERIOD	4 YEARS	4 YEARS	1 YEAR
STEP	PEO	PO	LO
STEP 1: Development & Review of Outcomes / Objectives	End of Semester 2 of academic year 4 in the previous cycle / Start of Semester 1 of academic year 1	End of Semester 2 of academic year 4 in the previous cycle / Start of Semester 1 of academic year 1	End of Semester 2 of the previous academic year / Start of Semester 1 of each academic year
STEP 2: Identification of Assessment Tools & Performance Criteria			
STEP 3: Data Collection	End of Semester 2 of each academic year	End of Semester 1 and Semester 2 of each academic year	End of Semester 1 and Semester 2 of each academic year
STEP 4: Data Analysis	End of Semester 2 of each academic year	End of Semester 2 of each academic year	End of Semester 2 of each academic year
STEP 5: Recommendation (CQI)	End of Semester 2 of each academic year for CQI process End of Semester 2 of academic year 4 to review the current PEO	End of Semester 2 of each academic year for CQI process End of Semester 2 of academic year 4 to review the current PO	End of Semester 2 of each academic year to review the current LO

ACT



Revise and standardize the change

- ▶ Completing the cycle
- ▶ Closing the Loop

“Closing the loop” is a term used to describe the process of **evaluation of assessment data and making improvements as a result of the analysis**. It is expected that the programs would perform the evaluation of assessment data, and **the documented results of the evaluation** would serve as **evidence of achievement of objectives and outcomes and/or evidence of an effective continuous improvement system**.
(ABET Workshop 2004)



**WELCOME TO
OUTCOME BASED
EDUCATION SYSTEM**

**JARIAH BINTI MOHAMAD
JUOI**
[PENSYARAH]
1-2014/2015

- Registration
- Mapping
- Assessment
- Set Method of Assessment
- LO/PO vs Methods
- CQI
- Reports Of Mapping
- Reports Of Assessment
- Reports Of Achievement
- Reports Of Evaluation
- Coordinator's Reports
- Report Of Setting

[Back to Portal](#)

[Download Guide](#)

Latest Login:
Date :30/09/2014
Time :10:34:55 AM

CONTINUAL QUALITY IMPROVEMENT (CQI)

Name : JARIAH BINTI MOHAMAD JUOI
Session : 1-2014/2015
Subject : BMFB3303 - ENGINEERING CERAMICS
Programme : BMFB

Staff No. : 00641

Suggestion of Improvement
(Current Session)

Action Taken (Next Session)

Reset Save Delete

History List of Subject Improvement

Subject	Session	Suggestion	Action Taken
---------	---------	------------	--------------

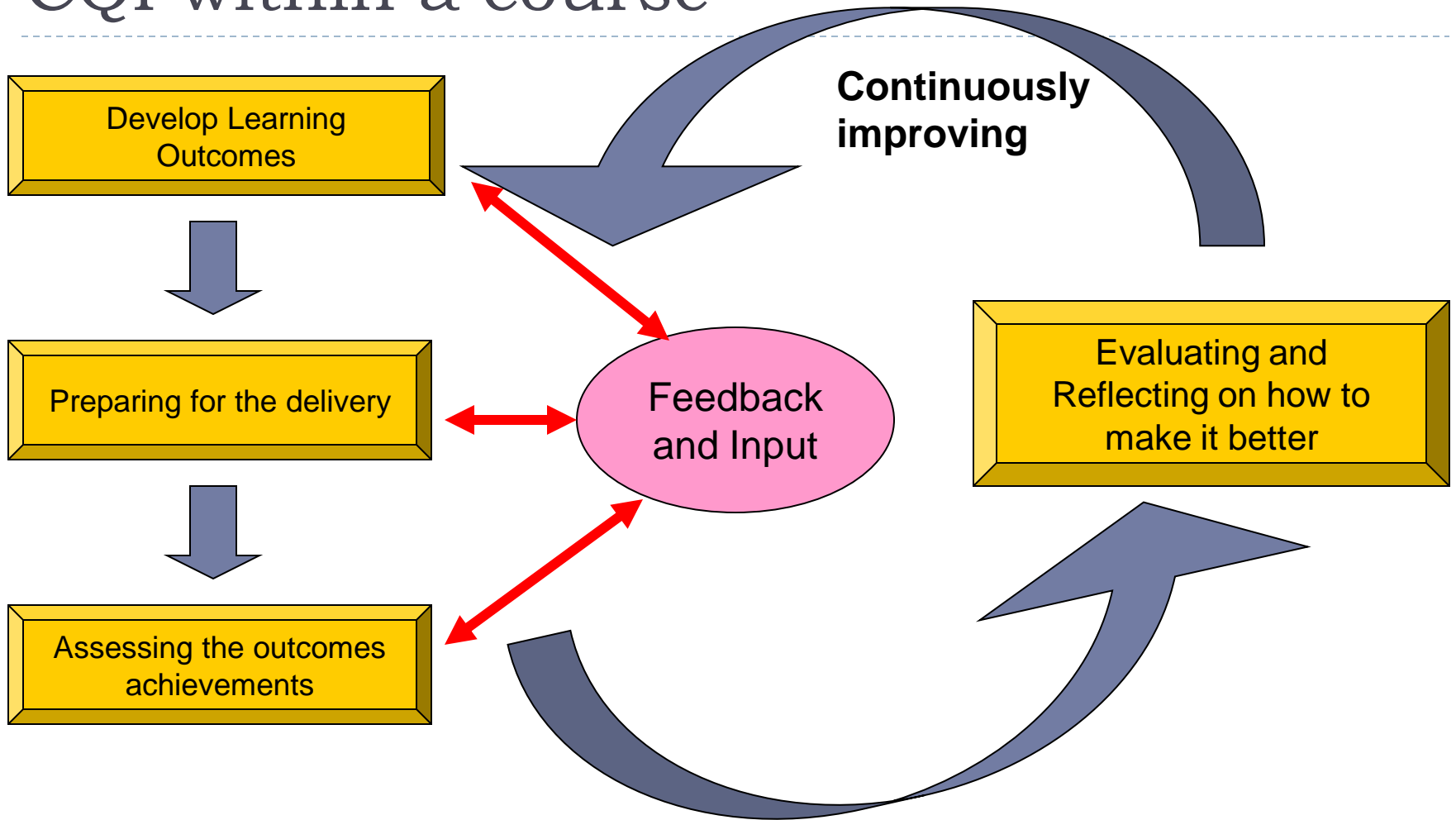
CQI Suggestions :

- At any level
- From a lecturer, Head of Department, Deputy Dean (Academic) and Dean.
- Ensure the outcome intended is achieved; produced graduates that are beneficial to the betterment of society.

CQI AT DIFFERENT LEVEL

CQI @COURSE LEVEL

CQI within a course



CONSTRUCTIVE ALIGNMENT OF LO, INSTRUCTION & ASSESSMENT



Assessment of subject

Learning Outcome (LO)		Learning Domain / Soft Skill & Taxonomy Level	Assessment Method	Rubric of Assessments
1	To explain the relationships between design requirements, material properties, processing and product performance.	Cognitive (C2)	CPBL Phase 1 & Phase 2 -Group peer teaching note / KNL, Quiz	TABLE 3.doc
2	To justify the suitability of a particular processing technique for selected material and design activity using data, charts and software.	Affective (CTPS3)	CPBL Phase 3 -Group technical report	TABLE 5.doc
3	To select the most appropriate materials and processes to be used for product fabrication and commercialization.	Cognitive (C4)	Test, Final exam	
4	To communicate ideas relevant to material selection analysis in product design and manufacturing.	Psychomotor (CS3)	CPBL Phase 3 -Group presentation	TABLE 6.doc
5	To perform self-directed study in gaining new knowledge and skill.	Affective (LL2)	CPBL Phase 2 & Phase 3 - Individual peer teaching note, reflection on content & learning process and peer rating	TABLE 4.doc TABLE 7.doc TABLE 8.doc
▶ 94				

EVALUATION

► Students' individual performance

Table 10. 3BMFX students' attainment of Learning Outcome (LO).

Learning Outcome (LO)	Assessment Method	Marks Distribution		Total Marks (%)	KPI (%)	Total Number of Students	Number of Students Achieved KPI	Percent of LO Attainment (%)	Achievement of KPI
		CPBL 1 (%)	CPBL 2 (%)						
1 (C2)	Peer Teaching Note (Group)	1	2	6	3.6	58	31	53.4	No
	Quiz (Individual)	1	2						
2 (CTPS3)	Report (Group)	2	4	6	3.6		58	100.0	Yes
3 (C4)	Test (Individual) (20%)	-	-	70	42		29	50.0	No
	Final Exam (Individual) (50%)	-	-						
4 (CS3)	Presentation (Group)	3	6	9	5.4		42	72.4	Yes
5 (LL2)	Peer Teaching Note (Individual)	1	2	9	5.4		56	96.6	Yes
	Reflection (Individual)	1	2						
	Peer Rating (Individual)	1	2						

- ◎ The reflection notes submitted by students provides essential insights for improvement from all parties involved (i.e. students, lecturers and subject delivery).

Table 11. Improvement strategies based on students' reflection.

Weakness	Improvement Strategy
Limited prior knowledge in subject matter	Review syllabus Engineering Materials (year 2 subject) to put more emphasis on the basics of materials structure, properties and processing.
Limited reference sources	Provide scaffolding, i.e. specific references or articles on the learning issues.
Poor English proficiency	Encourage students to communicate in English among their team mates during lectures and CPBL discussion.

CQI @Program level

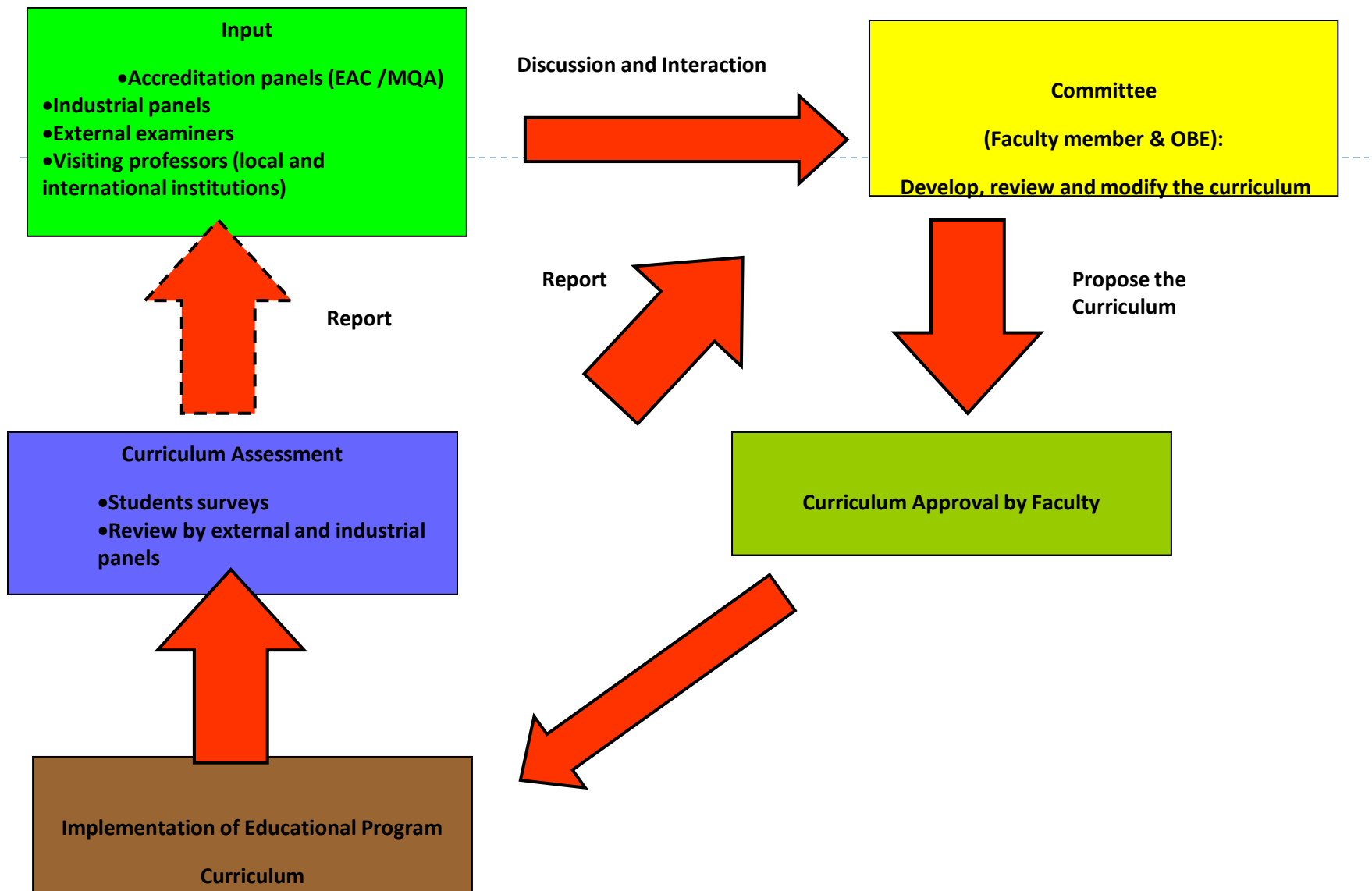
PEOs assessment tools

Key Performance Indicators and implementation details

Program Educational Objective		Assessment tools or methods used	Time of data collection/analysis carried out and presentation	Key Performance Indicators	What are the outcomes of the analysis?	Who is responsible ? (collection and analysis)	Feedback/comments for continuous improvement
PEO1	Graduates have strong understanding of fundamental and interdisciplinary engineering knowledge.	Alumni Survey	First and second year after graduation & subsequently every 4 years	> 60% voting good and above	<u>Graduates of 2008:</u> 55.0% vote good and above <u>Graduates of 2009:</u> 62.9% vote good and above	Panel of academic staff	The Faculty has revised and implemented new curriculum structure to increase the depth and breadth of the courses based on the comment from the External Examiner & Industrial Advisory Panel. More industrial talks have been conducted to the students by inviting speakers who are competent in their field.
		Phone interview	First and second year after graduation & subsequently every 4 years	10% further study 10% professional engineer 10% senior engineer	<u>Graduates of 2008:</u> 16.67% further study 0% professional engineer 0% senior engineer <u>Graduates of 2009:</u> 27.91% further study 0% professional engineer 0% senior engineer	Panel of academic staff	
		Industrial / Employer Survey	First and second year after graduation & subsequently every 4 years	> 60% voting good and above	<u>Graduates of 2008:</u> 48.1% vote good and above <u>Graduates of 2009:</u> 57.1% vote good and above	Panel of academic staff	

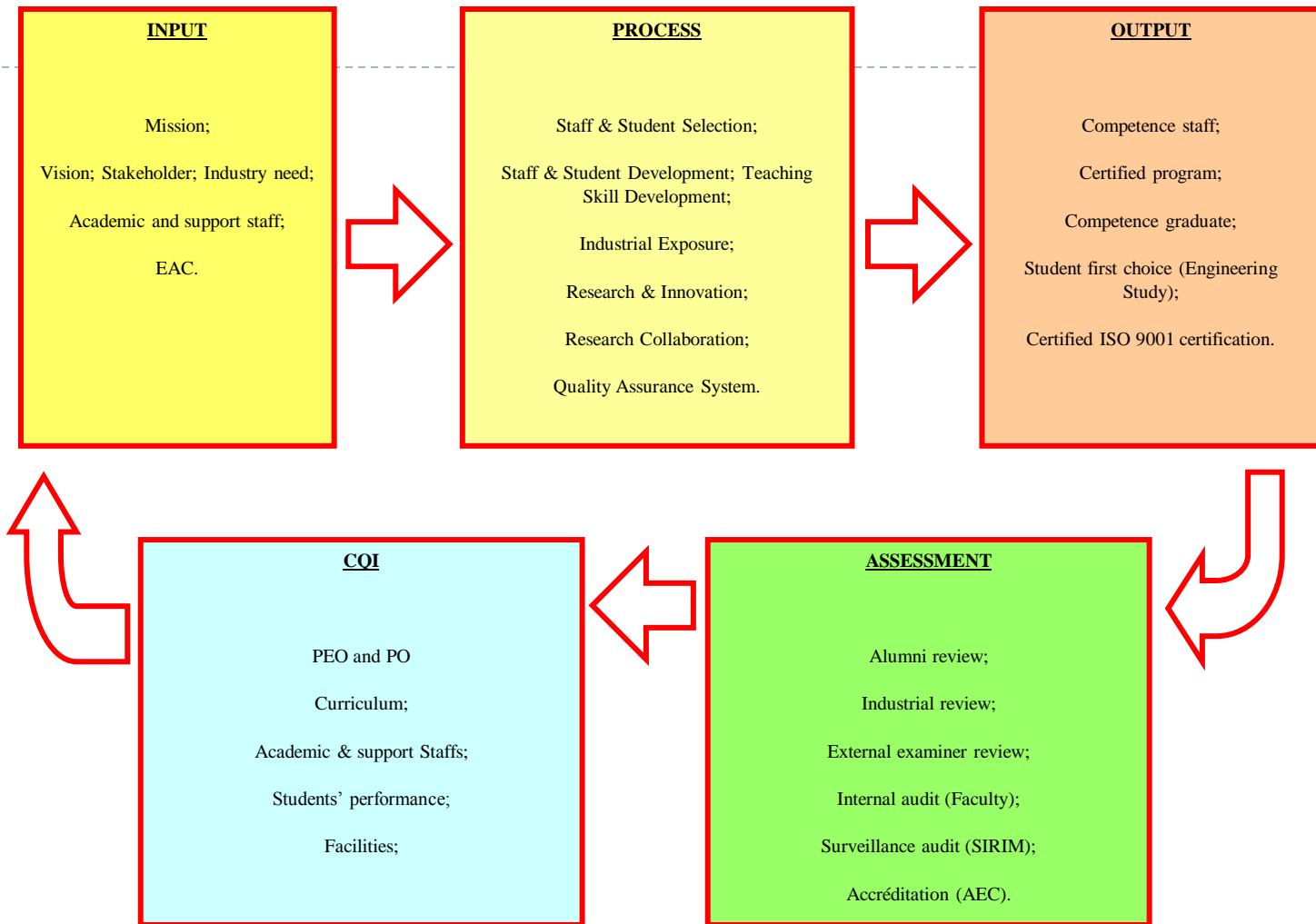
POs assessment tools, Key Performance Index (KPI) and implementation details.

Program Outcomes		Assessment tools or methods used	Stakeholder	Time for data collection/analysis carried out and presentation	KPI	Responsibility for collection and analysis
PO1	The ability to apply basic knowledge of sciences, engineering and technology in their profession.	Exit Survey	Graduating student	Every Final Semester	achieve 60% and above percentage of agree and strongly agree	Academic Staff
		Industrial Survey	Practical Training Supervisor	Every Practical Training	achieve 60% and above percentage of vote good and above	Academic Staff
		Student Course Survey	Students	Every Semester	achieve 3.5 score and above (standard UTeM requirement)	PJKA / Academic Staff
		Rubrics : Project	Academic Staff	Every Year	achieve 60% acceptable and above with reference to this rubric	Academic Staff



CQI: Academic Curriculum

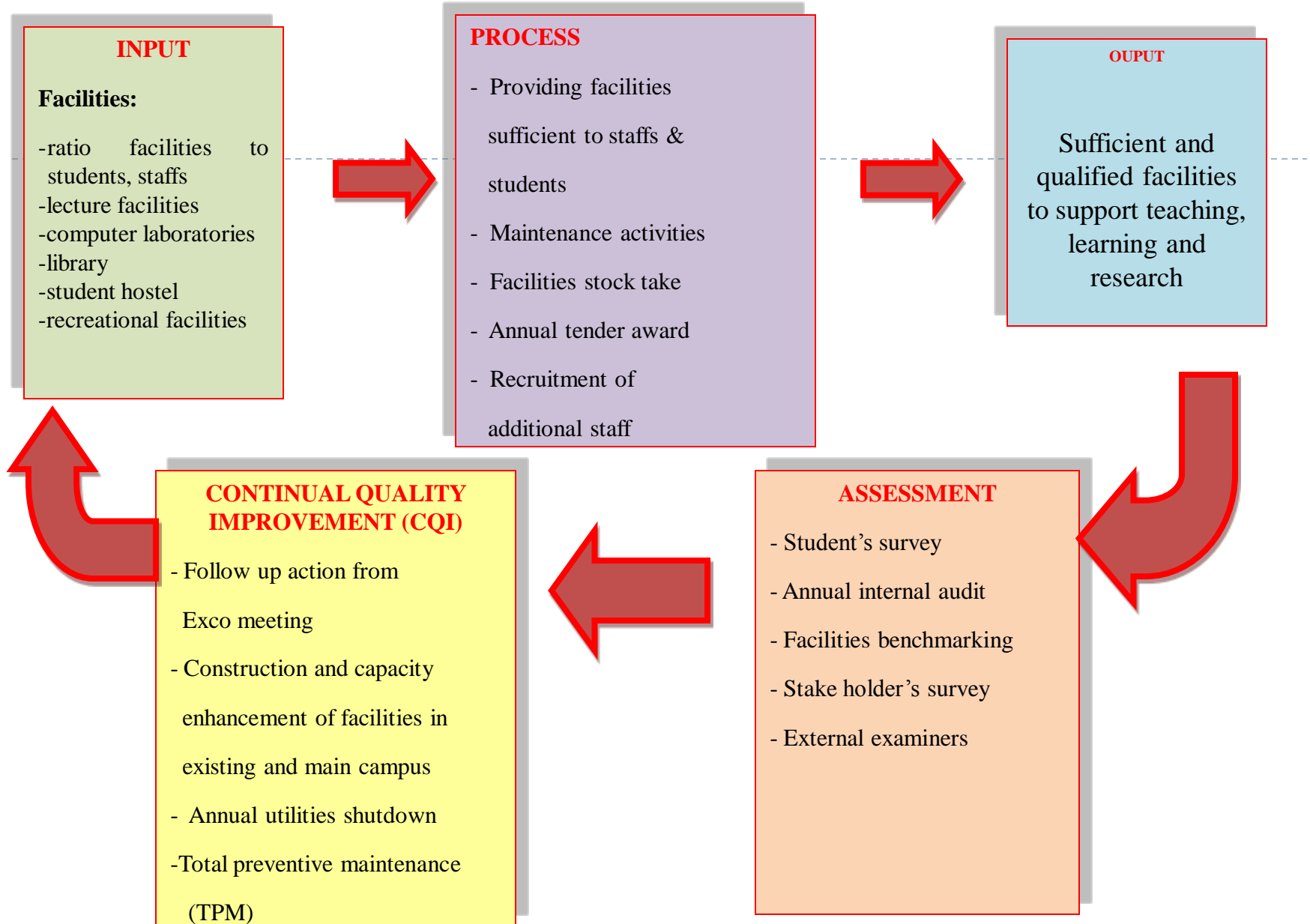
CQI @university



CQI: Quality Management System

Examples of concern issues and action

Issues	Action
University planning and action	Perancangan Strategik Universiti 2012-2020
OBE implementation	JK Pelaksanaan OBE Universiti, 2010 JK Teknikal Sistem Online OBE OBE online system developed and to be improved
Accreditation	Curriculum changes and Review
Staff teaching skill	Training module is revised and plan based on OBE approach
Weak performance of Students (percentage of KS student is high)	JK Pemerkasaan Pelajar, 2015 Tutoring Center
MUET achievement	Foundation English Course, Myline enrollement
Gen Y mode of study	OCW, MOOC, PSTP, ICT facilities upgrade



CQI: Educational Facilities

CQI @COURSE LEVEL

OUTLINE

- ▶ Introduction
- ▶ Method
 - ▶ CPBL
 - ▶ Implementation of CPBL
 - ▶ Assessment of CPBL
- ▶ Evaluation
- ▶ Continuous Quality Improvement
- ▶ Conclusion

INTRODUCTION

- ▶ Material Selection is one of the program core subjects introduced in Bachelor of Engineering in Manufacturing Engineering.
- ▶ Accommodate students from 5 different departments; Engineering Materials, Robotic and Automation, Manufacturing Process, Manufacturing Design and Manufacturing Management.
- ▶ A team of 5 lecturers from the Department of Engineering Materials, headed by a subject coordinator, were appointed by the Faculty.

INTRODUCTION

► Learning Outcomes:

- 1) Explain the relationships between design requirements, material properties, processing and product performance.(C2)
- 2) Justify the suitability of a particular processing technique for selected material and design activity using data, charts and software. (CTPS3)
- 3) Select the most appropriate materials and processes to be used for product fabrication and commercialization. (C4)
- 4) Communicate ideas relevant to material selection analysis in product design and manufacturing.(CS3)
- 5) Perform self-directed study in gaining new knowledge and skill.(LL2)

INTRODUCTION

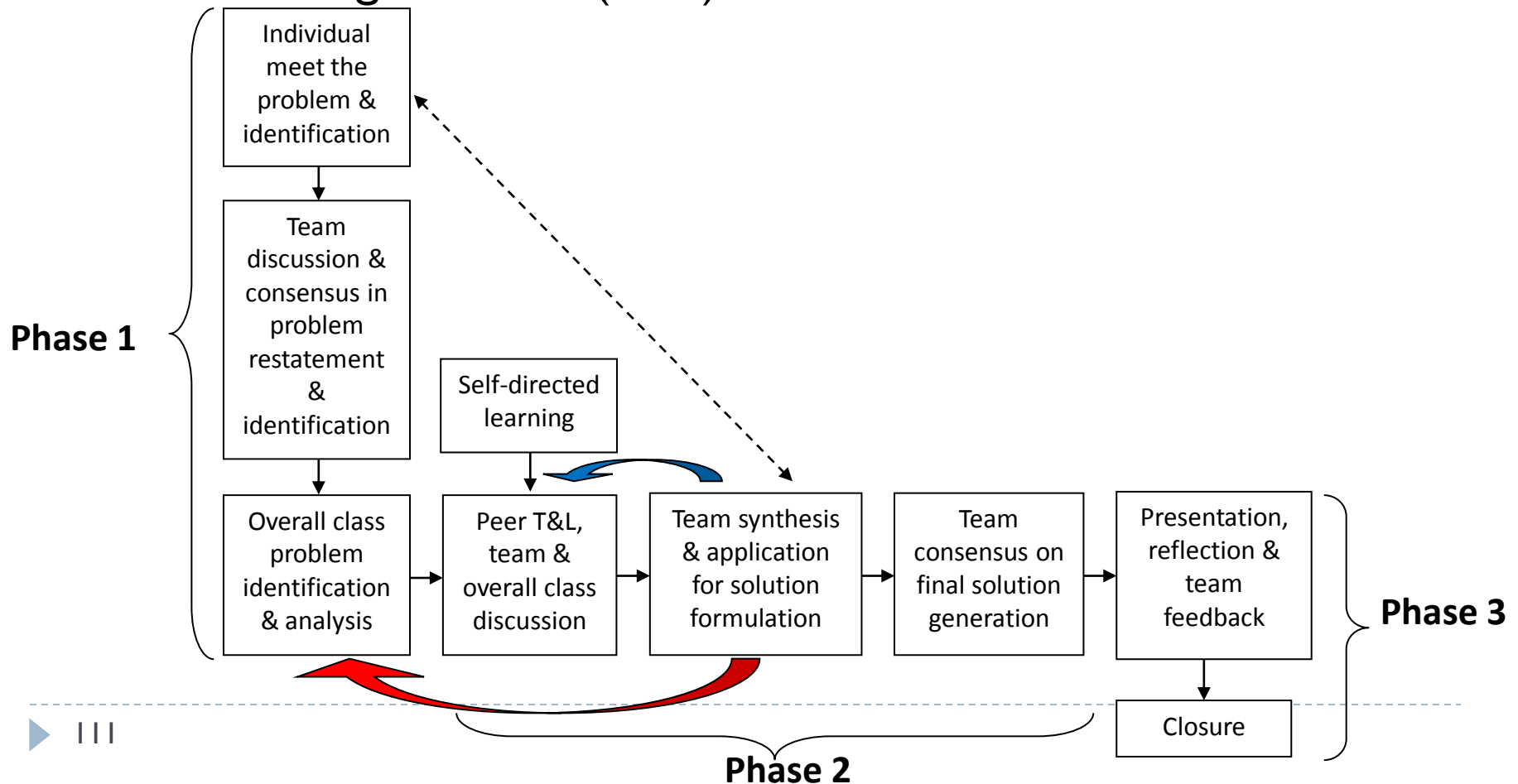
- ▶ Cooperative Problem-Based Learning (CPBL) were incorporated into the teaching and learning (T&L) process.
- ▶ This is an approach to accommodate student-centered learning (SCL) activities.
- ▶ Assessment of knowledge (cognitive domain), psychomotor and soft skills is possible.
- ▶ Constructive alignment among the learning outcomes, delivery methods, assessment and evaluation gives an overall reflection on the students' learning outcomes attainment.

METHOD

- ▶ Cooperative problem-based learning (CPBL) model is a combination of Problem-Based Learning (PBL) and Cooperative Learning (CL).
- ▶ It emphasizes learning and solving problems in small student teams (consisting of 3-5 students) in a medium sized class, of up to 60 students for one floating academic staff or facilitator (Khairiyah et al., 2011).

METHOD

- ▶ The CPBL model consists of three phases and the teaching and learning activities (TLA) involved are outlined in Table I.



METHOD

Table 1. Teaching and learning activities conducted in each CPBL phase (Khairiyah et al., 2011).

Phase		TLA
Phase 1	Individual	Before class, read and prepare individual problem restatement and identification (PR &PI) for submission.
	Team discussion & consensus	In class discussion, starting from individual PR&PI to find consensus for team PR&PI within the given time. Draw up action plan and assign learning issues to each member to prepare for peer teaching. May request team PR&PU be submitted or presented.
	Overall class	In-class discussion of each team PR&PI, where students may be randomly called to provide team answer. Conduct discussion to promote learning community among all students.

METHOD

Table 1. Teaching and learning activities conducted in each CPBL phase (Khairiyah et al., 2011).

Phase		TLA
Phase 2	Peer T&L	Individually prepare peer T&L notes, and conduct team peer T&L out of class. Submit individual peer T&L notes during class and have overall class peer T&L coordinated by a group. May give tutorials, quiz or mini lecture.
	Synthesis & application	Synthesize knowledge and information together as a team and use them to come up with possible solutions. Conduct progress check for problems with a duration of more than 2 weeks.
	Consensus on final solution	Reach a consensus on a solution that is deemed to be the best to all team members. Submit one report per team.

METHOD

Table 1. Teaching and learning activities conducted in each CPBL phase (Khairiyah et al., 2011).

Phase		TLA
Phase 3	Presentation, reflection, team peer rating and feedback	Teams present final solution in class. Conduct individual reflection, rate team members and provide written feedback on good actions to keep-up and things to improve on. In-class discussion on overall team performance and strategies for improvement.
	Closure	Summarizes and generalizes important concepts covered in problem. May compare different approached and solutions to suggest the best solution for the problem.

METHOD

Implementation of CPBL

- ▶ Teaching Plan
- ▶ Problem 1
- ▶ Problem 2

Assessment of subject

Learning Outcome (LO)		Learning Domain / Soft Skill & Taxonomy Level	Assessment Method	Rubric of Assessments
1	To explain the relationships between design requirements, material properties, processing and product performance.	Cognitive (C2)	CPBL Phase 1 & Phase 2 -Group peer teaching note / KNL, Quiz	TABLE 3.doc
2	To justify the suitability of a particular processing technique for selected material and design activity using data, charts and software.	Affective (CTPS3)	CPBL Phase 3 -Group technical report	TABLE 5.doc
3	To select the most appropriate materials and processes to be used for product fabrication and commercialization.	Cognitive (C4)	Test, Final exam	
4	To communicate ideas relevant to material selection analysis in product design and manufacturing.	Psychomotor (CS3)	CPBL Phase 3 -Group presentation	TABLE 6.doc
5	To perform self-directed study in gaining new knowledge and skill.	Affective (LL2)	CPBL Phase 2 & Phase 3 - Individual peer teaching note, reflection on content & learning process and peer rating	TABLE 4.doc TABLE 7.doc TABLE 8.doc
▶	116			

METHOD

Auto-rating

- ▶ To generate individual marks from team marks

Table 9. Auto rating for evaluation in presentation.

Student	Vote A	Vote B	Vote C	Vote D	Vote E	A_i	A_i/N	A	f	Marks for Presentation (Group), M	Marks for Presentation (Individual)
A	82	90	86	88	90	436	87.2	84.96	1.03	5.14	5.28
B	73	88	84	88	90	423	84.6	84.96	1.00	5.14	5.12
C	74	89	84	84	90	421	84.2	84.96	0.99	5.14	5.09
D	76	90	83	89	90	428	85.6	84.96	1.00	5.14	5.15
E	76	88	83	89	80	416	83.2	84.96	0.97	5.14	5.01

Note:

- ▶ $A_i = \text{Vote A} + \text{Vote B} + \text{Vote C} + \text{Vote D} + \text{Vote E}$
- ▶ $A = (\sum(A_i/N))/N$ (Common for all students) where N = number of members in a team
- ▶ $f = (A_i/N)/A$, max. = 1.05
- ▶ Individual marks for presentation = $f \times M$

EVALUATION

- ▶ Evaluation of students' attainment of learning outcomes was made individually based on students' performance through each assessment method.
- ▶ Table 10 shows example of overall LO attainment in one of the groups of students, i.e. the third year students of Bachelor of Engineering in Manufacturing Engineering (3BMFX).
- ▶ Key Performance Index (KPI) is set in accordance to the KPI of the Faculty.

EVALUATION

► Students' individual performance

Table 10. 3BMFX students' attainment of Learning Outcome (LO).

Learning Outcome (LO)	Assessment Method	Marks Distribution		Total Marks (%)	KPI (%)	Total Number of Students	Number of Students Achieved KPI	Percent of LO Attainment (%)	Achievement of KPI
		CPBL 1 (%)	CPBL 2 (%)						
1 (C2)	Peer Teaching Note (Group)	1	2	6	3.6	58	31	53.4	No
	Quiz (Individual)	1	2						
2 (CTPS3)	Report (Group)	2	4	6	3.6		58	100.0	Yes
3 (C4)	Test (Individual) (20%)	-	-	70	42		29	50.0	No
	Final Exam (Individual) (50%)	-	-						
4 (CS3)	Presentation (Group)	3	6	9	5.4		42	72.4	Yes
5 (LL2)	Peer Teaching Note (Individual)	1	2	9	5.4		56	96.6	Yes
	Reflection (Individual)	1	2						
	Peer Rating (Individual)	1	2						

CONTINUOUS QUALITY IMPROVEMENT (CQI)

- ◎ The reflection notes submitted by students provides essential insights for improvement from all parties involved (i.e. students, lecturers and subject delivery).

Table 11. Improvement strategies based on students' reflection.

Weakness	Improvement Strategy
Limited prior knowledge in subject matter	Review syllabus Engineering Materials (year 2 subject) to put more emphasis on the basics of materials structure, properties and processing.
Limited reference sources	Provide scaffolding, i.e. specific references or articles on the learning issues.
Poor English proficiency	Encourage students to communicate in English among their team mates during lectures and CPBL discussion.

CONCLUSION

- ▶ Implementation of CPBL enhanced knowledge and imparted soft skill within the students.
- ▶ CPBL activities are able to promote student-centered learning.
- ▶ Constructive alignment among the learning outcomes, delivery methods, assessment and evaluation gives an overall reflection on the students' learning outcomes attainment.
- ▶ Students' reflection provides insightful strategies for improvement of the subject matter and enabling CQI.
- ▶ The CQI taken help to ensure the achievement of learning outcomes and contribute to produce graduate with the criteria outline in the program outcome.