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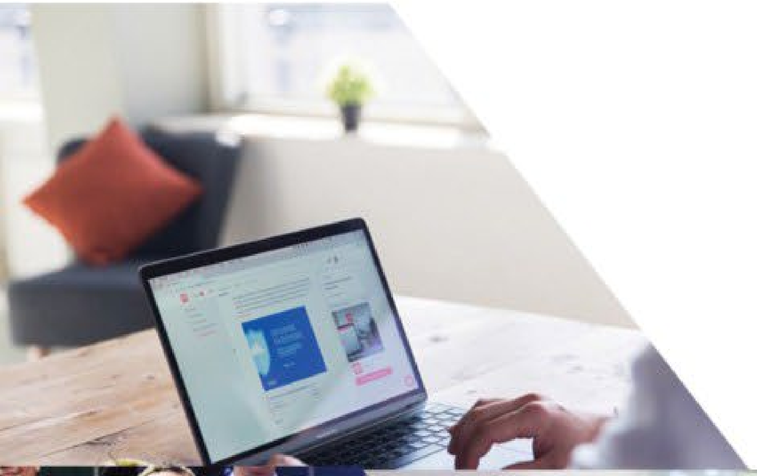
DEPARTMENT OF HIGHER EDUCATION



Key Insights for Teaching and Learning in Higher Education

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Editors

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PREFACE

The basic requirement for teaching in higher learning institutions for new teaching staff in Malaysia covers the mastery of the teaching and learning method. Adopting this component requires relentless effort from the learning institution itself, without giving any leeway to any academician who wants to progress in the higher learning institution teaching profession. The need for the teaching and learning training must be aligned in the academic human resource development plan in every higher learning institution especially new lecturers.

The scope of the teaching and learning training that covers aspects of academic accountability, curriculum design, learning and teaching, and student evaluation, forms the core knowledge of teaching, and guides teaching academicians in higher learning institutions. These aspects need to be cultivated among future higher learning institution academia so that knowledge can grow and prosper.

Adoption of the above aspects requires the involvement of capable, competent and effective facilitators or moderators to deliver what has been envisioned earlier. Training of Trainers and expertise sharing among higher learning institutions have become the foundation in ensuring the success of the Key Insights for Teaching and Learning in Higher Education training.

Finally, it is hoped that the adoption of the teaching foundations for new lecturer becomes an ongoing effort so that the teaching academicians will achieve and admired and respected professional status in teaching.

Thank you, Wassalam

Assoc. Prof. Dr. Azidah Abu Ziden
Director
Academic Excellence Division
Ministry of Higher Education

Key Insight for Teaching & Learning

In Higher Learning Institutions

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Table of Content

1 Teaching & Learning in Higher Education
- Unit 1 The Development of Higher Education
- Unit 2 Accreditation Bodies

2 Curriculum Design Concepts
- Unit 1 Curriculum Design & Concepts
- Unit 2 Curriculum Design Policy
- Unit 3 Alternative curriculum Design

3 Understanding Learners in Higher Education
- Unit 1 Learning Styles
- Unit 2 Learner Characteristics
- Unit 3 Individual Diversity

4 Teaching Delivery
- Unit 1 Learning Theories
- Unit 2 The Study of Teaching & Learning
- Unit 3 Approach, Method & Technique
- Unit 4 Methods of Teaching & Learning
- Unit 5 Online Learning

5 Learning Assessment in Higher Education
- Unit 1 Concepts & Types of Assessment
- Unit 2 Principles of Learning Assessment
- Unit 3 Construction and Use of Assessment Instructions, Assessment Analysis and Assessment Results

6 Teaching & Learning Practices in Higher Education
- Unit 1 Daily Lesson Plan
- Unit 2 Managing Learning
- Unit 3 Exemplars of Creative and Innovative Teaching & Learning

7 Quality in Higher Education
- Unit 1 Quality Assurance (QA)
- Unit 2 Programme Monitoring & Review
- Unit 3 Continual Quality Improvement (CQI)

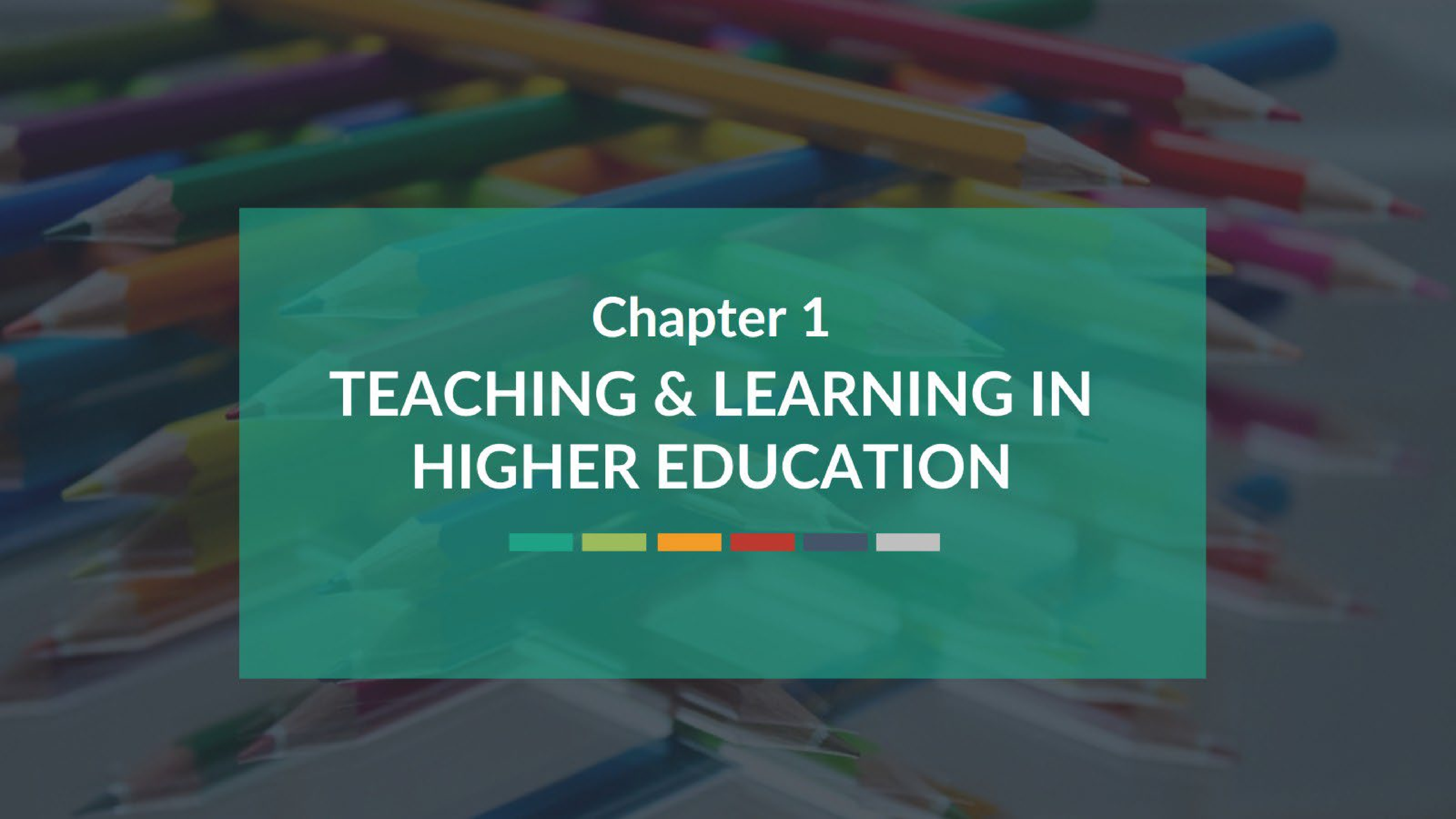
Glossary

The nation's higher education is an important social institution of the country because its primary function is as a source of human resources that will mobilize and ensure the sustainability of a country. This unit explores the history of higher education in Malaysia, National Philosophy of Education, the role of higher education, PPPM (PT), Education 4.0 and Sustainable Development Goals.

Disclaimer

This book is intended to provide general insights, strategies, and perspectives on teaching and learning in higher education. While every effort has been made to ensure the accuracy and relevance of the content, the advice and examples provided are not one-size-fits-all solutions and may not apply to every institutional context, discipline, or teaching environment. Readers are encouraged to adapt the insights to their unique circumstances and consult institutional policies, guidelines, or experts for specific applications.

The author and publisher are not responsible for any outcomes resulting from the use or implementation of the information provided in this book. The views expressed in this book are those of the author and do not necessarily reflect the positions or policies of any particular institution or organization. For further guidance or support, readers should seek advice from qualified professionals or educational experts.



Chapter 1
TEACHING & LEARNING IN HIGHER EDUCATION

Overview

Unit 1 : The Development of Higher Education

- The Role of Higher Education
- Sustainable Development Goals
- Malaysian Education Development Plan
- Transformations in Higher Education

Unit 2: Accreditation Bodies

- Malaysian Qualification Agency (MQA)
- Professional Bodies

Unit 1: The Development of Higher Education

Introduction

The nation's higher education is an important social institution of the country because its primary function is to mobilize and ensure the sustainability of the country. The Development of Higher Education takes into consideration, The National Philosophy of Education, Malaysia Education Blueprint 2015-2025 (Higher Education) [MEB (HE)] and Sustainable Development Goals (SDGs).

National Education Philosophy

Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in and devotion to God.

Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving high level of personal well-being as well as being able to contribute to the harmony and betterment of the family, the society and the nation at large.

Role of Higher Education System

1

Instill Entrepreneurial Mindset

Instill an entrepreneurial mindset throughout Malaysia's higher education and create a system that produces graduates with a drive to create jobs, rather than to only seek jobs

2

Construct Technical & Vocational System

Construct a system that is less focused on traditional, academic pathways and that places an equal value on much-needed technical and vocational training

3

Personalise Student Learning

Focus on outcomes over inputs and to actively pursue technologies and innovations that address students' needs and enable greater personalisation of the learning experience

4

Harmonise How Public and Private Institutions are Regulated

Harmonise how private and public institutions are regulated, and to transition from the current, highly-centralised governance system for Higher Learning Institutions (HLI) to a model based on earned autonomy within the regulatory framework

5

Ensure Financial Sustainability

Ensure the financial sustainability of the higher education system by reducing HLI reliance on government resources and asking all stakeholders that directly benefit from it to contribute as well

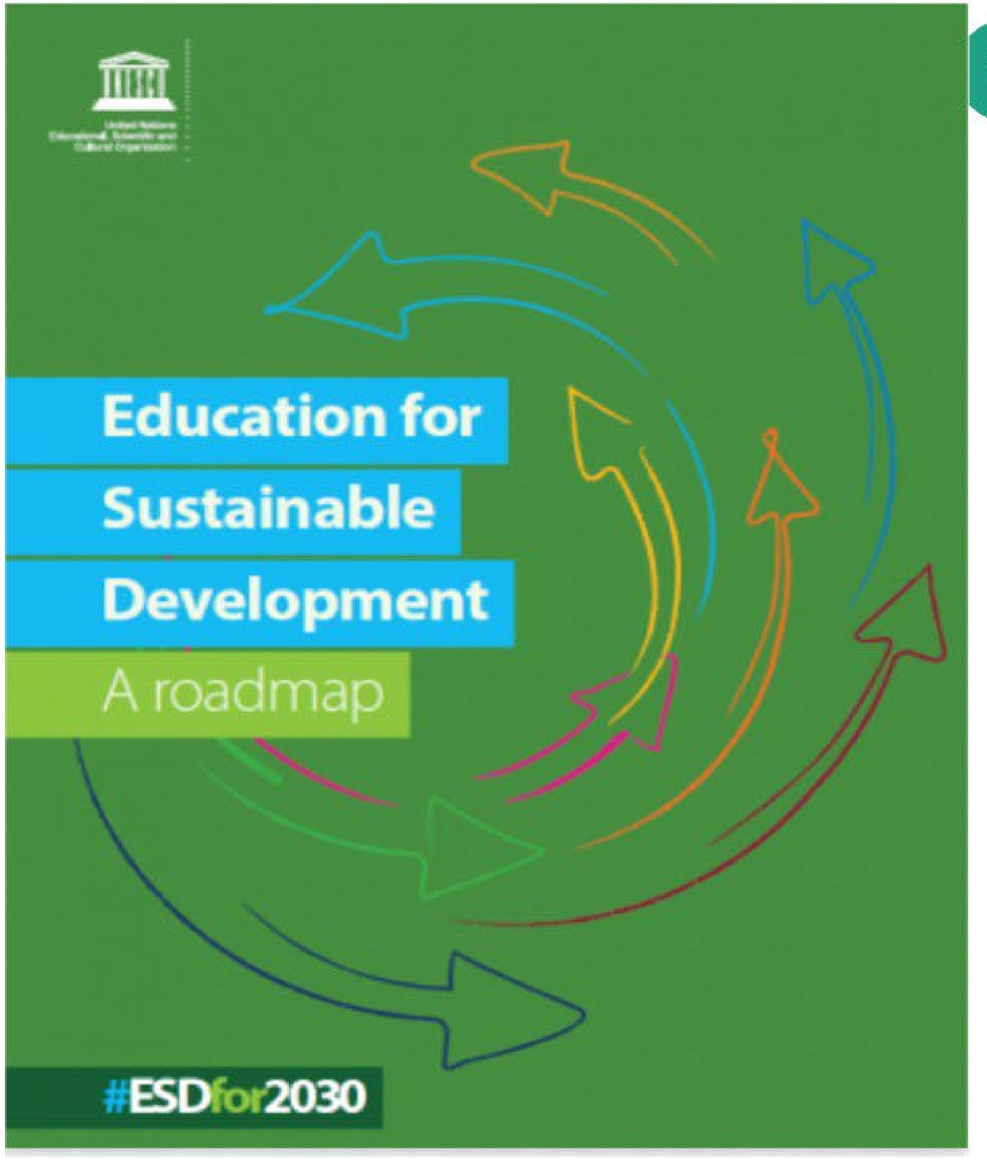
Sustainable Development Goals (SDGs)

The SDGs set in 2015 by the United Nations general assembly, are a call for action that addresses present and future global challenges relating to dignity, peace and prosperity for people and the planet (United Nations, 2019).

There are 17 interconnected goals in SDGs, each has a list of targets that are measured by indicators to determine the progress in reaching the goals.

Education for Sustainable Development (ESD) is defined as education that encourages and empower learners of all ages to obtain the required knowledge, skills, values and attitudes to take informed decisions and responsible actions to shape a sustainable future.

UNESCO, 2012



Education for 2030 will promote the integration of sustainable development and the SDGs into education and learning, as well as ensuring the integration of education and learning into all activities that promote sustainable development.

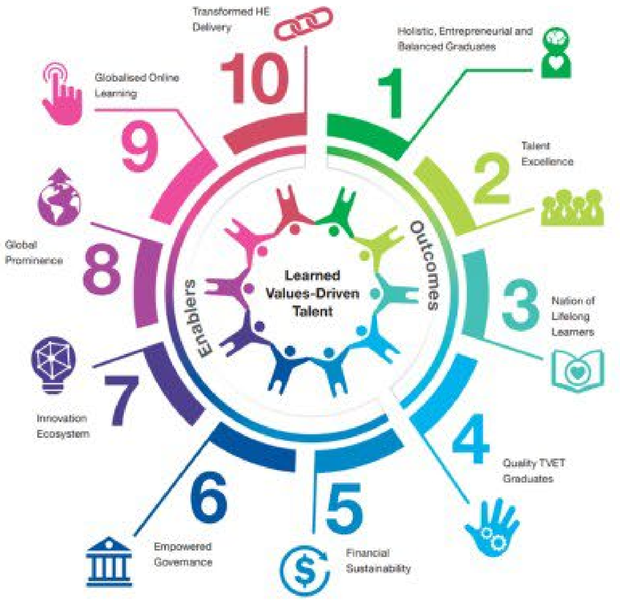
10 Shifts in Education System and Student Aspirations

Malaysia is committed in achieving the SDGs of the UN 2030 agenda where all children have access to quality education.

To support the SDGs, 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.



System Aspirations

The MEB (HE) builds on the five dimensions of access, quality, equity, unity, and efficiency.

ACCESS

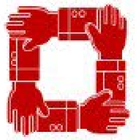
By 2025, the Ministry aspires to increase access to and enrolment in higher education.

QUALITY

The Ministry's aspiration covers three aspects: quality of graduates, quality of institutions, and quality of the overall system.

EQUITY

Although there is currently a lack of comprehensive data to effectively assess equity in the system, the Ministry aims to ensure that all Malaysians have the opportunity to fulfil their potential regardless of background.



UNITY

Similarly, while there is no widely accepted method yet to measure unity, the Ministry is committed to ensuring that enrolment in HLIs reflects the mix of Malaysia's ethnicities.

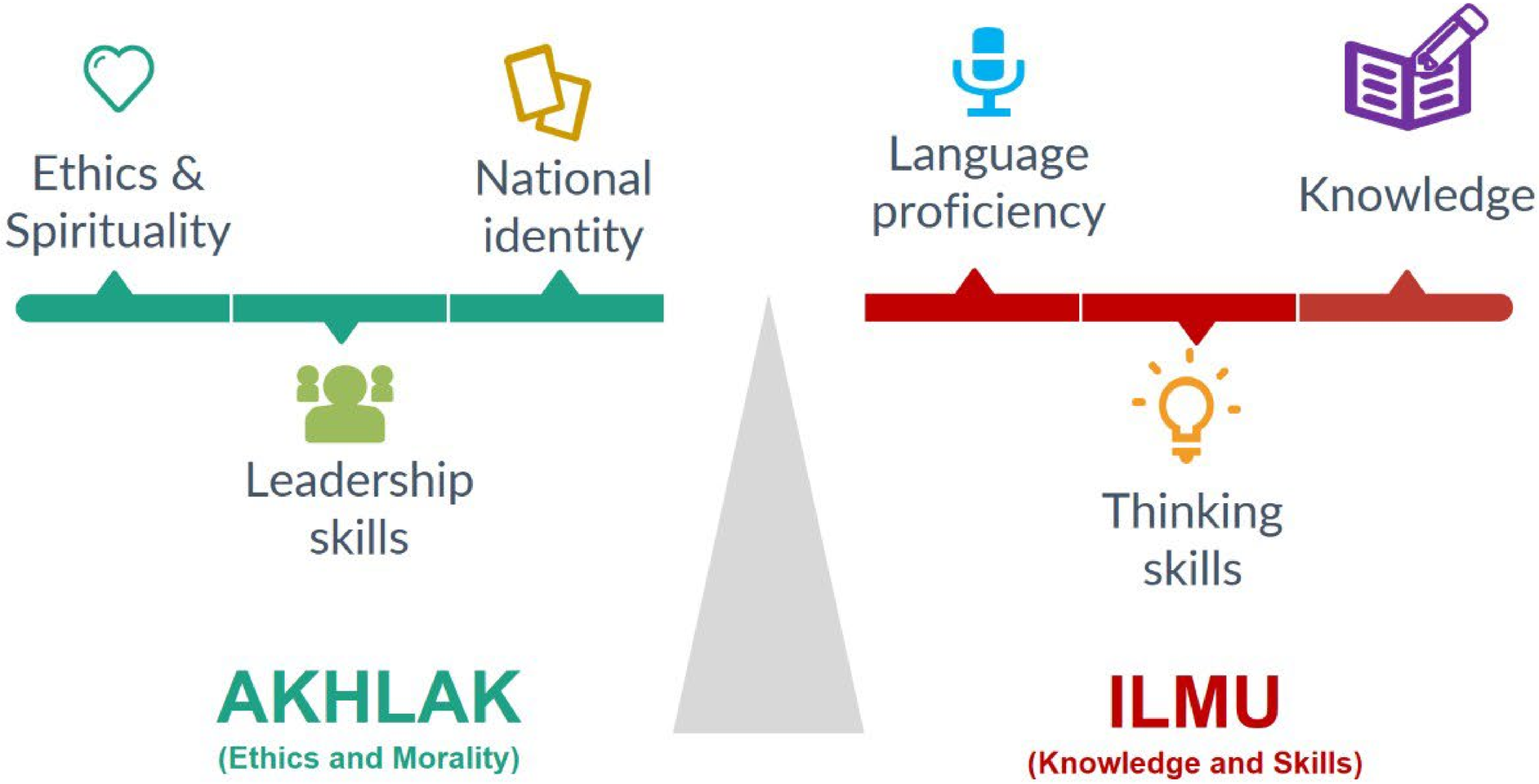
EFFICIENCY

In terms of efficiency, the Ministry aims to maximise the return on investment in higher education and to maintain the current levels of Government expenditure per student across public institutions.

Source: MOE. (2015). Malaysian Education Blueprint (Higher Education) 2015-2025. Putrajaya: MOE.

Student Aspirations

The student aspirations in the MEB are built around six primary attributes: ethics and spirituality, leadership skills, national identity, language proficiency, thinking skills, and knowledge.



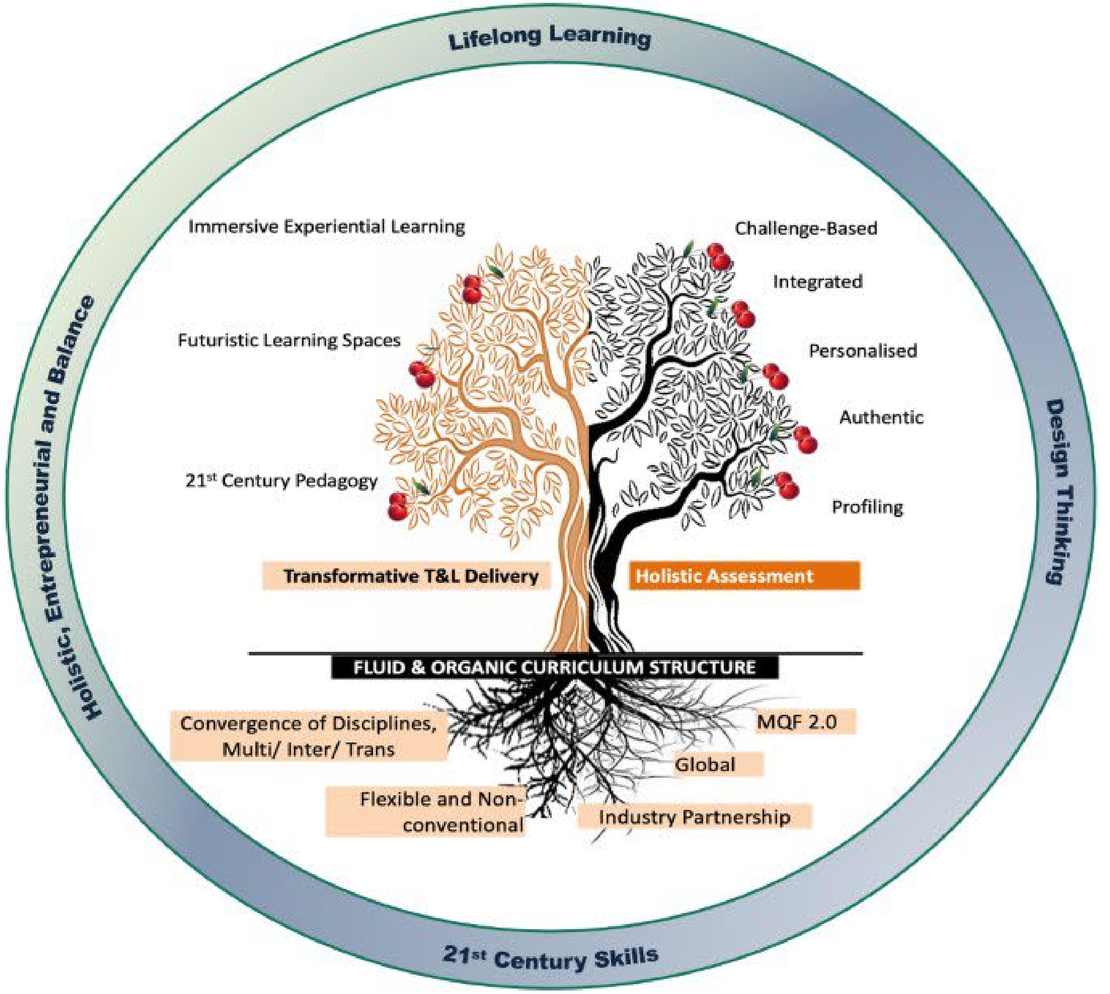
Source: MOE. (2015). Malaysian Education Blueprint (Higher Education) 2015-2025. Putrajaya: MOE.

Transformations in Higher Education

Future Ready Curriculum: Fluid and Organic Curriculum Structure

A future ready curriculum is a framework that highlights the element within a curriculum structure, learning delivery and assessment which are constructively aligned to prepare graduates in meeting the challenges of the 21st century.

Fluid and Organic Curriculum Structure is a flexible structure that grows naturally, not requiring systematic and structured approaches. It can be restructured (updated and shaped as and when necessary, in order to respond to changing needs of industry and students' educational experience.



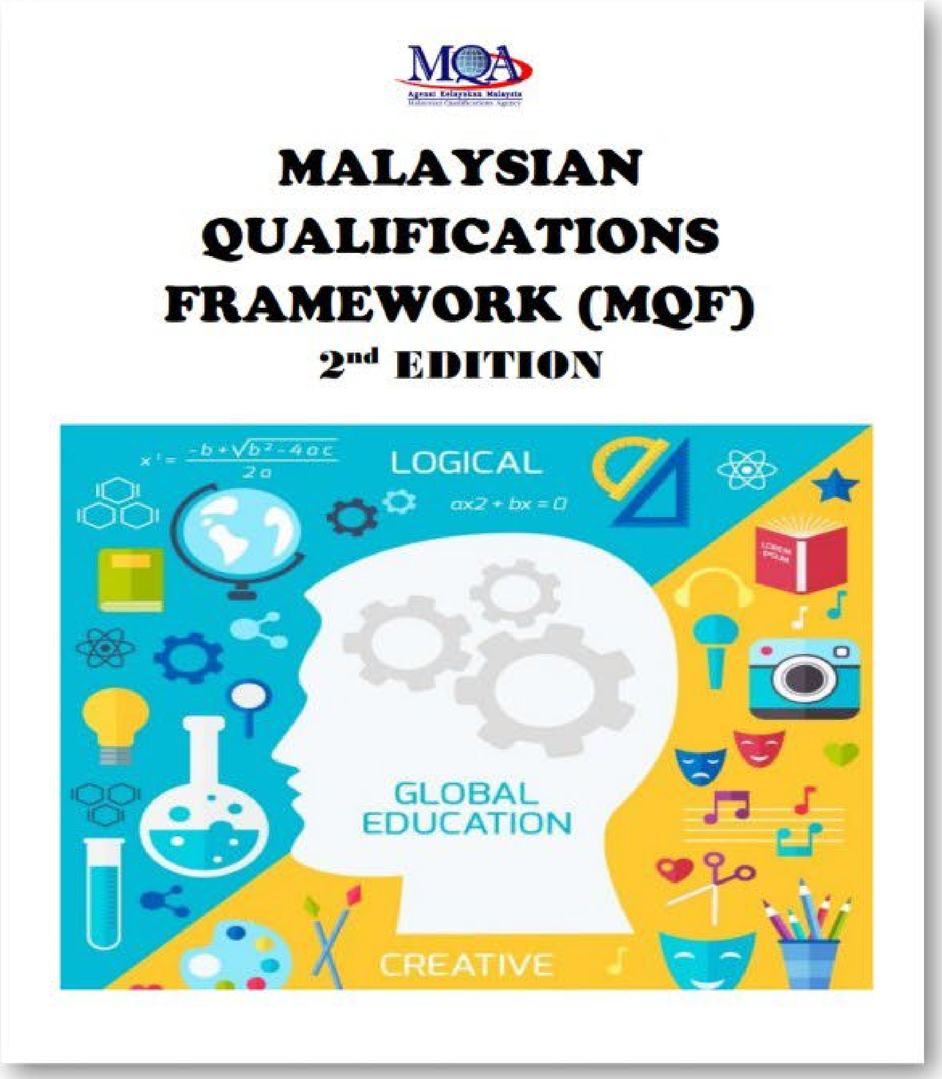
Source:
MoHE. (2018). Framing Malaysian Higher Education 4.0 Future-proof Talent. Putrajaya: MoHE.
MoHE (2020). High Impact Educational Practice, Putrajaya: MoHE

Transformations in Higher Education

Malaysian Qualification Framework 2.0 (MQF 2.0)

The Malaysian Qualifications Framework (MQF) is Malaysia's declaration about its qualifications and their quality in relation to its education system. MQF was first published in 2007 and its implementation was enforced in 2011.

After 7 years of implementation, the Malaysian Qualifications Agency (MQA) has revised MQF to ensure its relevancy/currency, according to dynamism of national and international higher education system. The revised version, MQF 2nd Edition is approved by the MQA Council Meeting in December 2017.



Transformations in Higher Education

University - Industrial Collaboration

2u2i

Work-based learning degree programmes

2u2i

2u2i[1,2] or 3u1i programmes is a work-based learning programmes that aims at increasing students' employability after graduation and intensifies academia and industry collaborations. It provides undergraduate students enhanced industry exposure during the course of their studies where students spend two or three years focusing on the theoretical aspects of the course in the university and two years or one year of hands-on practice in the industry. Industry exposure includes incorporating companies and running start-ups, which the students can continue to operate upon graduation. The 2u2i programme aims to inculcate the spirit of entrepreneurship via academia and industry collaborations through "Work-based Learning" concept. 2u2i is an initiative under Shift 1 (Holistic, Entrepreneurial and Balanced Graduates) and Shift 7 (Innovation Ecosystem) of the MEB (HE).

MINISTRY OF EDUCATION MALAYSIA

JPT DEPARTMENT OF HIGHER EDUCATION

GUIDELINES FOR THE IMPLEMENTATION OF THE 2u2i STUDY MODE

RENCANA

Program 2U2I penuhi permintaan, tingkat kebolehpasaran graduan

Jalinan kerjasama boleh kan industri lebih pelajar ikut keperluan semasa

Latihan persiap pelajar pelbagai kemahiran

Source: http://2u2i.mohe.gov.my/

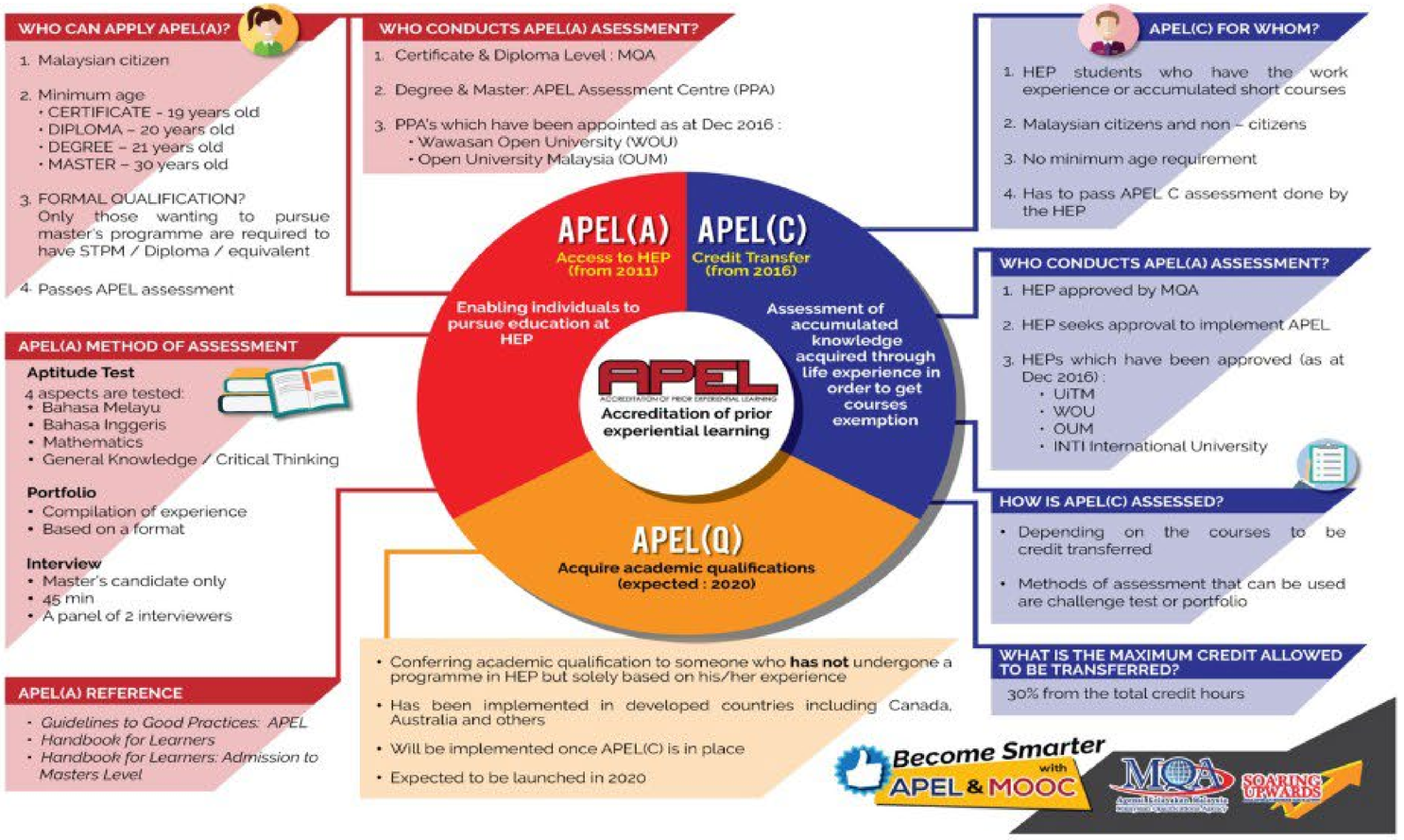
Transformations in Higher Education

Recognition of Work Experience to Pursue Higher Education

Accreditation of Prior Experiential Learning or APEL is a systematic process that involves the identification, documentation and assessment of prior experiential learning to determine the extent to which an individual has achieved the desired learning outcomes, for access to a programme of study and/or award of credits.

APEL

APEL is the Ministry's initiative to cultivate lifelong learning among Malaysians. Those who do not possess formal degree qualifications are allowed to pursue higher education via APEL. APEL advocates the formal recognition and assessment of prior experiential learning in determining whether an individual has achieved the desired learning outcomes for access to a programme of study (APEL A) and/or award of credits (APEL C). APEL is an initiative under Shift 3 (Nation of Lifelong Learners) of the MEB (HE).



Source: https://www2.mqa.gov.my/APEL/

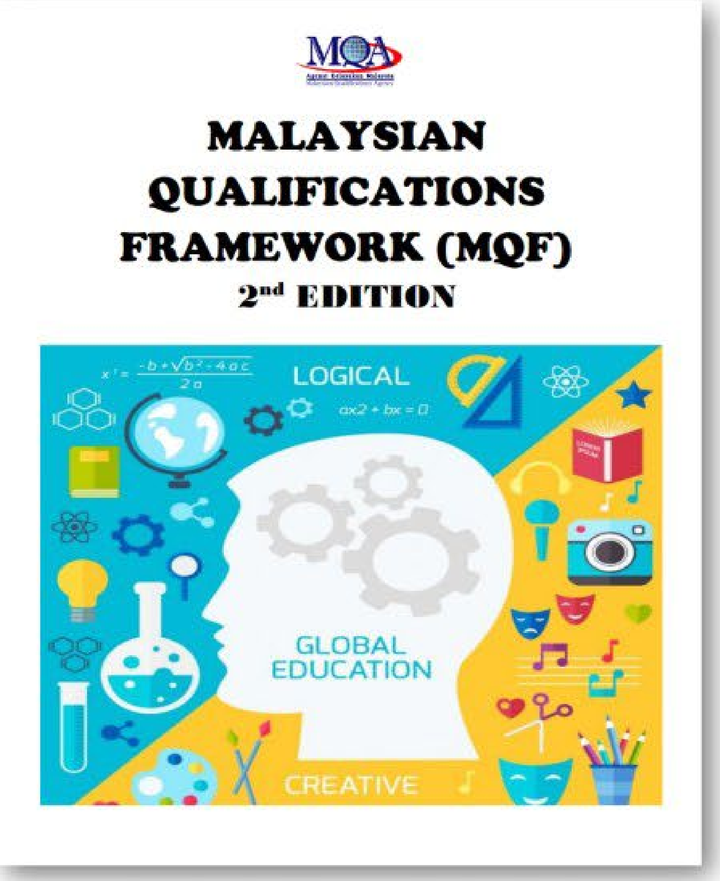
Transformations in Higher Education

Outcome-Based Education (OBE)

OBE is the education approach that is in compliance with the Malaysian Qualifications Framework (MQF) to ensure its relevancy/currency, according to dynamism of national and international higher education system.

It shuns away the traditional focus on what the university provides to students, in favor of making students demonstrate skills and learning outcomes as the most important aspect of education.

OBE believes, instead of rankings and exams, the use of assessments, opportunities and classroom experiences should all provide necessary support for the students to achieve their goals.



Source:
Biggs, J. (2014). Constructive alignment in university teaching. HERDSA Review of Higher Education, 1, 5-22.

Transformations in Higher Education

OBE

Outcome-Based Education

OBE provides clear guidance for the planning and development of the teaching process which includes the design and organization of materials, the selection of the most appropriate teaching methods, as well as providing a measure for quality assurance

Learning Outcome

What do you want the students to have after learning?

Learning Activities

How can you help students to achieve it?

Assessment

How will you know what they have achieved?

Transformations in Higher Education

Outcome-Based Education (OBE)

OBE

Outcome-Based Education

Creating a Wholesome Holistic Human Being

COGNITIVE KNOWLEDGE & SKILLS

Minds-on

PSYCHOMOTOR SKILLS

Hands-on

AFFECTIVE VALUES & ATTITUDES

Hearts-on

Quality in terms of outputs:

- 👍 **Goals and Ends**
- 👍 **Products & Results**
- 👍 **Outcomes & Effects**

Unit 2: Accreditation Bodies
Introduction

Accreditation bodies in Malaysian higher education ensure the quality assurance of programmes offered gains international confidence and recognition.

1

Malaysian Qualification Agency

MQA is the accreditation body that is responsible for quality assurance for both Public and Private Higher Institutions

2

Professional Bodies

Professional bodies are organisations that practice aspects of knowledge, skills and conduct of particular professions or occupation

Source: https://www.mqa.gov.my/pv4/profil_MQA.cfm

Malaysian Qualification Agency (MQA)

Main Roles

1. To implement the Malaysian Qualifications Framework (MQF) as a basis for quality assurance of higher education
2. As the reference point for the criteria and standards for national education qualifications
3. To monitor and oversee the quality assurance practices and accreditation of national higher education
4. To maintain the Malaysia Qualifications Register (MQR)

Agensi Kelayakan Malaysia
Malaysian Qualifications Agency

MQF 2.0 Five Clusters of Learning Outcomes

LO are statements that specify what learners will know or be able to do as a result of learning activity

1 **Knowledge & Understanding**

2 **Cognitive Skill**

3 **Functional work skills**
- a. Practical skills
- b. Interpersonal skills
- c. Communication skills
- d. Digital skills
- e. Numeracy skills
- f. Leadership, autonomy and responsibility

4 **Personal and entrepreneurial skills**
- a. Personal
- b. Entrepreneurial skills

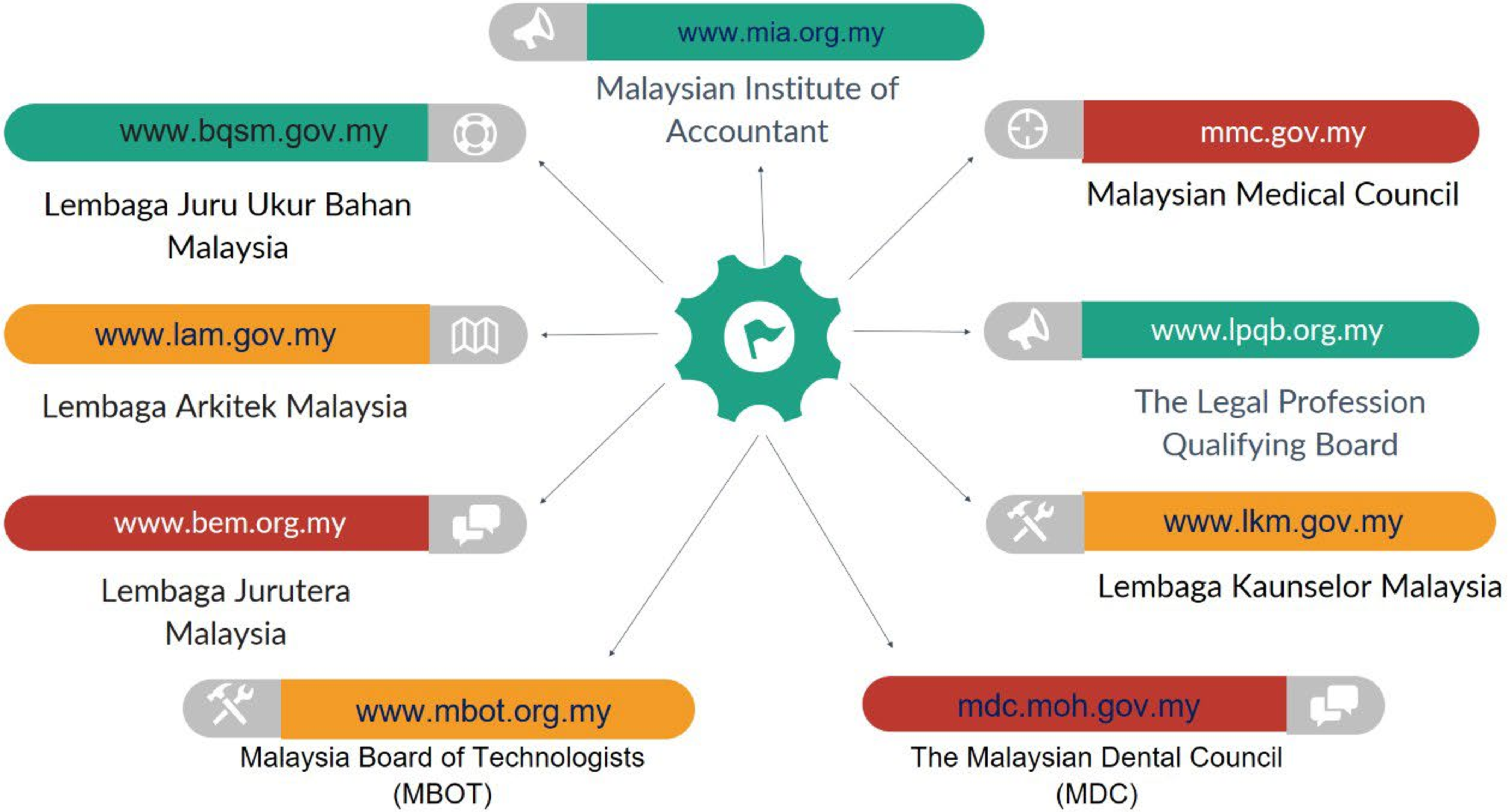
5 **Ethics and professionalism**

Professional Bodies

Main Roles

1. Specify the nature of the education an training required for entry to the profession
2. Assess the knowledge, competence an values of aspiring professionals as a conditio of entry to the profession
3. Ensure that the providers of profession education and training are suitable
4. Specify the ongoing education and training required for continued practice within the profession.

Selected Professional Bodies in Malaysia



Source: Professional Bodies for Academic Programme in Malaysia, MQA
https://www.mqa.gov.my/pv4/document/borang/permohonan_fi/2019/new/Jadual%20Keperluan%20Bilangan%20Salinan%20Dokumen%20Program%20Profesional.pdf

Conclusion

Malaysian Higher Education is focused towards delivering a comprehensive and relevant transformation of the higher education system in the country. Through collective efforts from every stakeholder the higher education system in Malaysia can be transformed to prepare Malaysians for the challenges and opportunities of an ever-changing world.

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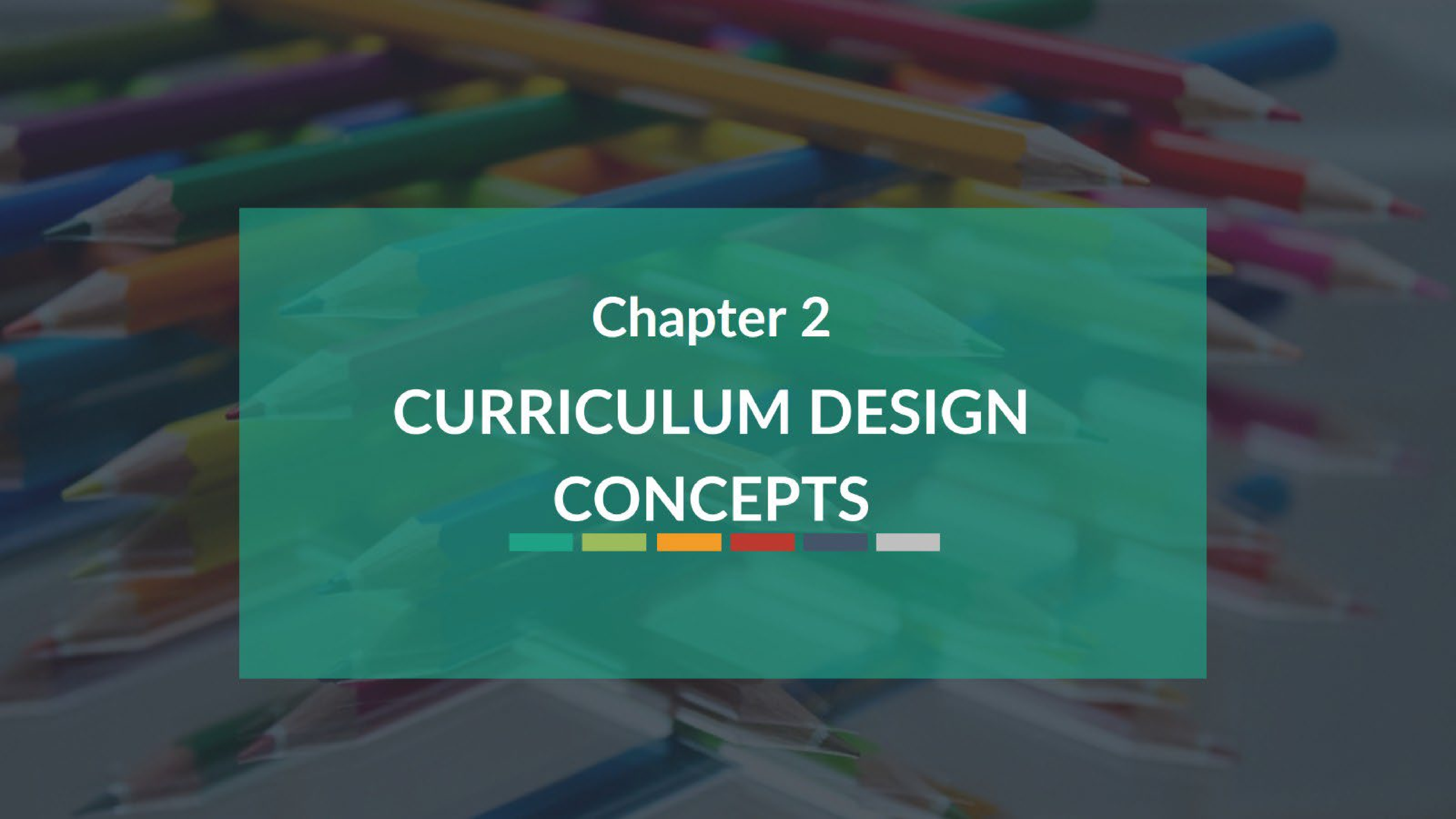
UNESCO



Chapter 2

CURRICULUM DESIGN CONCEPTS

Overview

Unit 1 : Curriculum Design Concepts

- Curriculum Design
- Curriculum Development Models
- Course Development

Unit 2: Curriculum Design Policy

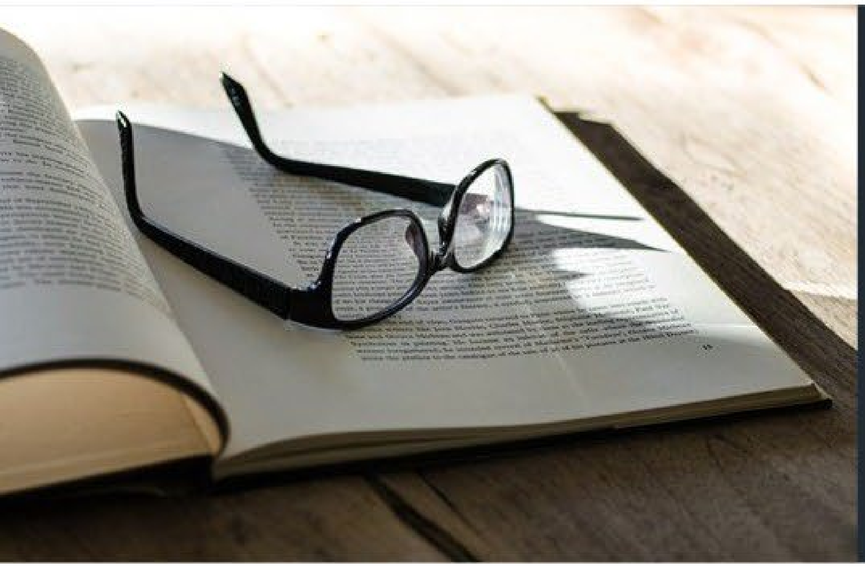
- Curriculum Design Policy
- Program Accreditation Process

Unit 3: Fluid and Organic Curriculum Design

- Flexible Curriculum Design
- 2U2I / 3U1I / 2U1I / 1½U1I
- Work Based Learning (WBL)
- Service Learning Malaysia University for Society (SULAM)

Unit 1: Curriculum Design Concept

CURRICULUM DESIGN FOR HIGHER LEARNING



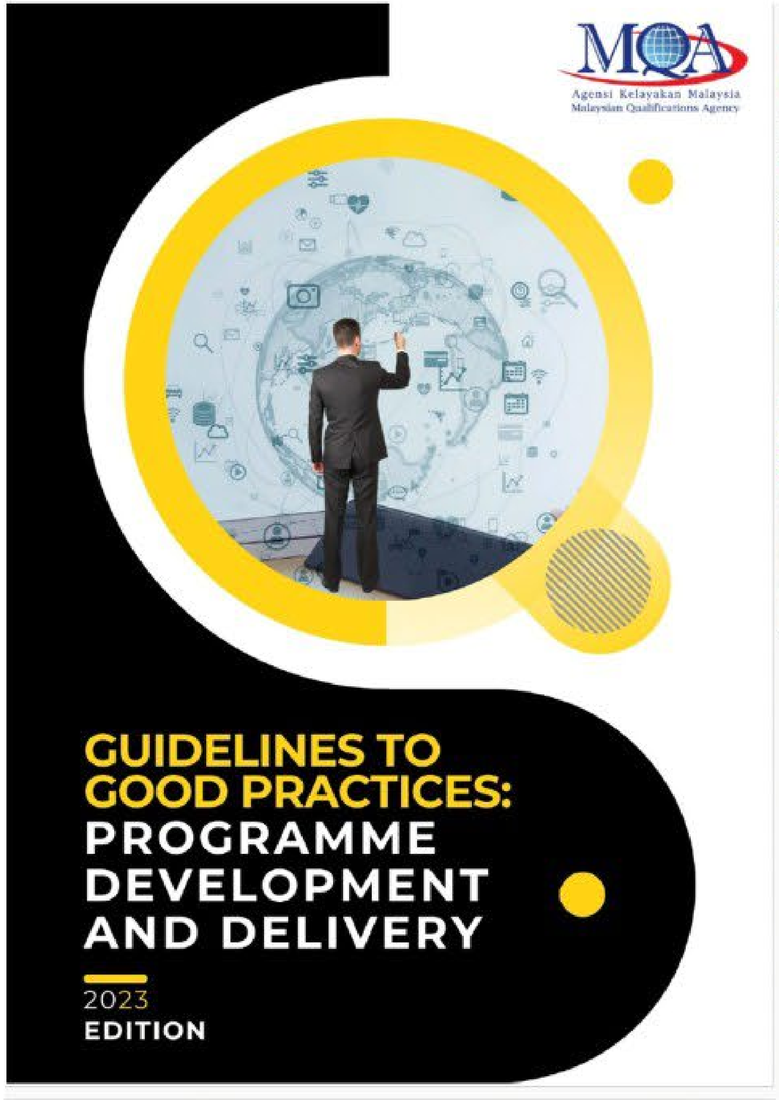
Introduction

Curriculum is a systematic combination of knowledge, skills, attitudes and values, student's performance assessment, instructional practices and learning experiences that are designed to bring about targeted learning outcomes. The development of a curriculum is associated with Curriculum Design concepts and Curriculum Development Models.

The design of a curriculum needs to include educational initiatives of the Sustainable Development Goals (SDG), the Shared Prosperity Vision 2030, and the Higher Education Development Plan (2015-2025), which move towards achieving quality education while addressing the issues of diversity, equality, and accessibility, and aiming at producing holistic graduants with entrepreneurial mindsets.

Curriculum Design

Curriculum design is a process of conceptualising the curriculum and arranging the teaching and learning activities and student performance assessments to meet learners' objectives (Biggs, 2003)



Three Types of Curriculum Design

Subject-centered design

Subject-centered curriculum design revolves around a particular subject matter or discipline such as biology, chemistry, history, language, performance arts and business. The focus is on the subject and how the subject should be studied

Learner-centered design

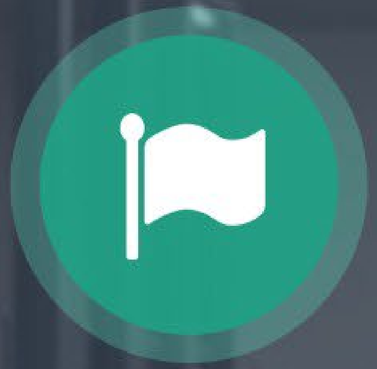
Learner-centered curriculum design focuses on student needs, interests and goals. This approach aims to empower learners to shape their education through choices.

Problem-centered design

Problem-centered curricula focus on teaching students to solve real-life issues, which helps them develop skills that are transferable to the real world.

Principles of Curriculum Design

Step 1



Determine philosophy, aims, goals and Objectives

Step 2

Developing and organizing the learning experiences, contents, and methods to achieve learning objectives.

Step 3

Evaluation of the objectives whereby learners' ability will be assessed and supported with evidences.

Curriculum Development Models

- Tyler Model
- Taba Model
- Oliva Model

Tyler Model

Strengths

One of the best known model for curriculum development.

focus

Special attention gives to the planning process.

steps

Deductive for it proceeds from the general to the specific.

sources

Involves 3 sources; the learners, contemporary life outside the schools, and the subject matter. Consider the needs of the society and the learner

Taba Model

Strengths

Curriculum is designed by the educators rather than handed down by higher authority.

focus

Special attention is given to the design process

steps

Uses the inductive approach for it proceeds from the specific to general design

sources

Involves primarily the subject matter experts

Oliva Model

Strengths

One of the best known models to recognise student needs in terms of career education, guidance and class activities

focus

Special attention is given to the instructional components

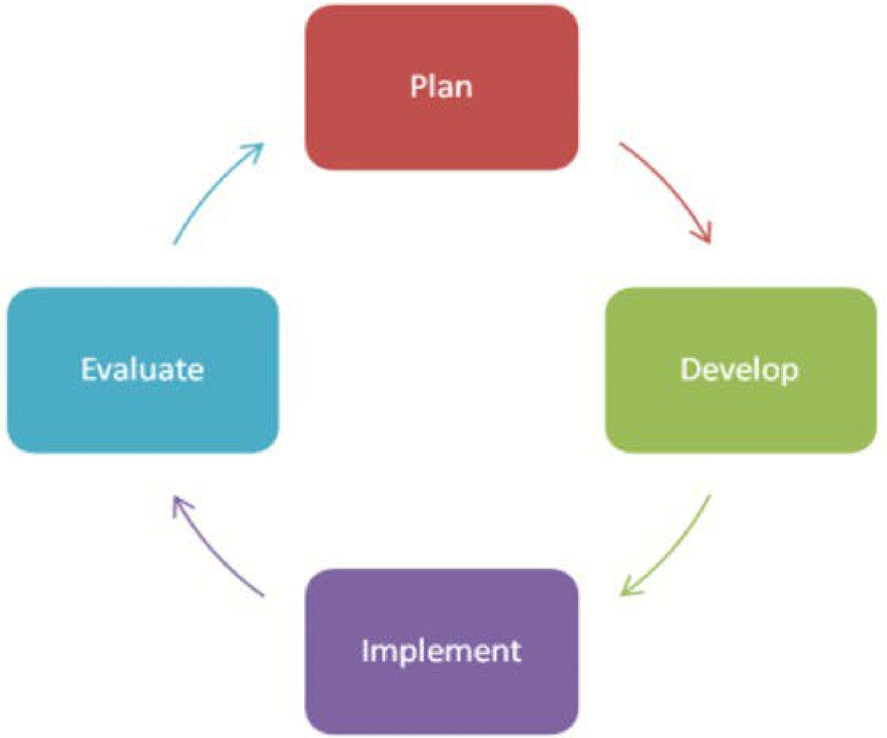
steps

Uses the deductive approach for it proceeds from the general to the specific

sources

Involves three sources: the learners, the instructors and the subject matter

Curriculum Design Cycle



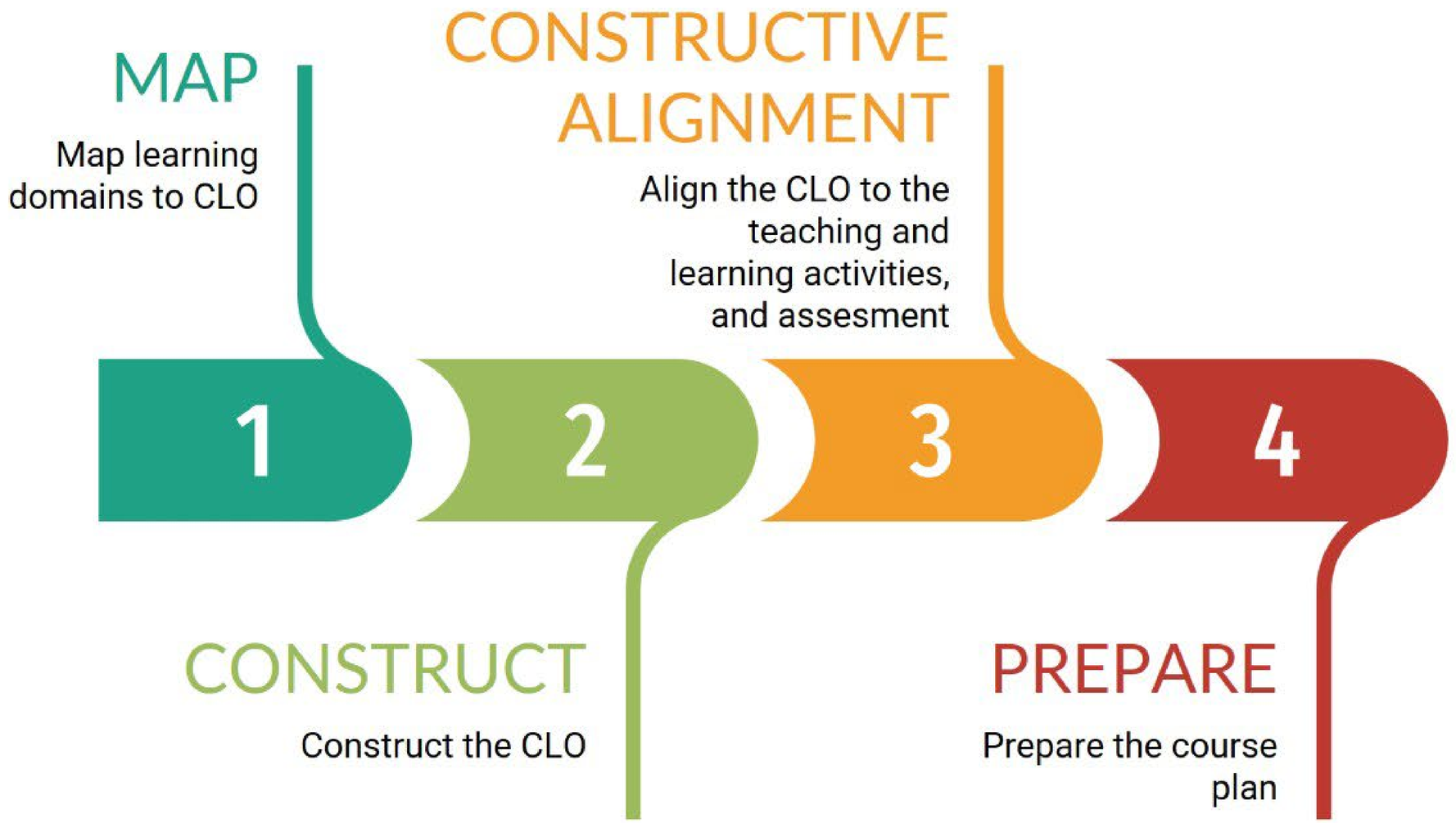
The Curriculum Design Cycle

The design and development of the formal curriculum can be informed by the COPPA and COPPIA.

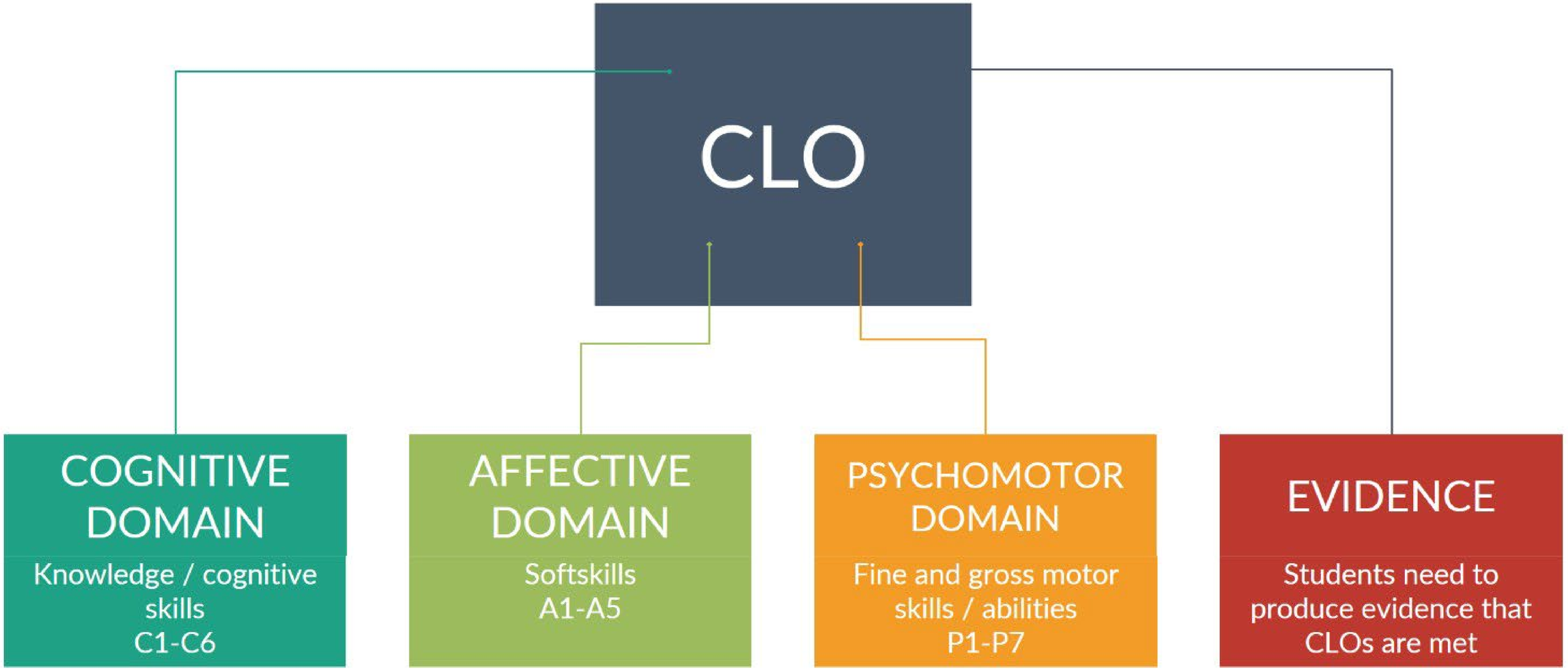
Plan	• Convene a Curriculum Committee • Assess needs and issues • Identify key issues such as Malaysian Qualifications Framework (MQF) levels and level descriptors, and institutional vision/ mission • Identify trends in the field of study/profession
Develop	• Articulate programme philosophy • State programme goal(s) • Sequence programme objectives and outcomes • Develop courses/modules • Identify and develop programme staff and physical resources • Develop and identify learning-teaching activities, assessment tools and procedures
Implement	• Deliver the programme • Assess the achievement of learning outcomes
Evaluate	• Review the Programme • Determine the success of the programme • Update the Programme

https://www2.mqa.gov.my/QAD/garispanduan/2014/GGP%20REKA%20BENTUK%20N%20KURIKULUM.pdf

COURSE DEVELOPMENT



1: MAP LEARNING DOMAINS TO CLO



Example: Mapping CLO to PLO and Learning Domains

PLO / COURSE	1	2	3	4	5	6	7	8	9	10	11
ABC 1111	CLO1 (C2)		CLO2 (P1)				CLO3 (A2)				
ABC 1112		CLO1 (C4)	CLO2 (P2)						CLO3 (A2)		
ABD 1122	CLO1 (C2)			CLO2 (A3)							CLO3 (A1)

COGNITIVE	PSYCHOMOTOR	AFFECTIVE
C1 - Remember	P1- Perception	A1 – Receiving
C2- Understand	P2 – Set	A2 – Responding
C3 - Apply	P3 – Guided response	A3 – Valuing
C4 – Analyze	P4 – Mechanism	A4 – Organizing
C5 – Assess	P5 – Complex Overt Response	A5 – Internalizing Values
C6 - Create	P6 – Adaptation	
	P7 - Origination	

2: CONSTRUCT THE CLO

I. ALIGN WITH PLO

According to the CLO-PLO mapping

II. CLEAR STATEMENTS

Clear CLO statement to be achieved (C, A, P) by the students

III. CLO STATEMENTS

A course has three to fives CLOs contributing to three to five PLOs*

IV. COMPONENTS OF A CLO

Contains five components of a CLO

v. CHARACTERISTICS OF ACTION VERBS

A CLO contains an action verb

*Academic Program Writing Guideline, KPM (2007)

COMPONENTS OF A CLO

A good CLO should have these five components

1. ACTION VERB

Verb that explains what the subject is actively doing

2. OBJECT FOR ACTION VERB

The object that are related to the action verb

3. CONTEXT

The situation / circumstances / settings that clarify the action verb

4. TARGET AUDIENCE

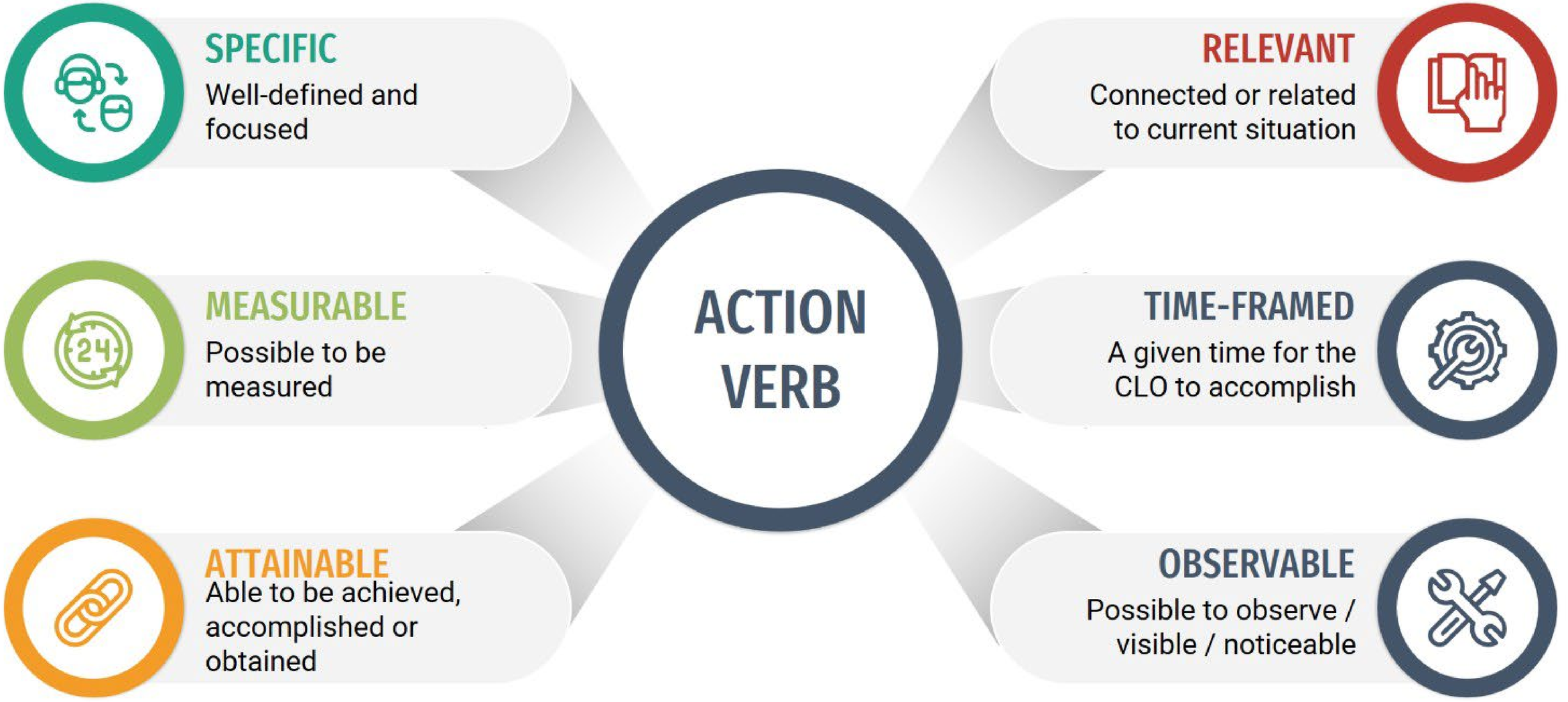
The target group of people that the CLO is aimed at appealing to

5. STANDARD / CRITERIA

A standard / criteria that might need to comply to

CHARACTERISTICS OF AN ACTION VERB

A good action verb must have all the listed characteristics



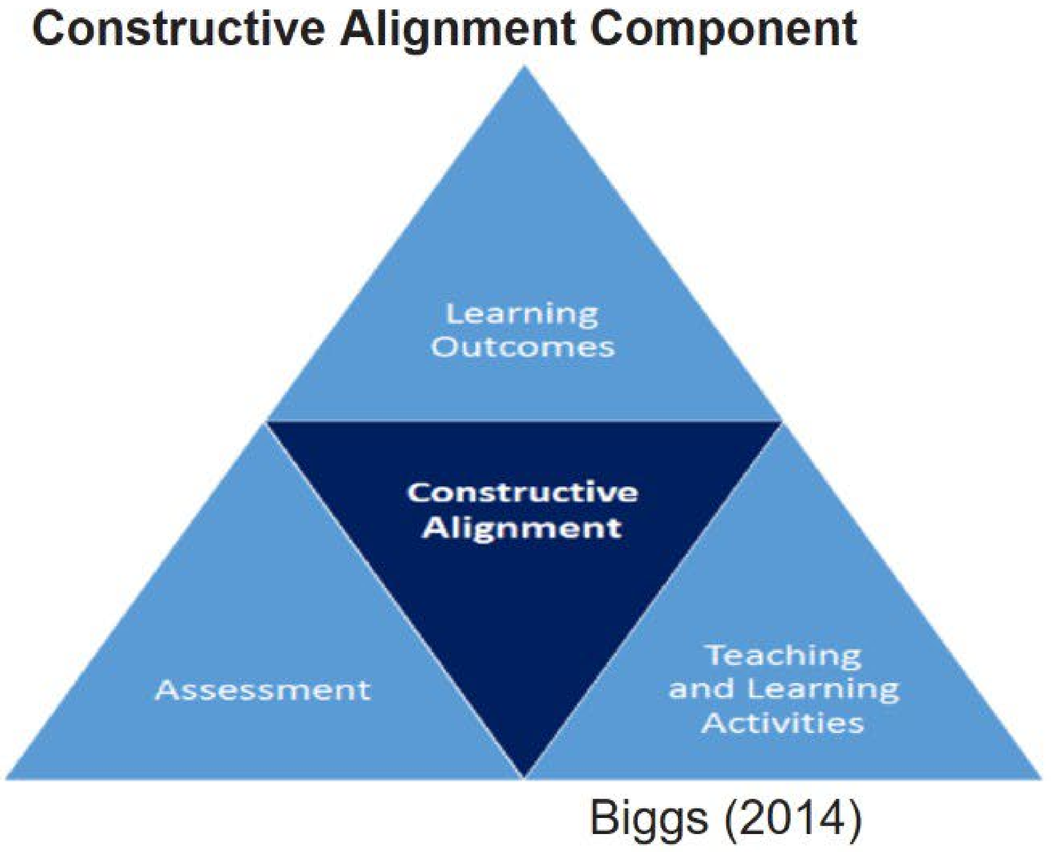
Example of Course Learning Outcome

At the end of the course **student** should be able to:

Apply the concept and implementation of andragogy education in the issues related to elderly education (C3, PLO2).

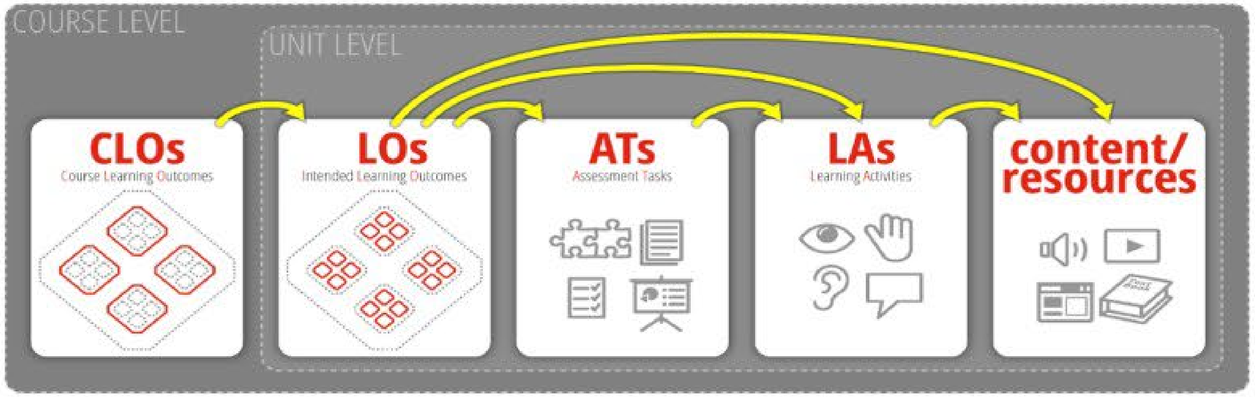
*Note: Example of written Couse Learning Outcome based on the five CLO component

3: Constructive Alignment



Biggs (2014)

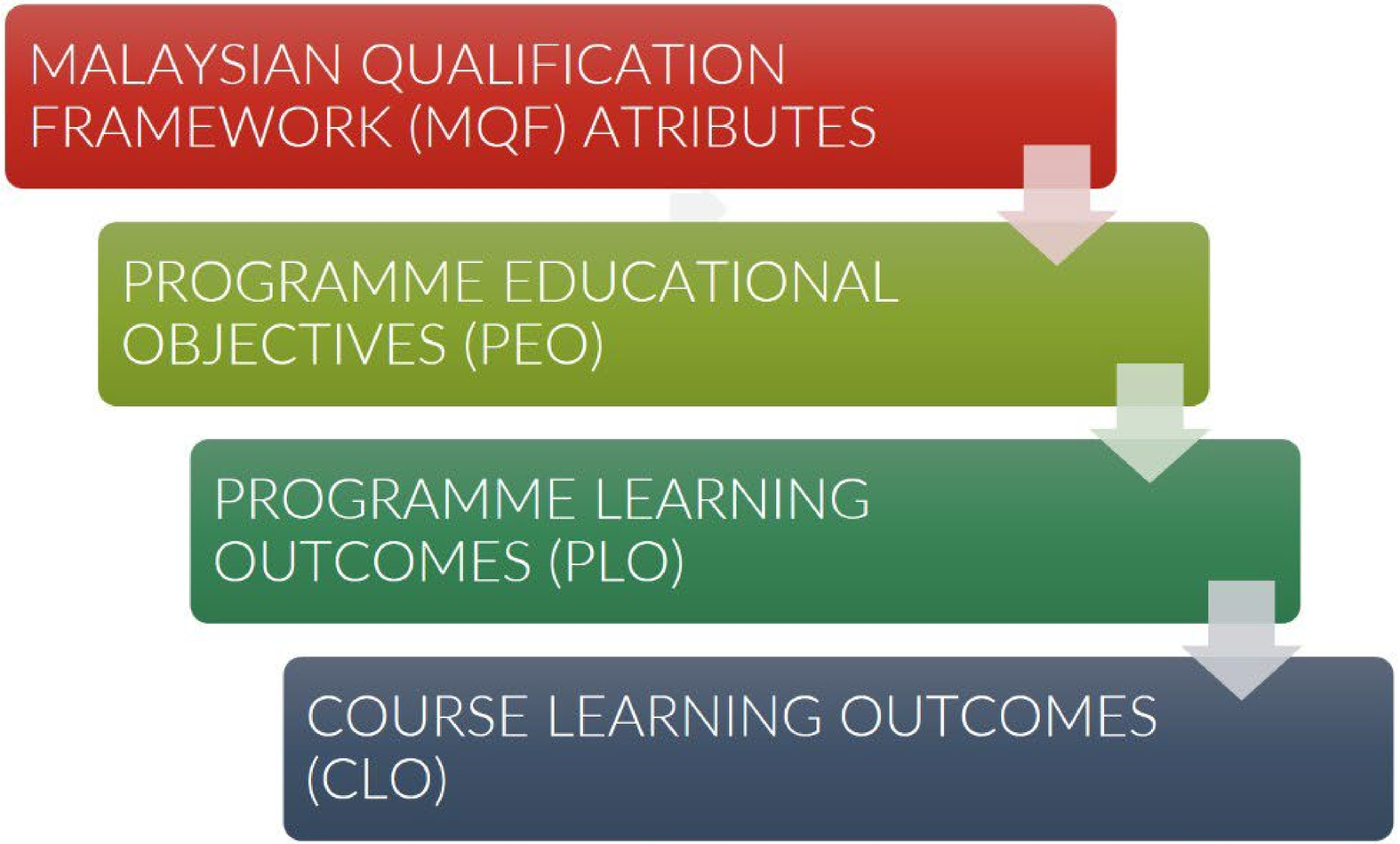
- Constructive alighmnet is the underpinning concept behind the current requirements for programme specification, learning outcomes (Los) and assessment criteria, and the use of criterion-based assessment.
- Teaching is designed to engage students in learning activities that optimise their chances of achieving those outcomes, and assessment tasks are designed to enable clear judgments as to how well those outcomes have been attained" (Biggs, 2014, pp. 5-6).



"Constructive alignment diagram" is licensed under the Creative Commons Attribution-Share Alike 4.0 International license.
Creators: Beale Gurney (Beale.Gurney@utas.edu.au) & Nell Rundle (Nell.Rundle@utas.edu.au), University of Tasmania
Source: http://bit.ly/2sWmTrO

CONSTRUCTIVE ALIGNMENT IN AN ACADEMIC PROGRAMME

Aligning the MQF Attributes, PEOs, PLOs and CLOs



4: PREPARE THE COURSE PLAN

The course plan must contain the following six elements:

SYNOPSIS
A brief outline of the course

CLOs
All CLO statements listed

MAPPING CLOs TO PLOs
The mapping of CLOs to PLOS based on learning domains

STUDENT LEARNING TIME (SLT)
The planning is according to CA and SLT

ASSESSMENT
The assessment activities is planned according to CA and SLT

REFERENCES
The course resources or materials within five years

EXAMPLE OF A COURSE PLAN, TABLE 4 MQA

1	Course Name:	ANIMAL PHYSIOLOGY					
	Course Code:	SBF3xx3					
	Course Classification:	Compulsary					
2	Synopsis:	This course discusses ……					
3	Name(s) of Academic Staff:	1	Dr. Siti binti Saad				
		2	Dr. Ahmad bin Mohamad				
		3					
4	Semester and Year offered:	Year Offered	3	Semester	1	*Remarks:*	
5	Credit Value:	3					
6	Pre-requisite/ co-requisite (if any):	NILL					
7	Course Learning Outcomes (CLO)	CLO1	Apply homeostasis concepts accurately in every physiological systems. (C3)				
		CLO2	Portray the functions of physiological system thoroughly through application of knowledge and skills. (P4)				
		CLO3	Communicate the thoughts to others clearly. (A4)				

Synopsis consists of information about the course content including the topics

CLOs of a course

EXAMPLE OF COURSE PLAN, TABLE 4 MQA

8 Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods

Course Learning Outcomes	Programme Learning Outcomes (PLO)											Teaching Methods	Assessment Methods
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11		
CLO1		/										Interactive Lecture, e-Learning, Problem-Based Learning, Discussion	Quizzes, Test, Final Exam
CLO2			/									Laboratory Experimentation, Interactive Lecture, e-Learning, Problem-Based Learning, Discussion	Laboratory Test
CLO3					/							Interactive Lecture, e-Learning, Problem-Based Learning, Discussion, Presentation	Poster Presentation
Mapping with MQF Cluster of Learning Outcomes		C2	C3A		C3C								

Mapping CLOs to PLOs according to learning domains

Indicate the primary causal link between the CLO and PLO by ticking '√' in the appropriate box.

C1 = Knowledge & Understanding, **C2** = Cognitive Skills, **C3A** = Practical Skills, **C3B** = Interpersonal Skills, **C3C** = Communication Skills, **C3D** = Digital Skills,
C3E = Numeracy Skills, **C3F** = Leadership, Autonomy & Responsibility, **C4A** = Personal Skills, **C4B** = Entrepreneurial Skills, **C5** = Ethics & Professionalism

Guideline to Allocate Student Learning Time (SLT)

SOURCE: MQA TRAINING NOTES

Teaching and Learning Activities	Implementation Time	Additional Time Preparation Time/ Time for Self Study	Note
Lecture	1 hr.	1-2 hr.	Complex courses might need 3 hours or more preparation time for one hour lecture. (ex Diploma 1:1, Bachelor 1:2, Master 1:3)
Tutorial	1-2 hr.	1-2 hr	
Makmal	3 hr. + report	Depend	For particular disciplines, 3 hours of lab might need additional 2-3 hours to prepare the report.
Final Year Project	14-28hours	240 - 400 hr.	
Small Group Discussion	1-2 hr.	1 hr.	
Problem-based Learning (PBL)	2 hrs. (e.g)	2-3 hrs + 2 hrs for discussion	
E-learning	- none-	3 hr.	No Face-to-face
Presentation	1 hr.	2-3 hr.	
Creative Writing	100-150 pages novel 50-70 pages of script	8-10 hrs/day throughout the whole semester	8 hrs. X 5 days X 14 weeks = 560 hrs.
Case Analysis/Study	3 hrs per case	3 hrs	
Assignment (2000 Words)	4 hour	12 hr.	
Summative Assessment	3 hrs	3 hrs. preparation	Complex courses might need more preparation time for one hour of assessment.

EXAMPLE OF COURSE PLAN, TABLE 4 MQA

10 Distribution of Student Learning Time (SLT)

Note: This SLT calculation is designed for home grown programme only.

Weeks	Course Content Outline and Subtopics	CLO*	Learning and Teaching Activities**										Total SLT
			Face-to-Face (F2F)								Non Face-to-Face (F2F)		
			Physical				Online/Technology-Mediated (Synchronous)				Online/Technology-Mediated (Asynchronous)	Independent Learning	
			L	T	P	O	L	T	P	O	O		
1	Week 1 Chapter 1 : Topic A	CLO1	1	0	0	0	0	0	0	0	0	2	
2	Week 2 Chapter 2 : Top		2	0	2	0	0	0	0	0	0	2	
3	Week 3 Chapter 3 : Top		2	0	2	0	0	0	0	0	0	2	
4	Week 4 Chapter 4 : Top		0	0	2	0	2	0	0	0	2	2	
5	Week 5 Chapter 5 : Topic E		0	0	0	0	2	0	0	0	2	2	
6	Week 6 Chapter 6 : Topic F	CLO1, CLO2	2	0	2	0	0	0	0	0	0	2	
7	Week 7 Chapter 7 : Topic G	CLO1, CLO2	2	0	2	0	0	0	0	0	2	2	
8	Week 8 Chapter 8 : Topic H	CLO1, CLO2	0	0	2	0	2	0	0	0	2	2	
9	Week 9 Chapter 8 : Topic H	CLO1, CLO3	0	0	0	0	2	0	0	2	2	2	
10	Week 10 Chapter 9: Topic I	CLO1, CLO3	0	0	0	0	2	0	0	1	1	2	
11	Week 11 Chapter 9: Topic I	CLO1, CLO3	0	0	0	0	2	0	0	1	1	2	
12	Week 12 Chapter 10 : Topic J	CLO1, CLO3	2	0	0	0	0	0	0	0	2	3	
13	Week 13 Chapter 10 : Topic J	CLO1, CLO3	2	0	0	0	0	0	0	2	2	2	
14	Week 14 Chapter 11 : Topic K	CLO1, CLO3	0	0	0	0	2	0	0	0	2	2	
		Sub Total	13	0	12	0	14	0	0	6	18	29	
SUB-TOTAL SLT:													92

SLT distribution for Teaching and Learning Activities

EXAMPLE OF COURSE PLAN, TABLE 4 MQA

SLT distribution for Continuous Assessment

Continous Assessement		%	Face-to-Face (F2F)		NF2F	
			Physical	Online/ Technology-mediated (Synchronous)	Online (Asynchronous and Independent Learning for Assessment)	
1	QUIZZES	10.00	0.00	1.00	1.00	
2	TEST	20.00	1.00	1.00	2.00	
3	PRESENTATION	15.00	1.00	0.00	2.00	
4	LABORATORY TEST	25.00	1.00	0.00	5.00	
5			0.00	0.00	0.00	
6			0.00	0.00	0.00	
	Sub Total	70	3.00	2.00	10.00	
					SUB-TOTAL SLT:	**15.00**

Final Assessement		%	Face-to-Face (F2F)		NF2F	
			Physical	Online/ Technology-mediated	Online (Asynchronous and Independent Learning for Assessment)	
1	FINAL EXAM	30	3.00	0.00	10.00	
2						
3						
4						
Sub Total		30	3.00	0.00	10.00	
					SUB-TOTAL SLT:	**13.00**

SLT distribution for Final Assessment

	SLT for Assessment:	28.00
	GRAND TOTAL SLT:	120.00
A	% SLT for F2F Physical Component: *[Total F2F Physical /(Total F2F Physical + Total F2F Online + Total Independent Learning) x 100)]*	30.39
B	% SLT for Online & Independent Learning Component:	**41.67**
C	% SLT for All Practical Component:	**10.00**
C1	% SLT for F2F Physical Practical Component	**10.00**
C2	*% SLT for F2F Online Practical Component*	**0.00**

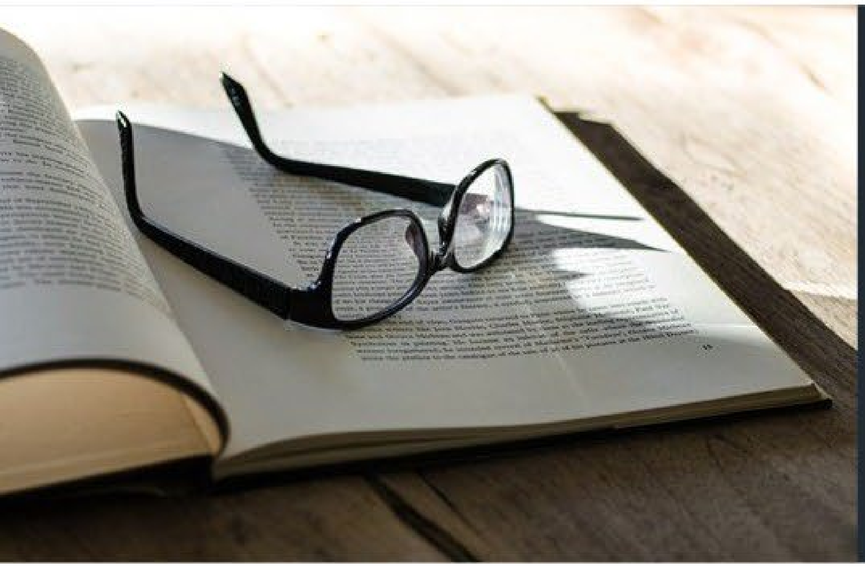
EXAMPLE OF COURSE PLAN, TABLE 4 MQA

11	Identify special requirement or resources to deliver the course (e.g., software, nursery, computer lab, simulation room etc)	
12	References (include required and further readings, and should be the most current)	
13	Other additional information (if applicable)	

References include required and further readings. The most recent (within 5 years need to be included)

Note: Number of PLO indicated is purely for illustration purposes only and the number is subjected to the curriculum design.

Unit 2: Curriculum Design Policy and Guidelines



Introduction

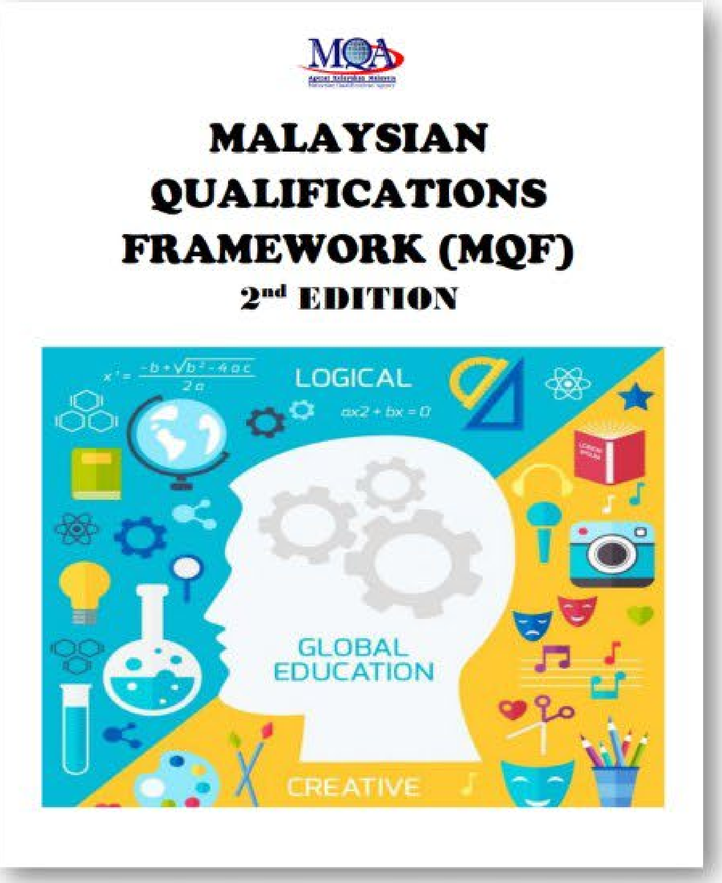
The Development of Curriculum Design has to follow policies and guidelines as outlined by the Malaysian Qualifications Agency (MQA) and professional accreditation bodies such as the board of Engineering Malaysia (BEM), Malaysian Board of Technology (MBOT), and ETAC (Engineering Technology Accreditation Council). All programmes and qualifications within the higher education and training sectors are expected to be in compliance with the MQF as required by relevant national policies since 2011.

Curriculum Design Policy

Malaysian Qualification Framework (MQF)

MQF is an "instrument that develops and classifies qualifications based on a set of criteria that is agreed nationally and benchmarked with international practices, and which clarifies the academic levels learning outcomes and credit system based on student academic load". (MQF, 2007).

It is intended as a comprehensive, overarching and integrated national qualifications framework. The Framework provides a set of levels and descriptors covering all sectors, which uses the set of levels and outcomes with the intention to bring progression and pathways together, and accommodate all forms of learning.
(MQF, 2017)



Curriculum Design Policy

Malaysian Qualification Framework (MQF)

1. MQF Scope of Framework :
    - Sectors and Qualifications – Three awarding sectors: academic, vocational and technical and skills (training centres)
    - Levels and Qualification – Eight levels of achievement: certificate, diploma and advance diploma, bachelor, master and doctoral degrees
    - Level Descriptors and Purposes – Each level defines the expected knowledge and/or competencies of learners
    - Learning Outcomes – Statements on students should understand and can do upon successful completion of a period of study that will create an impact on teaching and learning and assessment activities.

Curriculum Design Policy

Malaysian Qualification Framework (MQF)

2. Domains/ Clusters of Learning Outcomes

Five clusters of learning outcomes: Knowledge and understanding, Cognitive Skills, Functional work skills, Personal and entrepreneurial skills and ethics and professionalism

3. Qualification Titles

"Single qualification title for each qualification, provided it fulfils the qualifications standards determined for the level" (MQF, 2017)

4. Credit System

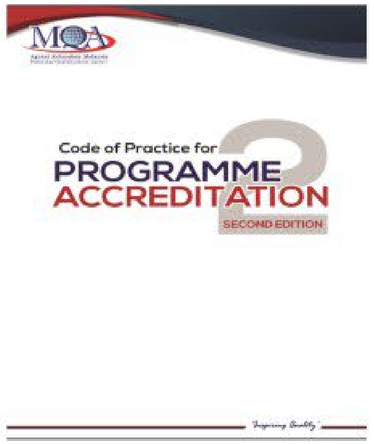
Mandatory minimum credit accumulation for each level and transferable credits are prescribed and regulated

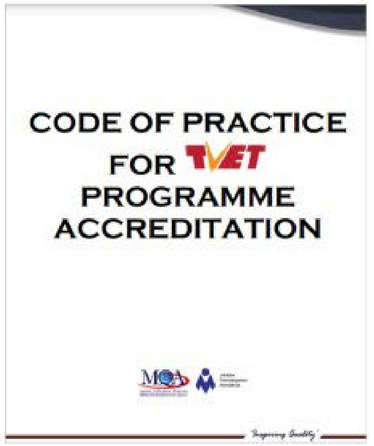
5. Qualification Profile By Levels of MQF

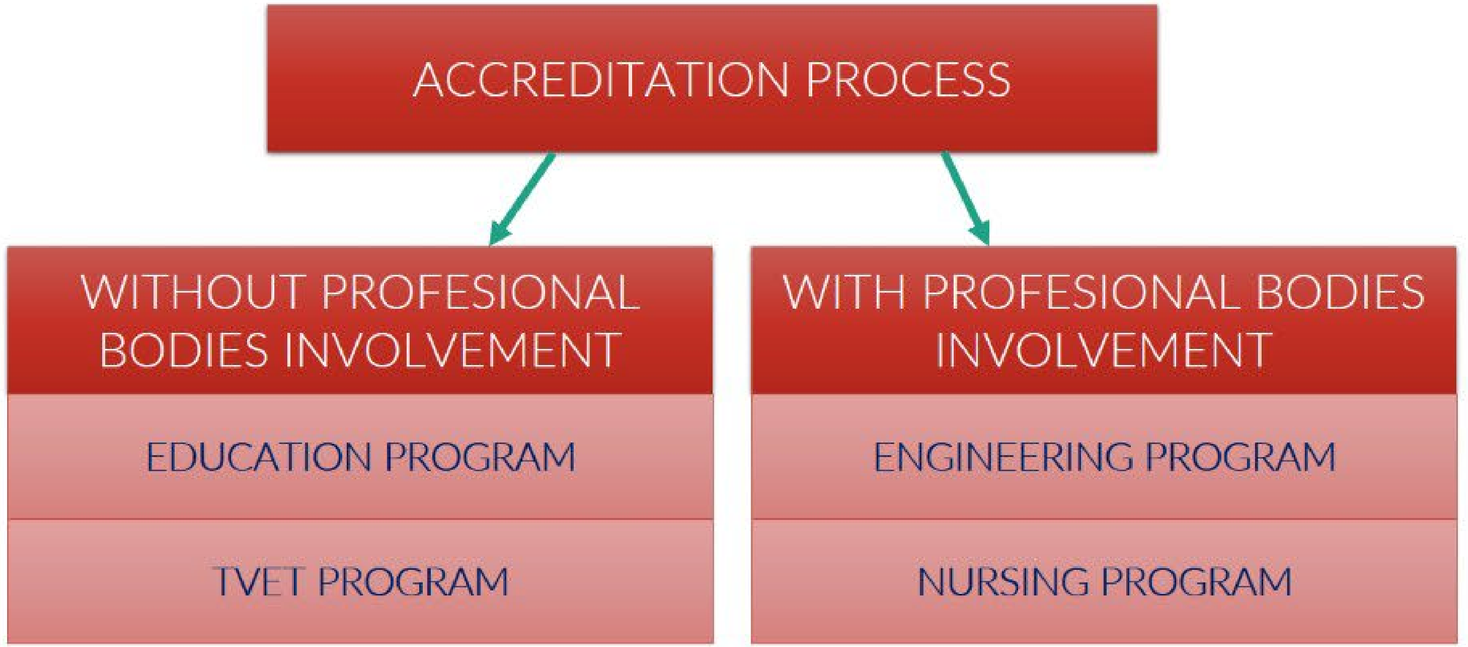
Defined by their purposes, levels, level learning outcomes, credits, field or discipline, nature of programme, minimum entry requirement, and typical duration for full-time or part time

Accreditation Process

A recognition granted by the Malaysian Qualifications Agency after examining and assessing (a) a higher education programme or qualification; or (b) a higher education provider under Chapter 4 or 7 of Part VIII (MQA Act, 2007).





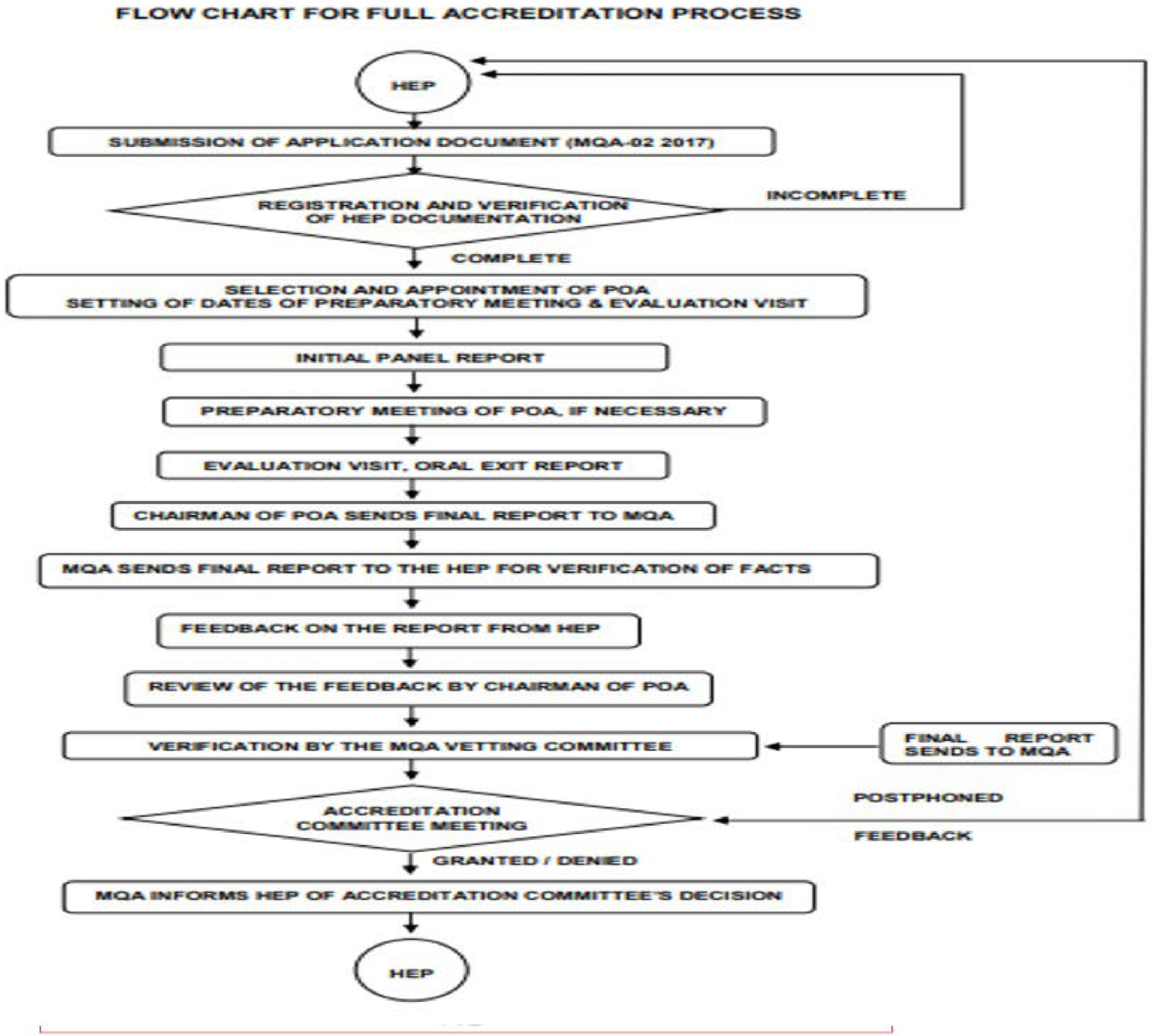


Note:
Programme with Programme Standards must comply with the standards

https://www2.mqa.gov.my/qad/

Accreditation Process without Professional Bodies Involvement

MQA



Requirement and Accreditation Criteria

Criteria for Programme Accreditation by MQA

Programme Development and Delivery

Assessment of Student Learning

Student Selection and Support Services

Academic Staff

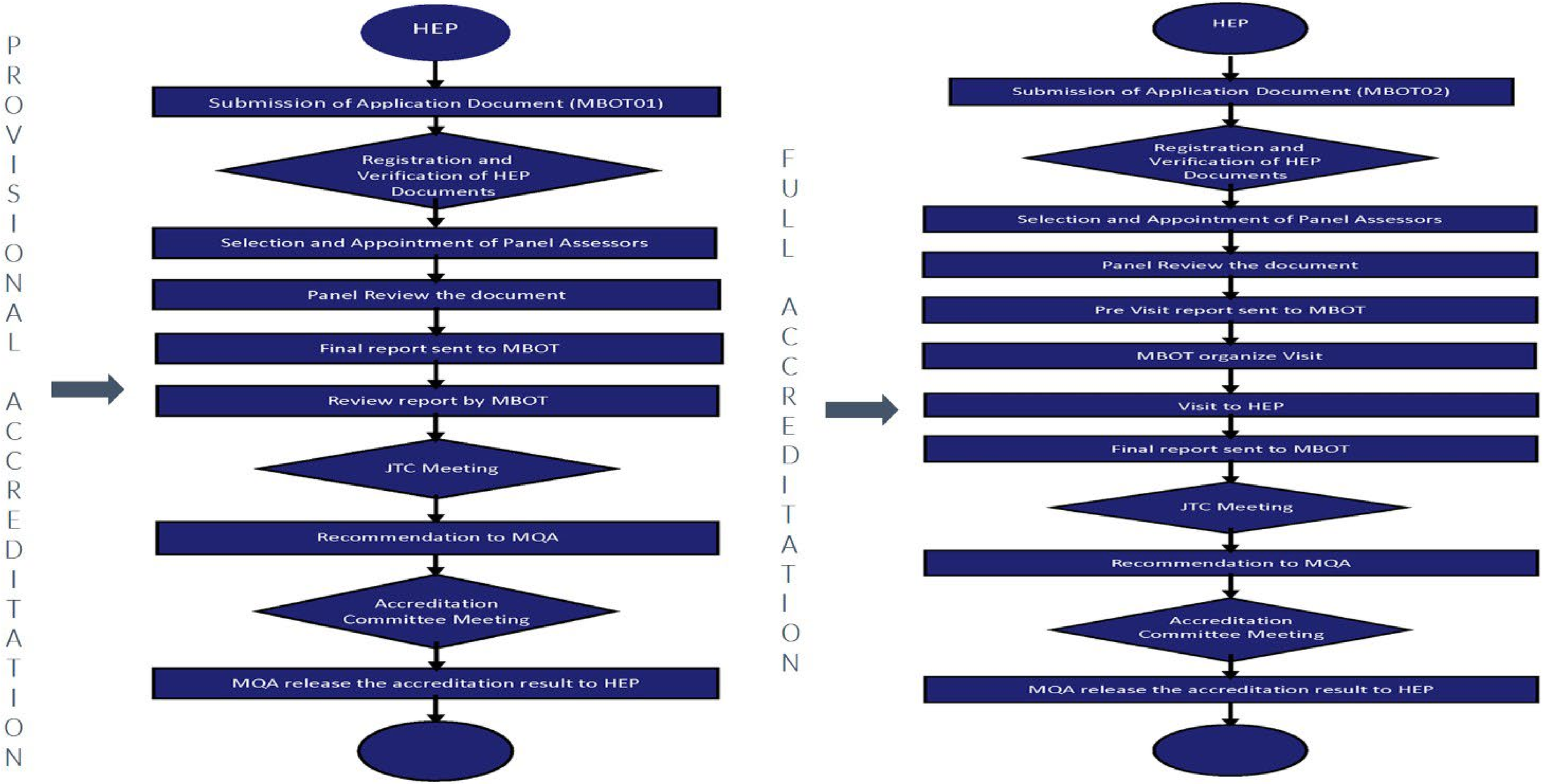
Educational Resources

Programme Management

Programme Monitoring, Review and Continual Quality Improvement

Accreditation Process with Professional Bodies Involvement

Example: MQA & MBOT



Requirement and Accreditation Criteria

Example: MQA & MBOT

Criteria 1

Programme Design and Delivery

Criteria 2

Student Assessment

Criteria 3

Students Selection and Support Service

Criteria 4

Teaching and Support Staff

Criteria 5

Educational Resources

Criteria 6

Programme Management

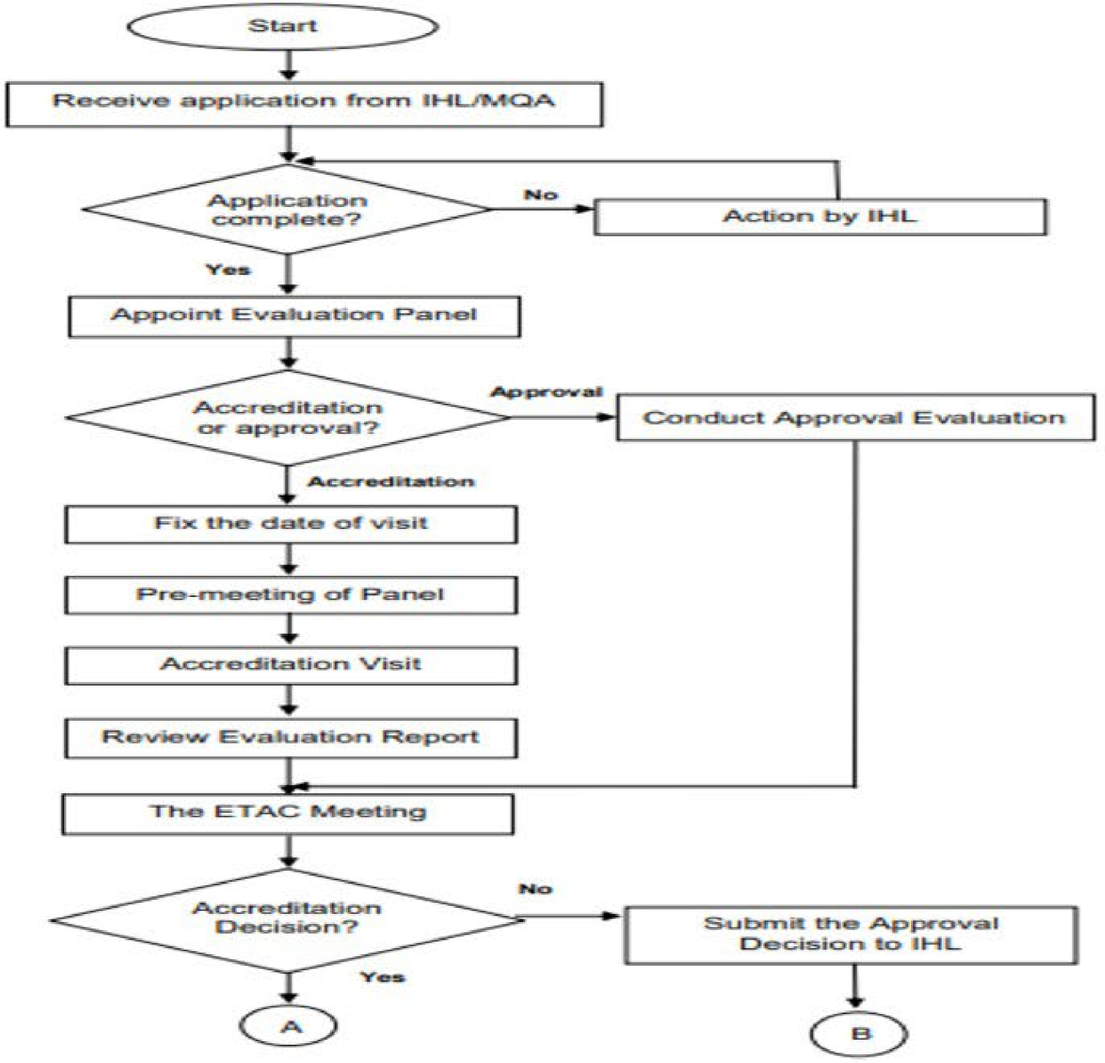
Criteria 7

Quality Management System

https://www.mbot.org.my/accreditation/ttas-ttac-manual/

Accreditation Process with Professional Bodies Involvement

Example: MQA & ETAC



Requirement and Accreditation Criteria

Example: MQA & ETAC

Criteria 1

Programme Educational Objectives

Criteria 2

Programme Outcomes

Criteria 3

Academic Curriculum

Criteria 4

Students

Criteria 5

Educational Resources

Criteria 6

Teaching and Support Staff

Criteria 7

Facilities

Criteria 8

Quality Management System

http://etac.org.my/wp-content/uploads/2020/05/Engineering-Technology-Programme-Accreditation-Standard-2020.pdf

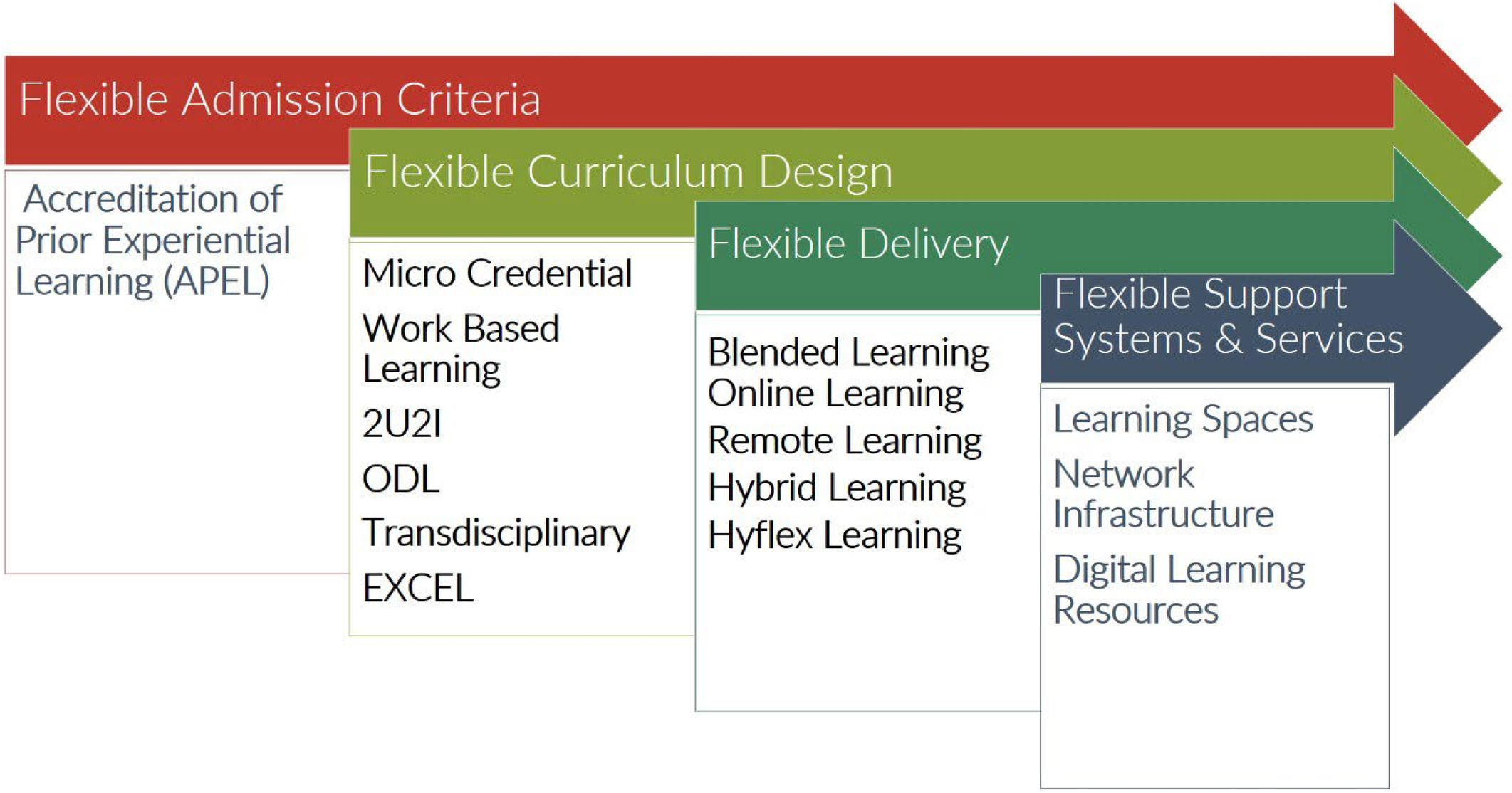
Unit 3: Fluid and Organic Curriculum Design

Introduction

Fluid and organic curriculum design is a flexible structure that can be structured and restructured when necessary in order to respond to the changing needs of industries and student educational experience (pace, place and mode of learning).

Work Based Learning (WBL), 2U2I/3U1I, ODL, Transdisciplinary Learning, Experiential Learning and Competency Based Education Landscape (EXCEL) are examples of flexible design which have been implemented in Malaysian Higher Education

FLEXIBLE EDUCATION FRAMEWORK



Flexible Curriculum Design

Bridging the Gap through WBL

HIGHER INSTITUTIONS IN MALAYSIA

INDUSTRIES & EMPLOYERS

Expanding industrial collaboration in the design & delivery of students ' learning

Flexible Curriculum Design
Characteristics of WBL

1

- facilitate the development of student-centered curriculum within the context of programme requirements,
- enhancement of their skills and/or academic knowledge with regards to the work setting;

2

- flexible in terms of access, delivery and curriculum, feedback and assessment in terms of access, delivery and curriculum, feedback and assessment;

3

- promote active partnerships with industry/external organisations via industry negotiated programmes; and
- promote innovative teaching, learning, support and assessment strategies applicable to the workplace and course/programme requirements. .

4

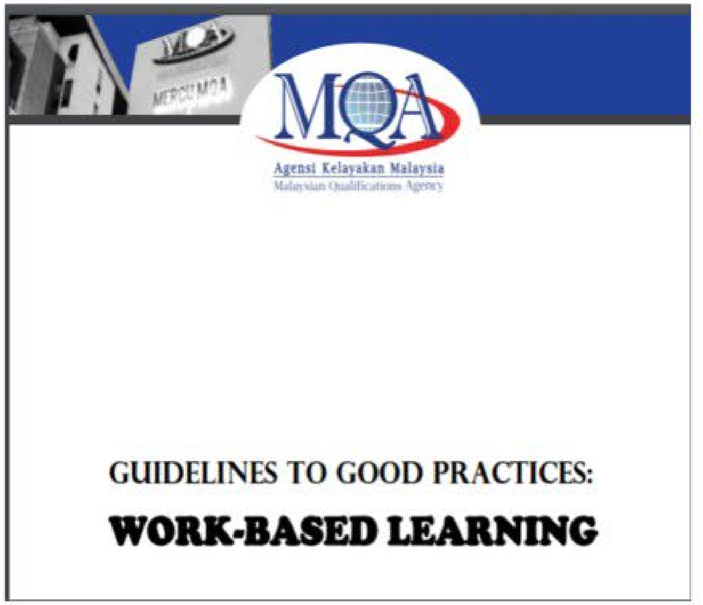
Flexible Curriculum Design

WBL Curriculum Delivery

WBL CURRICULUM DELIVERY

Curriculum Delivery for a day release structure

Classes or WBL experiences can be conducted at the workplace by either academic staff/tutor from the HEP or a qualified industry coach appointed by the HEP and workplace management.



Curriculum Delivery for a block release structure

Classes or WBL experiences must be held at the workplace that provides structure of WBL agreed by both HEP and industry partner and conducted by qualified industry coaches and/or academic staff/tutor from the HEP..

Flexible Curriculum Design

2U2I / 3U1I / 2U1I / 1½U1I

2 YEARS IN UNIVERSITY

3 YEARS IN UNIVERSITY

Basic principles and skills in the field of study

2 YEARS IN UNIVERSITY

1 ½ YEARS IN UNIVERSITY

2 YEARS IN INDUSTRY

1 YEAR IN INDUSTRY

Knowledge and skill application in a real work environment relevant to the field of study

1 YEAR IN INDUSTRY

1 YEAR IN INDUSTRY

Flexible Curriculum Design
Guidelines for Implementing 2U2I

CURRICULUM INTEGRATION

- Learning outcomes integrated in the curriculum
- Program Study Plan
- Total credit hour

ASSESSMENT METHOD

- Evaluation at workplace
- Practical component (60% - 70%)
- Grade value given
- Assessment according to academic calendar

CURRICULUM STRUCTURE

- Designed in collaboration with HLI – Industries
- Minimum credit for industry – 40%, (2I), 20% (1I)
- Minimum duration for industry placement – 1 Year
- Final Semester in Industry / Industrial Training
- Full time students

DELIVERY METHOD

- Full Immersion
- Block Release
- Industrial Supervisor
- Blended Learning

STRUCTURED WORK EXPERIENCE

- Direct experience
- Meaningful and significant
- Related to the curriculum
- Full time (minimum 40 hour / week)
- Allowance / Incentive (learn & earn)

http://jpt.mohe.gov.my/portal/pelajar/program-2u2i

Flexible Curriculum Design

2U2I Delivery Methods & Techniques

In Universities

- Industry driven field work
- Problem based learning with industry partners
- Case study with relevant industry
- Experiential learning

In Industries

- Work directed theoretical learning (WDTL)
- Capstone Project
- Problem Based Learning
- Final Year Project

OPEN AND DISTANCE LEARNING

Open distance learning refers to education and training in which using the learning resources, rather than attending classroom sessions, is the central feature of the learning experience

Commonwealth of Learning, 2003;
Code of Practice for Programme Accreditation: Open and Distance Learning (COPPA:ODL), 2019

TRANSDISCIPLINARY PROGRAMME

An approach to curriculum integration which dissolves the boundaries between the conventional disciplines and organizes teaching and learning around the construction of meaning in the context of real-world problems or themes.

International Bureau of Education, UNESCO

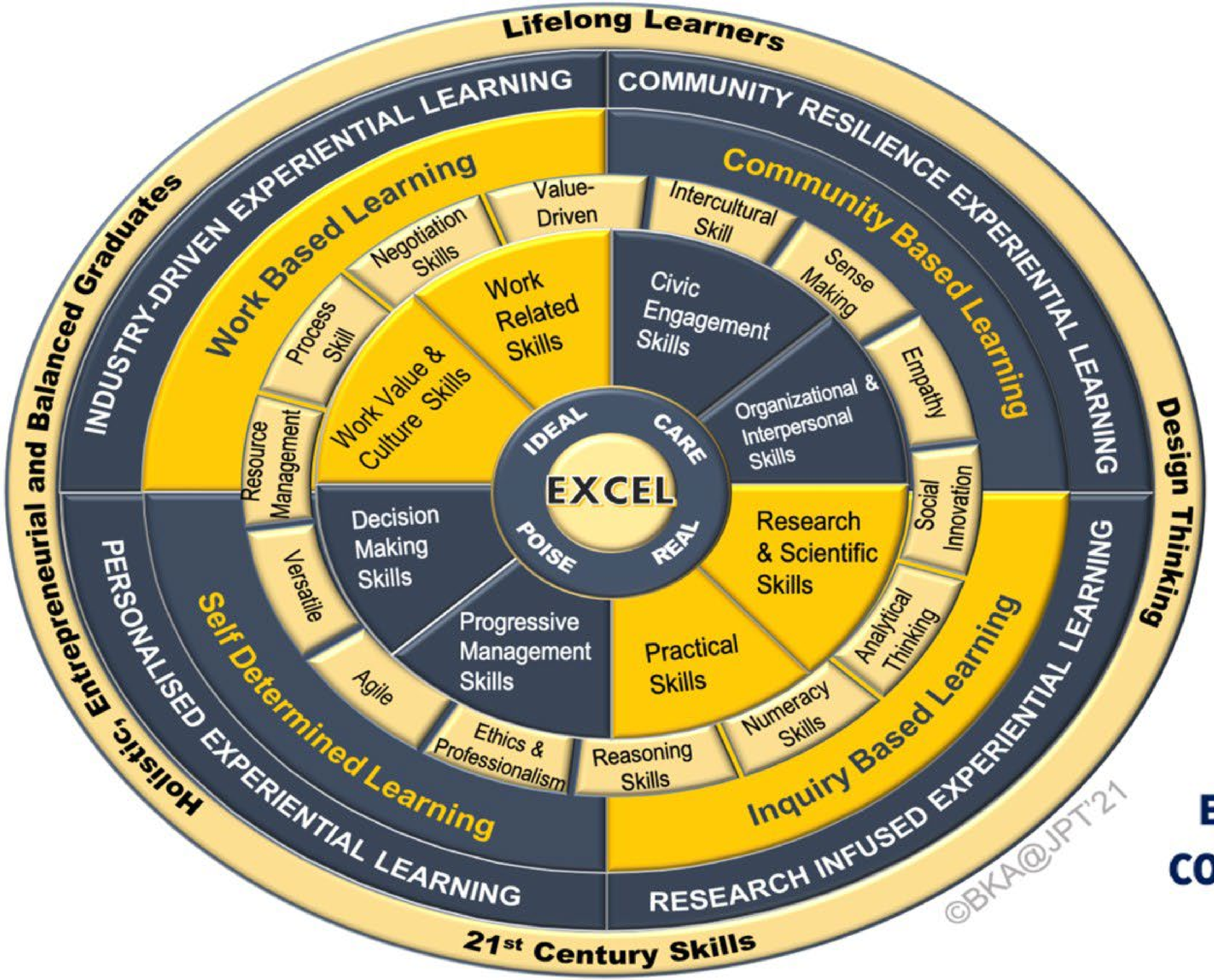
Experiential Learning and Competency-Based Education Landscape (EXCEL)

Resilient and Change Ready Talent

RESEARCH INFUSED EXPERIENTIAL LEARNING	REAL
INDUSTRY DRIVEN EXPERIENTIAL LEARNING	IDEAL
COMMUNITY RESILIENCE EXPERIENTIAL LEARNING	CARE
PERSONALISED EXPERIENTIAL LEARNING	POISE

10C's

- Communication
- Critical Thinking
- Creative, Innovative, Entrepreneurial Skills
- Computational Thinking & ICT Literacy
- Complex Problem Solving
- Collaboration and Leadership
- Cognitive and Affective Flexibility
- Cross-cultural and Global Learning Skills
- Career and Learning Self – Reliance
- Coping and Well-being Skills



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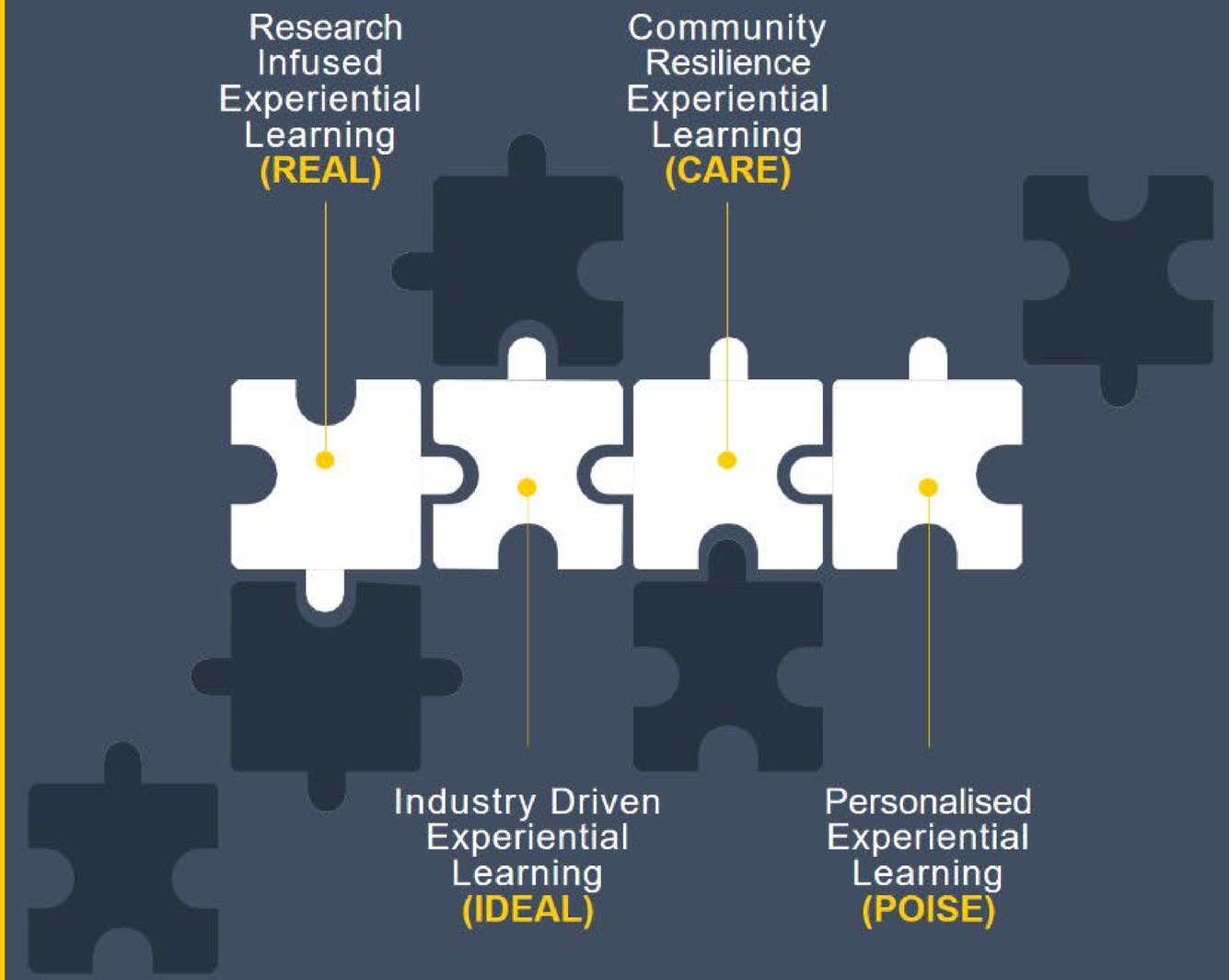
EXPERIENTIAL LEARNING AND COMPETENCY BASED EDUCATION LANDSCAPE (EXCEL)

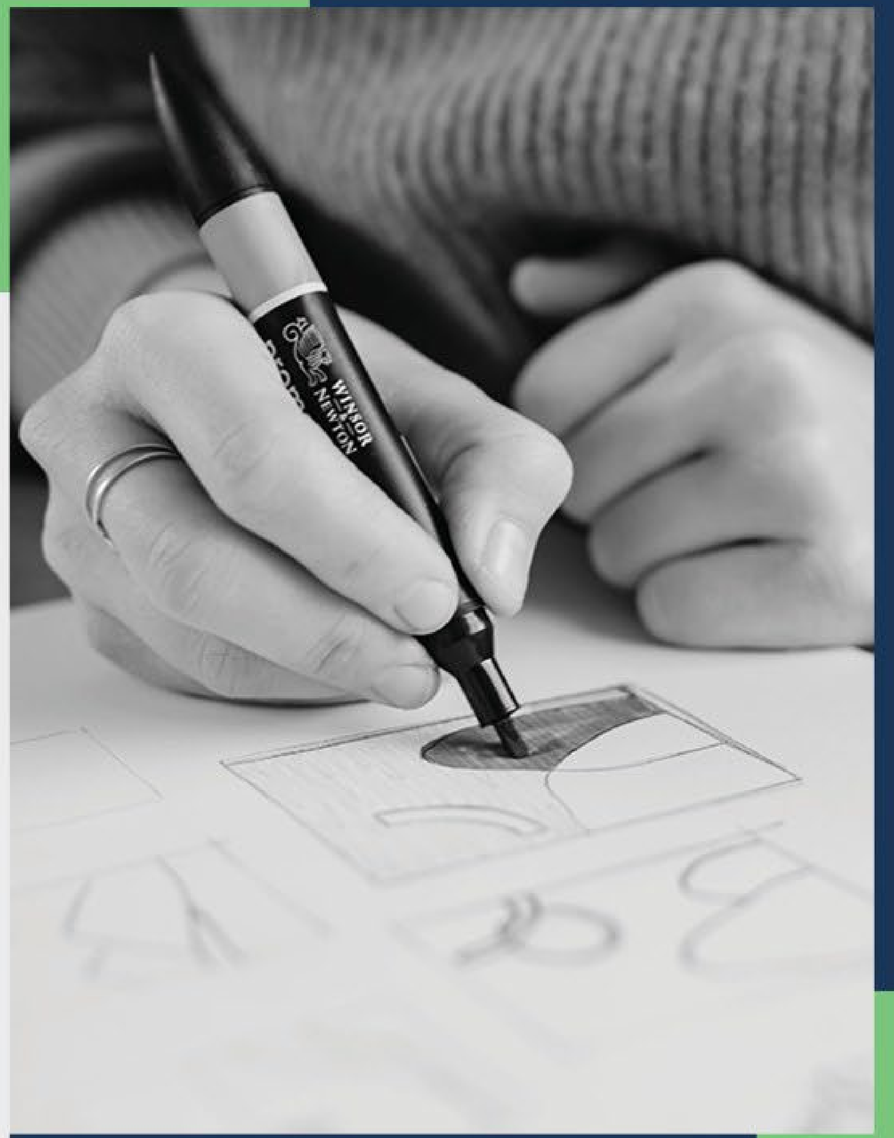
THE FOUR EXCEL THRUSTS

The next sections will describe the four thrusts; explicating the What, Why and How each of the thrust may be exemplified and implemented. Criteria of REAL, IDEAL, CARE and POISE along with each thrust's graduate attributes are explained as well.



> **All genuine learning comes through experience**
>
> - John Dewey -

Industry Driven Experiential Learning (IDEAL)



SOURCE: The EXCEL Framework, 2021

WHAT IS IDEAL?

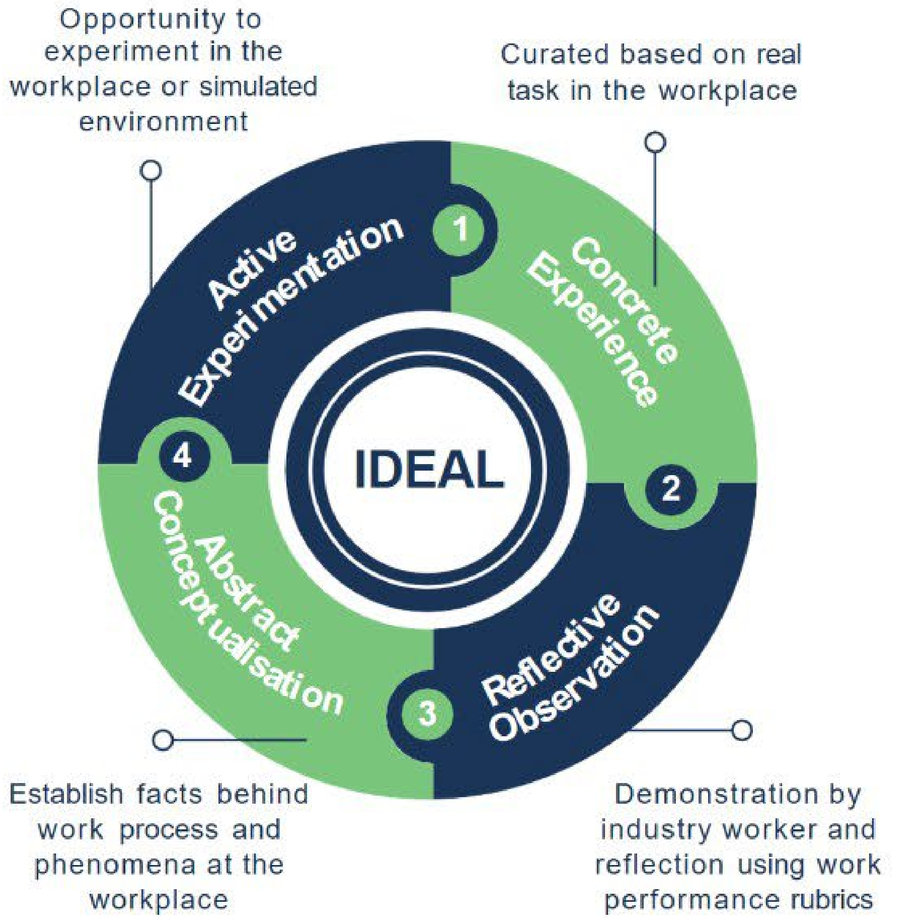
IDEAL 'Industry driven experiential learning' is a curricular thrust that is dominantly characterized by the requirements of industry and involves a significant amount of experiential learning.

INDUSTRY

Industry comes from Latin word industria, which means "diligence, hard work". In the context of IDEAL, 'industry' is economic activity concerned with the production of goods and the offering of services.

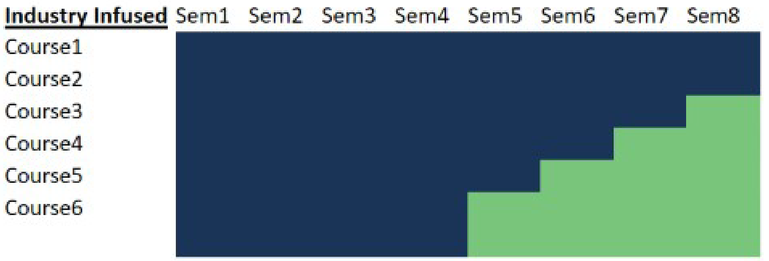
Experiential Learning requires learners to be actively involved in the experience, able to reflect on the experience, able to conceptualize the experience and able to experiment on the new ideas gained from the experience in order to gain genuine knowledge from an experience.

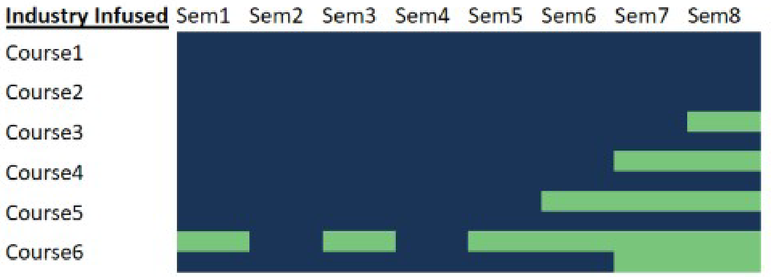
INDUSTRY DRIVEN EXPERIENTAL LEARNING

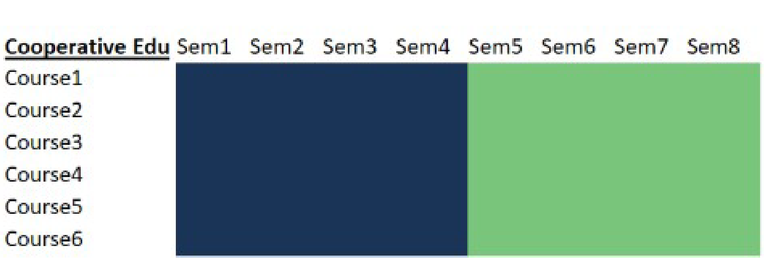


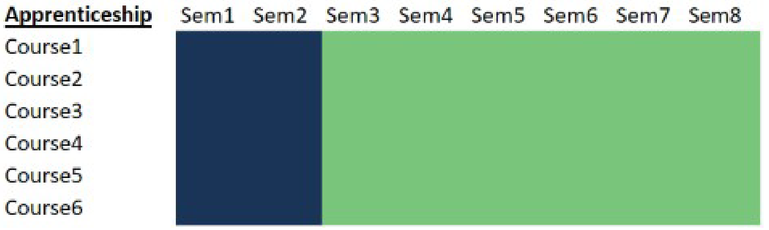
SOURCE: The EXCEL Framework, 2021

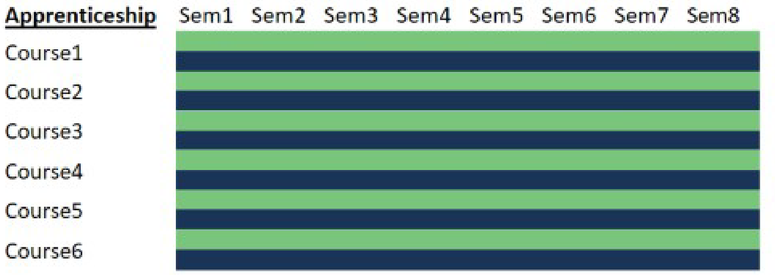
Curriculum Structure (example)











SOURCE: The EXCEL Framework, 2021

Co Op Education Models

Duration	Model	Semester							
		1	2	3	4	5	6	7	8
4 years	2u2i	U	U	U	U	I	I	I	I
		U	U	I	I	U	U	I	I
		I	I	U	U	U	U	I	I
	3u1i	U	U	U	U	U	U	I	I
3 years	2u1i	U	U	I	U	U	I		
		U	U	U	U	I	I		
		I	U	U	U	U	I		
2 1/2 years	1 1/2u1i	I	U	U	U	I			
		U	U	U	I	I			
		U	U	I	U	I			

University Industry

SOURCE: The EXCEL Framework, 2021

Competency

Note: Although personal and organisational competency could be thought, immersive experience with coop edu and apprenticeship ensure its attainment.

		Competency Acquired		
Experiential Learning	**Description**	**Technical**	**Personal**	**Organisational**
Industry Infused	1. Infuse work-based experience through POPBL/WBL delivery, elective courses, Clinical course, Industrial Training course, Final Project and others. 2. 15% - 20% time spend for WBL, mostly at HEP.	√		
Cooperative Edu	1. Work term every other semester. 2. Requires extension depending on level of cooperation. 3. 2u2i is an example of coop edu. 4. 30% - 50% time spend for WBL at workplace.	√	√	
Apprenticeship	1. Recruitment and mentorship by industry. 2. 70% - 80% time spend for WBL at workplace (on the job training).	√	√	√

IDEAL

Graduate Attributes

IDEAL graduates are highly sought, work-ready graduates:

- Who are ready for work and able to apply technical knowledge and work-related skills to solve tasks at work.
- Whose knowledge and skills match industrial needs.
- Whose values and characters are aligned with the workplace culture and increase value to the organisation.

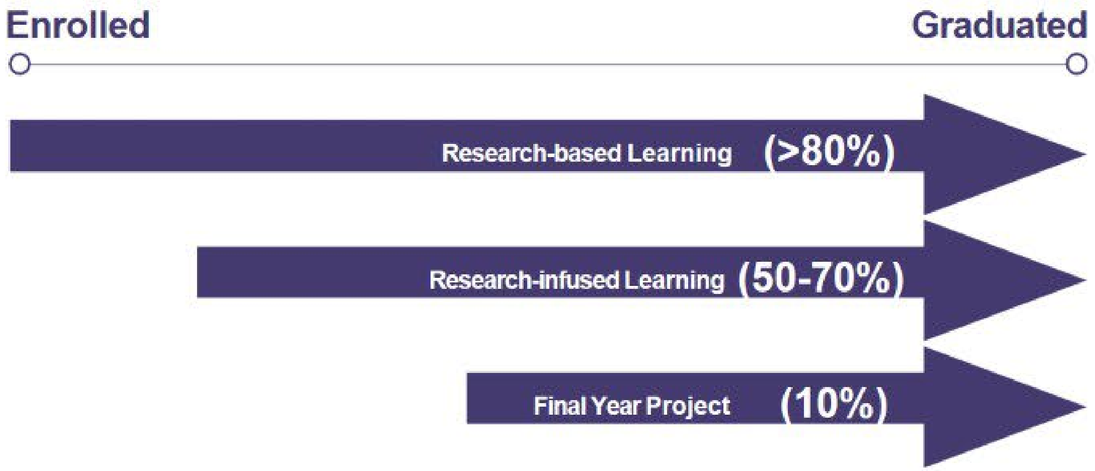
“Knowledge gained through experience is far superior and many times more useful than bookish knowledge”

- Mahatma Gandhi -

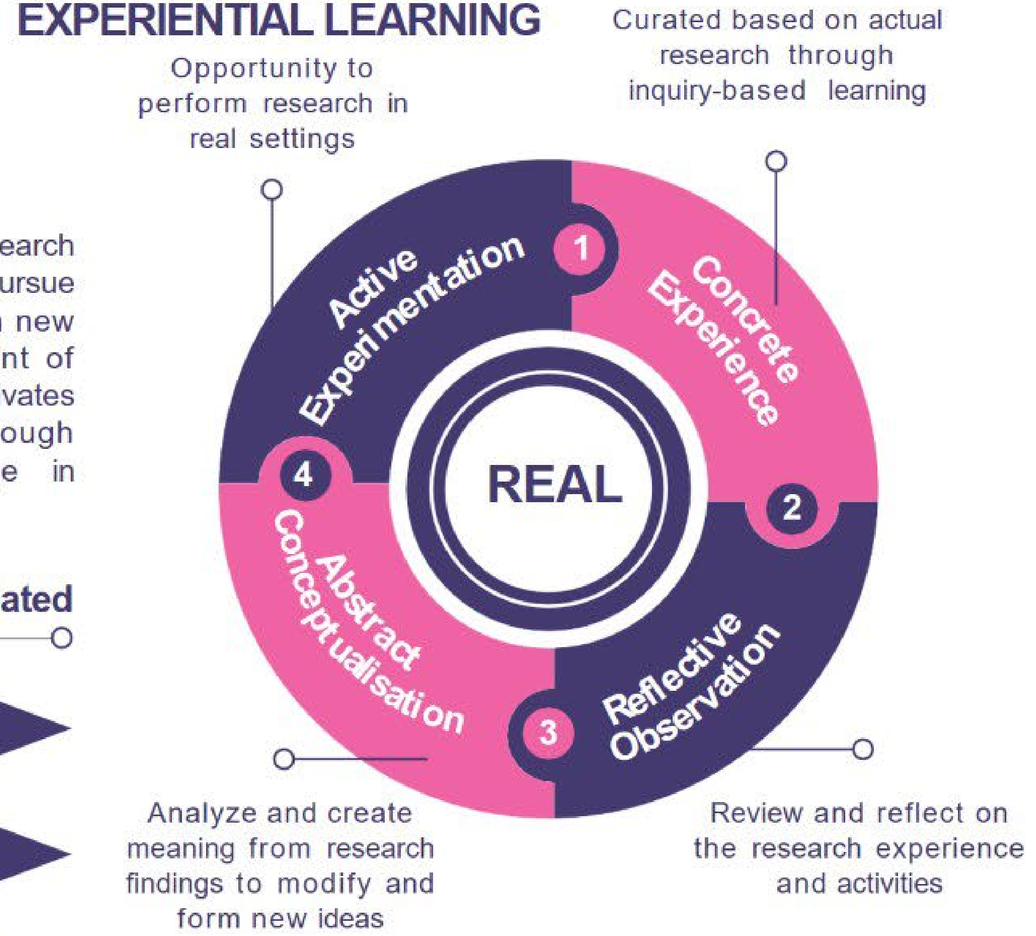
Research Infused Experiential Learning (REAL)

WHAT IS REAL?

REAL is a curricular thrust structure that promotes meaningful research learning experiences. REAL allows students to identify problems, to pursue interests, to learn something new, to hone and challenge themselves in new ways. It is an experiential learning process leading to the development of inquisitive and exploratory learning mindset and culture. REAL cultivates research skills and inspires learning through research and enquiry through an innovative research-informed curriculum. Students will engage in inquiry-based, evidence-based, and challenge-based learning.



RESEARCH INFUSED EXPERIENTIAL LEARNING



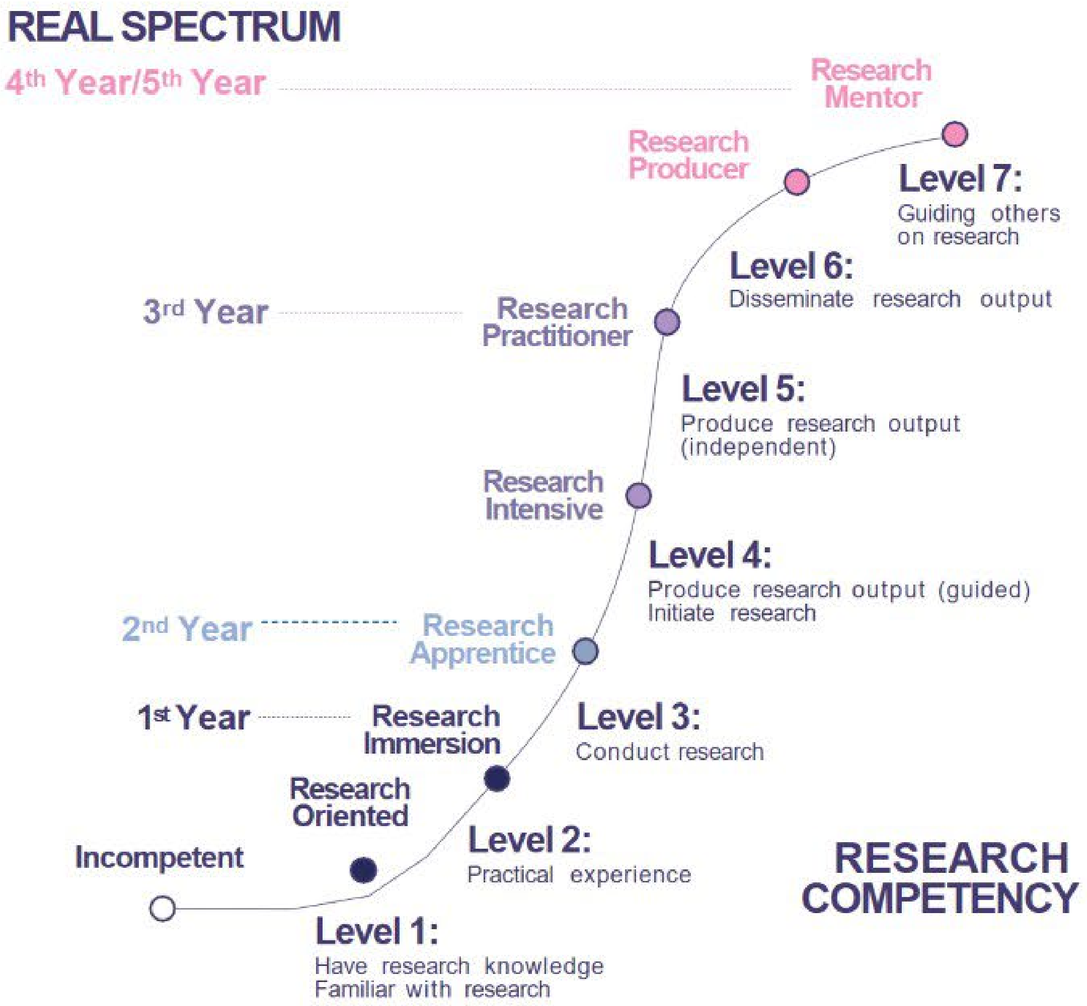
HOW:
REAL Model

The REAL strategic goals cut across a continuum of a research spectrum and are rooted in a desire to expose and promote research among university students, stimulate discoveries in local or global issues (SDGs), enable the translation of discoveries from basic research into practice, and foster the training of future scientists/researchers.

The REAL spectrum framework that begins from the research-oriented to becoming a research mentor based on several competence parameters for designing and developing a REAL-infused curriculum that are linked to the student learning outcomes based on MQF 2.0 framework.

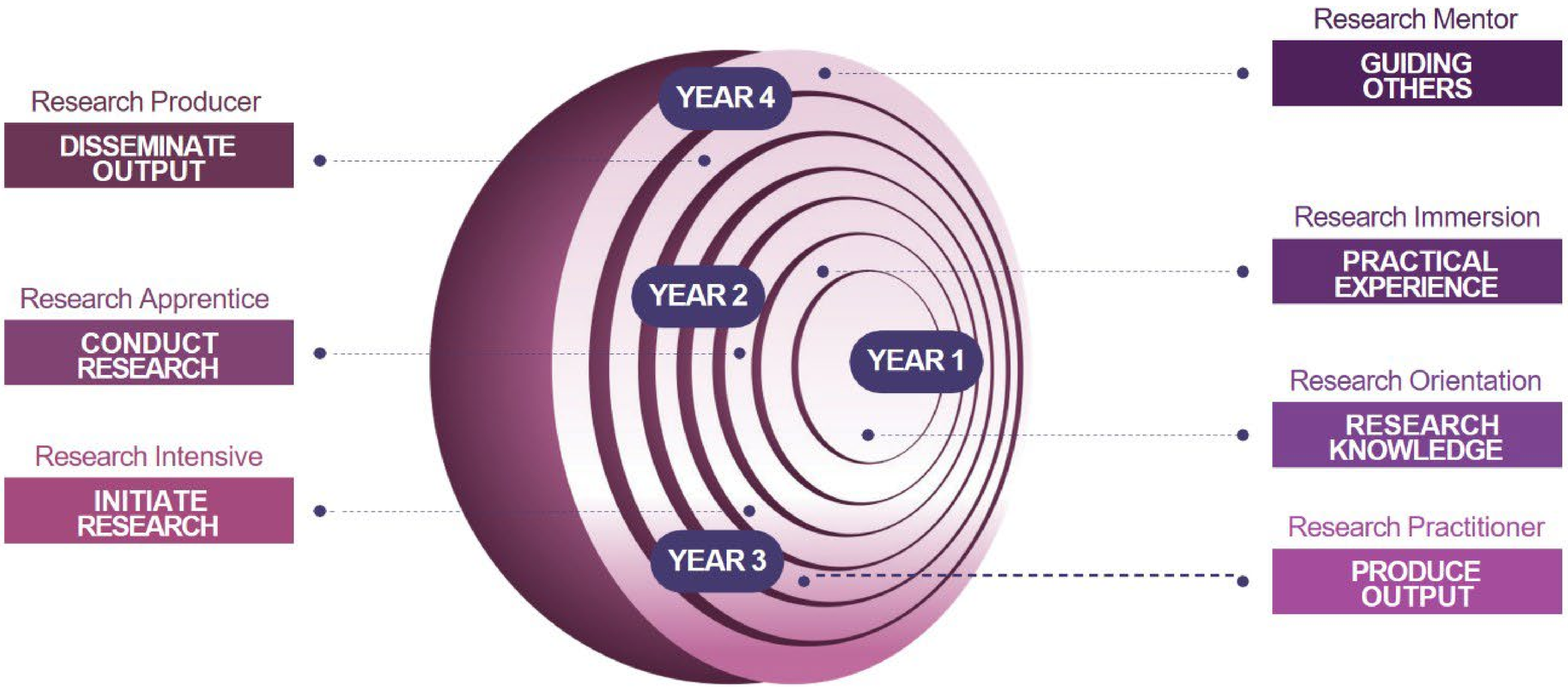
The REAL spectrum is incremental that allows learners to grow research competency differently at a different phase.

It allows higher education providers to design and develop a REAL-infused curriculum according to the appropriate level that they aim for.



SOURCE: The EXCEL Framework, 2021

REAL COMPETENCY



SOURCE: The EXCEL Framework, 2021

RESEARCH

EXPERIENCE

INFUSED

LEARNING

REAL Spectrum	Research Competency							
	Familiarity	Have knowledge	Practical experience	Conduct research	Initiate research	Produce research output	Disseminate research result	Guiding others on research
Research Oriented	√	√						
Research immersion	√	√	√					
Research Apprentice	√	√	√	√				
Research Intensive	√	√	√	√	√	√ (guided)		
Research Practitioner	√	√	√	√	√	√ (independent)		
Research Producer	√	√	√	√	√	√	√	
Research Mentor	√	√	√	√	√	√	√	√

Study Phase	Semester	REAL Level	Criteria	Remark
1st year	1 2	1 Research Oriented 2 Research Immersion	A REAL program is achieved whenever 50-70% of programme learning outcomes (based on the core discipline) mapped to the REAL taxonomy.	
2nd year	3 4	3 Research Apprentice		It is recommended to allow students have a research placement at industrial/company/collaborator.
3rd year	5 6	4 Research Intensive 5 Research Practitioner		This is the minimum REAL level for a REAL programme.
4th year	7 8	6 Research Producer 7 Research Mentor		Typically, this is the final year for the most of undergraduate programme.
5th year	9 10	The REAL level should be adjusted to suit the programme structure.		This is the final year for the 5-year programme, for instance, the undergraduate medical programme.

MODEL - DESCRIPTORS

RESEARCH

EXPERIENCE

INFUSED

LEARNING

REAL Spectrum	Research Competency	Description	COMPETENCY								TAXONOMY
			Familiarity	Have knowledge	Practical experience	Conduct research	Initiate research	Produce research output	Disseminate research result	Guiding others on research	INDICATORS
Level 1: Research Oriented	**Have research knowledge Familiar with research**	Students are provided with research knowledge and scientific methodological skills to progress from awareness to understanding of research	√	√							Students must be exposed to the knowledge and scientific skills through formal courses
Level 2: Research Immersion	**Practical experience**	It focuses on the development of research and inquiry skills and techniques through research practical sessions or attachment with scientists/researchers on an on-going research project; students may become observers/assistants	√	√	√						Students must be involved (assist or observe) in the research activities
Level 3: Research Apprentice	**Conduct research**	Students are assigned to work with supervisors an on-going research project. They will be guided on how to perform research tasks and have the opportunity to collaborate with other researchers	√	√	√	√					Supervisors provide students with the research proposal/ideas/title to be conducted
Level 4: Research Intensive	**Produce research output (guided) Initiate research**	Students become active participants, rather than passive recipients, to develop research ideas and contribute to the production of knowledge under closed guidance by experienced researchers/scientists. Students are personally and professionally supported to develop their research skills	√	√	√	√	√	√			Students generate their own ideas but closely guided (more than 70% of efforts) by supervisor to refine it
Level 5: Research Practitioner	**Produce research output (independent)**	Students become active participants, rather than passive recipients, to develop research ideas and contribute to the production of knowledge under minimal guidance. Students are personally and professionally supported to develop their research skills	√	√	√	√	√	√			Students generate their own ideas but minimally guided (less than 30% of efforts) by supervisor to refine it
Level 6: Research Producer	**Disseminate research output**	Students demonstrate individual capability to disseminate research output through publications (in respective fields) and communicate the research findings at various platforms	√	√	√	√	√	√	√		Students MUST publish research findings independently OR Students MUST exhibit research findings independently at national level
Level 6: Research Mentor	**Guiding others on research**	Students become mentors to guide, coach or train the inexperienced juniors to pursue their interests and goals in research. They provide supports and opportunities to the inexperienced juniors to find their research interests and areas	√	√	√	√	√	√	√	√	Guide level 3 REAL juniors to perform research

REAL

Graduate Attributes

REAL graduates are:

- Who are able to perform scientific research professionally and ethically.
- Who are able to demonstrate analytical thinking, reasoning, and numeracy skills for scientific research.
- Who are able to translate ideas into research activities for practical solutions to local and global issues.

SOURCE: The EXCEL Framework, 2021

"You may learn to imitate a birdcall, but do you experience what the nightingale feels for the rose?"

- Rumi -

Community Resilience Experiential Learning (CARE)

SOURCE: The EXCEL Framework, 2021

WHAT IS CARE?

CARE is a curriculum thrust that promotes student learning by addressing community needs and ultimately create positive social change through immersive community-based learning and Service Learning Malaysia (SULAM), University for Society. It serves to enhance student learning of course content, teach civic responsibility, and strengthen communities.

In the context of EXCEL, communities are local residents, non-profit organisations, government and community-based organisations, where community services rendered are to improve the quality of life for community residents, particularly low-income individuals or to solve/address particular problems related to their needs.

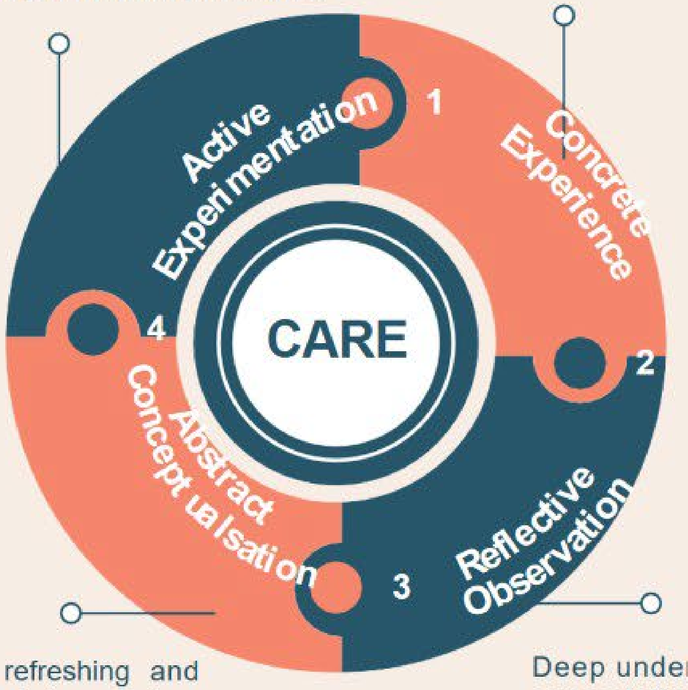
In terms of experience, the learning cycle is explicated in the diagram.

SOURCE: The EXCEL Framework, 2021

COMMUNITY RESILIENCE EXPERIENTIAL LEARNING

Applying their knowledge and ideas to create positive social change and building community resilience

Curated based on real problem exist in the community



Revisiting, refreshing and building their knowledge and ideas for social innovation in community

Deep understanding and appreciation of their roles and functions in their field/domain towards building community resilience

POSSIBLE CARE MODELS

Model	Semester										
	1	2	Break	3	4	Break	5	6	Break	7	8
SCoPe			-			-			-		
3u1c			-			-			-		
2u1i1c			-			-			-		
2u1c			-			-			-	-	-
Coop			Off (Planning)								

Community services could use multi or transdisciplinary framework and carried out in a single or different community through out the curriculum.

University

Industry

SOURCE: The EXCEL Framework, 2021

CARE Criteria and Competency

CARE Level	Description	Criteria				Identified Competency
		Two SULAM embedded courses using two different SULAM approaches	Minimum three SULAM embedded courses using any of the four approaches and one with international partner	Minimum four SULAM embedded courses inclusive of minimum of 1 semester of research in community - CARE + REAL). Example: 3u1c or 2u1c model	Minimum four SULAM embedded courses inclusive of minimum of 1 semester of research in community and 1 semester of placement in industry/ agency - CARE + REAL + IDEAL/POISE). Example: 2u1i1c model	
Level 1 (Community Infused)	Students are exposed to the SULAM concept and able to interact with the community while conducting the community service	√				Ability to develop inter- and Intrapersonal skills in civic engagement
Level 2 (Community Immersion)	Students are assigned to collaborate with at least one external stakeholder (i.e. industry/ government agency/NGO - Quadruple Helix concept) and one international partner in carrying out SULAM projects which are embedded in the courses	√	√			Ability to work collaboratively within Quadruple Helix framework and may include International partner
Level 3 (Community Practice)	Students actively involve in SULAM projects and work closely with various stakeholders (industry/government agency/ NGO - Quadruple Helix) in conducting final year research in community focussing on Social Innovation Project	√	√	√		Ability to conduct research in community focussing on SDG
Level 4 (Community Innovation)	Students undergo Work-based Learning (WBL) by spending a minimum period of one semester at industry/government agency/ NGO before conducting final year research in community focussing on Social Innovation Project	√	√	√	√	Ability to provide research-based industry solutions in community

* ONLY Undergraduate program fulfilling the Level 3 or 4 requirements can be considered as using CARE curriculum.

SOURCE: The EXCEL Framework, 2021

SUGGESTION OF CARE PROGRAM MODE OF STUDY

– Structured Community Programme (SCoPe) - Level 3 or 4 of the Spectrum

YEAR 1

Simple Community Project

1st Sem: Communication, Negotiation, Financial, Civic

2nd Sem: SULAM (Community A)

YEAR 2

Transdisciplinary/ Networking Project

3rd Sem: Communication, Negotiation, Financial, Partners/Stakeholders (Industry, Agency, NGO)

4th Sem: SULAM (Community B)

YEAR 3

Attachment/ Internship

5th Sem: Paperwork/ Proposal for attachment/ internship

6th Sem: Attachment with Partners/Stakeholders (Industry, Agency, NGO)

YEAR 4

Consultation/ Big Scale Project

7th Sem: SULAM (Community A/B/C)

8th Sem: SULAM (Community A/B/C)

Criteria: Transdisciplinary/Various Communities

SOURCE: The EXCEL Framework, 2021

CARE

Graduate Attributes

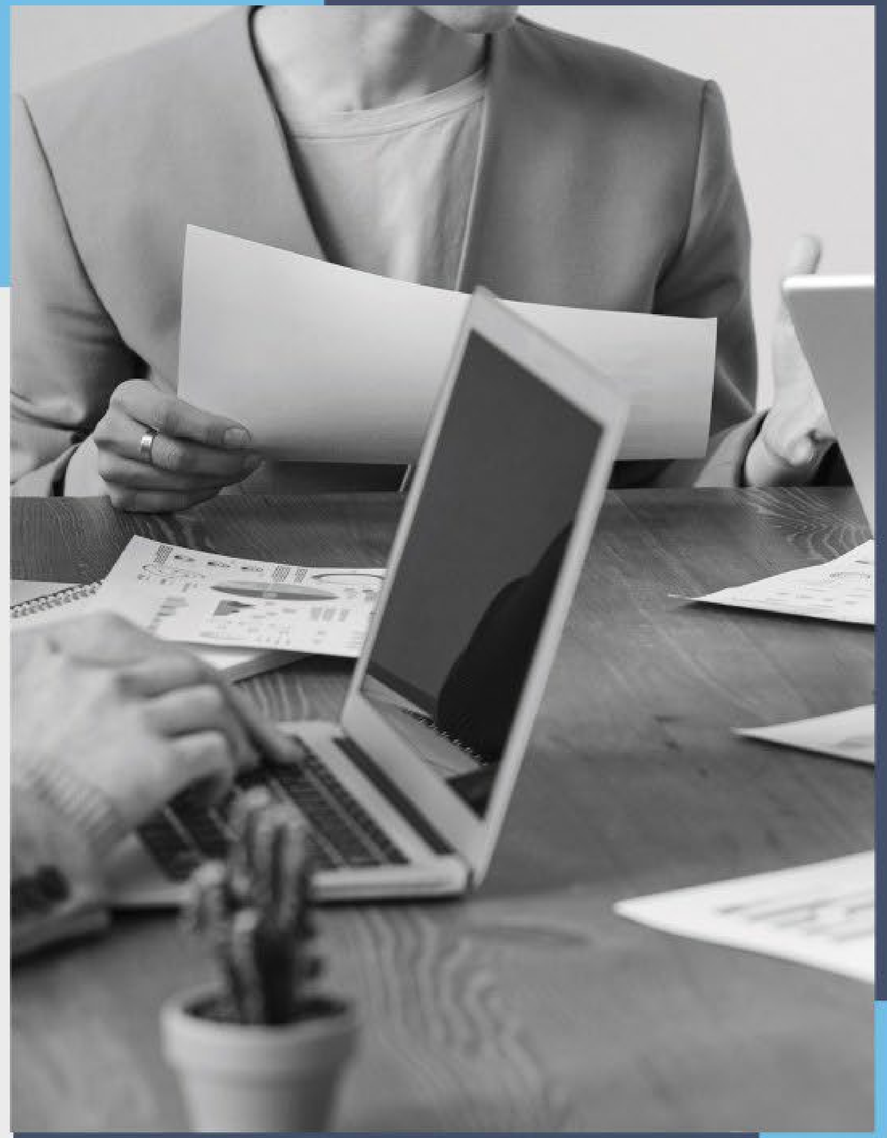
Care Graduates

- Graduates who are not only technically competent but also creative, innovative, adaptive, possess good leadership skills, and responsive to social issues.
- Graduates who are able to practice theories learnt to solve community issues & problems.
- Graduates who can relate well with community, aware of cultural differences and actively involved in civic engagement.

SOURCE: The EXCEL Framework, 2021

> **Education is the kindling of a flame, not the filling of a vessel**
>
> - Socrates -

Personalised Experiential Learning (POISE)



SOURCE: The EXCEL Framework, 2021

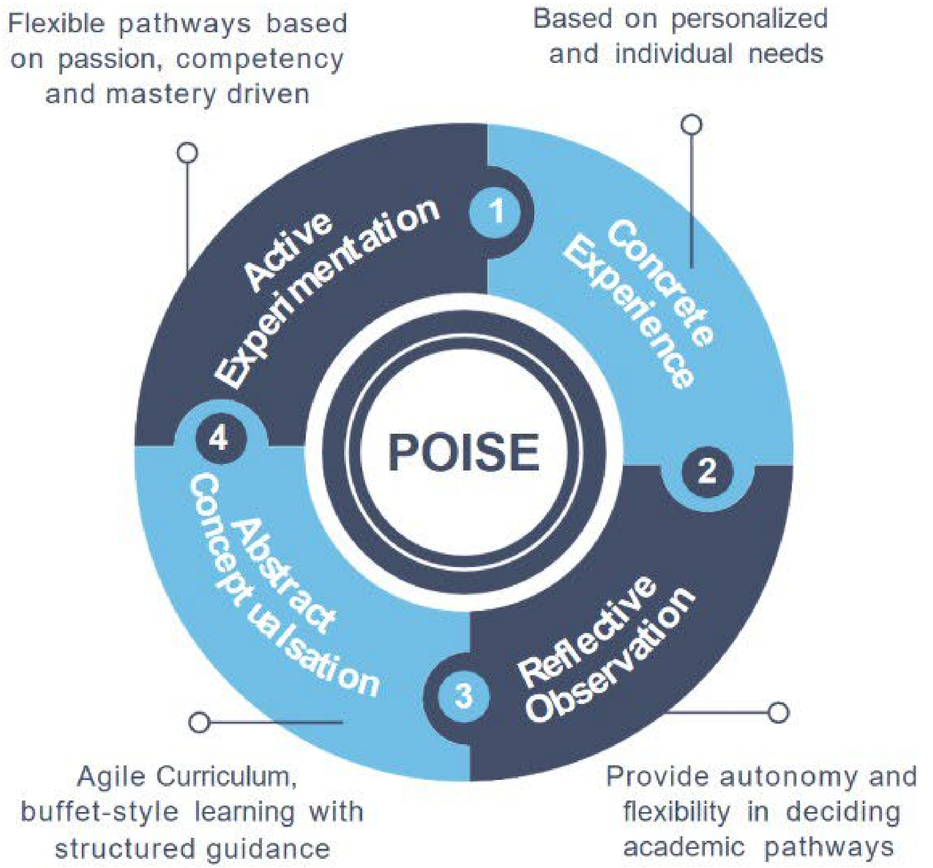
WHAT IS POISE?

POISE is a curriculum structure that expands access to a range of high-quality higher education options.

POISE provides students with diverse interests in obtaining academic qualifications with opportunities for lifelong learning.

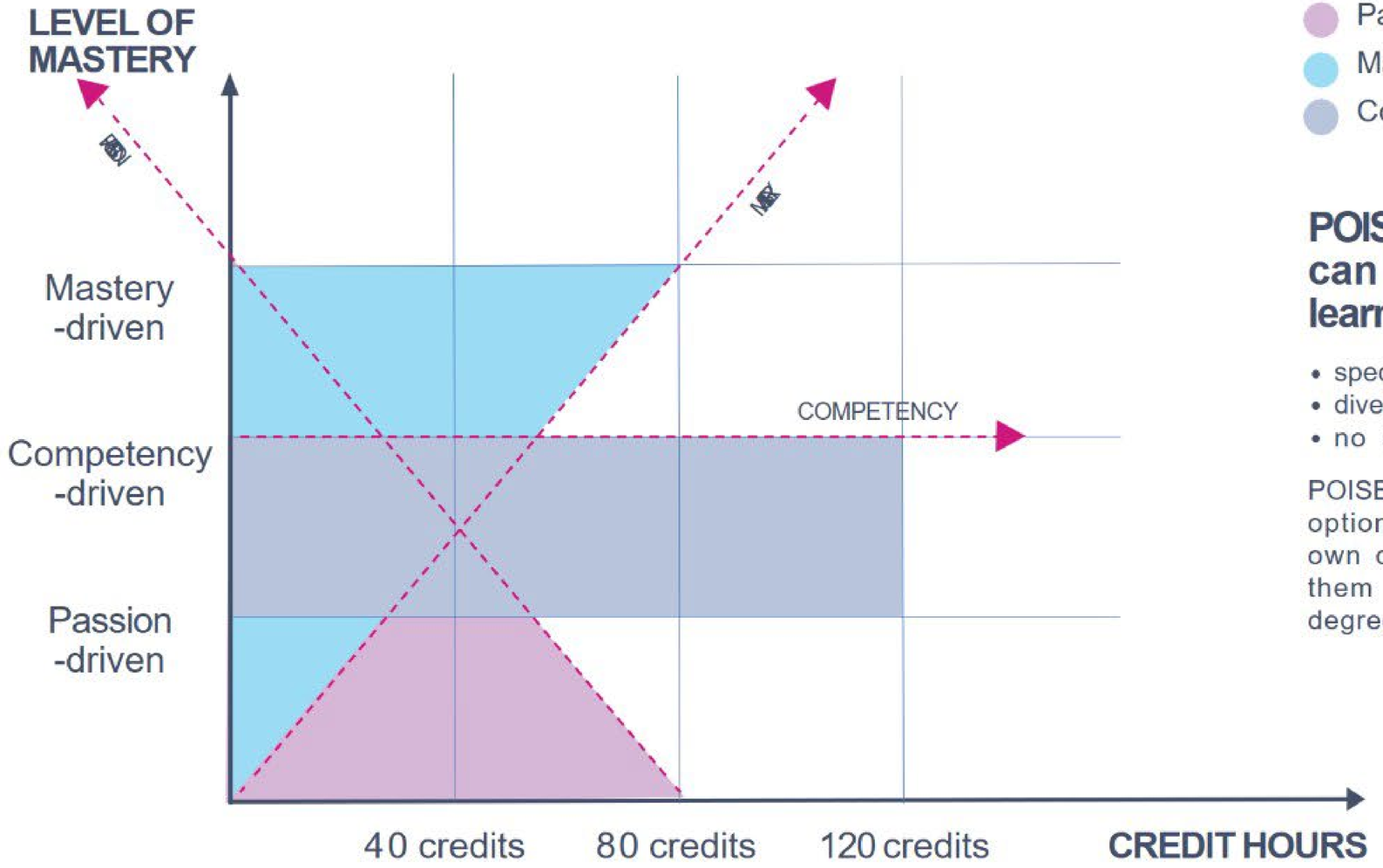
POISE provides learners in HEIs with industry-driven learning materials, agile curriculum material, and buffet-style learning with standardised guidance.

PERSONALISED EXPERIENTIAL LEARNING



SOURCE: The EXCEL Framework, 2021

POISE: GENERAL MODEL



- Passion-driven
- Mastery-driven
- Competency-driven

POISE curriculum structure can fulfil the demand of learners with:

- specific interest/goals/passions or;
- diverse interest/goals/passions or;
- no specific interest/goals/passions

POISE curriculum structure gives option for learners to design their own curriculum based on what drives them towards achieving their degree/certification.

SOURCE: The EXCEL Framework, 2021

POISE COMPETENCY

Experiential Learning	Description	COMPETENCY						
		Versatility	Adaptive	Decision Making	Agility	Skillful	Market Driven	Specialist
PASSION -DRIVEN	1 to 80 credits in more than 2 fields	√	√	√	√		√	
COMPETENCY -DRIVEN	1 to 80 credit in 2 fields	√	√	√	√	√	√	
MASTERY -DRIVEN	1 to 80 credits in 1 field	√			√	√		√

- Flexible time – No full time or part time with maximum 7 years of study duration
- Percentage Credits – based on % of major approved by MQA
- General curriculum structure need to be designed before-hand – mix-matched existing courses to form academic programs
- Passion-driven – Bachelor of General Studies (Higher % of BOK of the program)
- Competency/Mastery Driven – Bachelor with Honours – naming based on major

SOURCE: The EXCEL Framework, 2021

POISE CRITERIA

NO	GENERAL CRITERIA	PASSION-DRIVEN	COMPETENCY-DRIVEN	MASTERY-DRIVEN
1	Multiple entries - SPM, STPM, Apel A,C & Q	√	√	√
2	Compulsory Entry Assessment	X	√	√
3	Compulsory Courses - HEP decides the percentage and courses	√	√	√
4	Program Area - HEP will decide on the percentage and courses	√	√	√
5	Professional Program/Course	X	X	X
6	Package provided by HEP	√	√	√
7	Based on credits only	√	√	√
8	Flexible Time and Semesterless	√	√	√
9	Self learning mode via Microcredential	√	√	√
10	Competency based assessment - Band (rubric, based on programs)	√	√	√
11	Dedicated Academic Coach - Training will be provided	√	√	√
12	A special unit that look at POISE is recommended	√	√	√

SOURCE: The EXCEL Framework, 2021

POISE

Graduate Attributes

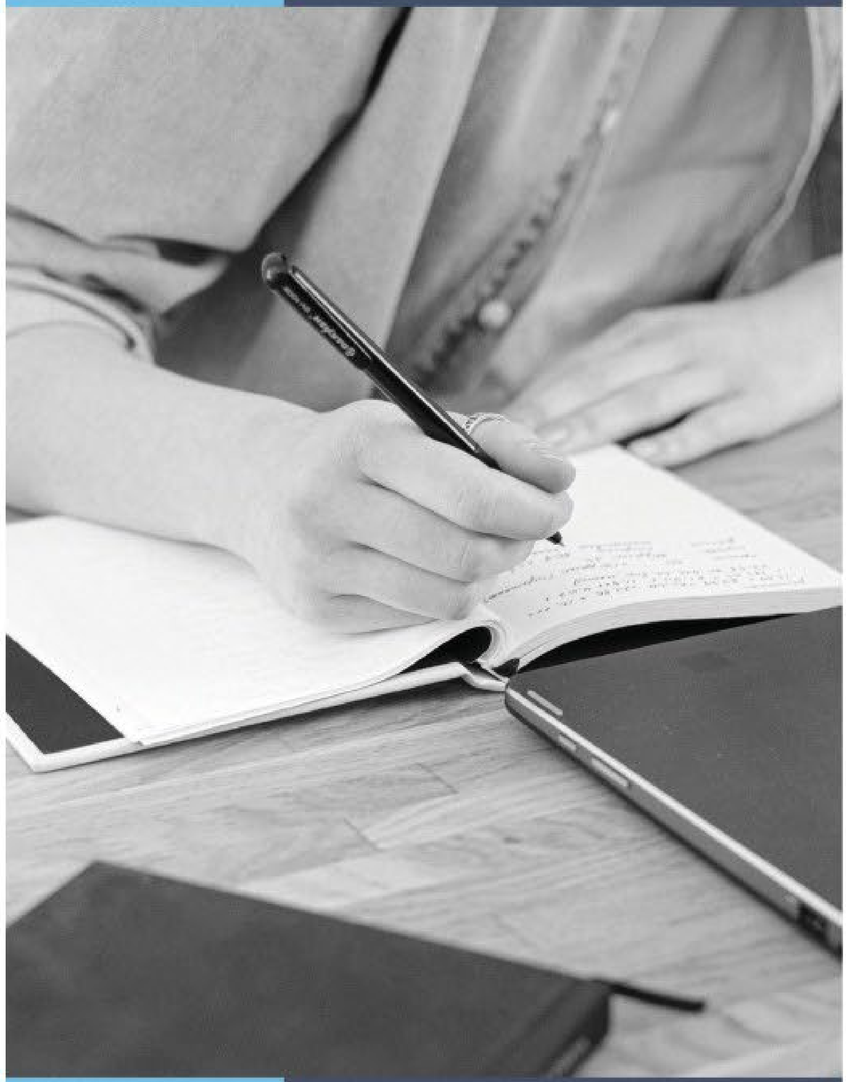
POISE graduates are developed from inter-connected models, where they start from Zero and be somewhere at the end (Hero).

POISE graduates are versatile, adaptive, self-directed, self-empowered and self-regulated, whereby they will be:

- Decision makers
- Life-long learners
- Progressive thinker

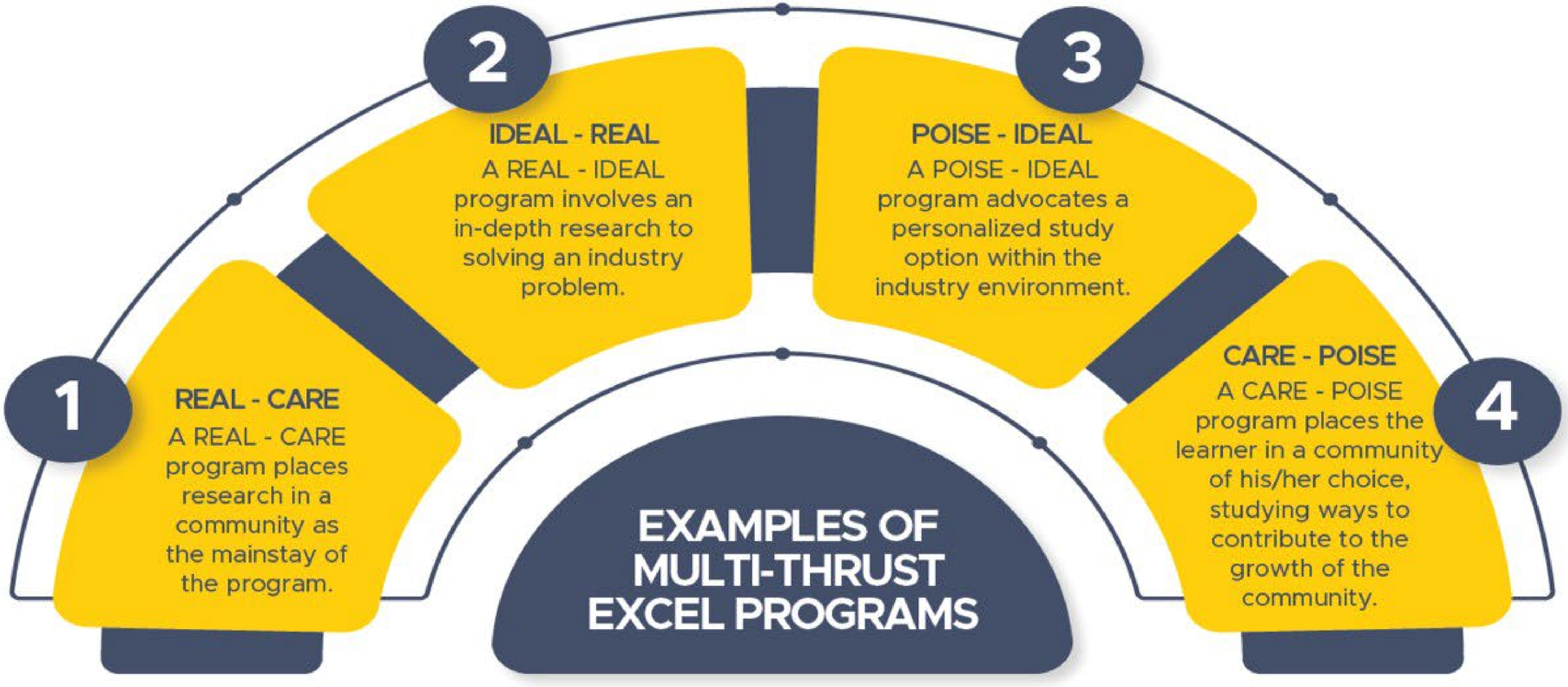
PASSION-DRIVEN	COMPETENCY-DRIVEN	MASTERY-DRIVEN
Adaptive, Agile, Resilient, Versatile Bridge towards competency & mastery	Skillful, Competent, Market-driven,	Subject Matter Expert, Specialist, Professional, Authority

SOURCE: The EXCEL Framework, 2021



MULTI-THRUST EXCEL

Since the nature of academic program delivery is often dynamic and multi-faceted involving industry based learning and involvement in community projects, a multi-thrust approach may be taken to provide a more enriching EXCEL program.



SOURCE: The EXCEL Framework, 2021

Flexible Curriculum Design

Joint Development of Assessment Plan

Agreement documents between both parties

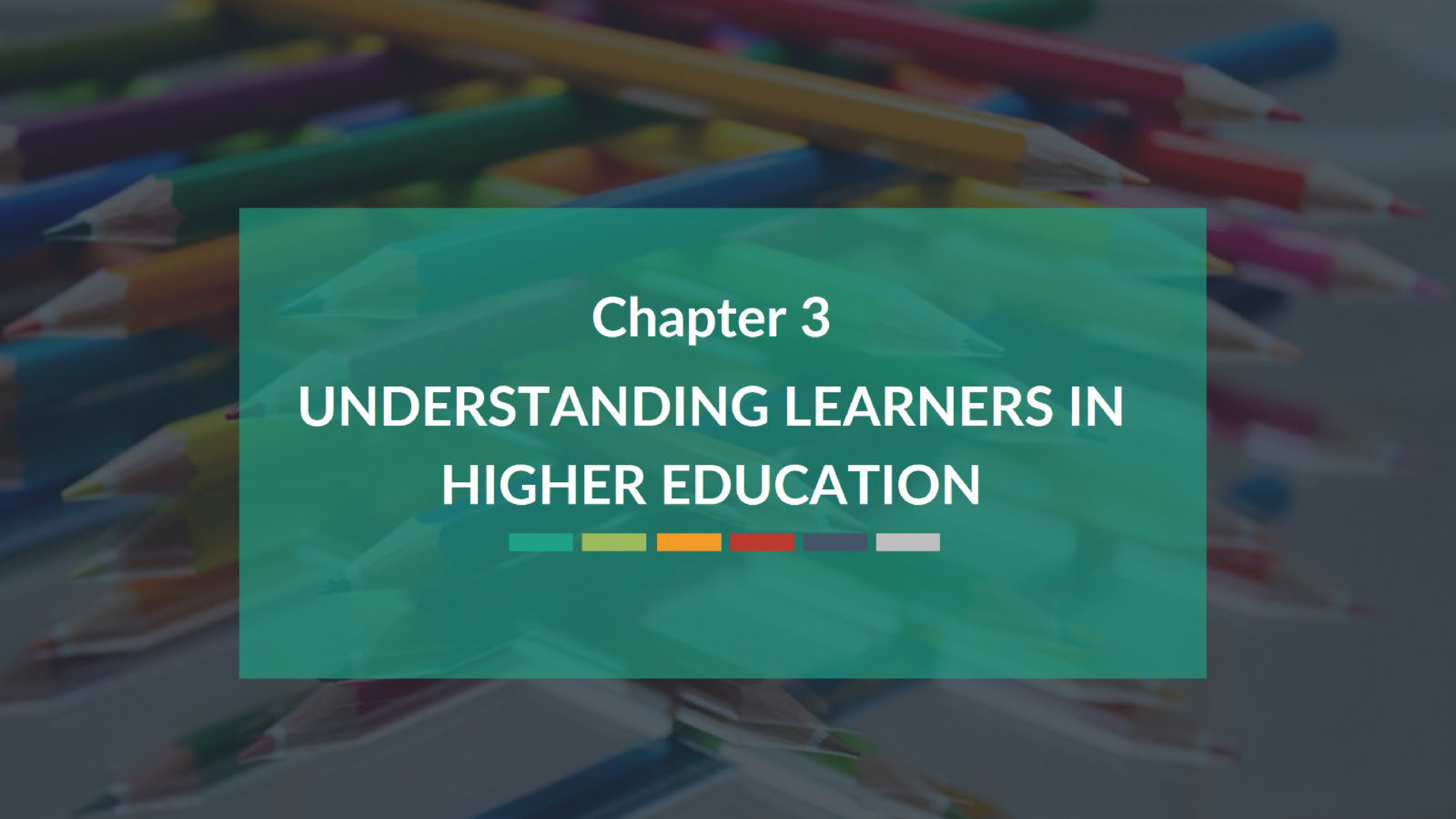
MOU / MOA

Course Learning Outcomes

Assessment Tasks/Test
Marking Scheme
Assessment Rubric
Evaluation Form

Briefings & Training

Guidelines
Procedures



Chapter 3

UNDERSTANDING LEARNERS IN HIGHER EDUCATION

OVERVIEW

Unit 1 : Learning Styles

- Learning Styles
- Kolb Learning Style Theory
- Honey & Mumford Learning Styles
- Gardner Multiple Intelligences
- VARK Modalities
- General Guideline on How to Use the Instrument

Unit 2: Learner Characteristics

- Learner Characteristics
- Critical and Innovative Thinking Learners
- Generation Z Learners

Unit 3: Individual Diversity

- Individual Diversity
- Types of Individual Diversity
- Accommodating Diversity into the Classroom

UNIT 1: LEARNING STYLES

Introduction

Educators in all fields should be aware of the critical importance of understanding how individuals learn. Learning styles are the ways in which individuals characteristically approach different learning tasks (Hartley, 1998).

It is the preferential way in which the student absorbs, processes, comprehends and retains information. Learning style has an impact on performance and achievement of learning outcomes. Therefore, acknowledging students different learning styles can help the educators to provide professional support with comprehensive strategies to enable all learners to study successfully.

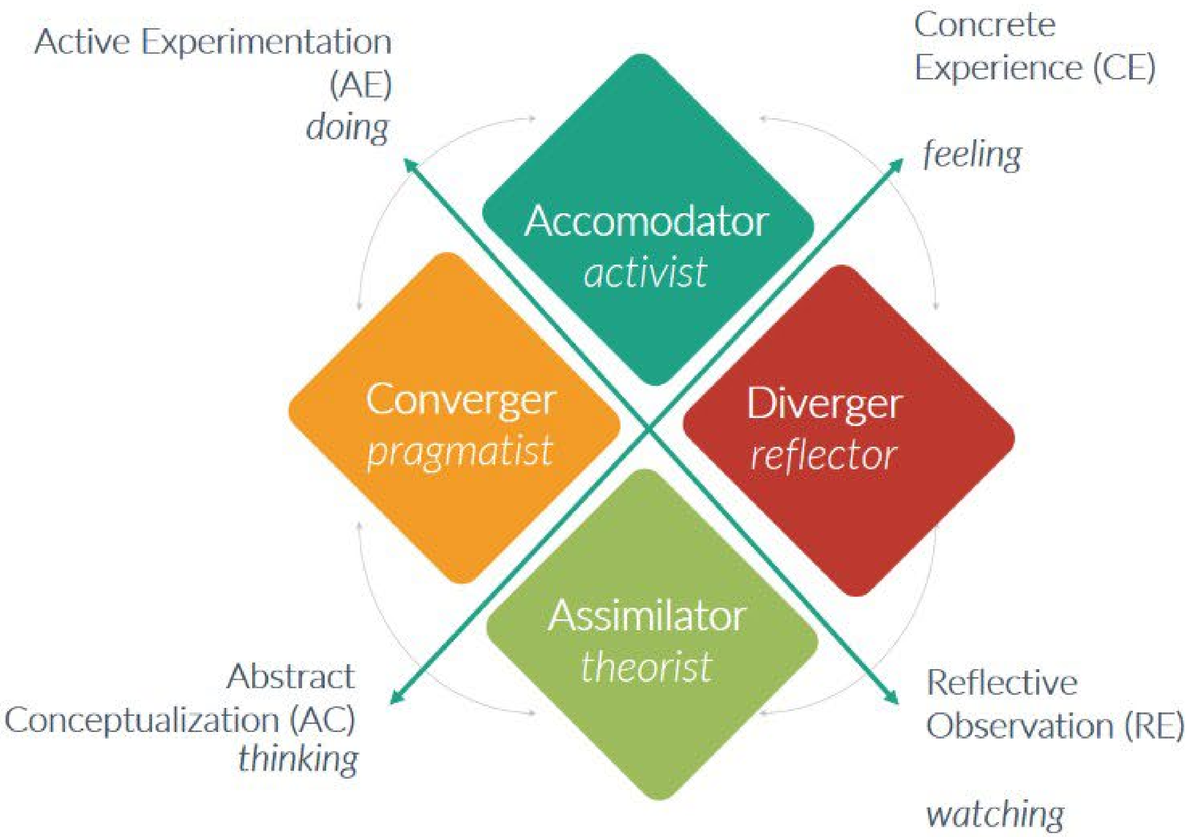
Kolb Learning Style Theory

Kolb proposed that learning is a combination of both how we approach a task and how we respond to and assimilate the experience.

"Learning is the process whereby knowledge is created through the transformation of experience" (Kolb, 1984).

In approaching a task (processing) we have a preference for either doing or watching, and in responding to the experience we have a preference for either feeling or thinking.

The combination of these preferences creates four main learning styles: Accomodator, Diverger, Assimilator and Converger.



Kolb's Four Learning Styles

The Accommodator:

- strongest in Concrete Experience and Active Experimentation
- basically the opposite of the Assimilator style
- they are doers who enjoy performing experiments and carrying out plans in the real world.

The Diverger:

- dominant in the areas of Concrete Experience and Reflective Observation, essentially the opposite strengths of the Converger
- good at seeing the "big picture" and organising smaller bits of information into a meaningful whole.

The Assimilator:

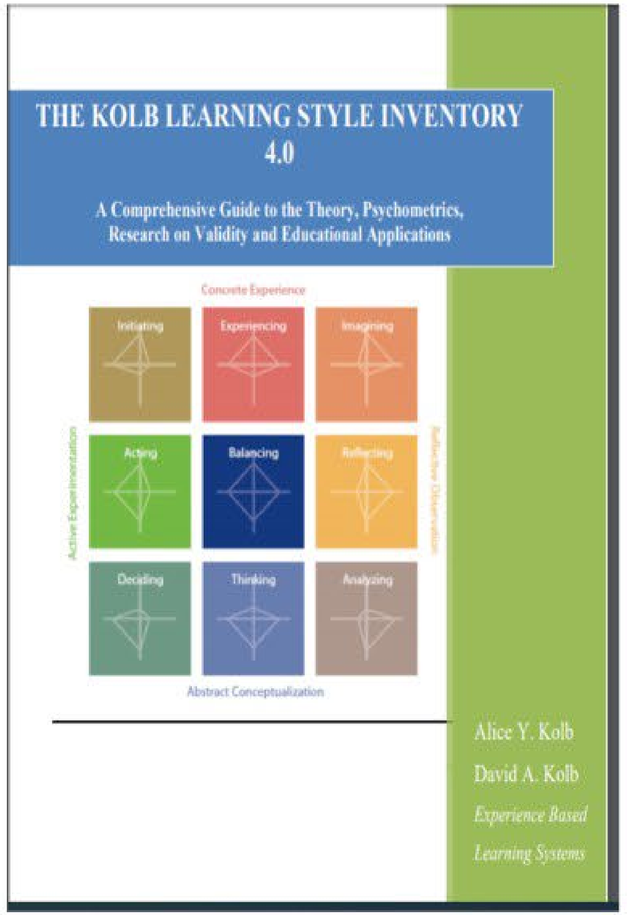
- skilled in the areas of Abstract Conceptualisation and Reflective Observation
- greatest strength: understanding and creating theoretical model
- more interested in abstract ideas than in people
- enjoy work that involves planning and research.

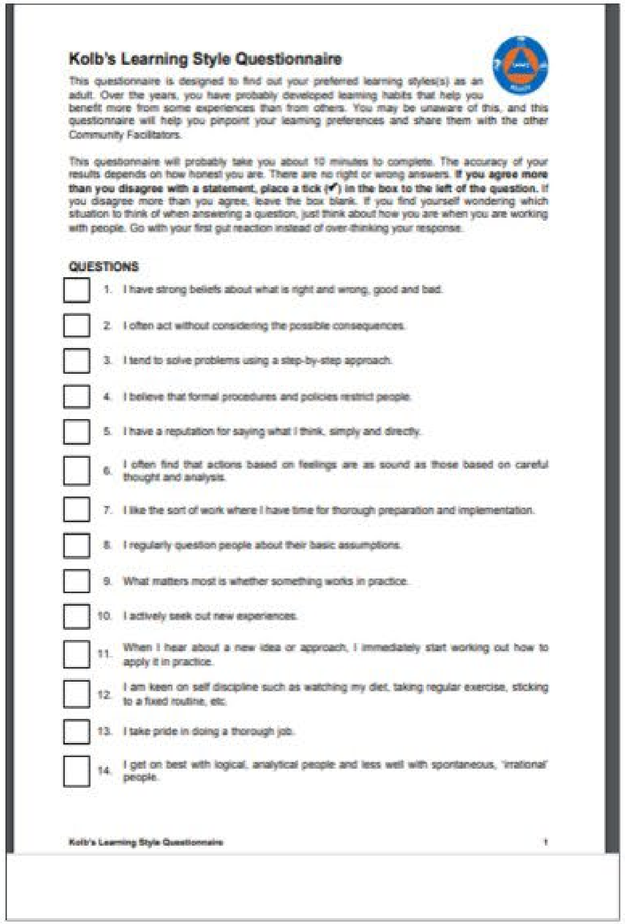
The Converger:

- have dominant abilities in the areas of Abstract Conceptualisation and Active Experimentation
- highly skilled in the practical application of ideas
- tend to do best in situations where there is a single best solution or answer to a problem.

Kolb's Learning Styles Instruments

Instruments that can be used to identify students learning styles:





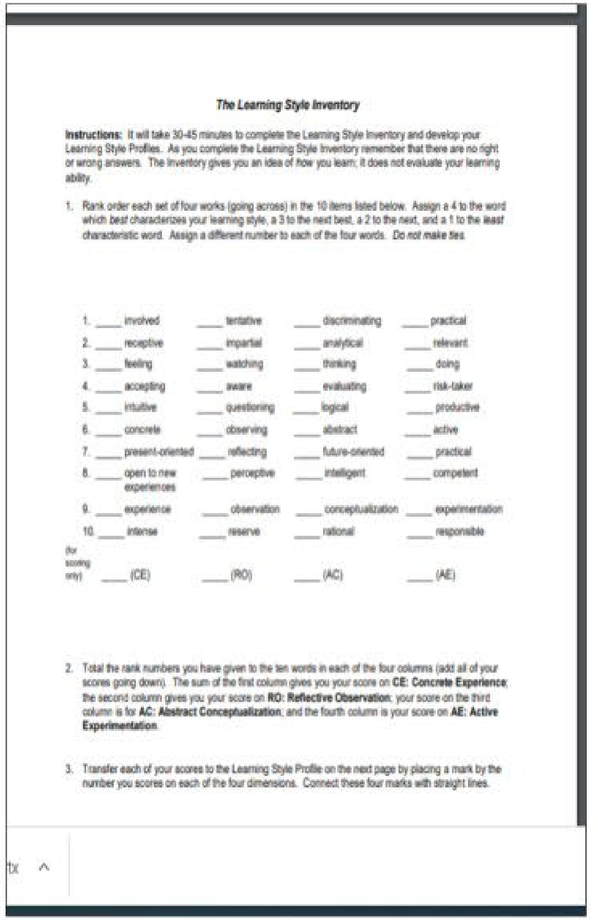
Kolb's Learning Style Questionnaire

This questionnaire is designed to find out your preferred learning style(s) as an adult. Over the years, you have probably developed learning habits that help you benefit more from some experiences than from others. You may be unaware of this, and this questionnaire will help you pinpoint your learning preferences and share them with the other Community Facilitators.

This questionnaire will probably take you about 10 minutes to complete. The accuracy of your results depends on how honest you are. There are no right or wrong answers. **If you agree more than you disagree with a statement, place a tick (✔) in the box to the left of the question.** If you disagree more than you agree, leave the box blank. If you find yourself wondering which situation to think of when answering a question, just think about how you are when you are working with people. Go with your first gut reaction instead of over-thinking your response.

QUESTIONS

1. I have strong beliefs about what is right and wrong, good and bad.
2. I often act without considering the possible consequences.
3. I tend to solve problems using a step-by-step approach.
4. I believe that formal procedures and policies restrict people.
5. I have a reputation for saying what I think, simply and directly.
6. I often find that actions based on feelings are as sound as those based on careful thought and analysis.
7. I like the sort of work where I have time for thorough preparation and implementation.
8. I regularly question people about their basic assumptions.
9. What matters most is whether something works in practice.
10. I actively seek out new experiences.
11. When I hear about a new idea or approach, I immediately start working out how to apply it in practice.
12. I am keen on self discipline such as watching my diet, taking regular exercise, sticking to a fixed routine, etc.
13. I take pride in doing a thorough job.
14. I get on best with logical, analytical people and less well with spontaneous, 'irrational' people.



The Learning Style Inventory

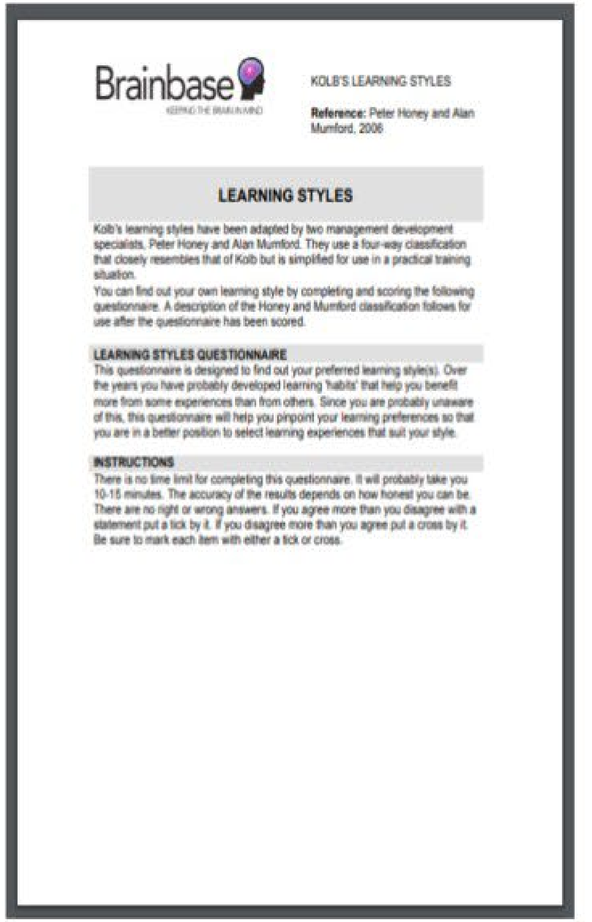
Instructions: It will take 30-45 minutes to complete the Learning Style Inventory and develop your Learning Style Profiles. As you complete the Learning Style Inventory remember that there are no right or wrong answers. The Inventory gives you an idea of how you learn; it does not evaluate your learning ability.

1. Rank order each set of four works (going across) in the 10 items listed below. Assign a 4 to the word which *best* characterizes your learning style, a 3 to the next best, a 2 to the next, and a 1 to the *least* characteristic word. Assign a different number to each of the four words. *Do not make ties.*

1.	____ involved	____ tentative	____ discriminating	____ practical
2.	____ receptive	____ impartial	____ analytical	____ relevant
3.	____ feeling	____ watching	____ thinking	____ doing
4.	____ accepting	____ aware	____ evaluating	____ risk-taker
5.	____ intuitive	____ questioning	____ logical	____ productive
6.	____ concrete	____ observing	____ abstract	____ active
7.	____ present-oriented	____ reflecting	____ future-oriented	____ practical
8.	____ open to new experiences	____ perceptive	____ intelligent	____ competent
9.	____ experience	____ observation	____ conceptualization	____ experimentation
10.	____ intense	____ reserve	____ rational	____ responsible
(for scoring only)	____ (CE)	____ (RO)	____ (AC)	____ (AE)

2. Total the rank numbers you have given to the ten words in each of the four columns (add all of your scores going down). The sum of the first column gives you your score on **CE: Concrete Experience**; the second column gives you your score on **RO: Reflective Observation**; your score on the third column is for **AC: Abstract Conceptualization**; and the fourth column is your score on **AE: Active Experimentation**.

3. Transfer each of your scores to the Learning Style Profile on the next page by placing a mark by the number you scores on each of the four dimensions. Connect these four marks with straight lines.



Brainbase
KEEPING THE BRAIN IN MIND

KOLB'S LEARNING STYLES

Reference: Peter Honey and Alan Mumford, 2006

LEARNING STYLES

Kolb's learning styles have been adapted by two management development specialists, Peter Honey and Alan Mumford. They use a four-way classification that closely resembles that of Kolb but is simplified for use in a practical training situation.

You can find out your own learning style by completing and scoring the following questionnaire. A description of the Honey and Mumford classification follows for use after the questionnaire has been scored.

LEARNING STYLES QUESTIONNAIRE

This questionnaire is designed to find out your preferred learning style(s). Over the years you have probably developed learning 'habits' that help you benefit more from some experiences than from others. Since you are probably unaware of this, this questionnaire will help you pinpoint your learning preferences so that you are in a better position to select learning experiences that suit your style.

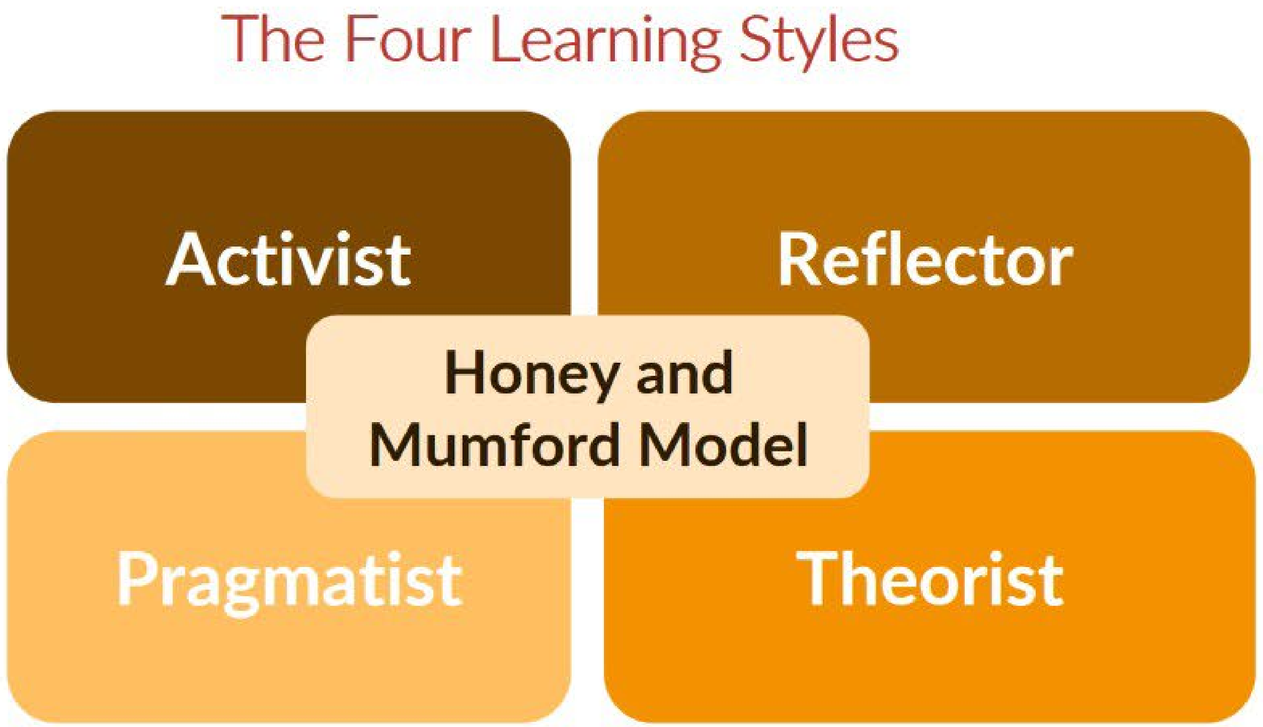
INSTRUCTIONS

There is no time limit for completing this questionnaire. It will probably take you 10-15 minutes. The accuracy of the results depends on how honest you can be. There are no right or wrong answers. If you agree more than you disagree with a statement put a tick by it. If you disagree more than you agree put a cross by it. Be sure to mark each item with either a tick or cross.

Honey & Mumford Learning Styles

Developed by Peter Honey and Alan Mumford in 1986; inspired from and built upon Kolb's learning styles model (Leaver, 2005).

Produced their own Learning Styles Questionnaire (LSQ) because it was found that Kolb's LSI had low validity with managers. Their questionnaire probes general behavioral tendencies.

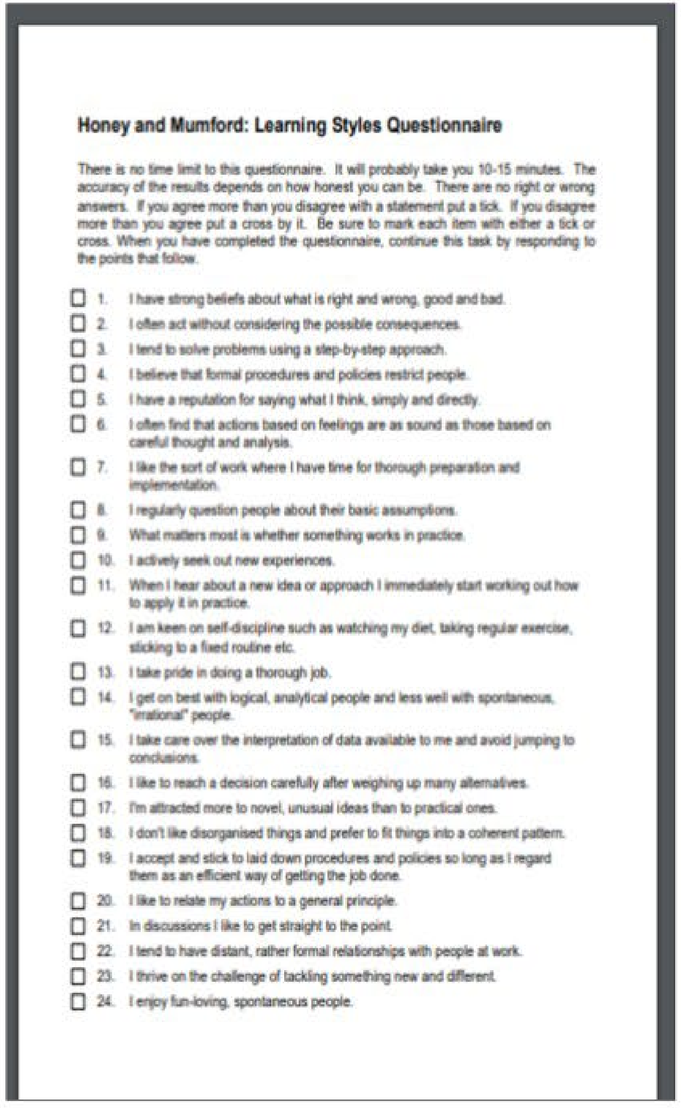


Characteristics of Honey & Mumford Learning Styles

Learning Style	Attributes	Activities
Activist	• Activists are those people who learn by doing. • Activists need to get their hands dirty, to dive in with both feet first. • Have an open-minded approach to learning, involving themselves fully and without bias in new experiences.	• Brainstorming • Problem solving • Group discussion • Puzzles • Competitions • Role-play
Pragmatist	• These people need to be able to see how to put the learning into practice in the real world. • Abstract concepts and games are of limited use unless they can see a way to put the ideas into action in their lives. • Experimenters, trying out new ideas, theories and techniques to see if they work.	• Time to think about how to apply learning in reality • Case studies • Problem solving • Discussion
Reflector	• These people learn by observing and thinking about what happened. • They may avoid leaping in and prefer to watch from the sidelines. • Prefer to stand back and view experiences from a number of different perspectives, collecting data and taking the time to work towards an appropriate conclusion.	• Paired discussions • Self-analysis questionnaires • Time-out • Observing activities • Feedback from others • Coaching • Interviews
Theorist	• These learners like to understand the theory behind the actions. • They need models, concepts and facts in order to engage in the learning process. • Prefer to analyse and synthesise, drawing new information into a systematic and logical “theory”.	• Models • Statistics • Stories • Quotes • Background information • Applying theories

Honey & Mumford's Learning Styles Instruments

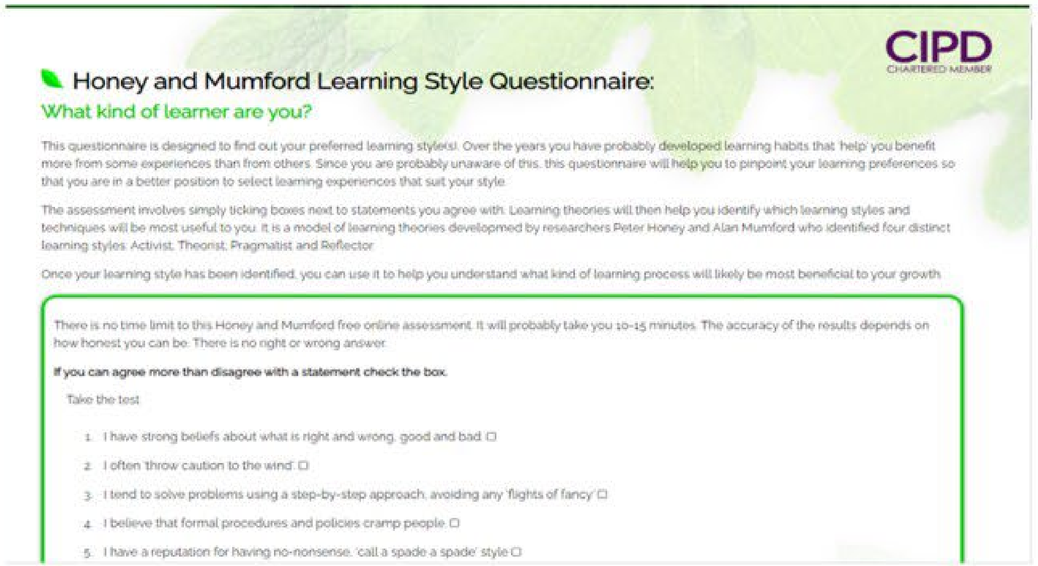
Instruments that can be used to identify students learning styles:



Honey and Mumford: Learning Styles Questionnaire

There is no time limit to this questionnaire. It will probably take you 10-15 minutes. The accuracy of the results depends on how honest you can be. There are no right or wrong answers. If you agree more than you disagree with a statement put a tick. If you disagree more than you agree put a cross by it. Be sure to mark each item with either a tick or cross. When you have completed the questionnaire, continue this task by responding to the points that follow.

- ☐ 1. I have strong beliefs about what is right and wrong, good and bad.
- ☐ 2. I often act without considering the possible consequences.
- ☐ 3. I tend to solve problems using a step-by-step approach.
- ☐ 4. I believe that formal procedures and policies restrict people.
- ☐ 5. I have a reputation for saying what I think, simply and directly.
- ☐ 6. I often find that actions based on feelings are as sound as those based on careful thought and analysis.
- ☐ 7. I like the sort of work where I have time for thorough preparation and implementation.
- ☐ 8. I regularly question people about their basic assumptions.
- ☐ 9. What matters most is whether something works in practice.
- ☐ 10. I actively seek out new experiences.
- ☐ 11. When I hear about a new idea or approach I immediately start working out how to apply it in practice.
- ☐ 12. I am keen on self-discipline such as watching my diet, taking regular exercise, sticking to a fixed routine etc.
- ☐ 13. I take pride in doing a thorough job.
- ☐ 14. I get on best with logical, analytical people and less well with spontaneous, "irrational" people.
- ☐ 15. I take care over the interpretation of data available to me and avoid jumping to conclusions.
- ☐ 16. I like to reach a decision carefully after weighing up many alternatives.
- ☐ 17. I'm attracted more to novel, unusual ideas than to practical ones.
- ☐ 18. I don't like disorganised things and prefer to fit things into a coherent pattern.
- ☐ 19. I accept and stick to laid down procedures and policies so long as I regard them as an efficient way of getting the job done.
- ☐ 20. I like to relate my actions to a general principle.
- ☐ 21. In discussions I like to get straight to the point.
- ☐ 22. I tend to have distant, rather formal relationships with people at work.
- ☐ 23. I thrive on the challenge of tackling something new and different.
- ☐ 24. I enjoy fun-loving, spontaneous people.



CIPD CHARTERED MEMBER

Honey and Mumford Learning Style Questionnaire:

What kind of learner are you?

This questionnaire is designed to find out your preferred learning style(s). Over the years you have probably developed learning habits that 'help' you benefit more from some experiences than from others. Since you are probably unaware of this, this questionnaire will help you to pinpoint your learning preferences so that you are in a better position to select learning experiences that suit your style.

The assessment involves simply ticking boxes next to statements you agree with. Learning theories will then help you identify which learning styles and techniques will be most useful to you. It is a model of learning theories developed by researchers Peter Honey and Alan Mumford who identified four distinct learning styles: Activist, Theorist, Pragmatist and Reflector.

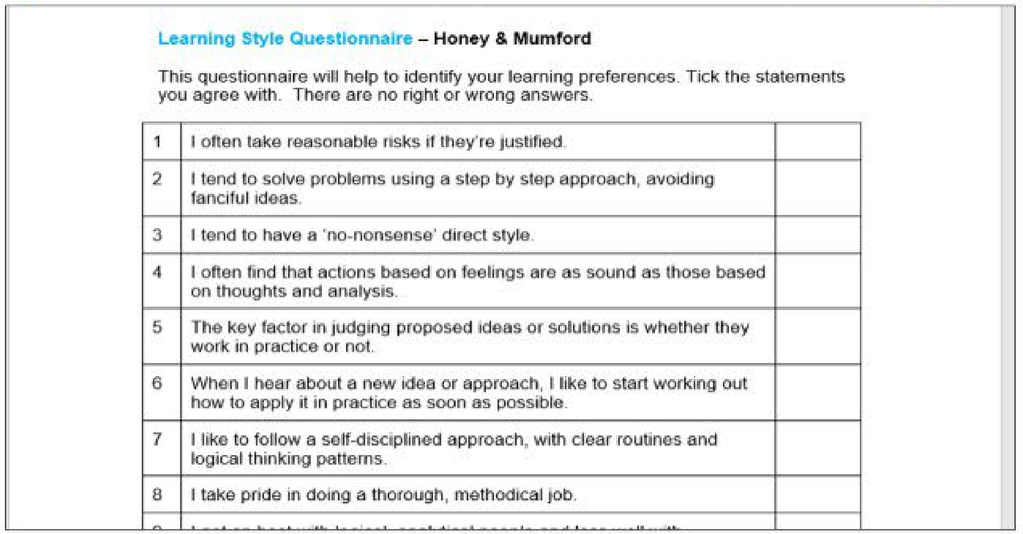
Once your learning style has been identified, you can use it to help you understand what kind of learning process will likely be most beneficial to your growth.

There is no time limit to this Honey and Mumford free online assessment. It will probably take you 10-15 minutes. The accuracy of the results depends on how honest you can be. There is no right or wrong answer.

If you can agree more than disagree with a statement check the box.

Take the test

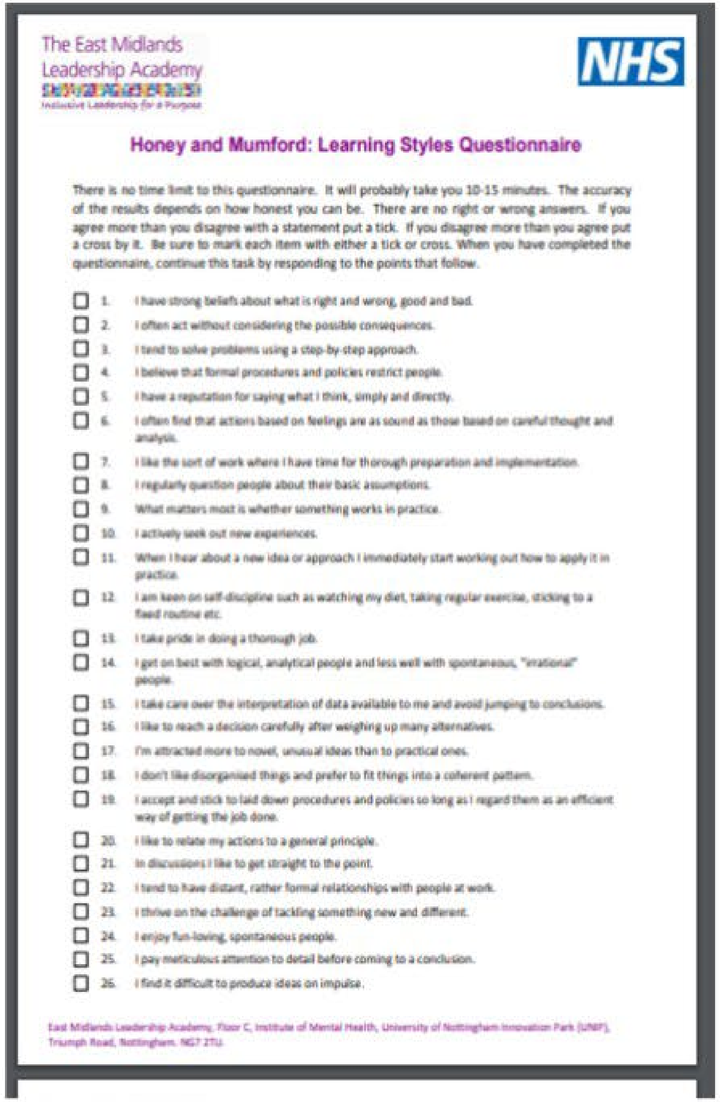
1. I have strong beliefs about what is right and wrong, good and bad ☐
2. I often 'throw caution to the wind' ☐
3. I tend to solve problems using a step-by-step approach, avoiding any 'flights of fancy' ☐
4. I believe that formal procedures and policies cramp people ☐
5. I have a reputation for having no-nonsense, 'call a spade a spade' style ☐



Learning Style Questionnaire – Honey & Mumford

This questionnaire will help to identify your learning preferences. Tick the statements you agree with. There are no right or wrong answers.

1	I often take reasonable risks if they're justified.	
2	I tend to solve problems using a step by step approach, avoiding fanciful ideas.	
3	I tend to have a 'no-nonsense' direct style.	
4	I often find that actions based on feelings are as sound as those based on thoughts and analysis.	
5	The key factor in judging proposed ideas or solutions is whether they work in practice or not.	
6	When I hear about a new idea or approach, I like to start working out how to apply it in practice as soon as possible.	
7	I like to follow a self-disciplined approach, with clear routines and logical thinking patterns.	
8	I take pride in doing a thorough, methodical job.	



The East Midlands Leadership Academy

Inclusive Leadership for a Purpose

NHS

Honey and Mumford: Learning Styles Questionnaire

There is no time limit to this questionnaire. It will probably take you 10-15 minutes. The accuracy of the results depends on how honest you can be. There are no right or wrong answers. If you agree more than you disagree with a statement put a tick. If you disagree more than you agree put a cross by it. Be sure to mark each item with either a tick or cross. When you have completed the questionnaire, continue this task by responding to the points that follow.

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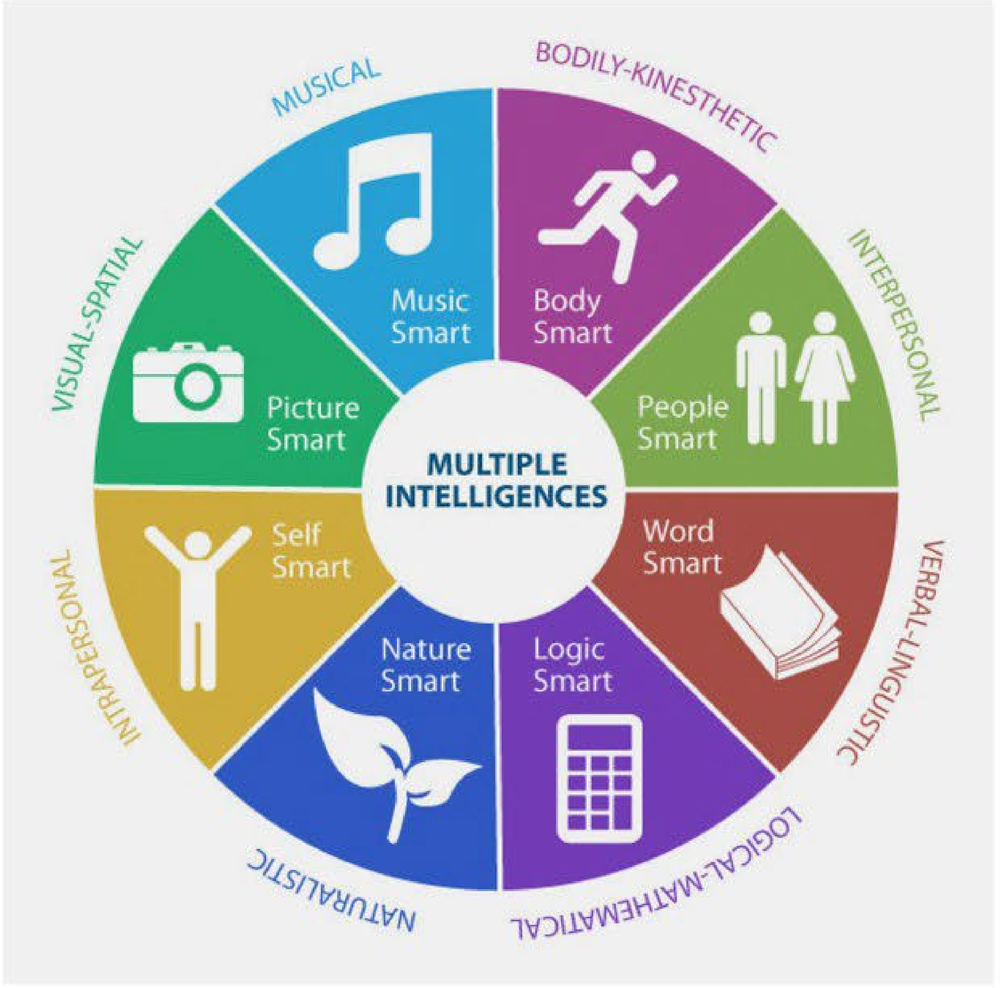
- ☐ 19. I accept and stick to laid down procedures and policies so long as I regard them as an efficient way of getting the job done.
- ☐ 20. I like to relate my actions to a general principle.
- ☐ 21. In discussions I like to get straight to the point.
- ☐ 22. I tend to have distant, rather formal relationships with people at work.
- ☐ 23. I thrive on the challenge of tackling something new and different.
- ☐ 24. I enjoy fun-loving, spontaneous people.
- ☐ 25. I pay meticulous attention to detail before coming to a conclusion.
- ☐ 26. I find it difficult to produce ideas on impulse.

East Midlands Leadership Academy, Floor C, Institute of Mental Health, University of Nottingham Innovation Park (UNIP), Triumph Road, Nottingham. NG7 2TU.

Gardner Multiple Intelligences



(MI Oasis, 2020)

- Learning styles are the ways in which an individual approaches a range of tasks (Gardner, 1983).
- Multiple intelligences does not necessarily mean the same thing as learning styles. Instead, multiple intelligences represent different intellectual abilities.

Gardner Multiple Intelligences

(Cherry, 2019)

01 Visual-Spatial Intelligence

- Good at visualising things
- Often good with directions as well as maps, charts, videos, and pictures.

Learning Style Characteristics:

- Enjoys reading and writing
- Good at putting puzzles together
- Good at interpreting pictures, graphs, and charts
- Enjoys drawing, painting, and the visual arts
- Recognises patterns easily

02 Linguistic-Verbal Intelligence

- Able to use words well, both when writing and speaking
- Typically very good at writing stories, memorising information, and reading.

Learning Style Characteristics:

- Good at remembering written and spoken information
- Enjoys reading and writing
- Good at debating or giving persuasive speeches
- Able to explain things well
- Often uses humor when telling stories

Gardner Multiple Intelligences

03 Logical-Mathematical Intelligence

- Good at reasoning, recognising patterns, and logically analysing problems.
- Tend to think conceptually about numbers, relationships, and patterns.

Learning Style Characteristics:

- Excellent problem-solving skills
- Enjoys thinking about abstract ideas
- Likes conducting scientific experiments
- Good at solving complex computations

04 Bodily-Kinesthetic Intelligence

- Good at body movement, performing actions, and physical control.
- Tend to have excellent hand-eye coordination and dexterity.

Learning Style Characteristics:

- Good at dancing and sports
- Enjoys creating things with his or her hands
- Excellent physical coordination
- Tends to remember by doing, rather than hearing or seeing

Gardner Multiple Intelligences

05 Musical Intelligence

- Good at thinking in patterns, rhythms, and sounds.
- Strong appreciation for music and are often good at musical composition and performance.

Learning Style Characteristics:

- Enjoys singing and playing musical instruments
- Recognises musical patterns and tones easily
- Good at remembering songs and melodies
- Rich understanding of musical structure, rhythm, and notes

06 Interpersonal Intelligence

- Good at understanding and interacting with other people.
- Skilled at assessing the emotions, motivations, desires, and intentions of those around them.

Learning Style Characteristics:

- Good at communicating verbally
- Skilled at non-verbal communication
- Sees situations from different perspectives
- Creates positive relationships with others
- Good at resolving conflict in groups

Gardner Multiple Intelligences

07 Intrapersonal Intelligence

- Good at being aware of their own emotional states, feelings, and motivations.
- Tend to enjoy self-reflection and analysis, including daydreaming, exploring relationships with others, and assessing their personal strengths.

Learning Style Characteristics:

- Good at analysing his or her strengths and weaknesses
- Enjoys analysing theories and ideas
- Excellent self-awareness
- Clearly understands the basis for his or her own motivations and feelings

08 Naturalistic Intelligence

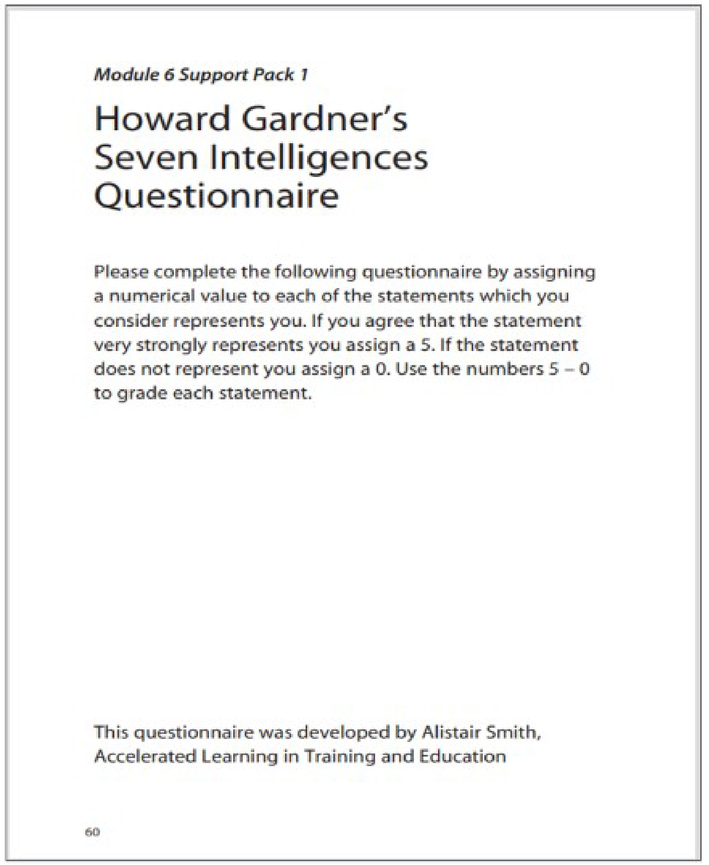
- More in tune with nature and are often interested in nurturing, exploring the environment, and learning about other species.
- Highly aware of even subtle changes to their environments.

Learning Style Characteristics:

- Interested in subjects such as botany, biology, and zoology
- Good at categorising and cataloguing information easily
- May enjoy camping, gardening, hiking, and exploring the outdoors
- Doesn't enjoy learning unfamiliar topics that have no connection to nature

Multiple Intelligences Instruments

Instruments that can be used to identify students learning styles:



Module 6 Support Pack 1

Howard Gardner's Seven Intelligences Questionnaire

Please complete the following questionnaire by assigning a numerical value to each of the statements which you consider represents you. If you agree that the statement very strongly represents you assign a 5. If the statement does not represent you assign a 0. Use the numbers 5 – 0 to grade each statement.

This questionnaire was developed by Alistair Smith, Accelerated Learning in Training and Education

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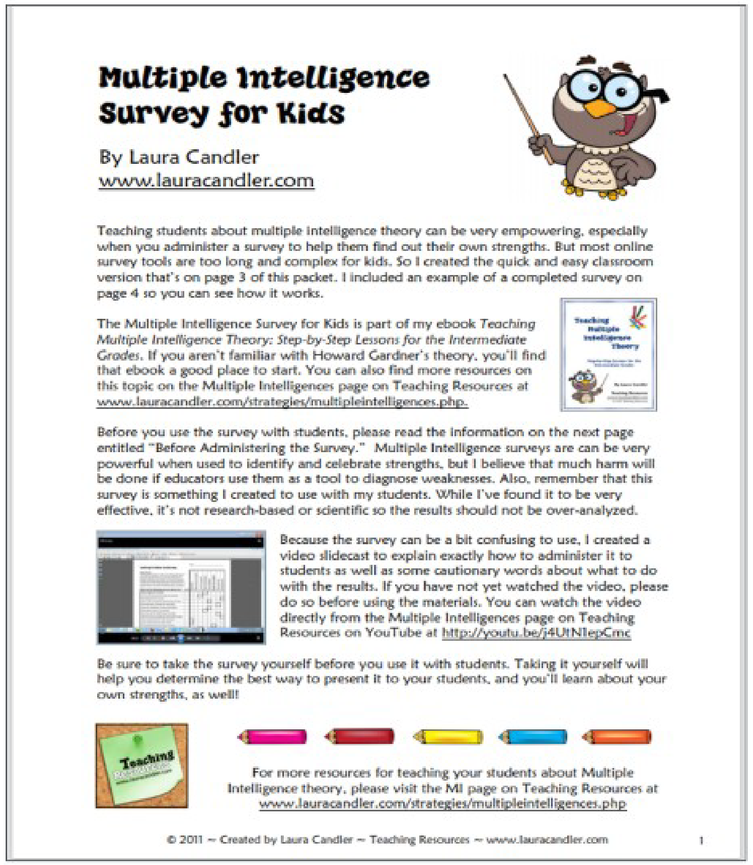

Multiple Intelligence Survey for Kids

By Laura Candler
www.lauracandler.com

Teaching students about multiple intelligence theory can be very empowering, especially when you administer a survey to help them find out their own strengths. But most online survey tools are too long and complex for kids. So I created the quick and easy classroom version that's on page 3 of this packet. I included an example of a completed survey on page 4 so you can see how it works.

The Multiple Intelligence Survey for Kids is part of my ebook *Teaching Multiple Intelligence Theory: Step-by-Step Lessons for the Intermediate Grades*. If you aren't familiar with Howard Gardner's theory, you'll find that ebook a good place to start. You can also find more resources on this topic on the Multiple Intelligences page on Teaching Resources at www.lauracandler.com/strategies/multipleintelligences.php.

Before you use the survey with students, please read the information on the next page entitled "Before Administering the Survey." Multiple Intelligence surveys are can be very powerful when used to identify and celebrate strengths, but I believe that much harm will be done if educators use them as a tool to diagnose weaknesses. Also, remember that this survey is something I created to use with my students. While I've found it to be very effective, it's not research-based or scientific so the results should not be over-analyzed.

Because the survey can be a bit confusing to use, I created a video slidecast to explain exactly how to administer it to students as well as some cautionary words about what to do with the results. If you have not yet watched the video, please do so before using the materials. You can watch the video directly from the Multiple Intelligences page on Teaching Resources on YouTube at http://youtu.be/j4UtNIepCmc

Be sure to take the survey yourself before you use it with students. Taking it yourself will help you determine the best way to present it to your students, and you'll learn about your own strengths, as well!

For more resources for teaching your students about Multiple Intelligence theory, please visit the MI page on Teaching Resources at www.lauracandler.com/strategies/multipleintelligences.php

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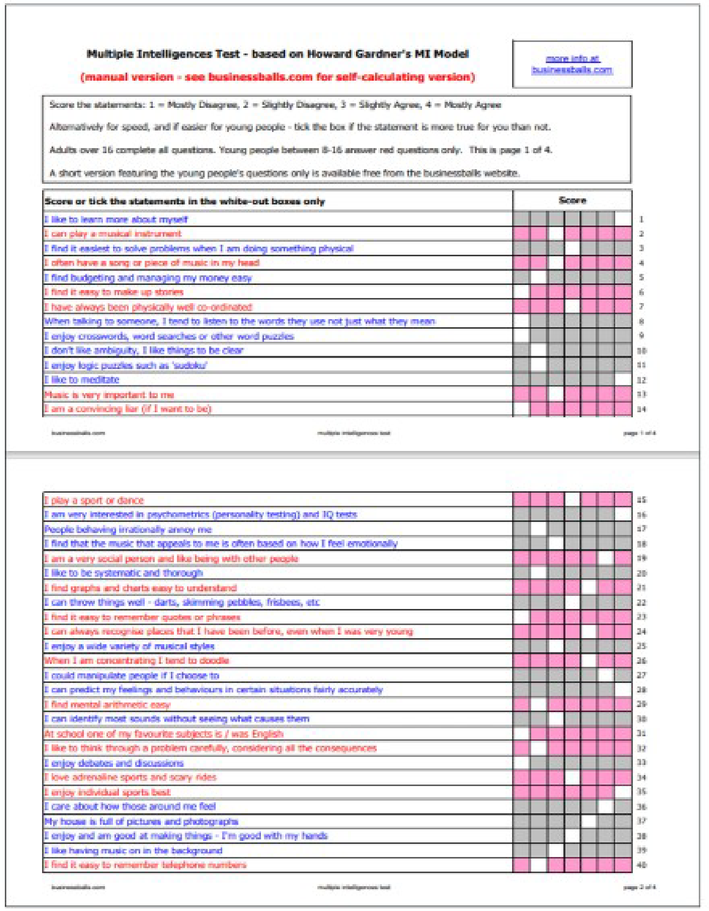


Multiple Intelligences Test - based on Howard Gardner's MI Model

more info at businessballs.com

(manual version - see businessballs.com for self-calculating version)

Score the statements: 1 = Mostly Disagree, 2 = Slightly Disagree, 3 = Slightly Agree, 4 = Mostly Agree

Alternatively for speed, and if easier for young people - tick the box if the statement is more true for you than not.

Adults over 16 complete all questions. Young people between 8-16 answer red questions only. This is page 1 of 4.

A short version featuring the young people's questions only is available free from the businessballs website.

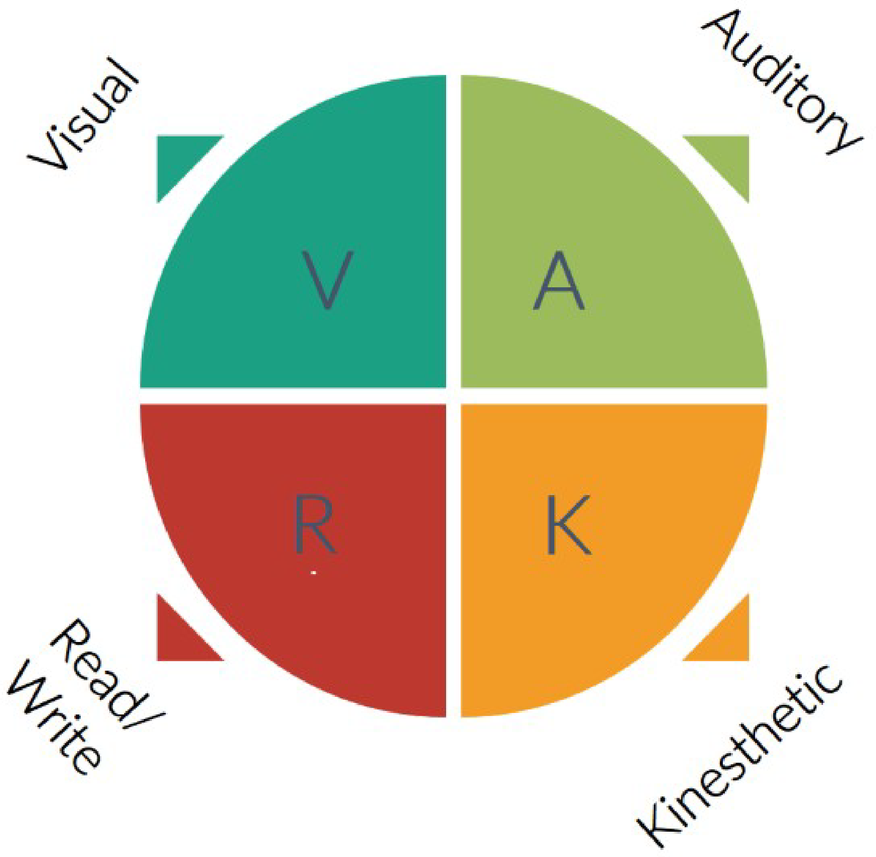
Score or tick the statements in the white-out boxes only	Score	
I like to learn more about myself		1
I can play a musical instrument		2
I find it easiest to solve problems when I am doing something physical		3
I often have a song or piece of music in my head		4
I find budgeting and managing my money easy		5
I find it easy to make up stories		6
I have always been physically well co-ordinated		7
When talking to someone, I tend to listen to the words they use not just what they mean		8
I enjoy crosswords, word searches or other word puzzles		9
I don't like ambiguity, I like things to be clear		10
I enjoy logic puzzles such as 'sudoku'		11
I like to meditate		12
Music is very important to me		13
I am a convincing liar (if I want to be)		14

businessballs.com multiple intelligences test page 1 of 4

I play a sport or dance		15
I am very interested in psychometrics (personality testing) and IQ tests		16
People behaving irrationally annoy me		17
I find that the music that appeals to me is often based on how I feel emotionally		18
I am a very social person and like being with other people		19
I like to be systematic and thorough		20
I find graphs and charts easy to understand		21
I can throw things well - darts, skimming pebbles, frisbees, etc		22
I find it easy to remember quotes or phrases		23
I can always recognise places that I have been before, even when I was very young		24
I enjoy a wide variety of musical styles		25
When I am concentrating I tend to doodle		26
I could manipulate people if I choose to		27
I can predict my feelings and behaviours in certain situations fairly accurately		28
I find mental arithmetic easy		29
I can identify most sounds without seeing what causes them		30
At school one of my favourite subjects is / was English		31
I like to think through a problem carefully, considering all the consequences		32
I enjoy debates and discussions		33
I love adrenaline sports and scary rides		34
I enjoy individual sports best		35
I care about how those around me feel		36
My house is full of pictures and photographs		37
I enjoy and am good at making things - I'm good with my hands		38
I like having music on in the background		39
I find it easy to remember telephone numbers		40

businessballs.com multiple intelligences test page 2 of 4

VARK Modalities



Fleming and Mills (1992) suggested four modalities that seemed to reflect the experiences of the students and teachers.

The four modalities are Visual, Auditory/aural, Read/write, and Kinesthetic (VARK) sensory modalities used for learning information.

All four modalities can be used, thus accommodating students who learn best in a different way.

VARK is more as a guide to learning preferences. It is a questionnaire that helps student's learning by suggesting the strategies the learner's should be using.

(Cherry, 2019)

VARK MODALITIES:

Visual Strategies

Key words:
different formats, space, graphs, charts, diagrams, maps, interesting layouts and plans.

Description:

- Information presented as:
  - maps, spider diagrams, charts, graphs, flow charts, labeled diagrams;
  - all the symbolic arrows, circles, hierarchies;
  - other devices that people use to represent what could have been presented in words.

- This preference uses symbolism and different formats, fonts and colours to emphasise important points.

- It does not include video and pictures that show real images and it is not visual merely because it is shown on a screen.

VARK MODALITIES: Auditory/Aural

Strategies

Key words:

listening, discussing, talking, questioning and recalling

Description:

- This preference is for information that is spoken or heard such as lectures, group discussion, radio, email, mobile phones, speaking, web-chat, and talking things through.

- Making statements and using questions are an important for those with this preference.

VARK MODALITIES:

Read/Write Strategies

Key words:
lists, notes, handouts, print, and text in all its formats and whether on screens or on paper.

Description:

- This preference uses the printed word, text-based input and output as the most important way to convey and receive information.

- This includes all forms but especially manuals, reports, essays, and assignments.

VARK MODALITIES: Kinesthetic Strategies

Key words:

senses, practical exercises, experiences, examples, case studies, trial and error.

Description:

- A preference for gathering information through experience and practice, simulated or real, either through concrete personal experiences, examples, practice or simulation, even when they are shown as images and on screens.

- It also includes demonstrations, simulations, videos, and movies, as well as case studies, practice, and applications.

VARK Instruments

Instruments that can be used to identify students learning styles:

The VARK Model of Teaching Strategies

Are you familiar with the VARK model of Student Learning and the teaching strategies contained therein? Perhaps you're not familiar with it, or perhaps you need a refresher on it. Either way, today on TeachHUB.com, we spell out the VARK teaching strategies and how they can transform your class.

For the uninitiated, VARK stands for four learning modalities -- Visual, Auditory, Reading/Writing, and Kinesthetic teaching strategies. By way of explanation, frequent TeachHUB.com frequent contributing writer Jacqui Murray, who is also a veteran tech teacher based in Northern California, looks at VARK and how to carry it out.

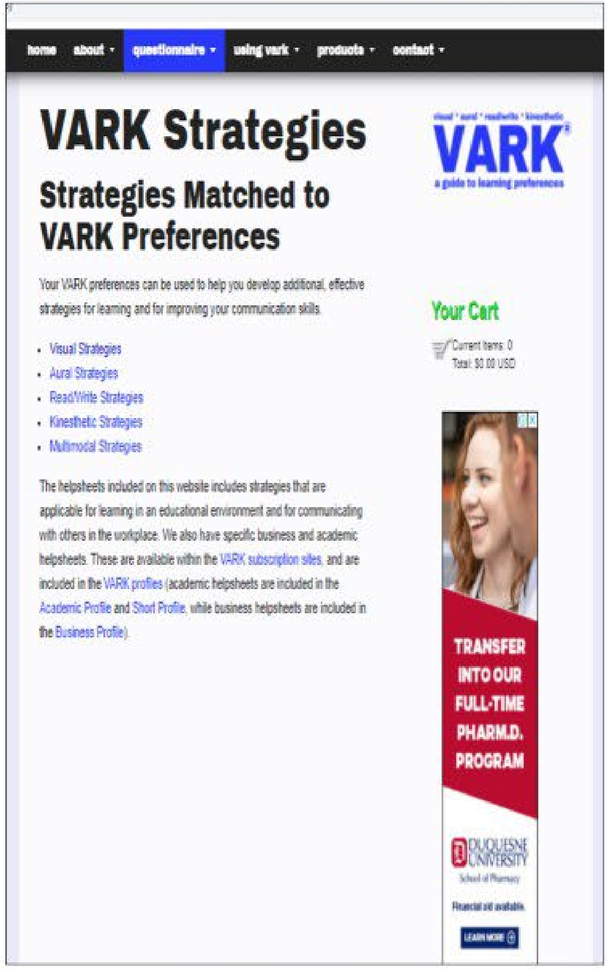
Here's how she explains to get started with VARK: "Start with an open-minded assessment of the student's learning style using the VARK questionnaire or one of several other learning style inventories. The goal is to uncover how the student learns best. At the end of the VARK questionnaire, students get a report that analyzes their answers and draws conclusions as to what their best learning style is. Students use these results to understand their preferred modality and, in a bigger sense, come to terms with why learning challenges they've faced in the past have less to do with their intelligence and more with how the knowledge was presented. Follow up this written report with varied activities from all four modalities and pay close attention to the types of intelligence students display as they complete tasks."

Jacqui sums up her article like this: "Now, after more than a decade of teaching in a manner that addresses student personal learning styles, I can see that the time invested up front quickly paid off in student success. And once I learned to structure lessons that meet students where they learn, it actually saved time in not having to re-explain, provide after-school tutoring, and discuss with them and their parents why they didn't do well when we all knew they were smart enough.

Have you had a similar experience? Or a different one? We'd love to hear from you. Share with us in the comment section of this article!

Our detailed look at the VARK model of teaching strategies>>

Posted 6th October 2017 by Anna



home about questionnaire using vark products contact

VARK Strategies

Strategies Matched to VARK Preferences

VARK
a guide to learning preferences

Your Cart

Current Items: 0
Total: $0.00 USD

Your VARK preferences can be used to help you develop additional, effective strategies for learning and for improving your communication skills.

- Visual Strategies
- Aural Strategies
- Read/Write Strategies
- Kinesthetic Strategies
- Multimodal Strategies

The helpsheets included on this website includes strategies that are applicable for learning in an educational environment and for communicating with others in the workplace. We also have specific business and academic helpsheets. These are available within the VARK subscription sites, and are included in the VARK profiles (academic helpsheets are included in the Academic Profile and Short Profile, while business helpsheets are included in the Business Profile).

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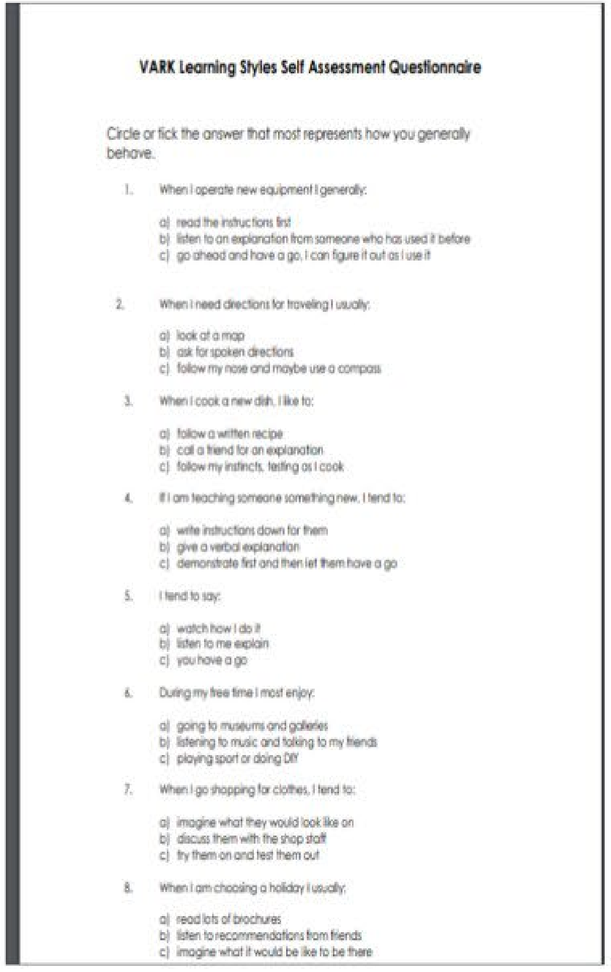
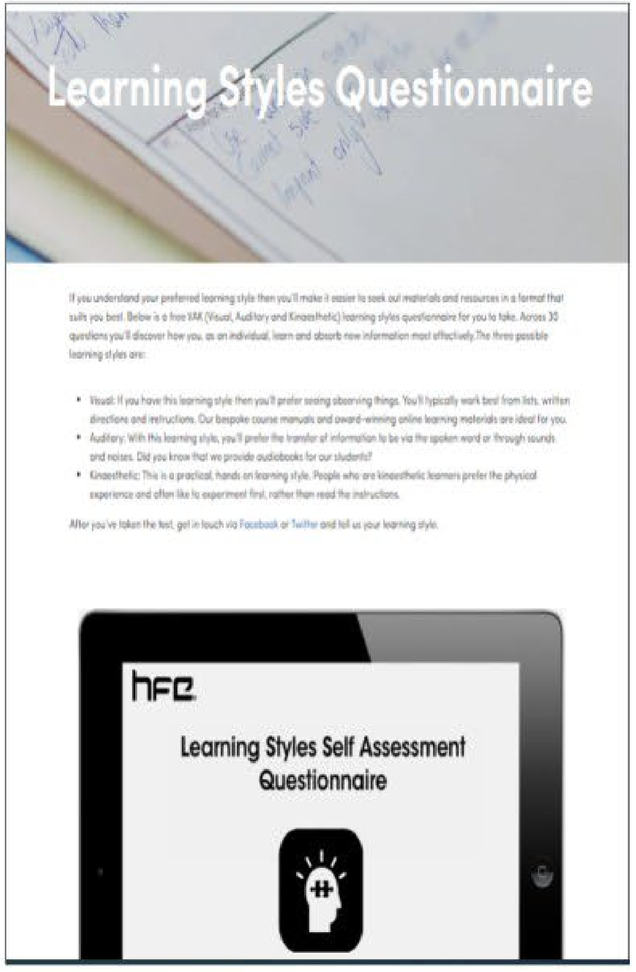


VARK Learning Styles Self Assessment Questionnaire

Circle or tick the answer that most represents how you generally behave.

1. When I operate new equipment I generally:
   a) read the instructions first
   b) listen to an explanation from someone who has used it before
   c) go ahead and have a go, I can figure it out as I use it
2. When I need directions for traveling I usually:
   a) look at a map
   b) ask for spoken directions
   c) follow my nose and maybe use a compass
3. When I cook a new dish, I like to:
   a) follow a written recipe
   b) call a friend for an explanation
   c) follow my instincts, tasting as I cook
4. If I am teaching someone something new, I tend to:
   a) write instructions down for them
   b) give a verbal explanation
   c) demonstrate first and then let them have a go
5. I tend to say:
   a) watch how I do it
   b) listen to me explain
   c) you have a go
6. During my free time I most enjoy:
   a) going to museums and galleries
   b) listening to music and talking to my friends
   c) playing sport or doing DIY
7. When I go shopping for clothes, I tend to:
   a) imagine what they would look like on
   b) discuss them with the shop staff
   c) try them on and test them out
8. When I am choosing a holiday I usually:
   a) read lots of brochures
   b) listen to recommendations from friends
   c) imagine what it would be like to be there



Learning Styles Questionnaire

If you understand your preferred learning style then you'll make it easier to seek out materials and resources in a format that suits you best. Below is a free VAK (Visual, Auditory and Kinaesthetic) learning styles questionnaire for you to take. Across 30 questions you'll discover how you, as an individual, learn and absorb new information most effectively. The three possible learning styles are:

- Visual: If you have this learning style then you'll prefer seeing observing things. You'll typically work best from lists, written directions and instructions. Our bespoke course manuals and award-winning online learning materials are ideal for you.
- Auditory: With this learning style, you'll prefer the transfer of information to be via the spoken word or through sounds and noises. Did you know that we provide audiobooks for our students?
- Kinaesthetic: This is a practical, hands on learning style. People who are kinaesthetic learners prefer the physical experience and often like to experiment first, rather than read the instructions.

After you've taken the test, get in touch via Facebook or Twitter and tell us your learning style.

hfe

Learning Styles Self Assessment Questionnaire

General Guideline on How to Use the Instrument

Start with questionnaires

1

The goal is to uncover how the student learns best.

Students get a report

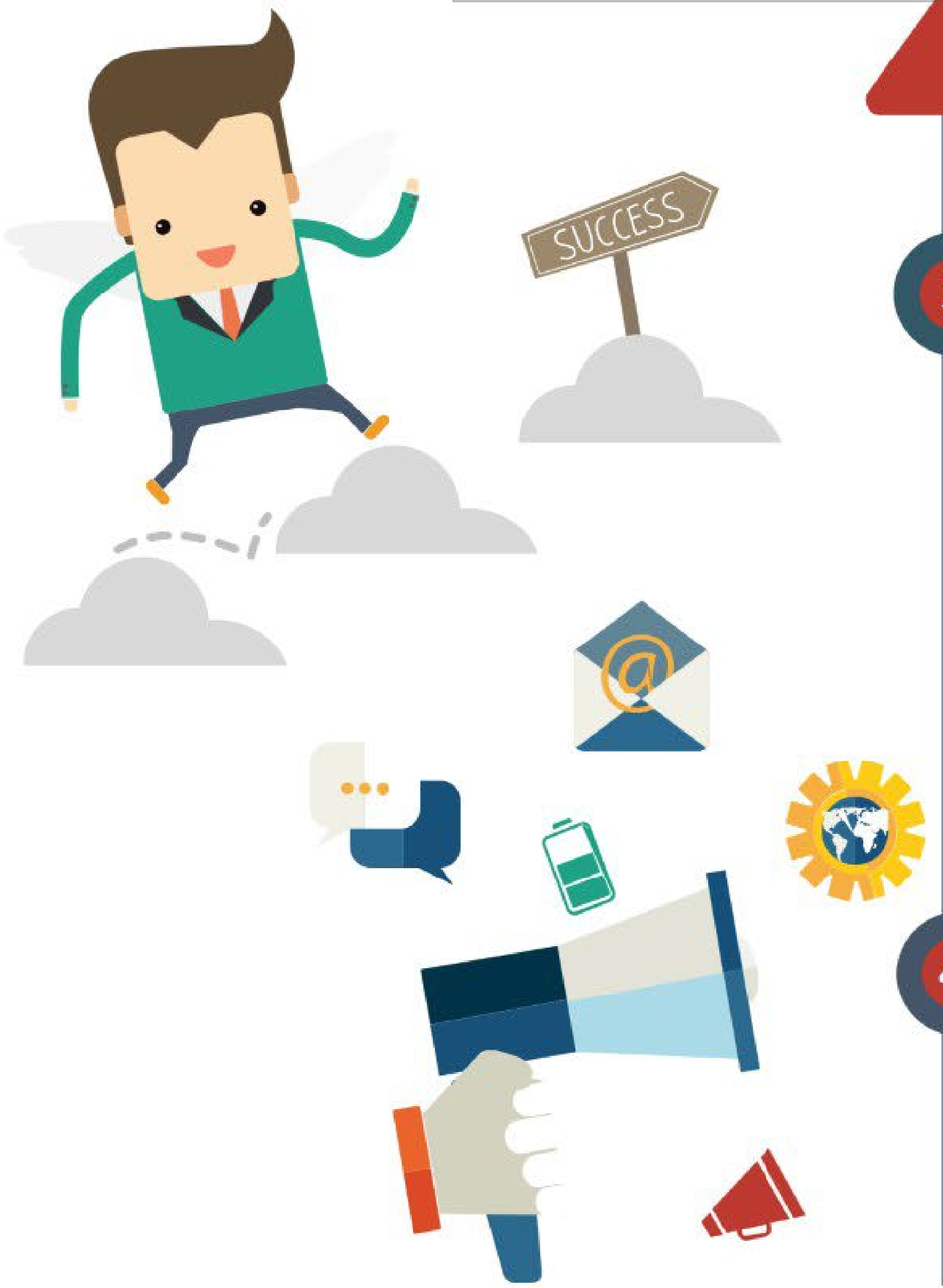
2

Students analyse their answers and draws conclusions as to what their best learning style is. Students use these results to understand their preferred modality.

Follow up report with varied activities

3

Vary activities from all modalities and pay close attention to the types of intelligence students display as they complete tasks.



Successful implementation

5

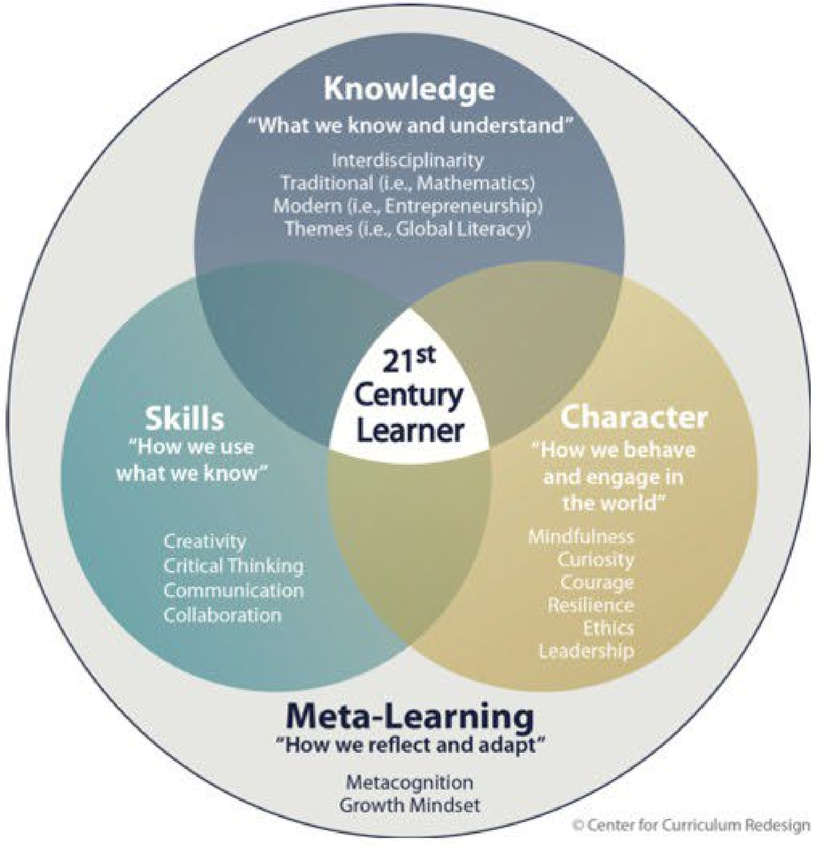
- Teachers understand why students don't always understand their well-constructed lesson plans.
- Teachers begin to present materials in multiple ways, accepting that students learn in different ways.
- Teachers allow students to complete their work in ways that work for them, as long as what they do satisfiy lesson goals.

4

Recommended two steps:

1) **Individualise teaching for students;**
2) **Pluralise teaching** to include as many of the intelligences as possible.

UNIT 2: LEARNER CHARACTERISTICS



Introduction

Learner characteristic is a term that characterises student differences, including age, gender, educational level, achievement level, socioeconomic background, learning preferences (i.e., learning styles), verbal ability, relevant experiences, attitudes toward subject, role perceptions, and perceived learning needs (Shambaugh, 2019).

Learners of 21st century are collaborative, innovative and responsive as they work in an open book world with facilitators rather than teachers, using devices rather than pen and paper which requires students to think critically and creatively.

Critical and Innovative Thinking Learners

Critical thinking skills are very important for learners (and for *everyone*) to build on. It is a highly desirable skill, especially in the workplace.

Every educator needs to know how crucial it is to cultivate critical thinking skills among students so that they become critical and innovative thinking learners.

16 Characteristics of Critical Thinkers

(Patel, 2018)

1. Observation

The ability to perceive and understand the world around us, that will eventually lead to insight and a deeper understanding of the world.

2. Curiosity

Inherently inquisitive and interested in the world and people around us, forcing us to keep an open mind and propels us to gain deeper knowledge

3. Objectivity

Look at an issue dispassionately and focus on facts, and on the scientific evaluation of the information at hand; seek to keep their emotions from affecting their judgment.

4. Introspection

Being aware of our thinking (thinking about how we think about things); aware of our own degree of alertness and attentiveness, as well as our biases.

5. Analytical thinking

The ability to break information down to its component parts and evaluate how well those parts function together and separately.

6. Identifying biases

Identify the evidence that forms our beliefs and assess whether or not those sources are credible. Helps us to question our own preconceived notions.

7. Determining relevance

Figuring out what information is the most relevant, meaningful and important for our consideration.

8. Inference

The ability to extrapolate meaning from data and discover potential outcomes when assessing a scenario; assess the information and draw conclusions based on raw data.

9. Compassion and empathy

To have concern for others and to value the welfare of other people. Always take into account the human element; not everything we do is about detached data and information.

10. Humility

The willingness to acknowledge one's shortcomings and see one's positive attributes in an accurate way. With intellectual humility, we are open to other people's viewpoints

11. Willing to challenge the status quo

Questioning long-established business practices; look for smart, thoughtful answers and methods that take into account all the current and relevant information and practices available

12. Open-mindedness

Able to step back from a situation to see the broader view and not become embroiled; avoid launching into a frenzied argument or taking sides; not jumping to conclusions; embrace other opinions and views.

13. Aware of common thinking errors

Do not allow logic and reasoning to become clouded by illusions and misconceptions. Common errors in thinking include circular reasoning, cognitive shortcut bias and confusing correlation with causation.

14. Creative thinking

Reject standardized formats for problem solving (think outside the box). Experimenting with different methods and considering different viewpoints; generate ideas.

15. Effective communicators

Starts with a clear thought process; coherently build our thoughts and express them; able to relay our ideas in a compelling way and then absorb the responses of others.

16. Active listeners

Engage in active listening and really hear others' points of view; actively try to participate; ask questions to help us distinguish facts from assumptions and probe deeper into the issue.

Generation Z Learners

Generation Z, born from 1995 through 2010, is rapidly replacing Millennials on college campuses. Unlike Millennials, Generation Z students grew up in a recession and are under no illusions about their prospects for employment after college.

Therefore, understanding Generation Z's mindset and goals is paramount to supporting, developing, and educating them through higher education.

Generation Z students have different learning styles, characteristics, motivations, skill sets, and social concerns than previous generations.

They are also entrepreneurial, innovative, and independent learners concerned with effecting social change.

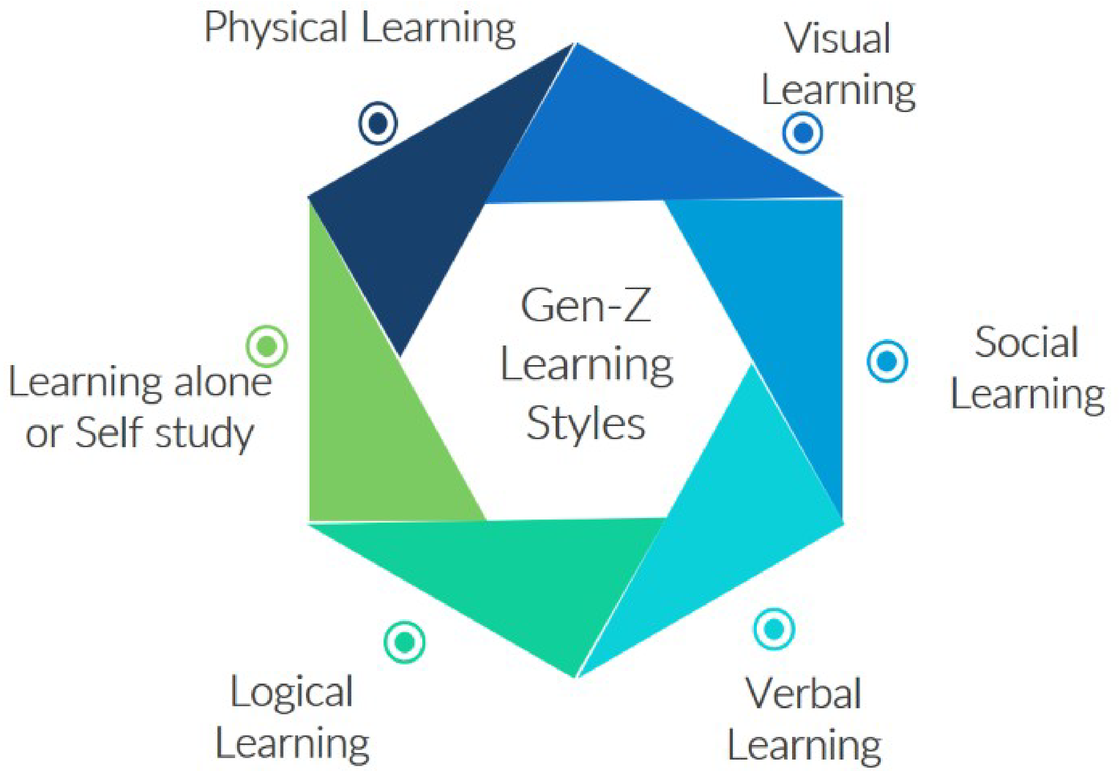
(Seemiller & Grace, 2016)

Gen-Z Learning Styles

Gen Z learning style #1:

They are multimodal learners.

- These learners need to be engaged through multiple learning channels where information can be delivered in a variety ways.



Gen Z learning style #2:

No spoon-feeding required.

- Gen Z children need to feel, hear, see, touch, and experience their lessons, all of which can be enhanced through the use of technology.

Gen Z learning style #3:

Too much information, not enough evaluation.

- These learners have access to all this information at a touch of a search, but they are not able to analyse the information and make sound judgements which reflects poor critical thinking skills.

(Abrahams, 2015)

Gen-Z Learner Characteristics

Work Style:

- Stays connected all the time.
- Adopts technology at high levels and pushes others to do the same.
- Approaches all aspects of life from a global and visual perspective.

Learning Preferences:

- Craves regular and technology-enhanced learning opportunities.
- Educational opportunities that use visually enhanced methods of teaching.

Attitudes toward Authority:

- Wants high intensity in relationships with those in authority, as well as co-workers.

(Pace University, 2020)

UNIT 3: INDIVIDUAL DIVERSITY

Introduction

Students who enter the classroom bring with them a unique background, set of skills, and educational needs that need to be addressed by educators.

Individual diversity is an understanding and acceptance that each individual is unique and differs along the dimensions of race, ethnicity, culture, socioeconomic status, age, gender, religious beliefs, political beliefs or other ideologies.

In today's society it is becoming more important to embrace it and educators should tailor their instructions to address the students' needs. Educators must provide students with an environment that is conducive to learning. If a student feels uncomfortable, unsafe, or not respected, then their chances of success in that class dramatically decrease.

Types of Individual Diversity

- Socio-cultural
- Ethnic/ Racial
- Socio-economic
- Linguistic
- Psycho-socio/ emotional
- Gender/ sexual orientation
- Physical abilities
- Religious & Political Beliefs

(Taubman College, 2020)

Accommodating Diversity in the Classroom

1. Understand students

Understand the strengths, weaknesses, personality traits, and learning styles of the students in the classroom.

2. Incorporate different teaching styles

Expose students to various teaching and learning approaches and methods

3. Equal Access to Opportunities

Students have an equal chance to participate and contribute to classroom activities

4. Celebrate diversity

Allow students to share to share their diversity with their peers.

5. Encourage Differing Perspectives

Encourage students to solve problems from different perspectives

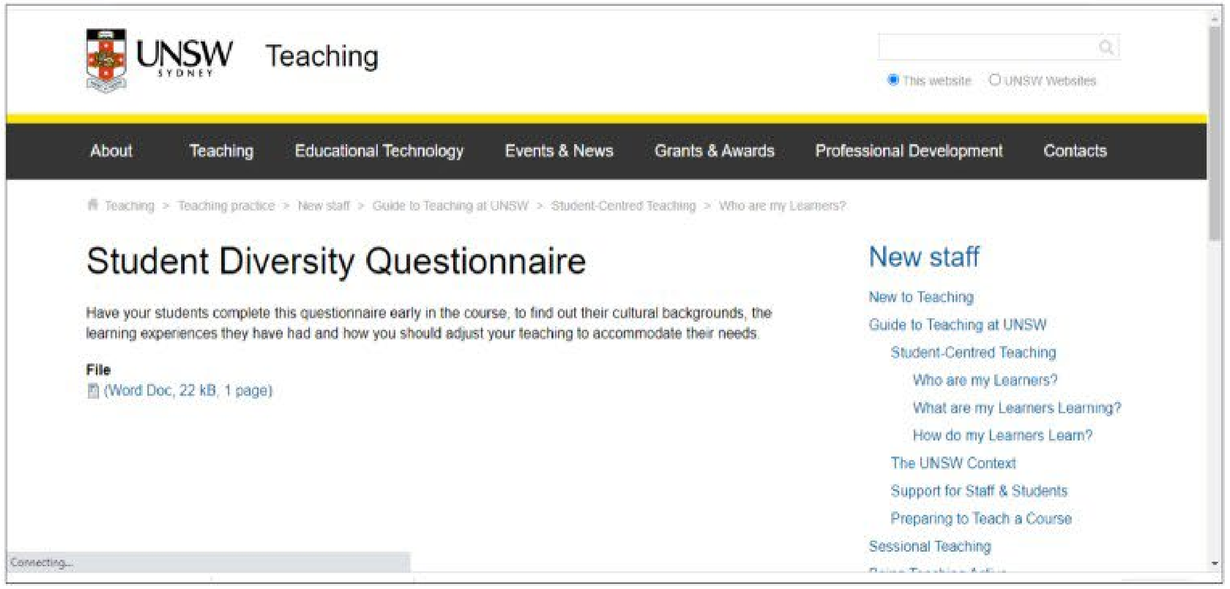
6. Include diverse learning materials

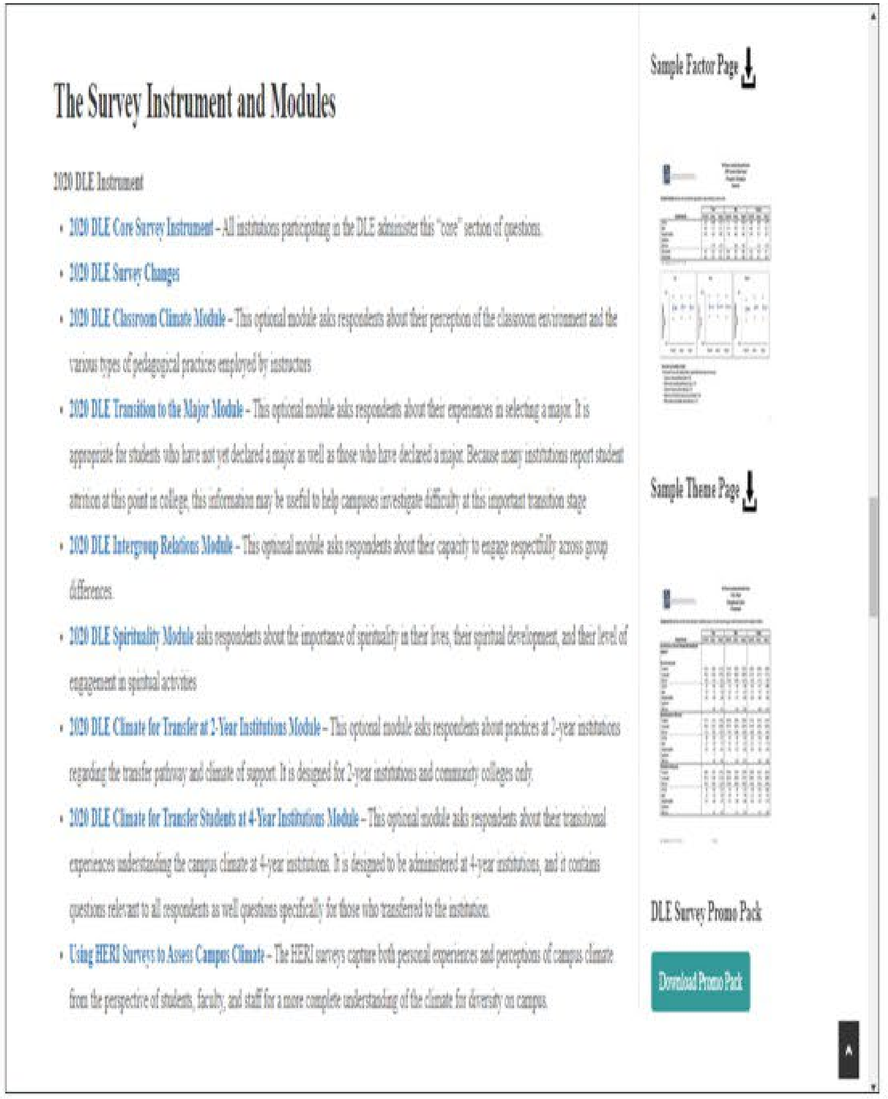
Include teaching and learning materials which represent the rich diversity of the world

(Excite Education, 2020)

Learners Diversity Instruments

Instruments that can be used to identify learners diversity:





CONCLUSION

A one-size-fits-all approach to education will invariably leave some students behind.

Therefore, it is important for educators to understand the differences in their students' **learning styles, characteristics** and **diversity**, so that they can implement best practice strategies in their teaching and learning activities, curriculum and assessments.

By designing experiences tailored to the learning style and goals of the students and accommodating individual diversity, educators can deliver personalised, relevant and continuous learning experiences to this generation.

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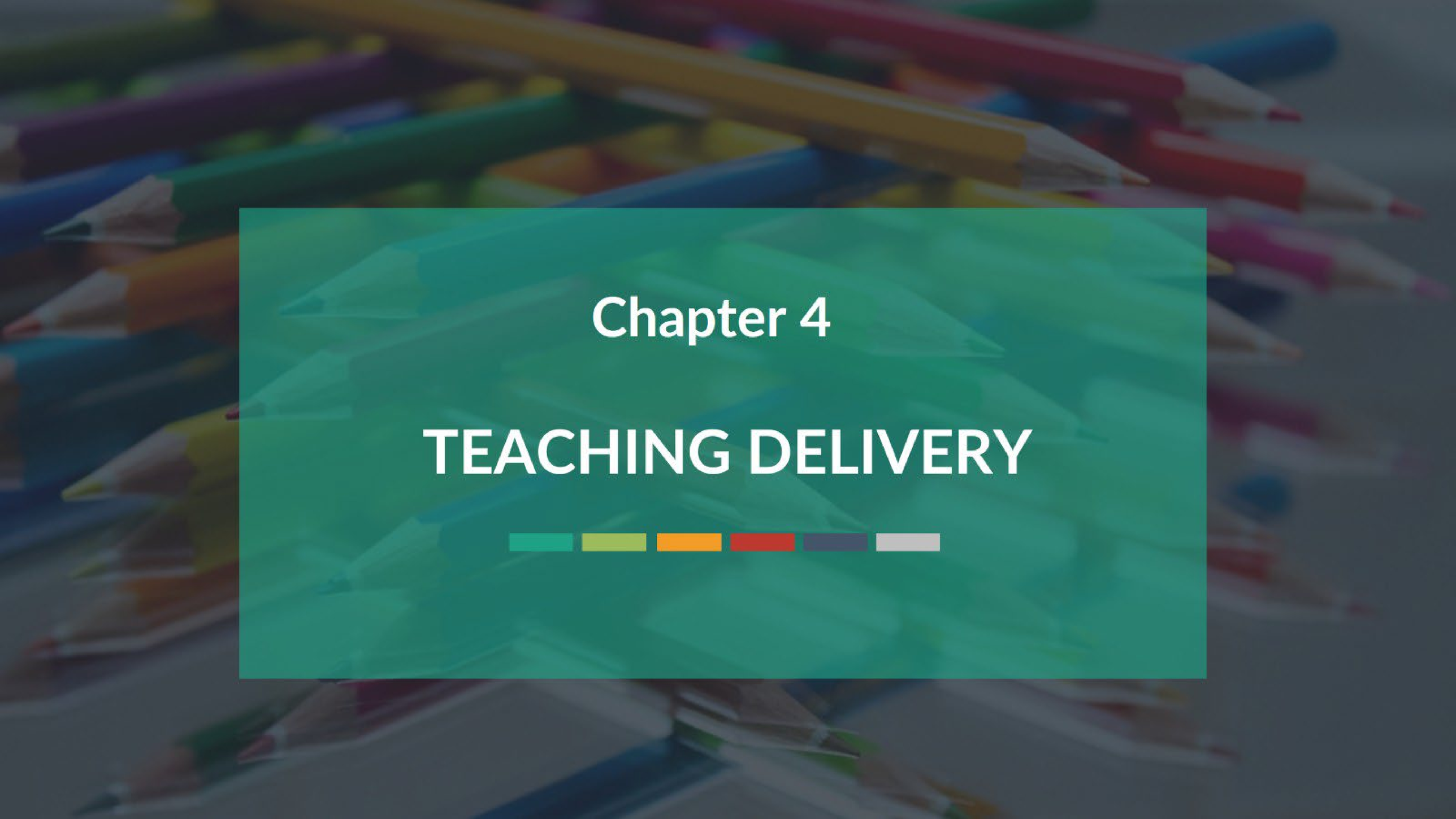


Chapter 4

TEACHING DELIVERY

Chapter 4: Delivery

Overview

1 Learning Theories

1. Behaviorism
2. Constructivism
3. Cognitivism
4. Humanism
5. Connectivism

2 The Study of Teaching & Learning

1. Pedagogy
2. Andragogy
3. Heutagogy
4. Peeragogy/Paragogy
5. Cybergogy

3 Approach, Method & Technique

1. Approach
   I. Eclectic
   II. Active
   III. Blended
   IV. Collaborative
   V. Learner vs Teacher-centred
2. Method
3. Technique

4 Methods of Teaching & Learning

1. Interactive Lecture
2. Problem-based Learning
3. Thinking-based Learning
4. Inquiry-based Learning
5. Cooperative Learning
6. Project-based Learning
7. Passion-based Learning

5 Online Learning

1. Delivery
2. Platform
3. Immersive Online Learning

Unit 1: Learning Theories

Five influential learning theories

INTRODUCTION

A learning theory is a set of ideas or principles that explains how learning can occur. A learning theory is valuable for guiding practices in education.

Learning Theories

The main ideas

BEHAVIORISM

Learning happens when there is a stimulus and a response to the stimulus resulting in a change in behaviours (e.g. from not knowing to knowing or from not being able to do to being able to do).

CONSTRUCTIVISM

Learning happens when learners are able to relate new information to prior knowledge and construct meaning themselves though active learning.

COGNITIVISM

Learning happens when learners are able to assimilate and accommodate new information to be stored in short term and long term memories and be able to retrieve them when needed.

HUMANISM

Learning happens when learners fulfill their potentials as they are being treated as individuals with unique capabilities and developed holistically.

CONNECTIVISM

Learning in the digital age happens when internet technologies give access to learners to learn through networking with other learners by creating, curating and sharing knowledge.

Behaviorist Learning Theory

The basic premises and principles

1. Learning happens when there is a stimulus and a response to the stimulus resulting in a change in behaviour.
2. Learning outcomes are clearly determined at the planning and beginning of the teaching & learning process.
3. Learning can be affected by the manipulation of the learning environment.
4. Timely feedbacks and rate of learning according to students capabilities are emphasised.
5. Teaching needs to be broken down into several stages, followed by reinforcement and feedbacks after each stage.

Constructivist Learning Theory

The basic premises and principles

1

Constructing, deconstructing, and reconstructing meaning is learning.

2

Learners construct their own knowledge of the world.

3

Learning occurs when learners restructure their existing ideas by relating new ideas to prior knowledge.

4

Learning is an active mental as well as a social activity.

5

Learning involves language and is contextual.

6

One needs knowledge to learn.

7

It takes time to learn.

8

Metacognition and motivation are key components in learning.

Cognitivist Learning Theory

The basic premises and principles

Learning is a complex mental process that involves the processing of information.

Learning happens when learners are able to assimilate and accommodate information and relate to their prior knowledge stored in memory.

The cognitive processes involved in learning are attention, perception, repetition, coding and retrieving.

Information that is chosen through attention and follows the necessary cognitive processes becomes learners knowledge and understanding.

Humanistic Learning Theory

The basic premises and principles

1. All humans have a natural tendency to grow, to learn, and to develop fully.
2. The ultimate purpose of education is human development and personal growth (becoming fully functional, self-actualised human beings).
3. Learning is enhanced by making personal connections to students' lives, emotions, and experiences.
4. Students learning should be as self-directed as possible.
5. The full spectrum of the human experience should be included in the educational experience.

Source:

Connectivist Learning Theory

The basic premises and principles (Duke, Harper, & Johnston, 2013)

1. There are some criticisms against it as a proper learning theory but it has its usefulness.
2. Learning in the digital age happens when internet technologies give access to learners to learn through networking with other learners by creating, curating and sharing knowledge.
3. Learning consists of the ability to construct and traverse the network of connections.
4. Learning can happen across peer networks that takes place online.
5. An understanding of where to find knowledge may be more important than answering how or what that knowledge encompasses.

Duke, B., Harper, G., & Johnston, M., 2013. The International HETL Review, Special Issue.

Unit 2: The Study of Teaching and Learning

Based on different focus of teaching and learning

INTRODUCTION

The pedagogical practices of an educator are very much influenced by the age group and capability of learners, the content being delivered, the learning outcomes, and the physical provisions available. Based on these factors, there are quite distinct field of studies of teaching and learning namely; pedagogy, andragogy, heutagogy, peeragogy, and cybergogy.

Five studies of teaching and learning

Main ideas

Pedagogy
The art and science of teaching in general but as other terms emerged, pedagogy usually refers to the teaching of children (Knowles, 1973).

Andragogy
The art and science of helping adults learn.

Heutagogy
The study of self-determined learning.

Peeragogy
The study of peer-based learning.

Cybergogy
The study of learning that is engaged in an online environment.

Pedagogy

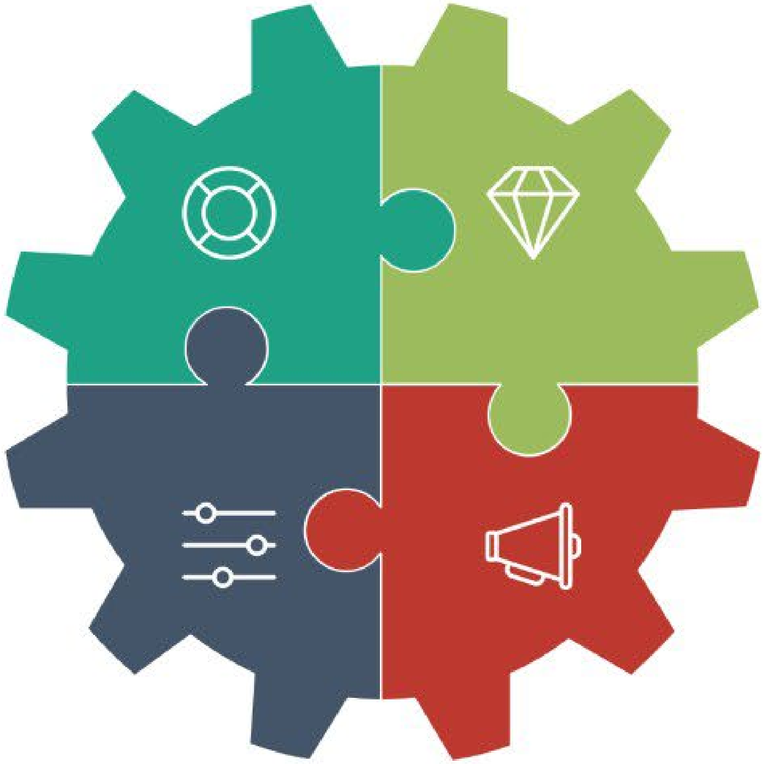
Basic principles (when the focus is on the teaching of children)

- Teaching involves leading leaners and modifying their learning experience and understanding.
- Recognise that learning takes time.
- Build learners beliefs in their own capacities to learn successfully and their understanding of the relationship between effort and success.
- Demonstrate and discuss explicitly what learners are intended to do and learn and assess continuously that learning is occurring.
- Set high expectations for every learners' progress and targets for improving learners' performances.
- Facilitate reflection, and double loop and triple loop learning (metacognition).
- Promote deep learning by emphasising underlying principles, concepts and big ideas that are developed over time.
- Create learning environments in which all learners are engaged, challenged, feel safe to take risks and are supported to learn.
- Connecting new material to prior learning and assisting students to see the continuity in their learning over time.
- Provide regular and timely feedback that make clear what actions the learners can take to make further learning progress.

Andragogy

Basic principles

- As adults are self-directed learners, they should be involved in the planning and evaluation of their learning.
- Learning should be problem-centred rather than content-centred as adults bring a great deal of experience into the classroom.
- Education provided needs to facilitate immediate application in the learners respective profession.
- Learning activities should be in the context of common tasks performed, i.e. task-oriented.



Heutagogy

Basic principles (Hase, 2014, p. 13)

- Involve learners in designing their own learning content and process as a partner.
- Recognise that learning is non-linear.
- Differentiate between knowledge and skill acquisition (competencies) and deep learning.
- Provide a lot of resources and let the learners explore.
- Recognise the importance of informal learning and that we only need to enable it rather than control it.
- Recognise that teaching and teacher control can become a block to learning.
- Facilitate reflection, and double loop and triple loop learning (metacognition).
- Individualise learning as much as possible.
- Have confidence in the learner.
- Make the curriculum flexible so that new questions and understanding can be explored as new neuronal pathways are developed.
- Develop research skills including how to be discerning about ideas and content.
- Facilitate collaborative learning.
- Provide flexible or negotiated assessment.
- Enable the learners to contextualise concepts, knowledge and new understanding.
- Use experiential learning methods.

Peeragogy/Paragogy

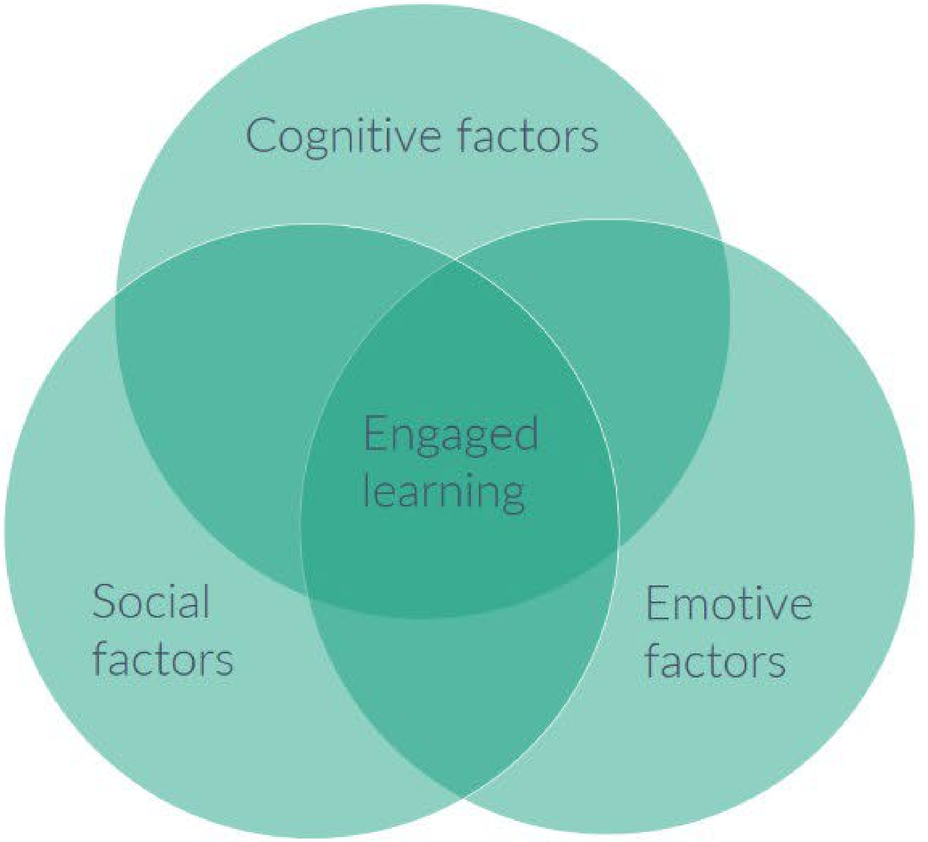
Basic principles

1. Learning is distributed and non-linear
2. Peers provide feedback and assess each other through peer assessment
3. Leaners co-create their knowledge and learning environment
4. Learning can happen from self-organised group interaction among peers

Cybergogy

Basic principles and the MM Model for engaged learning (Wang & Kang, 2006)

- Leaners are truly engaged when they are behaviorally, intellectually and emotively involved in the learning process.
- Information and communication technology can greatly enhance learners engagement.
- Create learner-centred, autonomous and collaborative virtual learning environment.
- Learning and assessment tasks need to be challenging, authentic, and multidisciplinary.
- The efficiency and effectiveness of learners' information processing can be affected by the range of emotions emerging from the learning process.

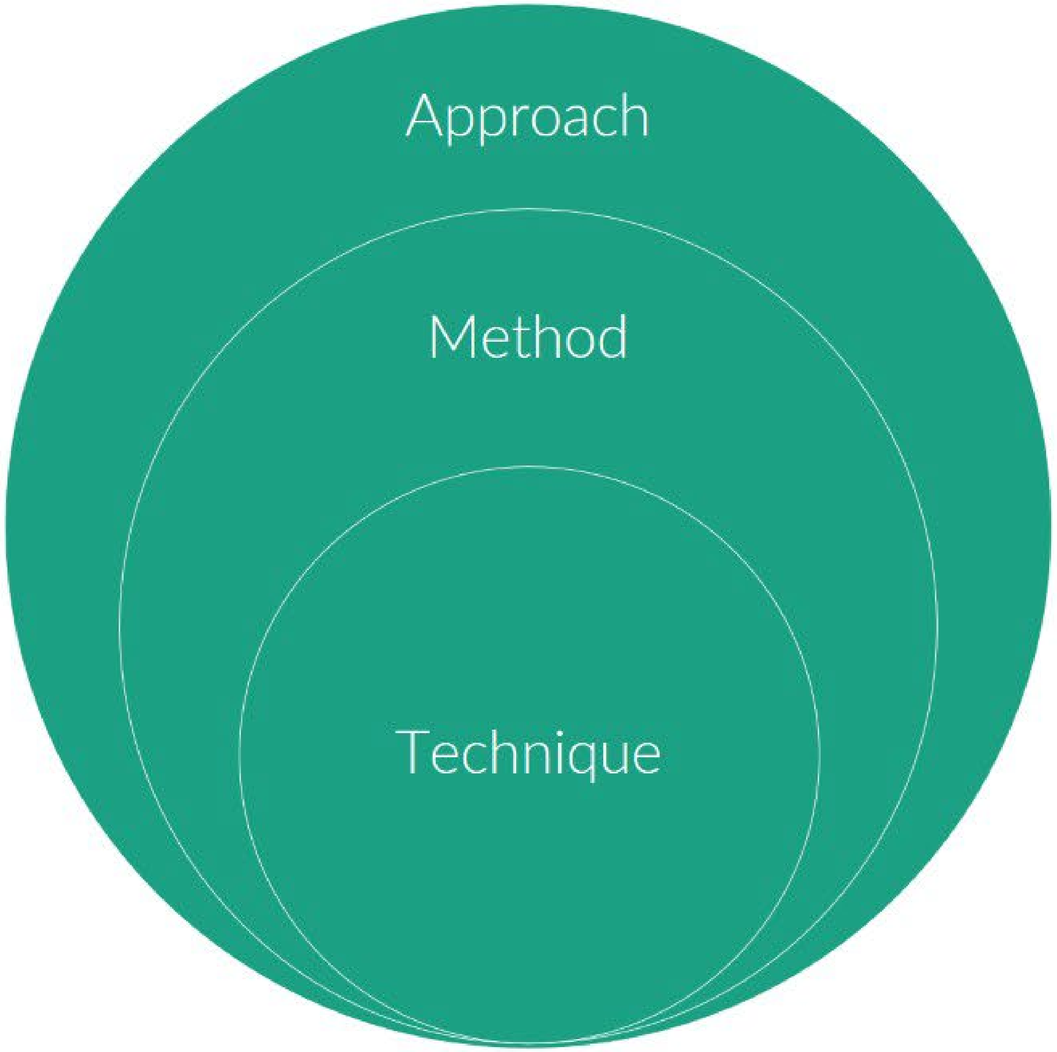


Unit 3: Approach, Method and Technique

Teaching and learning approach, method and technique defined

As educators, it is important to be able to differentiate concepts as they are applied in the context of teaching and learning so that educators have a common language and understanding when communicating with each other. Three concepts that are often used interchangeably are approach, method and technique. In this unit, these three terms will be defined and clarified.

DEFINITIONS



Approach

A perspective or viewpoint on teaching and learning. It has underlying learning theories that provide the philosophy and general principles to the whole process of teaching and learning.

Method

A systematic, well-planned procedure of the teaching and learning process to facilitate and enhance learners' learning.

Technique

A particular way of carrying out specific steps of the teaching and learning process

Some examples of approach

Eclectic Approach

Use of various methods of teaching and learning

Blended Learning Approach

Blending face-to-face learning in and outside classrooms with virtual learning

Active Learning Approach

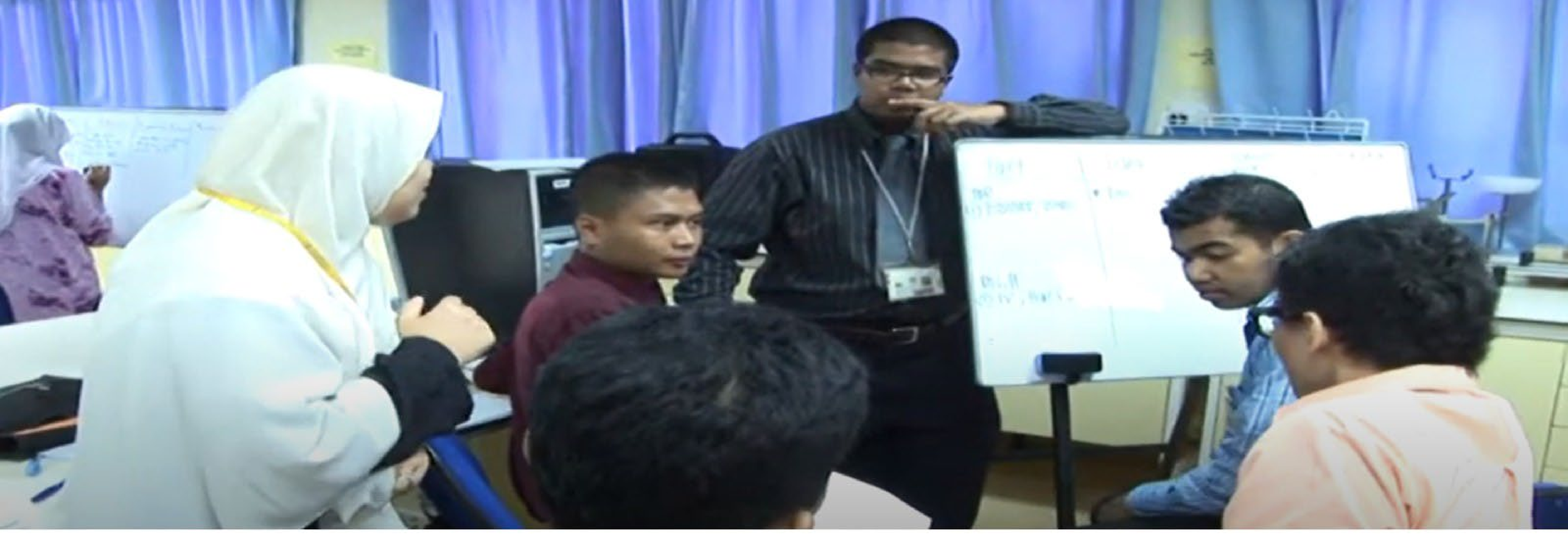
Focus on engaging and motivating learners through hands-on, minds-on, and hearts-on activities

Learner-centred/teacher-centred Approach

More learner-controlled or teacher-controlled learning

Collaborative Approach

Focus on learning through interactions between groups of learners



Eclectic Approach

Use of various methods of teaching and learning

When using the eclectic approach, educators will as much as possible vary their methods of teaching and learning so as to leverage on the strengths of each method. In this way, educators are able to cater for the diverse learning styles of learners in addition to other factors such as the nature of the subject matter, available facilities and class size.

Various teaching and learning methods

Among the teaching and learning methods that can be used under the eclectic approach

Cooperative Learning
A lesson on Cooperative Learning using the Jigsaw technique

Inquiry-based Learning
A lesson on Archimedes Principle

Problem-based Learning
A lesson on Electrical Energy and Power

Project-based Learning
A lesson on Nuclear Energy

Game-based Learning
A lesson on Series and Parallel Circuits

Interactive Lecture
A lesson on Electric and Magnetic concepts

Challenge-based Learning
A lesson on Gamification

Thinking-based Learning
A lesson on Classifying Deductively and Bloom's Taxonomy

More about teaching and learning methods in Unit 4

Active Learning Approach

Engaging and motivating learners through hands-on, minds-on, and hearts-on methods and activities

The focus of the active learning approach is to actively engage learners through the use of hands-on, minds-on and hearts-on methods and activities of teaching and learning. Thus, the learning must involve learners with not only learning by doing but also actively thinking about what and why they are doing any learning activities and having fun.

Active learning Approach

can be categorised into two

SIMPLE

Methods/activities that can relatively easily be incorporated during a lesson with little or no preparation time on the part of the instructor

- Peer instruction
- Minute paper
- Think-pair-share
- Concept mapping
- Predict-Observe-Explain

COMPLEX

Methods/activities that require longer duration, careful planning and structuring and usually have learners work collaboratively in groups

- Problem-based learning
- Case-based learning
- Project-based learning
- Game-based learning
- Field experience

Blended Learning Approach

Blending face-to-face learning in and outside of the classrooms with virtual/online learning

Blended learning approach leverages both face-to-face learning either in or outside the classrooms with online or virtual learning through the use of the internet technology. There are several Blended Learning approach models but the most influential is the Flipped Classroom model.

Blended Learning Approach

When and where learning can happen

Hybrid Learning Approach

The best of both worlds

Hybrid learning refers to a teaching method that involves students attending in person at a learning location with a teacher. At the same time, other students participate in the learning online. The teacher facilitates the learning session synchronously.

Hybrid learning design is a structured approach to developing learning materials and activities to achieve course learning outcomes through the delivery of face-to-face and online instruction simultaneously.

Garis Panduan Pelaksanaan Kursus Pembelajaran Hibrid di Institusi Pendidikan Tingg, KPT 2024

HyFlex Learning Approach

The future of education: Connected and personalized

HyFlex or Hybrid-Flexible is a student-centered instructional approach in higher education that combines **face-to-face learning**, **online synchronous learning**, and **online asynchronous learning** within a single course.

This creates a flexible environment where students can choose how they participate in class sessions, based on their individual needs and preferences. HyFlex learning fosters student engagement, accessibility, and personalization, making it an adaptable option for higher education.

Flipped Classroom

Flipping the traditional model of learning into blended learning

Traditionally, learners go through lecture and smaller tutorial classes. During lectures, learners are given inputs and are expected to acquire new knowledge. Subsequently, learners are expected to complete tasks/homework outside of the classroom to apply what they have learned during the lecture.

Flipping the classroom means that learners are expected to get inputs through structured or self-directed online learning, complete tasks that engage learners before the class and when the class meets, learners do activities that involve the application of knowledge and higher order thinking such as problem solving, discussion and debate.

Collaborative Approach

Focus on learning through interactions between two or more learners/peers

Collaboration involves learning together between two or more learners/peers by working on a non-routine cognitive task. When learning collaboratively, the number of learners learning together can be as small as one pair or as large as several thousands (as the case in learning collaboratively through the Massive Open Online Courses (MOOC) or even millions of learners in a society. In addition, the task can be very intensive that takes only one or two hours or can lasts up to several generations (e.g. a group of scientists working on finding solutions to a particular problem).

The criteria to define a collaborative interaction

Interactivity

The degree to which the interactions influence the peers' cognitive processes. Collaborative interactions let learners truly work together on a given task rather than work independently based on a division of labour and then only come together.

Synchronicity

The communication involves a high degree of synchronicity.

Negotiability

Negotiation can only happen when the cognitive task is non-trivial. Thus, it enables learners who are in the collaborative situation to build a shared solution/understanding from different viewpoints, misunderstanding and disagreements.

(Dillenbourg, 1999)

Online Collaborative Learning Tools

To increase the scale, frequency, and quality of interactions

25% 15 collaborative tools that are not Google

25% 6 Online Collaborative Tools to Engage Learners in Teamwork

25% 10 of the Best Online Tools for Leaner Collaboration

25% 30 of the Best Digital Collaboration Tools For Leaners

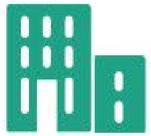
Learner-centred vs. Teacher-centred Approach

Focuses on who plays the bigger role in ensuring learning

These two approaches can be placed on a continuum of two extremes based on who plays the central role in ensuring the learners learn. Learner-centred approach places the learners at the centre of learning, making them take on more responsibility towards their own learning while the teacher facilitates the learning process. On the other continuum, teacher-centred approach places the teacher as the person with the highest degree of responsibility in ensuring learners learn while the learners act as recipients of information.

The continuum of learner-centred and teacher-centred approach

Some examples of teaching methods under each approach



HIGHLY TEACHER-CENTRED

Standard Lecture/Direct Instruction

MODERATELY TEACHER-CENTRED

Interactive Lecture

Confirmation/ Structured Inquiry

MODERATELY LEARNER-CENTRED

Problem-based Learning

Guided Inquiry

HIGHLY LEARNER-CENTRED

Open Inquiry

Cooperative Learning: Jigsaw technique

Some examples of teaching and learning techniques

A particular way of carrying out specific steps of the teaching and learning process

KWL chart

Learners state their prior knowledge (Know), learning target (Want) and learning achieved (Learned)

Focused listing

Ask a question that requires students to list down their answer.

.

Reflecting on thinking

4-step technique. Ask the following questions:

(i) What was the thinking did we just do?
(ii) How did we do it?
(iii) Was it a good way to do it? Why?
(iv) How would you do it the next time it is called for?

Two-minute paper

Ask a question and give learners two minutes to jot down their answers.

Think-Pair-Share

Present a question. Let students think individually first, then ask them to discuss in pairs/nearest neighbour, and finally, share their responses to the whole class.

Questioning

6-step technique:

(i) Ask a question to the whole class
(ii) Give appropriate wait time (thinking time)
(iii) Select a student to answer
(iv) Ensure everybody's attention to the answer
(v) Respond appropriately
(vi) Reiterate the best answer

Unit 4: Teaching and Learning Methods

What, Why, How & Examples

INTRODUCTION

To engage, empower
and emancipate

Methods of teaching and learning are organised, orderly, systematic, and well-planned procedures aimed at facilitating and enhancing students' learning. When selecting or designing methods of delivery, one has to consider primarily the abilities, needs, and interests of the learners and constructively align these to the intended learning outcomes along with the assessment tasks. For 21st century learning to happen, where the focus is on developing and enhancing skills such as creative and critical thinking, collaboration and communication and the inculcation of values, methods and techniques which actively engage, empower and emancipate learners through minds-on, hands-on and hearts-on activities should be the chosen ones.

Some examples of teaching and learning method

under the Active Learning Approach

Interactive Lecture

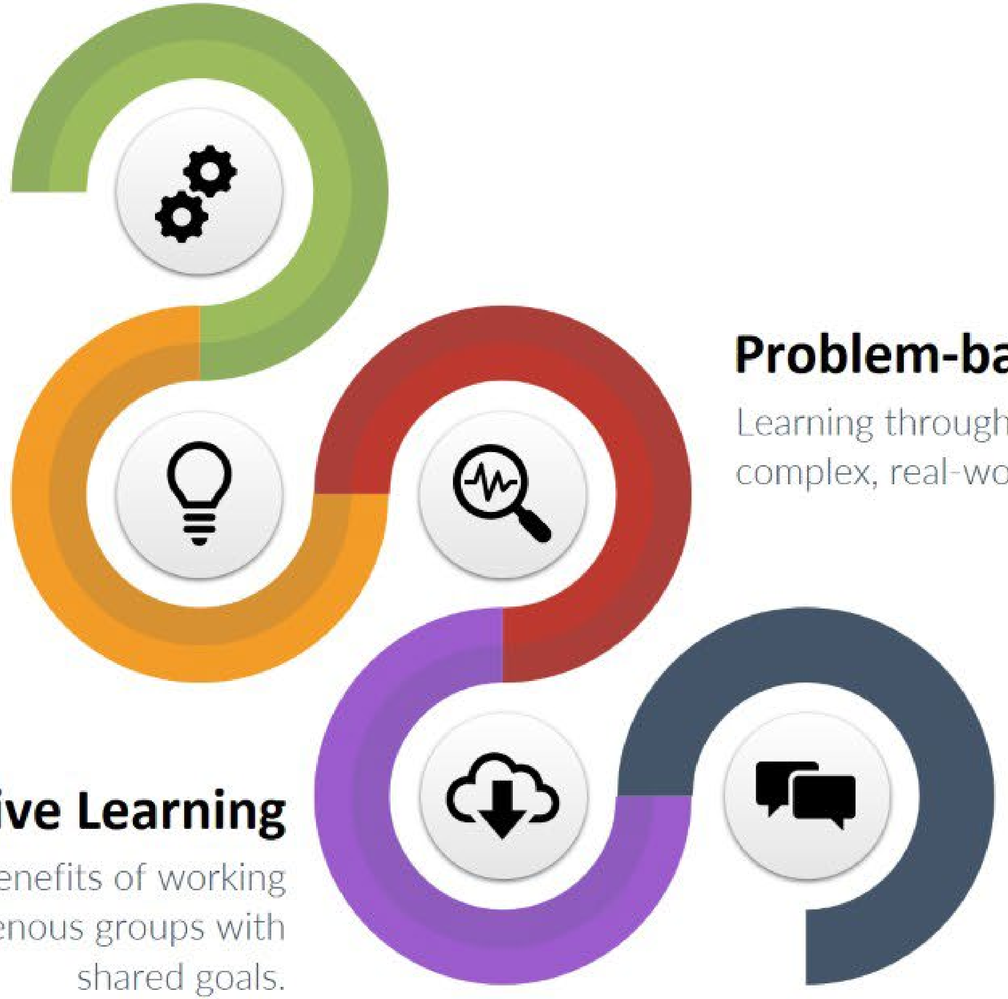
The most lecturer-friendly way to transform the standard one-way lecture into a more engaging lecture session.

Inquiry-based Learning

Learning through formulating researchable questions and conducting investigations to answer those questions.

Cooperative Learning

Learning by leveraging the benefits of working together in small heterogenous groups with shared goals.

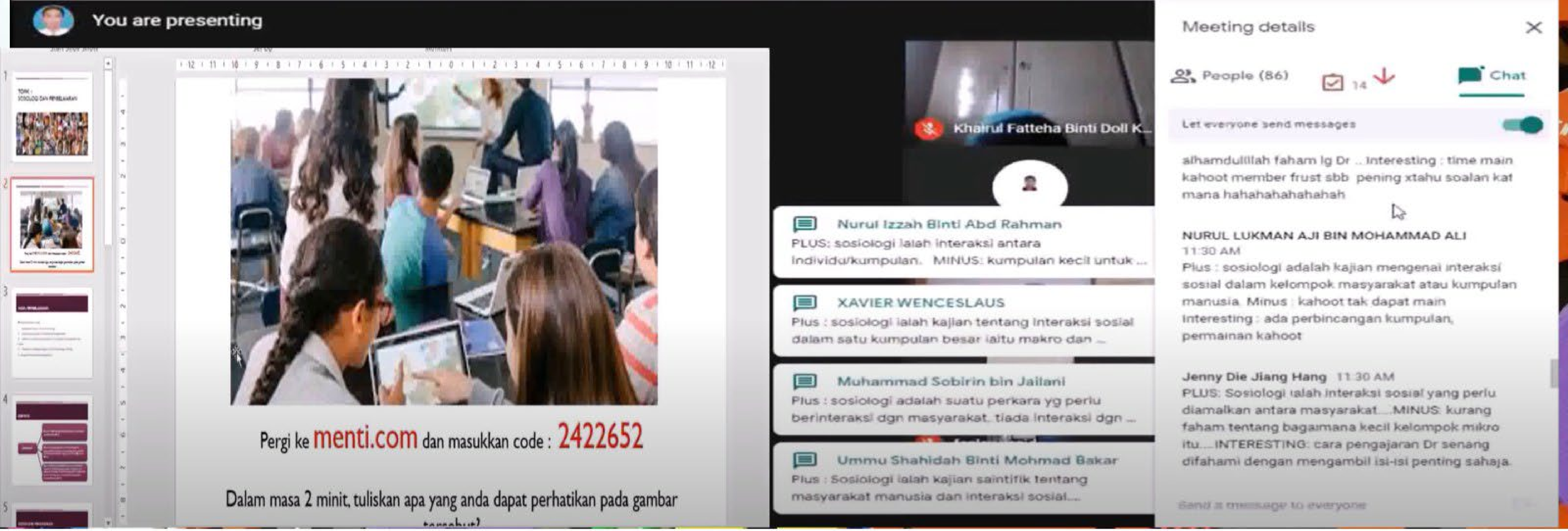


Problem-based Learning

Learning through solving ill-structured, complex, real-world problems.

Thinking-based Learning

Uses the infusion learning approach where the teaching of content is infused with the teaching of thinking skills.



What is an Interactive Lecture (IL)?

The CDEARA Model (Nurulhuda & Azwani, 2014)

A lecture that is interspersed with other activities besides listening and note-taking, that enable students to actively participate during the lecture involving learner-teacher, learner-learner, learner-material and learner-technology interactions. The 'other activities' when used in a lecture context are called Interactive Lecture Tools (ILT). The components of the CDEARA Model are Connect (C), Deliver (D), Engage (E), Apply (A), Reflect (R), and Assess (A).

Interactive Lecture Tools (ILT)

Engaging activities/techniques that can be used during lecture

Questioning

Punctuate lectures with verbal questionings

KWL Chart

A chart that consists of statements of prior knowledge, learning target and learning achieved

Brainstorming

Ask for ideas around the class, one by one

Two-Minute Paper

Ask a question and give students two minutes to jot down their answer

Focused Listing

Ask a question that requires students to list down their answers

Video Clips

Direct students' attention on some aspects of the video before playing the video

Demonstrations

Do live demonstration while lecturing

Think-Pair Share

Present a question. Let students think individually first, then ask them to discuss in pairs/nearest neighbour, and finally, share their responses with the whole class

Interactive Lecture Tools (ILT)

Engaging activities/techniques that can be used during lectures

Plus-Minus-Interesting

Can be used as a reflection template. Reflection can be on the content learned, the thinking (metacognition), or on the affective component of the learning experience

Predict-Explain-Observe-Explain

PEOE technique is an interactive demonstration where students are asked to predict a particular event, explain their predictions, then observe and finally explain

Simulations

Simulations that are suitable for use during lectures are digital simulations such as Phet simulations (for teaching Science and Mathematics) and BrainPOP

Why do Interactive Lecture?

The benefits of doing Interactive Lecture: The CDEARA Model

Increase students' engagement

The monotony of a standard lecture is broken down by chunking the lecture content into smaller units and alternately embedding ILT throughout the lecture. Thus, students' learning experiences are varied and therefore attract students' attention and keep them actively engaged throughout the lecture.

Foster thinking

The use of questioning in various formats including the use of graphic organisers and thinking templates make for a purposeful, systematic and thought-provoking process of fostering thinking.

Deepen understanding

The use of ILT make students' learning experiences more concrete compared to the use of mainly verbal and visual symbols as in the standard lecture. By using the ILT alternately with lecturing, we enrich students' learning experiences and thus lead them to greater learning.

Continuous assessment

Many ILT can serve as assessment tasks in addition to them being part of the learning activities. Thus, learning activities and assessment are seamlessly intertwined so that students receive immediate feedback during the learning process.

Theories that underpin Interactive Lecture

The CDEARA Model

Constructivism

Ascertain prior knowledge and facilitate the meaning making process

Dale Cone of Experiences

Make learning experiences more concrete and enriching to increase understanding

Information Processing Theory

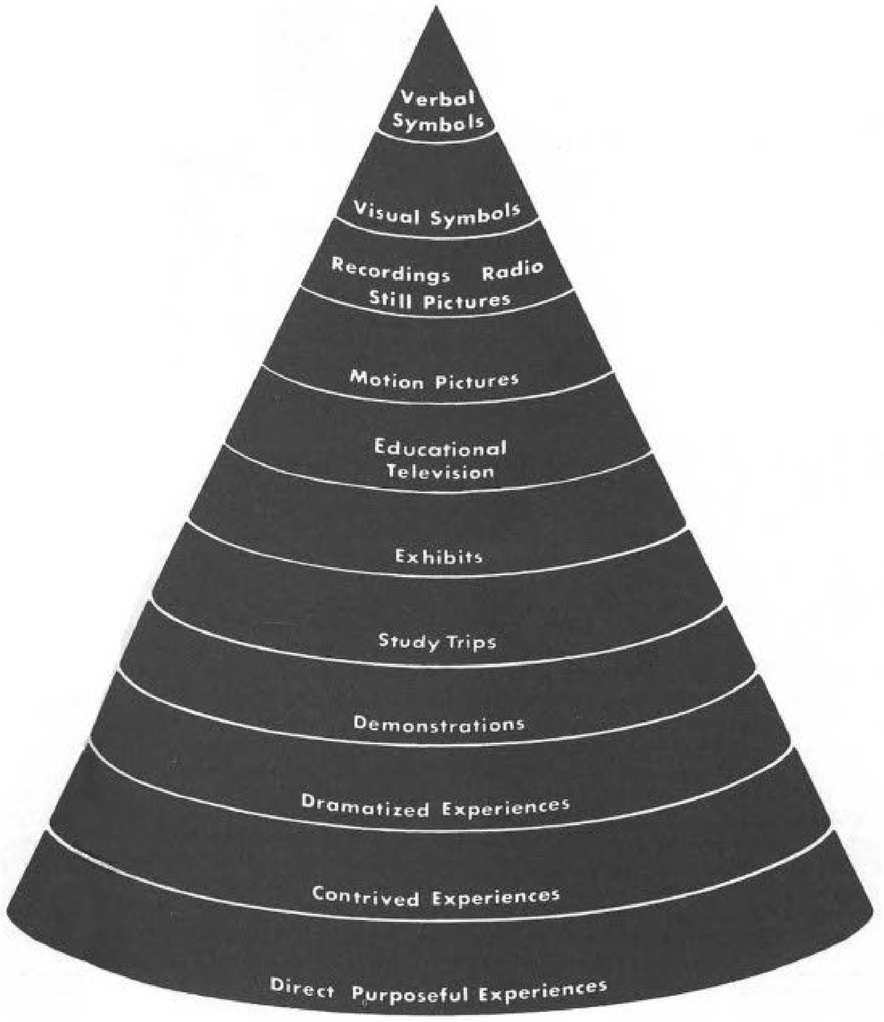
Chunking the lecture content into smaller units helps with storing more information in the working memory

Multiple Intelligences

Use of various ILT allow students to learn through multiple senses thus catering for students different learning styles

Dale's Cone of Learning Experiences

How it underpins Interactive Lecture



Dale's Cone of Experience (1969, p.107)

The Cone is organised by starting with the most **abstract experiences from its top**, following through to the most **concrete experiences at its bottom.** Students experience mostly verbal and visual symbols when they read and hear, as what basically happens during the standard lecture. These two represent the more abstract experiences and in terms of learning would be the least enriching compared to the other learning experiences on the Cone.

By innovating the standard lecture into an interactive lecture, we will be able to incorporate more concrete experiences by enabling students to move from being able to just define, describe and explain towards apply, analyse, evaluate and create. By using the ILT alternately with lecturing, we enrich students' learning experiences and thus lead them to greater learning.

How to do an Interactive Lecture

The CDEARA Model

Connect

Attract attention, elicit ideas and relate students' everyday experiences to the content.

Deliver

Present content in small chunks. 10 minutes, tops.

Engage

Allow students to interact through multiple senses via the use of ILT thus enabling them to process content deeply and meaningfully and develop thinking skills.

Assess

Assess students' learning throughout the learning process to ensure the attainment of the learning outcomes.

Reflect & Close

Provide closure by having students reflect on what and how they learn. Connect to the next lesson.

Apply

Provide enrichment tasks to facilitate transfer of learning. Focus on the 'big idea' of the lesson and provide new and challenging contexts preferably related to the real world.

How to do an Interactive Lecture

The CDEARA Model and lesson plan template

The CDEARA Interactive Lecture Model consists of six components. Although some parts of the model appear to be sequential (for example, the components Connect, Deliver, A pply and Reflect are sequential), others such as Engage and Assess are components of the interactive lecture that are executed throughout the lecture.

Interactive Lecture Lesson Plan		
Theme/Title/Topic: **Target Group:** **Duration:** **Big Idea:**		
Students' Learning Outcomes: Knowledge: Skills: Attitudes/Noble Values/Soft Skills: **Equipments and Resource Materials:**		
Teaching and Learning Activities		
Connect	**Engage (ILT)**	**Assess**
Deliver	**Engage (ILT)**	**Assess**
Unit 1: **Unit 2:** **Unit 3:**		
Apply	**Engage (ILT)**	**Assess**
Reflect and Close	**Engage (ILT)**	**Assess**

Examples

Interactive Lectures in Higher Ed.

Example 1

Multimedia Interactive Lecture

(Nurulhuda & Noor Azman, 2012)

An interactive lecture that is interspersed with a plethora of activities/techniques with a focus on multimedia resources.

Example 2

Online Interactive Lecture

An interactive lecture that is fully online using the CDEARA Model that focus on learning about listening.

Example 3

Online Interactive Lecture

An interactive lecture that is fully online using the CDEARA Model focusing on Sociology.

Example 4

Peer Instruction (Mazur, 1997)

An interactive lecture that is mostly interspersed with conceptual type questions and executed using the think-pair-share technique with the use of technology.

Example 5

The Fully Interactive Physics Lecture (Meltzer & Manivannan, 2002).

A variant of an interactive lecture where it is distinguished by lecturer–student dialogues that closely resemble one-on-one instruction.

What is Problem-based Learning (PBL)?

A problem-driven method of teaching and learning

Problem-based learning is one of the methods that falls under the umbrella term of active learning. The unique phases of PBL make PBL distinct from other methods of learning. Learners learn by first encountering an ill-structured, real world problem delivered through a problem scenario. By analysing the problem scenario, learners are able to identify the problem, generate ideas, propose solutions and share their findings making PBL a systematic inquiry process of learning.

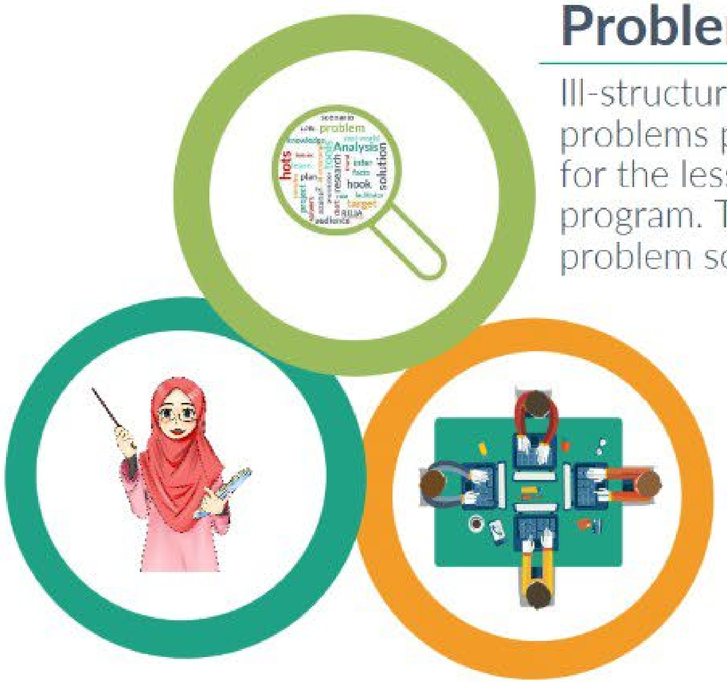
The PBL Conceptual Model

Problem-Problem Solvers-Facilitator Interactions

Through PBL, learners learn by encountering ill-structured real-world problems first. In the process of providing solutions to these problems through exploration and investigations, they acquire new knowledge, skills and values. Thus, lecturers are guides-on-the-side or meddler-in-the-middle as their primary roles are that of facilitators and coaches.

Problems

Ill-structured, complex or challenging problems provide the focal point(s) and stimuli for the lesson, course, curriculum and/or program. There are more than one acceptable problem solutions.



Facilitators

Lecturers take on the role of facilitators and coaches where they introduce the subject for problem solving, encourage sharing of thoughts and reflection, providing clues when necessary and feedback thus promoting an environment of inquiry.

Problem solvers

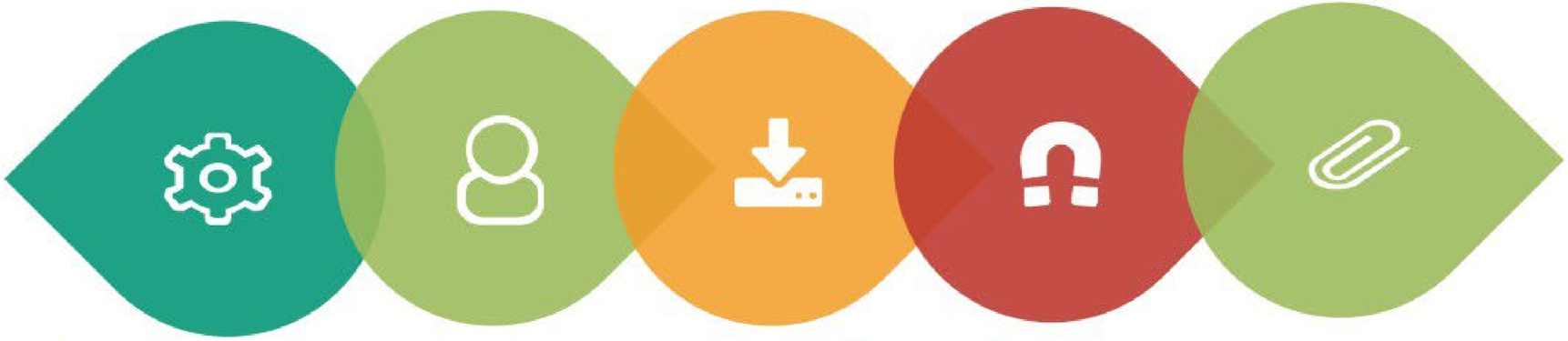
Learners are problem solvers as they work together in small groups and independently to understand the problem and provide multiple solutions to the problem(s) thus enabling them to acquire and apply new knowledge, skills and values.

Six characteristics of Problem-based Learning

Howard Barrows (1996)

What is a Problem Scenario?

A problem scenario is a story of actual happenings in the real-world or fiction but is very much related to real-life situations. It can have different forms such as narrative texts, videos, pictures, photos, newspaper clippings, depending on the concept under consideration and the level of detail that one wants to capture in the scenario.



It sets the context/situates the problem

It informs learners the role they should adopt when solving the problem

It embeds the content of the subject matter

It has a catchy title

It includes a hook. A hook is something that can attract learners attention and motivates them to find a solution to the problem

Problem Scenario Resources

Why do PBL?

The benefits of PBL

1

Foster higher order thinking

Acquisition, integration and application of content and development of process skills such as problem solving, research, inquiry and creative/critical thinking.

2

Inculcate soft skills and values

Learners learn through social interactions, discussions and peer-teaching with group members and thus develop team work skills, communication skills, time management and emotional intelligence.

3

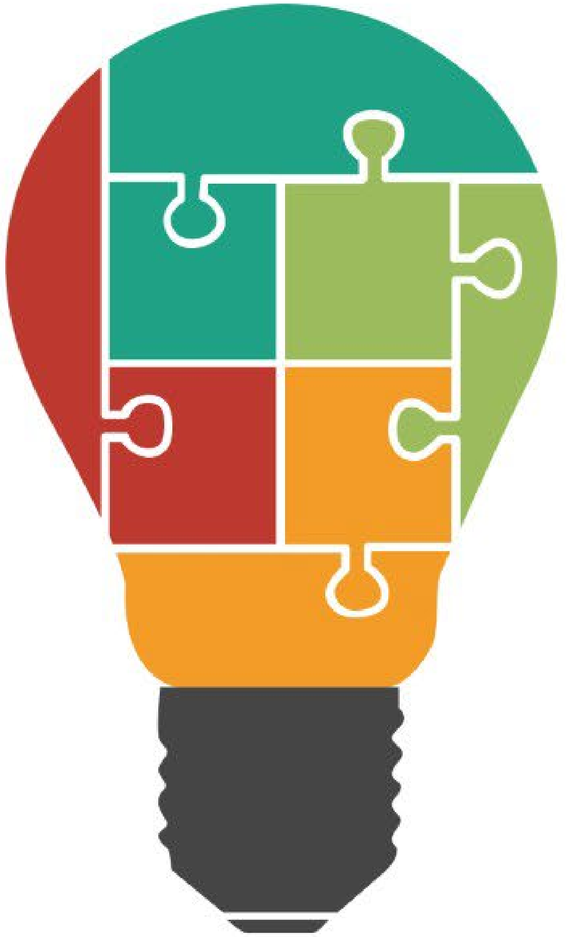
Use of various assessment modes

Can be a combination of journals, portfolios, presentations, self/peer evaluation, written reports and examinations. Thus, assessment are more balanced and fair.

4

Engaging and empowering learners

Learners take a more active responsibility for learning and thus are more engaged and empowered as they have to work independently in groups and conduct self-directed learning.



Theories that underpin Problem-based Learning

Constructivism

Learners make use of prior knowledge and actively seek new information to construct and co-construct understanding when presented with a problem that needs resolution.

Adult Learning Theories

Related theories are andragogy, self-directed learning and transformational learning.

How to do Problem-based Learning?

The UPSI *i*-PBL Model

PHASE 1: GROUP SETTING

- Form **groups**
- Introduce team members
- Identify and clarify roles
- Set ground rules

PHASE 2: UNDERSTANDING THE PROBLEM

- Introduce the problem through a problem scenario
- Identify related content area
- Identify learners' role in the context of the problem

PHASE 3: ANALYSING THE PROBLEM AND ASSIGNING TASKS

- Extract relevant information from PROBLEM SCENARIO
- Determine what need to be learned
- Develop inquiry questions
- Plan learning activities
- Assign tasks based on questions and/or activities among group members.
- Reflect and improve
- Use thinking templates to facilitate thinking,

continue

PHASE 4: SELF-DIRECTED LEARNING

- Carry out self-directed learning activities

How to do Problem-based Learning?

The UPSI *i*-PBL Model

PHASE 5: FORMULATING A PROBLEM SOLUTION

- Share information and evaluate the resources for credibility and validity
- Synthesise and apply relevant new knowledge to the problem

PHASE 6: PRESENTING THE PROBLEM SOLUTION

- Deliver the problem solution
- Handle question and answer session
- Reflect

PHASE 7: CLOSURE

- Reflect and give feedback
- Debriefing

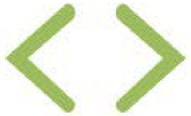
Lesson plan template

RiLIA Thinking Template

For facilitating the analyses of problem scenario and is used in Phase 3 (UPSI *i*-PBL Model)

Relevant Information

Extract relevant information from the problem scenario.



Learning issues

Generate ideas, assumptions, inferences, and hypotheses about the problem based on the relevant information. Determine what need to be learned to understand and solve the problem.

Inquiry questions

Develop questions based on what need to be learned to understand and solve the problem.

Activities

Plan activities to provide problem solutions.

Alternative thinking te

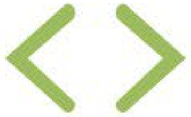
FILA Chart

Temasek Polytechnic, Singapore

FACTS

Information extracted from the problem scenario.

Grouped according to themes where possible.



IDEAS

Based on facts identified.
Brainstorm

Accept hypothesis without judgement

Evolve over time.

LEARNING ISSUES

Phrased as questions. When answered should contribute towards solving the problem.

ACTION PLAN

Activities to be carried out to answer gaps in order to help solve the problem, e.g. conduct research, interview.

PBL Lesson Plan Template

Course/Topic/Unit:	Date:
Title:	
Problem Designer:	
Learning Outcomes: A. Content B. Skills C. Attitudes/Values	
Problem Scenario (Description of problem, focus questions and task)	
Deliverables (Explanation/Product/Presentation/Report)	
Presentation format (Paper based/email/interview/video/newspaper article/briefing, slides, etc.)	
References	

Examples

Problem-based Learning in Higher Ed.

PBL @ UPSI

A PBL lesson on electrical energy and power

Example 1

Example 2

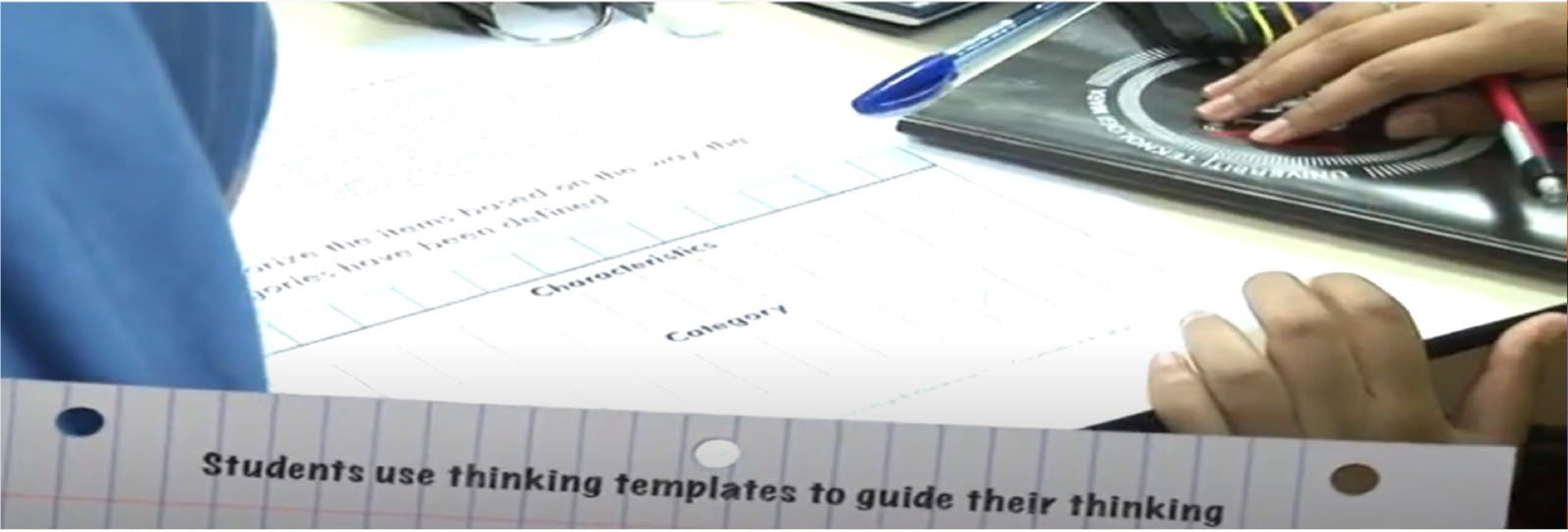
PBL @ Aalborg University

A hybrid and project-oriented PBL. Hybrid means class sessions also include a face-to-face lecture session in addition to independent group work

PBL @ Maastricht University

A PBL lesson on content related to chemistry

Example 3



What is Thinking-Based Learning (TBL)?

Uses the infusion approach to teach thinking and content

Thinking-based learning infuses the teaching of thinking with the teaching of content. It gives an equal emphasis on both deep subject matter understanding and thinking processes. TBL uses a variety of effective practices and thinking tools to scaffold learners thinking and thus encourages deep and meaningful subject matter learning and internalisation of specific thinking skills, habits of mind and metacognition.

(Swartz, Costa, Beyer, Reagen, & Kallick, 2010)

Thinking Tools

As used in TBL

What is a thinking strategy map?

Thinking Tool for TBL

It is an organised sequence of explicit questions or behaviours designed to evoke a particular thinking skill or process, habits of mind or metacognition.

As learners answer each question, they move through the steps in applying the particular thinking skill. They are not only directed through each step but are also made explicitly aware of what to do next to apply the skill.

Thinking Strategy Maps

For selected thinking skills

Compare and contrast

1. What are the similarities?
2. What are the differences?
3. What are the patterns of significant similarities and differences?
4. What categories do you see in the significant differences?
5. What interpretation/ conclusion can be made from the significant similarities and differences?

Decision Making

1. What makes a decision necessary?
2. What are the options and factors to consider?
3. What are the likely consequences of each option?
4. Which option is best after considering all the consequences?

Problem Solving

1. What is the problem?
2. Why is there a problem?
3. What are some possible solutions?
4. What would result from these solutions?
5. Which solution is best and why?

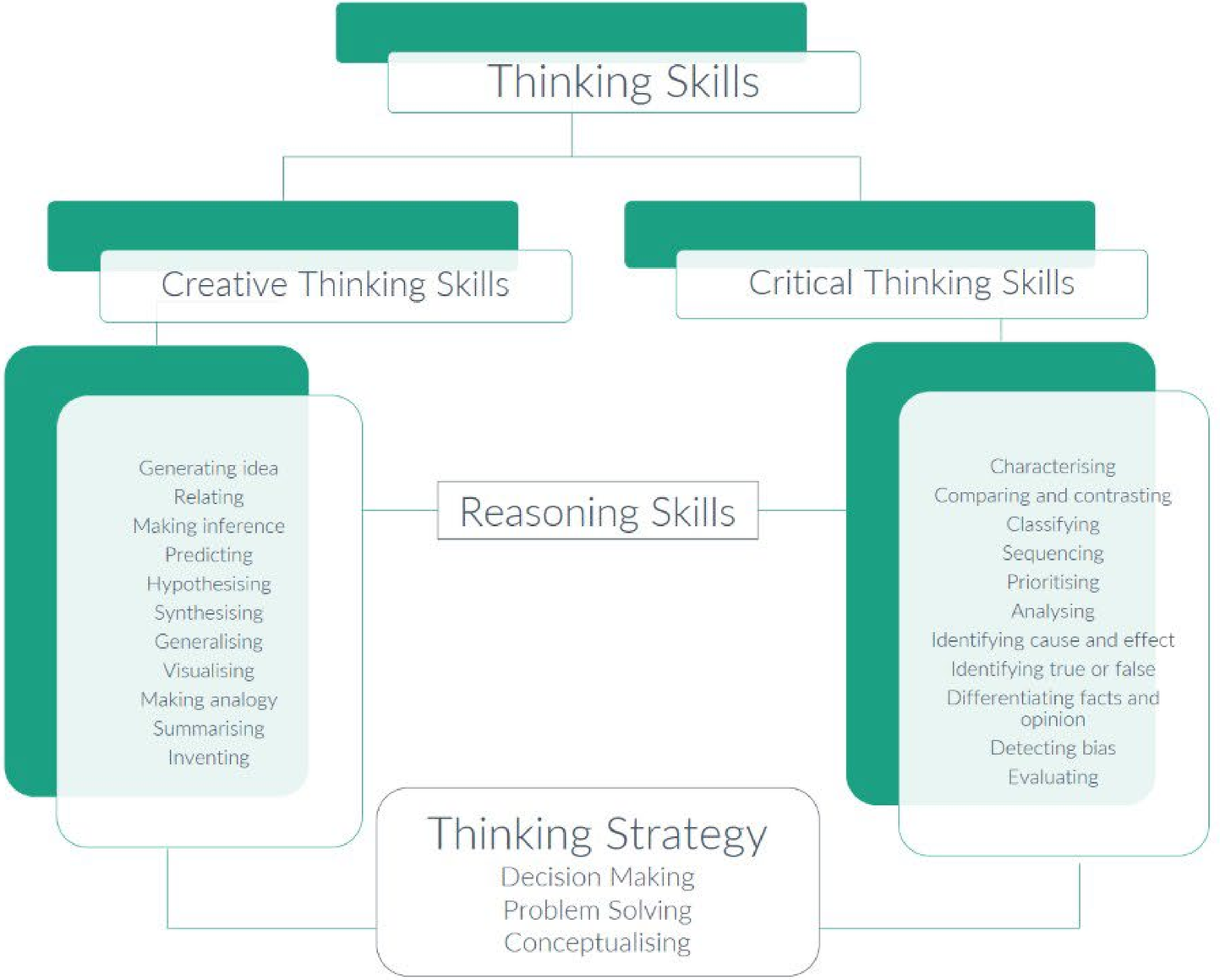
Metacognition

1. What was the thinking did we just do?
2. How did we do it?
3. Was it a good way? Why?
4. How would you do it the next time it is called for?

(Swartz et al., 2010)

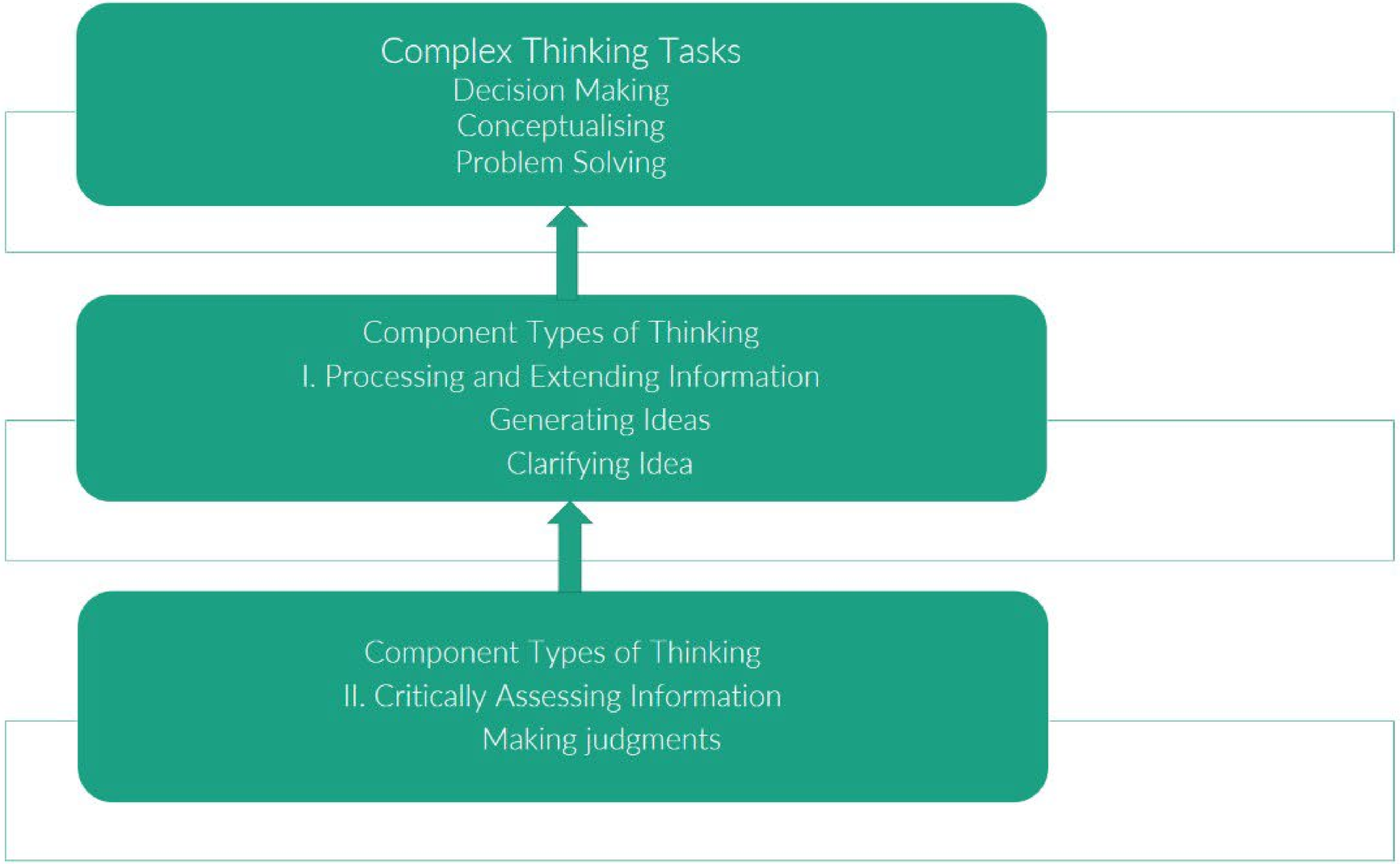
Types/Categories of thinking skills

According to Ministry of Education Malaysia (2012)



Types/Categories of thinking skills

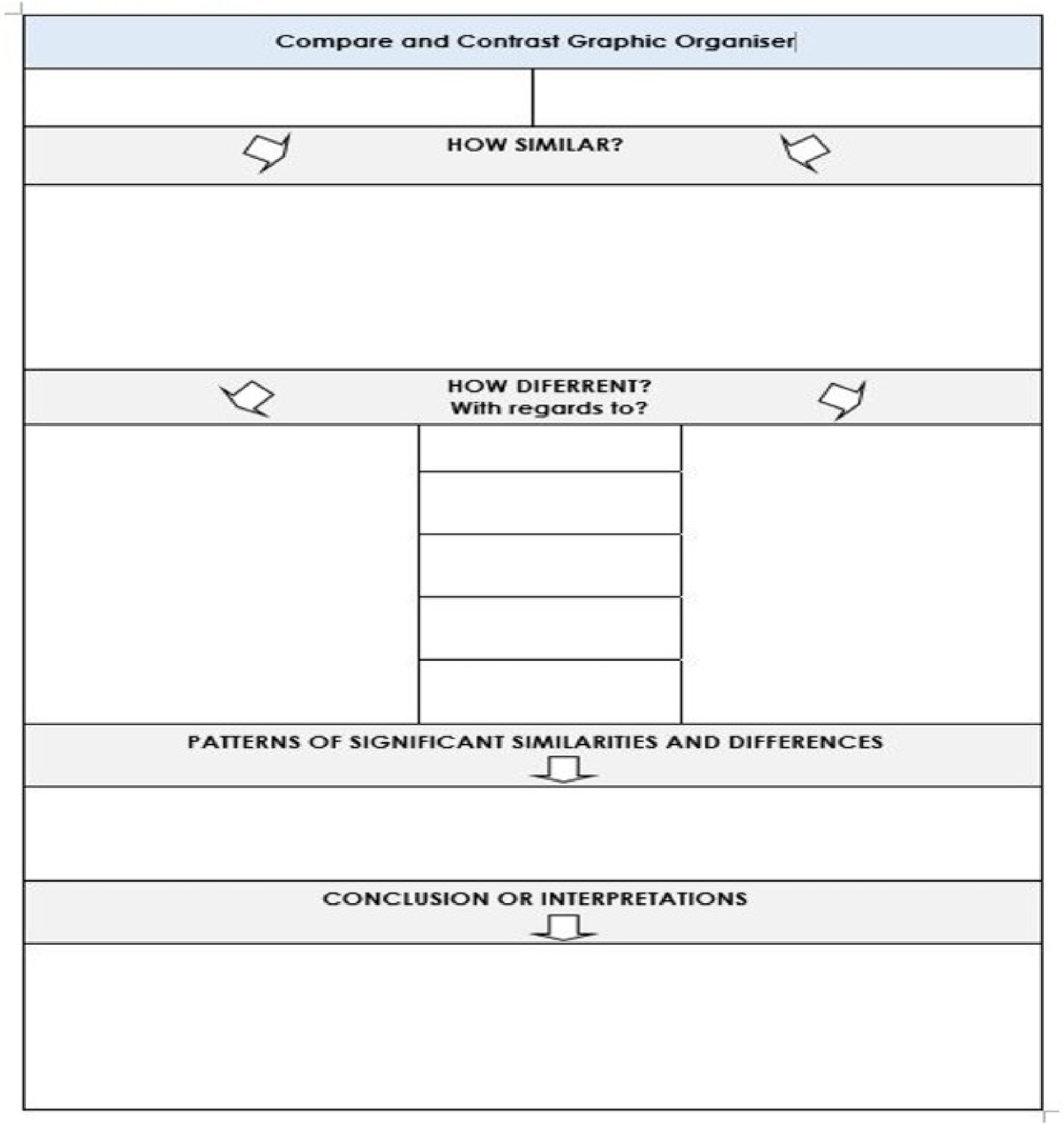
Simplified version of important thinking skills according to Swartz (2010)



What is a thinking template/graphic organiser?

As a thinking tool for TBL

It is a visual thinking tool that is usually in the form of tables that is cognitively dynamic to scaffold learners' thinking. It displays the sequence of questions or behaviours designed to evoke a particular thinking skill. Different types of thinking skills have their own unique graphic organisers.



Theories that underpin TBL

Constructivism

Learners make use of prior knowledge and actively seek new information to construct and co-construct understanding by responding to a sequence of questions and at the same time triggering the targeted thinking skill.

Cognitivism

Thinking and learning are internal mental actions that take place in the brain and by actively triggering the specific thinking, habits of mind and the processing of information by applying and combining these information, the learning process leads to deep understanding that have a lasting impact on memory.

Why do TBL?

Ensure the development of thinking happens purposefully

Gain deep understanding

Using thinking skillfully to think about the content facilitates deep understanding.

Foster higher order thinking

Explicit instruction in procedures for doing various types of higher order thinking ensure the development of thinking happens purposefully.

Foster metacognition

Explicit use of a thinking strategy map for metacognition ensures learners reflect on their thinking that subsequently may have a lasting effect on their thinking habits.

Foster good habits of mind

Good habits of mind are operationalised and inculcated during the entire learning session.

How to do TBL?

Four main steps (Swartz, 2010)

1. Make connection to a specific thinking skill in a context that is familiar to learners.
2. Prompt the use of a certain habit of mind.
3. Give learners a guided practice in doing the targeted thinking skill as they engage with the subject matter.
4. Prompt learners to think about their thinking (metacognition).

An Example TBL@UPSI

An infusion lesson on classifying deductively and Bloom's Taxonomy

What is Inquiry-based Learning (IBL)?

Researchable question-driven method of teaching and learning

Inquiry-based learning encompasses a broad spectrum of methods (e.g. Problem-based Learning, Project-based Learning and Discovery Learning) and activities of teaching and learning. Thus, it can also be seen as an approach to teaching and learning.
It is usually characterised by posing a central researchable question (either by the teacher or learners, depending on the level of sophistication and demand on learners' thinking), followed by exploration and investigative activities to address or answer the generated question, making conclusion, communicating the findings and finally doing reflection.

Four levels of IBL

Based on three aspects of information (question, procedure, answer) given to learners

Level 1

The researchable question, investigative procedure, and the answer to the guiding question are known or given to learners.

Level 2

The researchable question and investigative procedure are given to leaners but the answer may not be known to or understood by the learners before the investigation.

Level 3

Only the researchable question is given to learners. They have to design their own procedure and answer the guiding question.

Level 4

Learners formulate their own researchable question, design the appropriate procedure and answer their own question. This is the highest form of inquiry and requires the highest level of thinking for the learners.

Continuum of sophistication in doing inquiry and thus learners' thinking

(Banchi & Bell, 2008)

Theories that underpin IBL

Constructivism

Learners must actively construct knowledge and skills through experiences and interactions with the environment. As learners actively experience something new through exploration and investigative activities, they incorporate prior knowledge and beliefs to make meaning out of these experiences.

Experiential Learning

Learning is the process whereby knowledge is created through the transformation of experiences (Kolb, 1984). By emphasising exploration and investigative activities, learners are provided with the necessary experiences that can foster deep learning.

Why do IBL?

The benefits of IBL

1

Foster higher order thinking

Through the inquiry activities, learners are able to develop process skills such as experimenting, problem solving, research, and creative/critical thinking.

2

Inculcate soft skills and values

Learners learn through social interactions, discussions and peer-teaching with group members and thus develop team work skills, communication skills, time management and emotional intelligence.

3

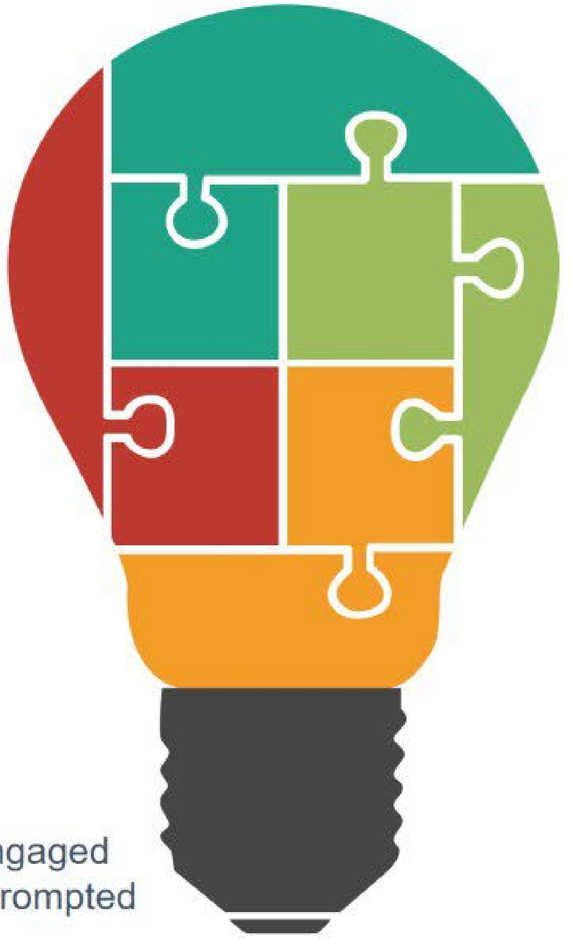
Use of various assessment modes

Can be a combination of journals, portfolios, presentations, self/peer evaluation, written reports, examinations, etc. Thus, assessment are more balanced and fair.

4

Engaging and motivating learners

Learners take more active responsibility for learning and thus are more engaged and motivated when the researchable question sparks their interest and prompted them to seek evidence/information to answer the question.



How to do IBL?

Three models of doing IBL

Eggen & Kauchak, 1996

Inquiry steps that involve hypothesis testing

Audet, 2005

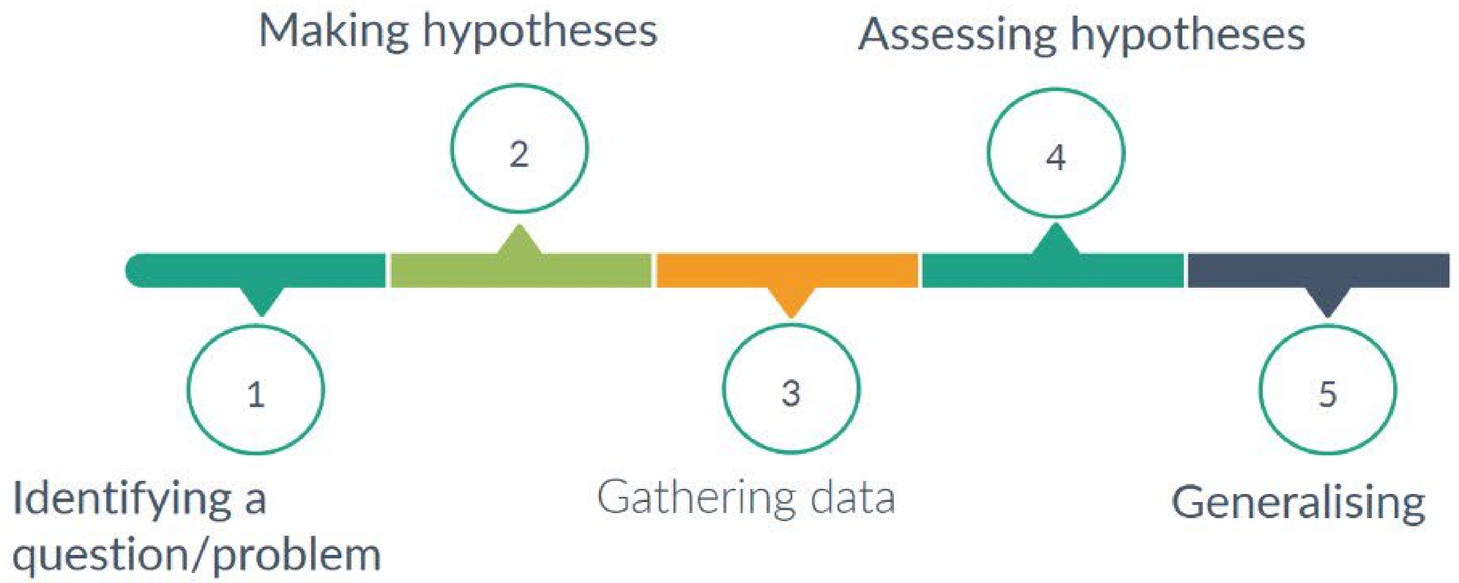
More general. Applicable across disciplines

Nurulhuda, A.R, 2012

More detailed steps of inquiry that involve hypothesis testing

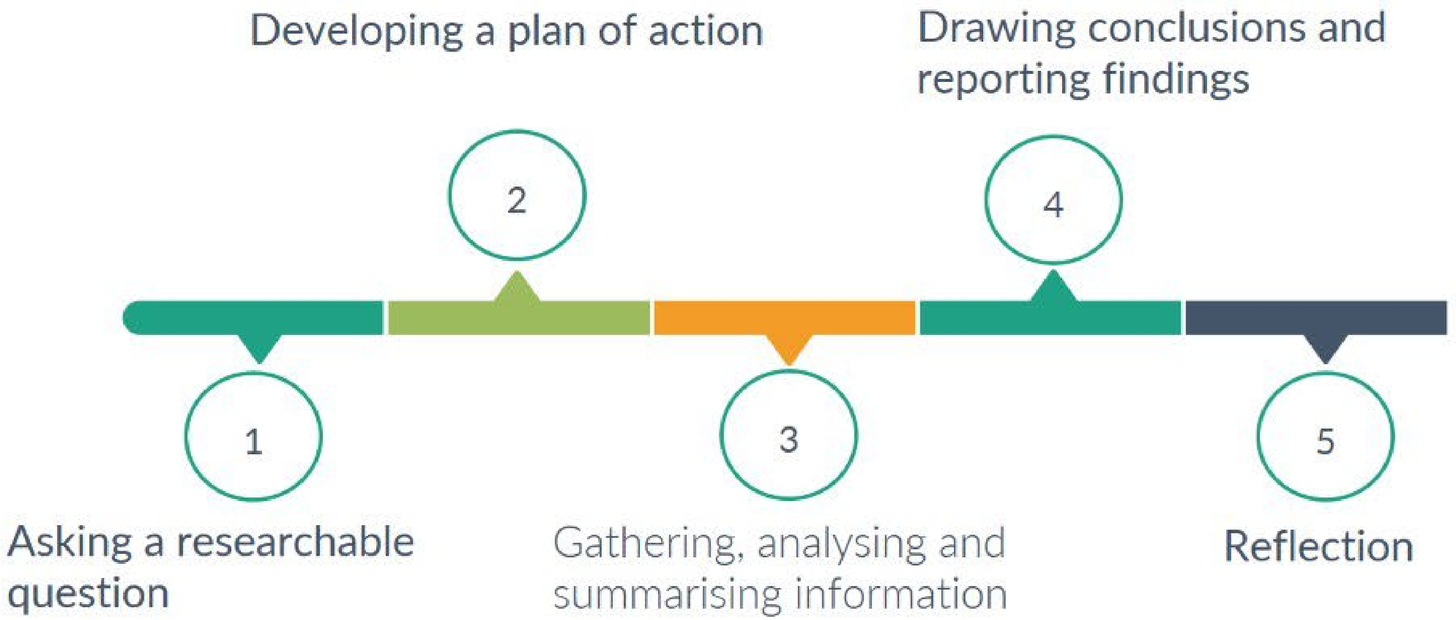
How to do IBL?

Eggen & Kauchak, 1996



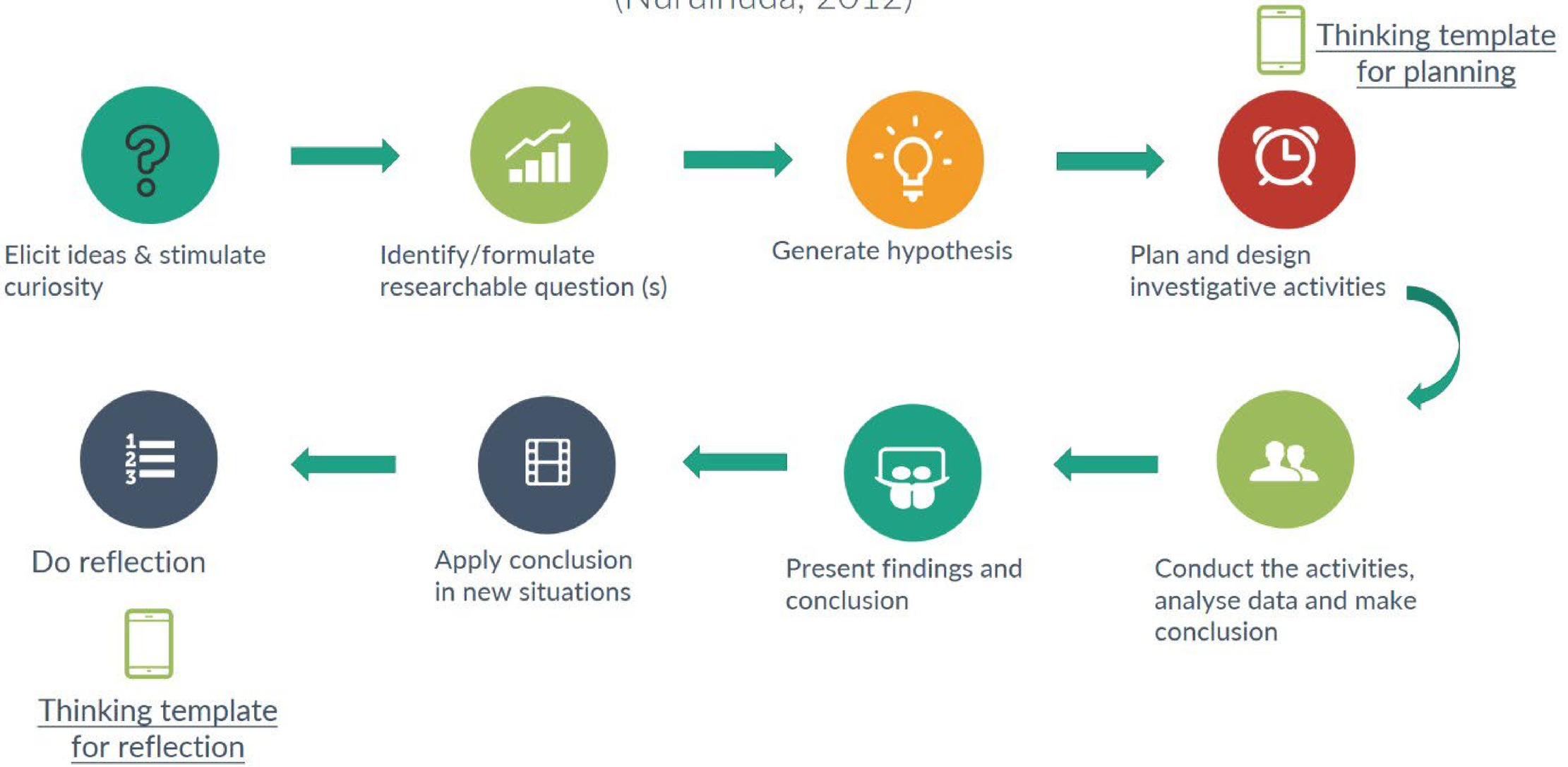
How to do IBL?

Audet, 2005



How to do IBL?

(Nurulhuda, 2012)



IBL Planning Template

Inquiry skills	What to think about?
Stating the aim	What is the aim of the investigation?
Formulating/Identifying an Inquiry Question	What is the guiding question?
Hypothesising	What is the hypothesis?
Controlling variables + Defining Operationally	What is the responding variable? What is the manipulated variable? How to measure the manipulated variable and responding variable (stating the operational definitions) What is/are one/two variable(s) that I need to keep constant?
Planning and designing	What are the appropriate apparatus and materials needed in the experiment? What are the steps/procedure to the experiment? What are the safety precautions that I have to take? How do I set up the apparatus and materials? How do I draw the diagram of the set-up? How do I record all the data and results? How will I present my design (for Guided Inquiry) and the subsequent results to the class? What might be the source of errors that can be expected?

IBL Reflection Template

Inquiry Skills	What to think about
Planning, designing and experimenting	Did I do the experiment according to the steps that I plan? Did I make any alteration to the plan? Why?
Observation, measurement and recording	Did I draw the diagram of the experiment correctly? Did I make the right measurements? Did I record all the results correctly? Did I generate the correct table? Did I draw the correct graph?
Interpreting and evaluating data	Did I find any relationship between the manipulated and the responding variables from the results? Did I notice any patterns from the results? Did I show all the working of the calculation in order to obtain the correct answer? Did I make any inference(s) from the experiment? Did my result support my hypothesis?
Communicating	Did I explain and present the experiment and result to the class clearly that my peers and teacher can understand? Did I compare the findings with the hypothesis? Did I provide a plausible explanation when my results differ from what is expected?
Collaboration	Do I feel that I have communicated well as a team? Did I listen to others in the team? Did I contributed to the team with some input? *For more questions visit* https://www.ventureteambuilding.co.uk/de-brief-questions-master-list/#.Xjebt2gzY2w

Examples

IBL in Higher Ed.

IBL @ UPSI
An IBL lesson on Archimedes Principle

Example 1

Example 2

IBL @ The University of Iowa
An interdisciplinary inquiry lesson on programming robots

Example 3

IBL @ Western Washington University
Several examples of IBL in science learning

What is Cooperative Learning (CL)?

Falls under the umbrella of collaborative learning

Cooperative learning is a teaching and learning method or activity that involves learners working in small groups to accomplish a common goal and guided by the following principles (Johnson & Johnson, 1987): (i) positive interdependence, (ii) individual accountability, (iii) face-to-face interaction, (iv) explicit teaching of collaborative and team work skills, and (v) group processing albeit not always, as there are at least four ways to do cooperative learning.

Theories that underpin CL

Structure-process-outcome theory

Learners learn best when their learning involves desired interactions that have been structured around learning goals. When the desired interactions occur, learning will happen automatically.

Social interdependence theory

The interdependence among members created by common goals is the essence of a group. Team members can reach their goals if and only if the other group members also reach their goals. Thus, positive interdependence will tend to unite the members in a group and subsequently leads to learning.

(Johnson & Johnson, 2018)

Why do CL?

The benefits of CL

1

Increase motivation to succeed
The drive to achieve a common goal results in higher achievement and greater productivity compared to competitive or individualistic efforts.

2

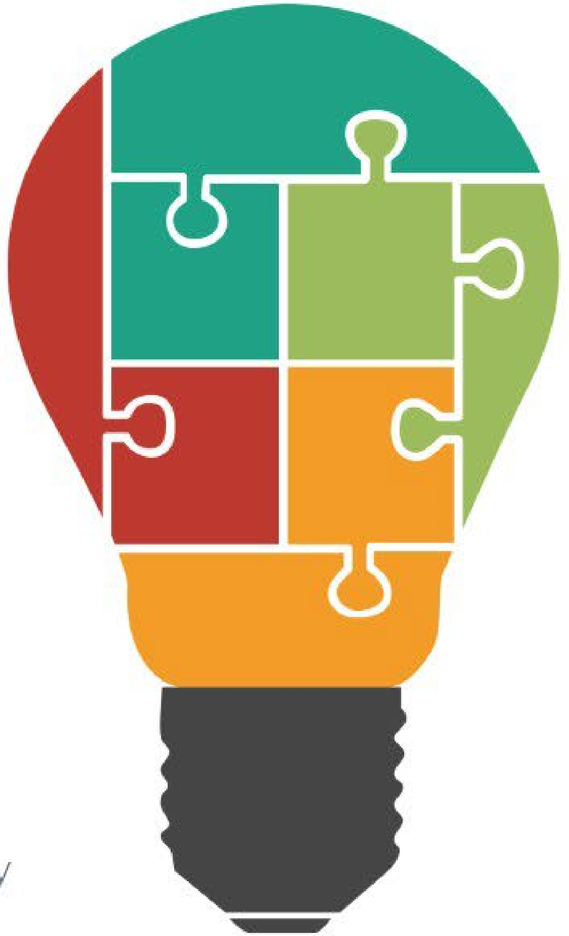
Foster positive relationship
Develop positive and committed relationships.

3

Foster thinking skills
Frequent generation of new ideas and solutions (i.e., process gain), more higher-level reasoning, and greater transfer of what is learned (i.e., group to individual transfer).

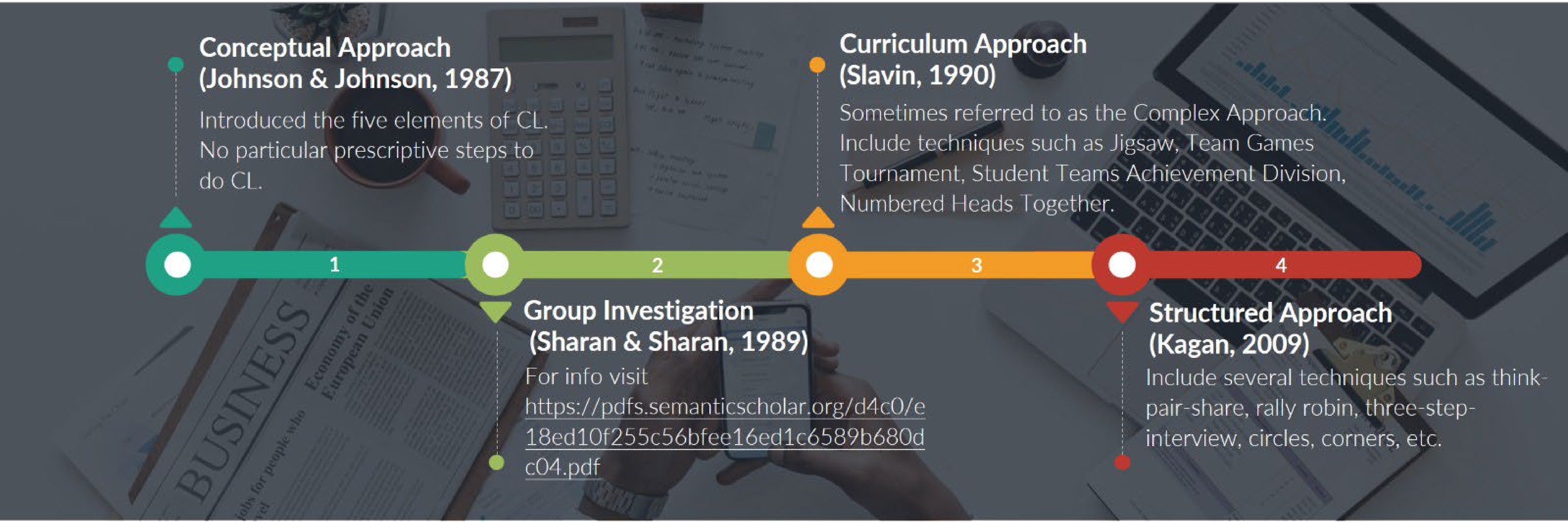
4

Increase psychological health and self-esteem
Cooperative efforts guided by the five elements of cooperative learning promote learners' each other's success and create the basis for a healthy psychological and social development.



How to do CL?

Four approaches to do CL



Conceptual Approach (Johnson & Johnson, 1987)

Introduced the five elements of CL. No particular prescriptive steps to do CL.

1

2

Group Investigation (Sharan & Sharan, 1989)

For info visit https://pdfs.semanticscholar.org/d4c0/e18ed10f255c56bfee16ed1c6589b680dc04.pdf

Curriculum Approach (Slavin, 1990)

Sometimes referred to as the Complex Approach. Include techniques such as Jigsaw, Team Games Tournament, Student Teams Achievement Division, Numbered Heads Together.

3

4

Structured Approach (Kagan, 2009)

Include several techniques such as think-pair-share, rally robin, three-step-interview, circles, corners, etc.

(Ong & Noor Shah, 2012)

How to do CL?

Curriculum Approach: Jigsaw technique

Step 1: Learners meet in HOME GROUPS. Each member is given a number. Each number is given a unique topic that they have to master.

Step 2: Learners meet in EXPERT GROUPS. Each group comprises of members with the same number. In the EXPERT GROUPS learners search, sort, and synthesise information about the topic that has been assigned to them until they mastered the topic.

Step 3: Learners return to HOME GROUPS to teach each other.

Step 4: Learners are assessed on their understanding and do reflection on their group dynamics. Assessment can be done using various methods including individual quiz, group quiz or even using one of the structured CL for example the Numbered Heads Together technique

How to do CL?

Curriculum Approach: Students Teams Achievement Division (STAD)

Step 1: After forming groups, the teacher teach.

Step 2: Learners learn together in groups to deepen their understanding about the contents that have been taught.

Step 3: Learners take individual quiz.

Step 4: Recognition of team's achievement. Individual scores are sum together to form the group score. Recognition can be based on the highest scoring group or the group with the highest improvement based on past performances.

How to do CL?

Curriculum Approach: Numbered Heads Together (NHT)

Step 1: Teacher divide learners into groups of four or five. Number each member in the group.

Step 2: Teacher poses a question or problem to the class. Learners 'put their heads together' to address the question or problem.

Step 3: Teacher calls out a number randomly. The learner with the number, answer the question for his or her team.

How to do CL

Structured Approach: Three-Step Interview

Pre-Interview: Teacher divides learners in pairs. Teacher poses a question (s) or topic that can be used as interview materials.

Step 1: One learner interviews another within specified time limits. The interviewer is encouraged to jot down notes to help him or her better retain the information shared.

.

Step 2: The pair then reverse roles and conduct the interview again.

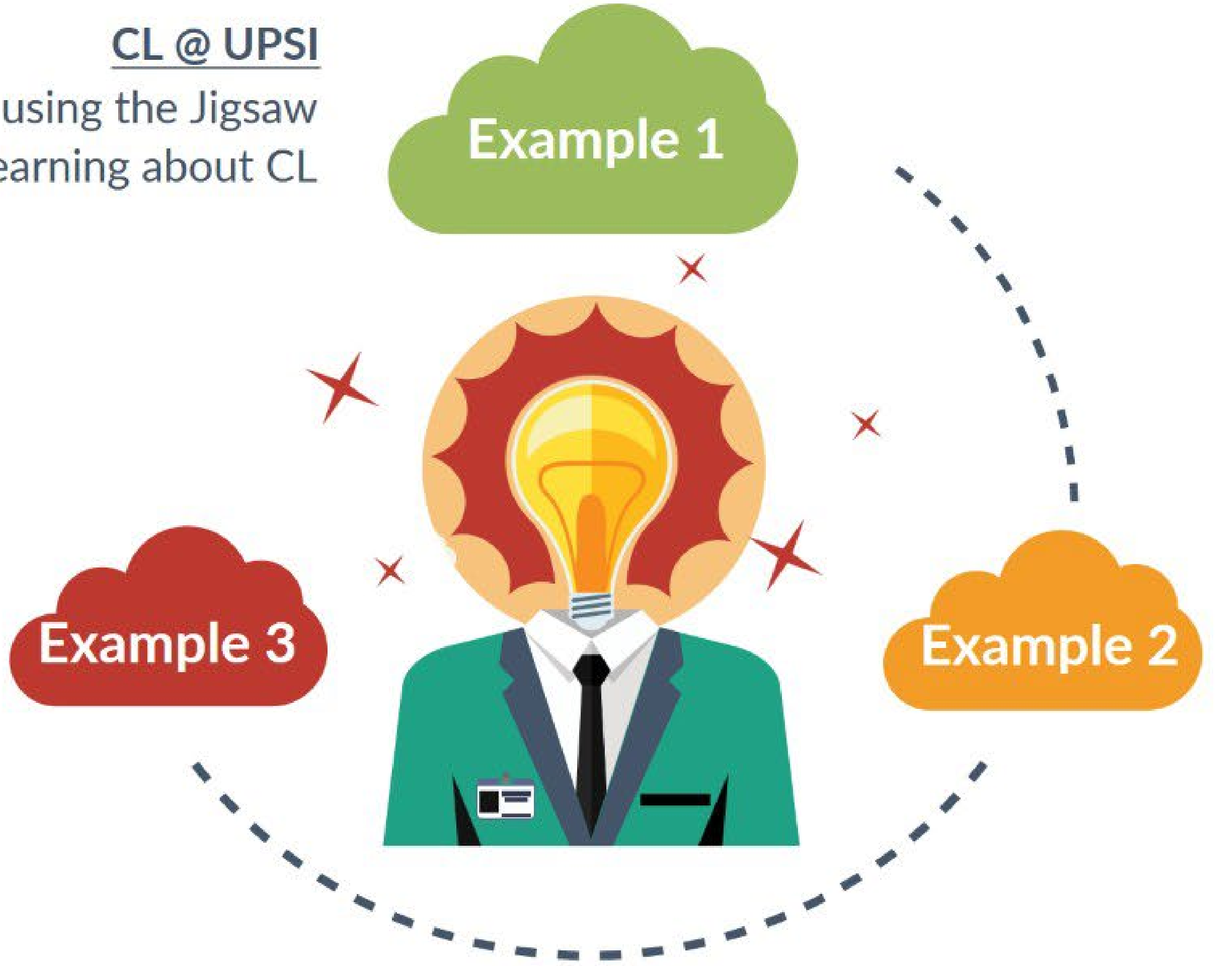
Step 3: Learners share the highlights of the information or insights gained from the paired interview with each other and the class.

Examples

Cooperative Learning in Higher Ed.

CL @ UPSI

A CL lesson using the Jigsaw technique in learning about CL

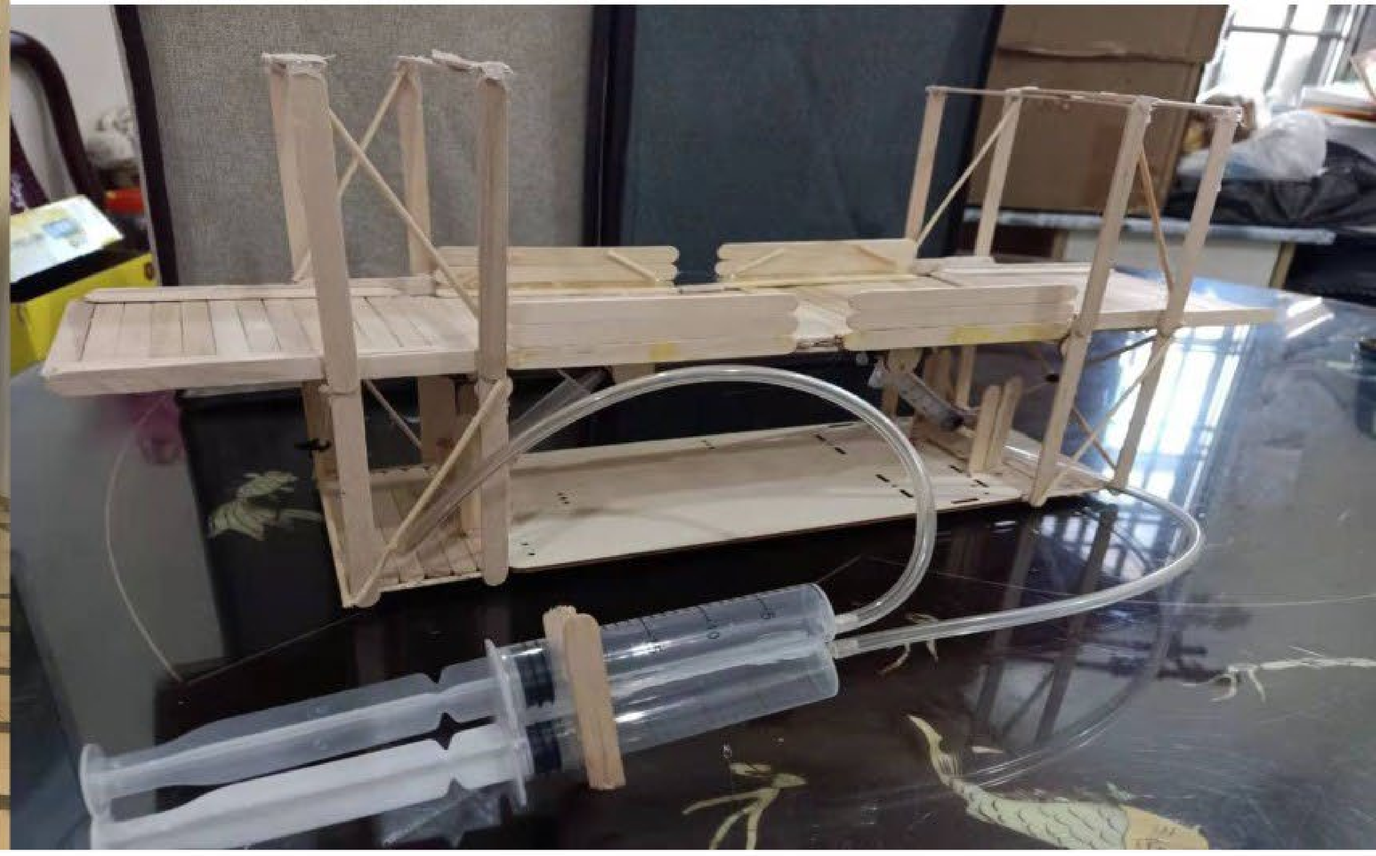


CL3 @ UPSI

A CL lesson using the Jigsaw and Numbered Heads Together techniques in learning about Aquaculture Principles

CL2 @ UPSI Part 1
CL2 @ UPSI Part 2

A CL lesson using the Jigsaw, Gallery Walk and Three Stray One Stay techniques to learn about CL



What is Project-based Learning (PjBL)?

Learning through engaging in real-world and personally meaningful projects

Project-based learning is an active learning method where students develop knowledge and skills through an extended task or project that promotes student enquiry and authentic demonstrations of learning in product and performances. The project is the vehicle for teaching the important knowledge and skills student need to learn. The project contains and frames curriculum and instruction (Buck Institute for Education, 2021). The duration of the extended tasks can be from a week up to a semester and can be in the form of solving a real-world problem or answering a complex question.

Important Elements of Project-based Learning

Authentic driving question/problem

The question/problem that is complex enough and based on real-world scenario that will drive the project activities

Significant content

Project activities meet and aligned with the content and several learning standards

A need to know

Include a hook that trigger students' curiosity and get them interested and engaged

Students' voice and choice

Freedom to make decisions regarding part of the process and products of the project

Foster 21st century skills

Enable students to develop skills such as critical and creative thinking, complex problem solving, collaboration, and communication, and technological skills

In-depth inquiry and innovation

Students will have to explore and investigate to answer the driving question and create the innovation (product or performance)

Reflection and evaluation

Students evaluate and reflect on the process and products of their project which can lead to revision and improvement

Public presentation

Students present their work to the public which can include their peers or the larger community such as the school, parents or community.

(Rada Abdo, 2020)

A Framework for High Quality PjBL

Authenticity

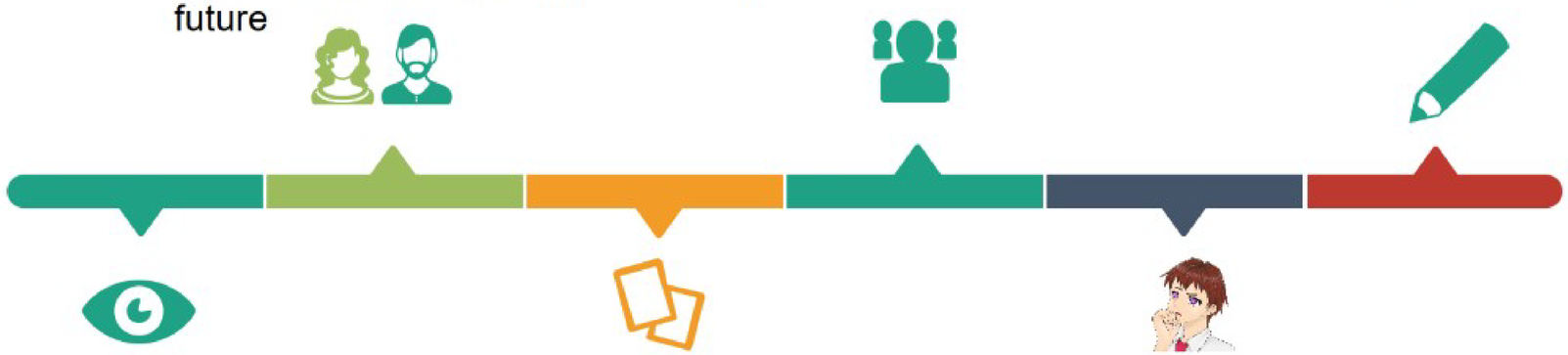
Students do projects that are meaningful and relevant to students' lives, culture, and future

Collaboration

Students work collaboratively in teams with guidance form experts and collaborators

Project Management

Students use project management process that enables them to proceed effectively from start to finish



Intellectual Challenge and Accomplishment

Students do projects that are challenging that let students experience research-based activities

Public products

Students' work is publicly displayed, discussed, and critiqued.

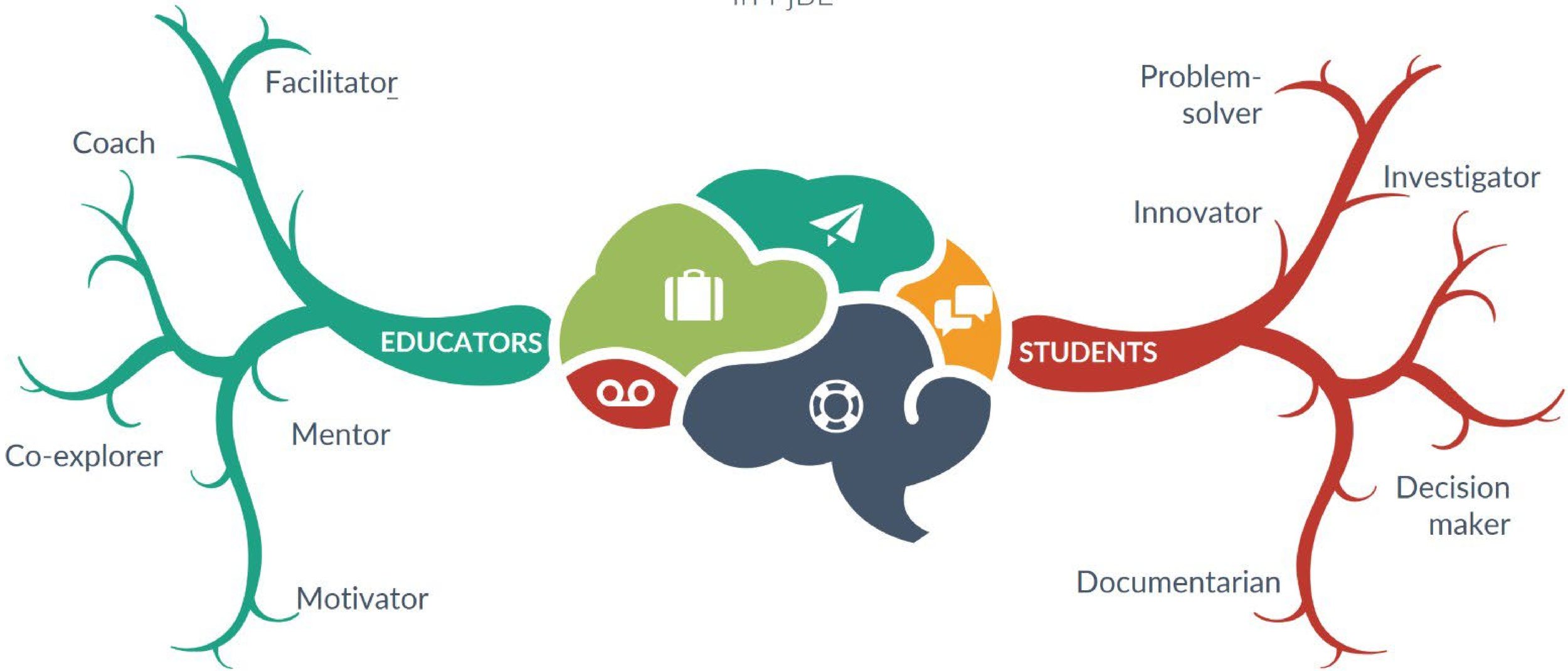
Reflection

Students reflect on their work and learning throughout the project

(Tom Vander Ark, 2018)

Educators' and Students' Roles

In PjBL



Why do PjBL?

The benefits of PjBL

1

Transferable skills valued by employers

Acquisition, integration and application of content and development of process skills such as problem solving, research, inquiry, collaboration, communication, and creative/critical thinking.

2

Engage the community

Learners work on challenges and opportunities in the community that bridge theory and practice and facilitate students to become engaged citizens. .

3

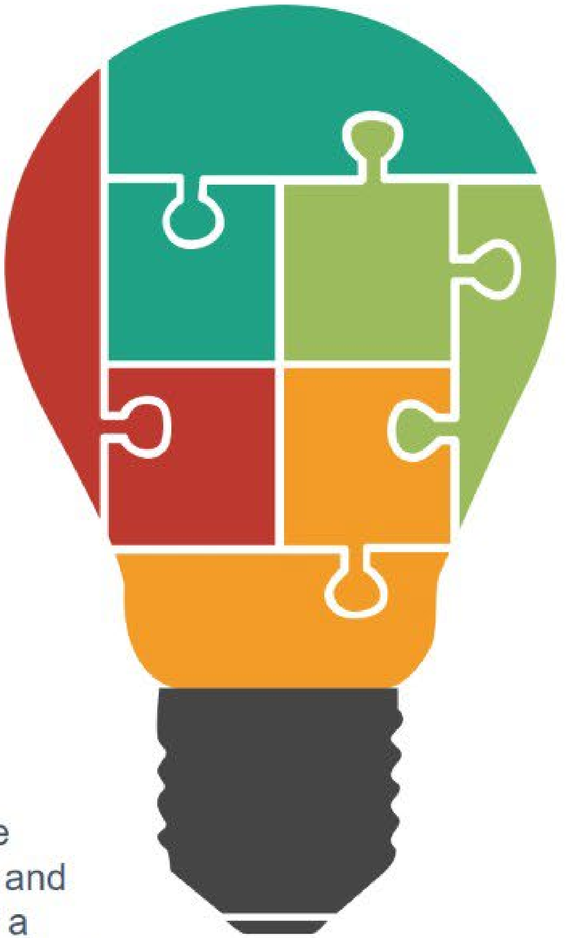
Use of various assessment modes

Can be a combination of journals, portfolios, presentations, self/peer evaluation, written reports and examinations. Thus, assessment are more balanced and fair.

4

Engaging and empowering learners

Learners take a more active responsibility for learning and thus are more engaged and empowered as they have to work independently in groups and conduct self-directed learning. If the project involves the development of a tangible product, it provides an engineering challenge and helps students think like an engineer in addition to thinking like a scientist.



Theories that underpin Project-based Learning

Constructivism

Learners actively construct knowledge and skills through experience and interaction with the environment while doing a project. As learners actively carry out projects, they incorporate prior knowledge and beliefs to make meaning out of these project activities.

Constructionism

Students learn more meaningfully when they are involved in constructing tangible products or artifacts.

Experiential Learning

Learning is the process whereby knowledge is created through the transformation of experience. By emphasising exploration and investigative project activities, learners are provided with the necessary experience that can foster deep learning

How to do Project-based Learning?

STEP 1: IDENTIFY THE DRIVING LEARNING OUTCOMES/STANDARDS

- Identify the main learning standards/outcomes (driving standards)
- Align them with current issues/problems and the relevant community to provide the real-world context
- Formulate the driving question/essential question
- Brainstorm this step with students if you wish to incorporate more students' voices and choices

STEP 2: PLAN THE FINAL PRODUCTS/DELIVERABLES & ASSESSMENT TOOLS

- Begin with the end in mind as per the concept of backward design
- Brainstorm the final products or deliverables that can demonstrate the attainment of the learning outcomes/standards
- Prepare the assessment tool (e.g. rubrics)
- Brainstorm this step with students if you wish to incorporate more students' voices and choices

STEP 3: DESIGN THE ACTIVITIES AND MILESTONES FOR THE PROJECT

- Break down the activities into phases
- Identify the content and skills necessary to complete each phase
- Identify the deliverables for each phase and the corresponding formative assessment criteria
- Brainstorm this step with students if you wish to incorporate more students' voices and choices

continue

STEP 4: PROPOSAL PRESENTATION

- Students present their project proposal (if more freedom was given to students)
- Sharing, defending and critiquing of project proposal

How to do Project-based Learning?

STEP 5: MONITOR STUDENTS' PROGRESS

- Set up a monitoring system to ensure students are on track (e.g. use of any social media where students' can upload the evidence for each milestone)

STEP 7: CLOSURE & REFLECTION

- Students do reflection and evaluate their process and products
- Lecturers give feedback
- Debriefing

STEP 6: PUBLIC PRESENTATION OF PROJECT FINAL PRODUCTS/DELIVERABLES

- Students perform or showcase their products/deliverables
- Audience are not limited to classmates and can include the larger audience such as the faculty, institutions or even globally
- Handle question and answer session
- Lecturers assess summatively.

An example of Project Planning Template

An example of Students' Project Proposal Template for greater students voices and choices

Some ideas for PjBL

Links to some ideas for project-based learning

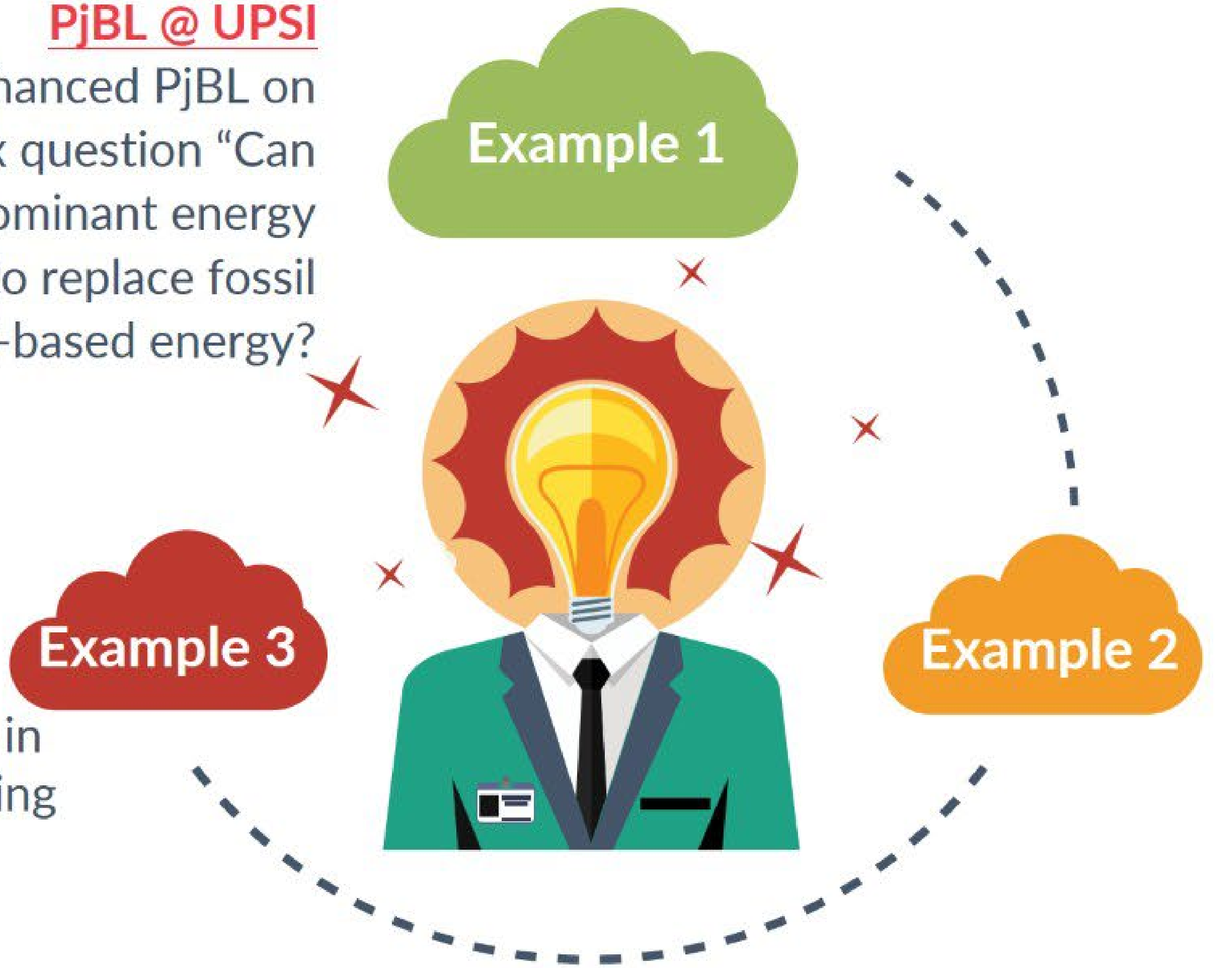
1. https://www.teachthought.com/education/examples-of-project-based-learning/
2. https://www.trueeducationpartnerships.com/schools/a-guide-to-using-project-based-learning-in-the-classroom/
3. https://my.pblworks.org/projects?_ga=2.156375995.1475472323.1583764682-1351536372.1583764682

Examples

PjBL in Higher Ed.

PjBL @ UPSI

A technology-enhanced PjBL on answering a complex question "Can nuclear energy be the dominant energy source for Malaysia to replace fossil fuel-based energy?



PjBL @ WPI

A Global Project Program by Worchester Polytechnic Institute.

PjBL @ UPSI 2

A project-based learning in the form of service learning

SERVICE LEARNING

SULAM

SULAM community services are defined as services that are identified by HLIs through formal or informal consultation with local non-profit organisations, government, and community based organisations, designed to improve the quality of life for community residents, particularly low-income individuals or to solve/address particular problems related to their needs (HIEPS).

SULAM PLAYBOOK.pdf

Flexible Curriculum Design
SULAM Stakeholders

Government
All government agencies

Higher Learning Institutions
Private and Public universities, colleges & polytechnics

Community
Kampong angkat, B40, OKU, Senior citizen, underprivileged communities

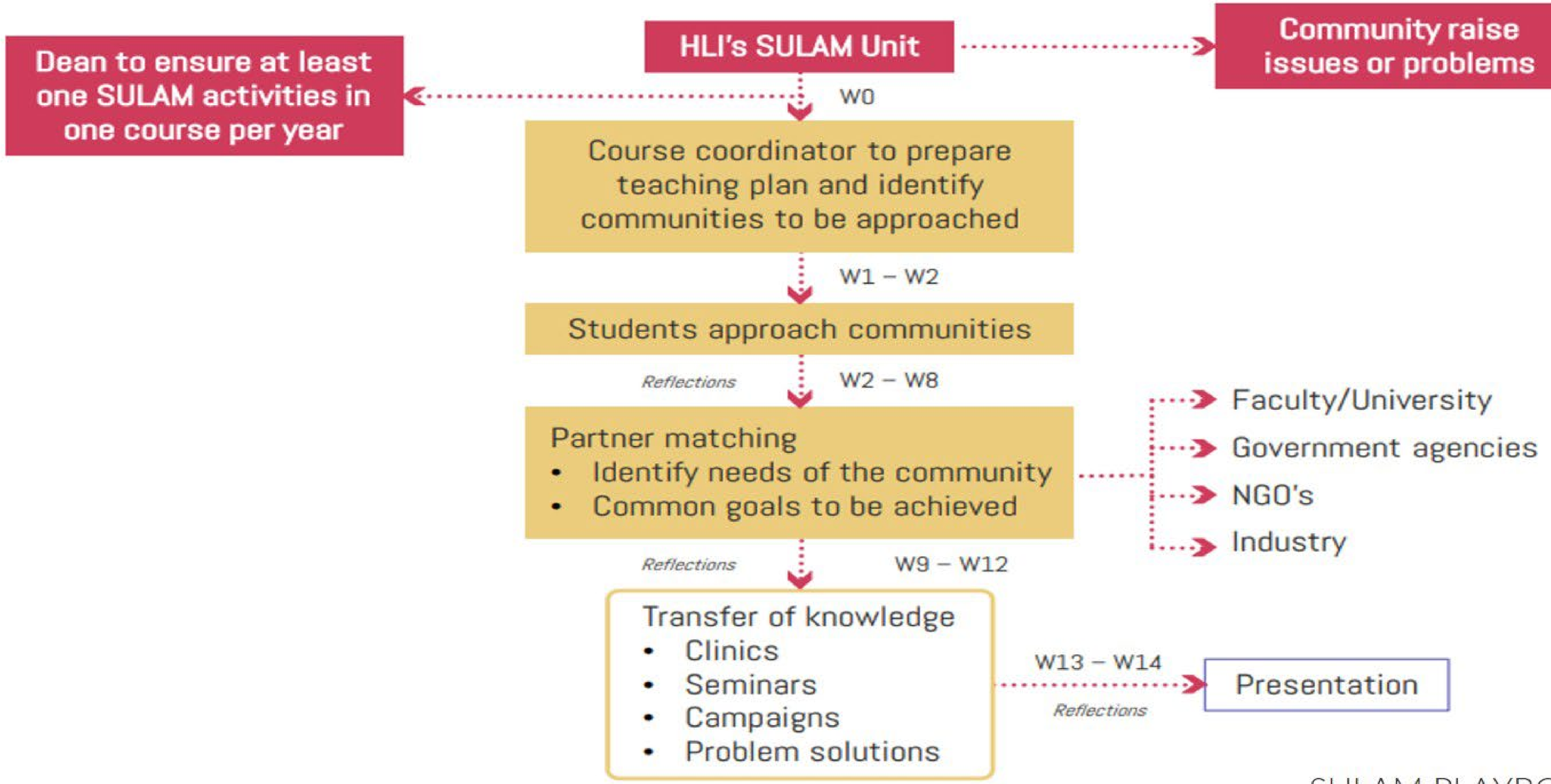
Industry
Corporates

Flexible Curriculum Design
SULAM Seven Principles

- Explicit connection between learning outcomes and SULAM activities
- Appropriate time commitment
- Faculty commitment
- Student input
- Ongoing reflection
- Perceptible impact
- Continual Quality Improvement

Flexible Curriculum Design

Flowchart for SULAM Project Development



SULAM PLAYBOOK.pdf

Flexible Curriculum Design
Example of SULAM Project

Course : Measured Drawing Architecture
SULAM Project : Jejak Warisan Dato' Penggawa Timur
Community Partner : Community of Pulau Tanjung Surat, Kota Tinggi
Author : Assoc. Prof. Ts. Dr. Mohd Hisyam bin Rasidi

Pulau Tanjung Surat is an island located at the mouth of the Johor River which was once an important place during the reign of Sultan Abu Bakar ibn Temenggung Ibrahim. Tanjung Surat became the administrative centre of Dato' Penggawa Timur, Dato' Wan Jaafar bin Wan Nong Yahya. He became the Deputy Chief of Sultan Abu Bakar to rule the eastern part of Johor including tax collection. Students and community were trying to reconstruct the ruin of the Dato' Penggawa Timur administrative office in order to make it as an interesting spot for eco-tourism.

Flexible Curriculum Design
Example of SULAM Project

Example of SULAM Project (UPM)

Courses Involved:

Pathogenic Microbiology

Immunology → **Sexually Transmitted Disease Awareness Campaign** ← Microbial Genetics

Service Learning in Microbiology

SULAM Project : Putting STD into STDs
Community Partner : Sekolah Berasrama Penuh Integrasi Gombak (INTEGOMB)
Author : Chia Suet Lin, Saila Ismail, Adelene Song Ai Lian, Wan Zuhainis Saad, Asilah Ahmad Tajuddin, Mohd Termizi Yusof

This is a SULAM projects conducted by students from the Department of Microbiology, Faculty of Biotechnology and Biomolecular Sciences. This project encouraged holistic learning as students have to study a common topic combining knowledge from three different subjects and then become teachers themselves to high school students to enhance learning whilst providing community service by creating awareness about sexually transmitted disease (STD). This project was aimed to Share, Transform and Disseminate knowledge.

Flexible Curriculum Design

Example of SULAM Project

Course : Technoprenuership (FCSIT)
SULAM Project : CyberSafe
Community Partner : Kampung Pulau Salak
Author : Dr. Sze San Nah

Participants:
15 adults from Kg Pulau Salak and 35 school children from SK Salak. The community was provided free WiFi service as of 2018 from Sacofa Sdn. Bhd.

Objective:
To provide awareness and knowledge to the community on the threats and danger that comes from the usage of the Internet.

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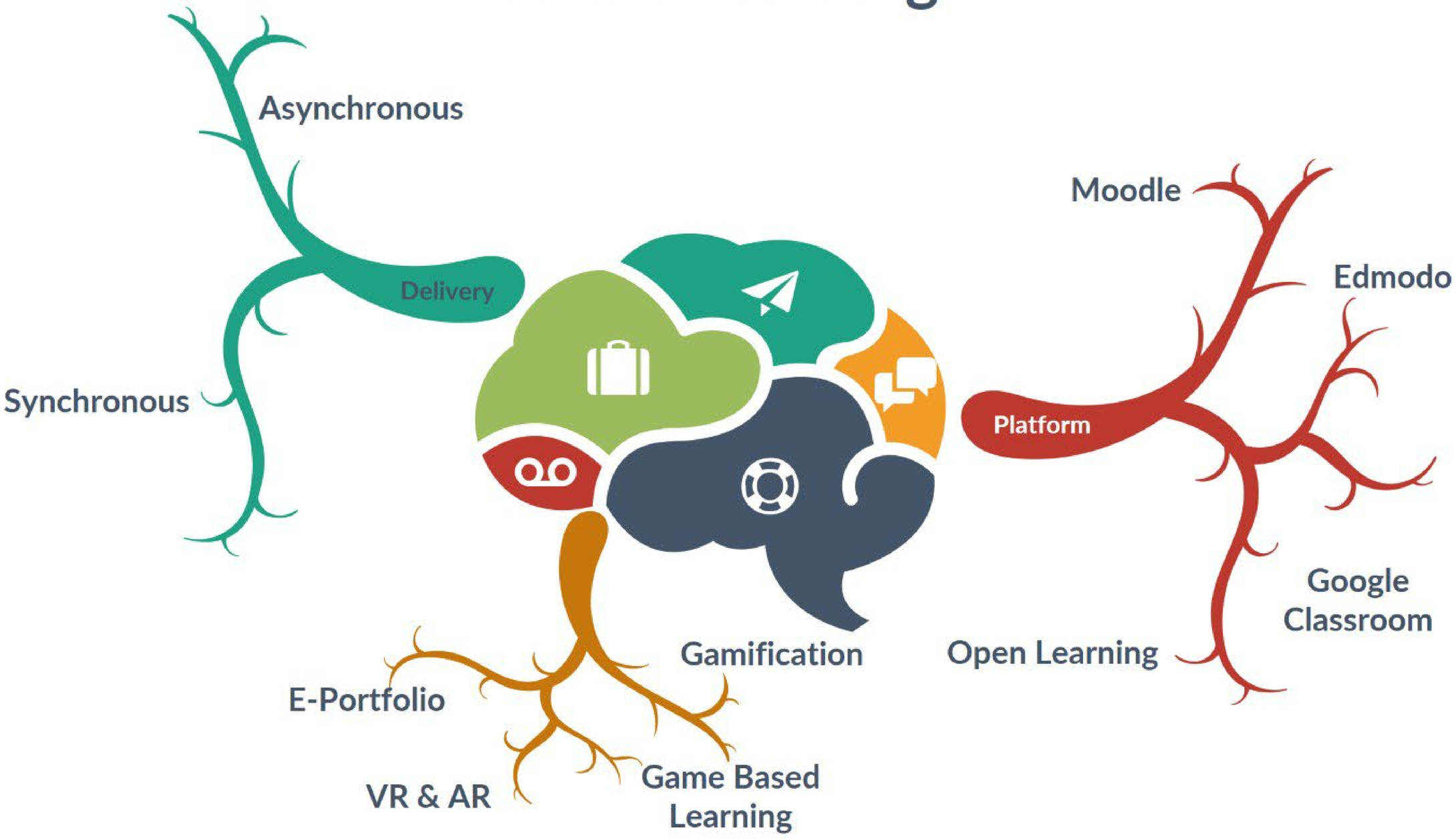
Unit 5: Online Learning

Online learning provides flexibility with regards to when students can take courses, as well as alleviate demands on face to face (F2F) instruction. Institutions will be able to increase their student population by enrolling students who are unable to come to the campus for a traditional college experiences.

Online Learning



Online Learning Delivery

Synchronous

Information is sent and received immediately by the student.

Resources

Instant Messaging, Chatroom, Video Conferencing

Tools

WhatsApp, WeChat, Telegram, Zoom, WebEx, Facebook Live, Google Hangouts, Skype, Google Meet.

Asynchronous

Information is left for the student to read later.

Resources

Email, Blog, Listserv, Bulletin Board

Tools

Learning Management System (LMS; Edmodo, Google Classroom, Schoology and Moodle) WhastApp, Telegram, Youtube, IceCream, Screen Recorder, Movie Maker.

Online Learning Approach

Social Learning

- Connecting
- Communicating
- Collaborating

Self Directed Learning

- Correlate
- Compare
- Cooperate

Inquiry Based Learning

- Contribute
- Combine
- Change

SOCIAL LEARNING

- Social Learning refers to the learners' interaction behavior with educators and other learners' (learner-educator interaction and learner-learner interaction.
- Social interactive engagement involves socialisation and active community participation such as social discussion, problem solving and content sharing (Oh, et. al, 201).

CONNECTING

The interaction can provide learners with a sense of connectedness and a feeling of being cared about, thereby enhancing learners' willingness to continue to participate in online discussions.

COMMUNICATING

Social learning is essential for communicative exchange of information and facilitates active engagement between learners and educators.

COLLABORATING

Collaborative learning adapts and integrates social media tools such as integrated instant messaging technology into its platforms. Thus, it supports collaborative dialogues and provides real time interactive experiences to increase social presence and ensure efficient and effective conversations.

SDL

SELF DIRECTED LEARNING

CORRELATE

Self Directed Learning allow learners to generate ideas and information gathered through experiences and environment to help them to make decisions.

COMPARE

Ideas and Information gathered from other learners allow learners to make comparison to find better solutions.

COOPERATE

Ability to learn through self-le[illegible] enhances critical thinking and leads to better decisions among learners.

INQUIRY BASED LEARNING

Contribute

Inquiry-based learning allows learners to participate in complex scenarios, through arguing and commenting towards finding a solution through posting up the inquiries in the online learning platform.

Combine

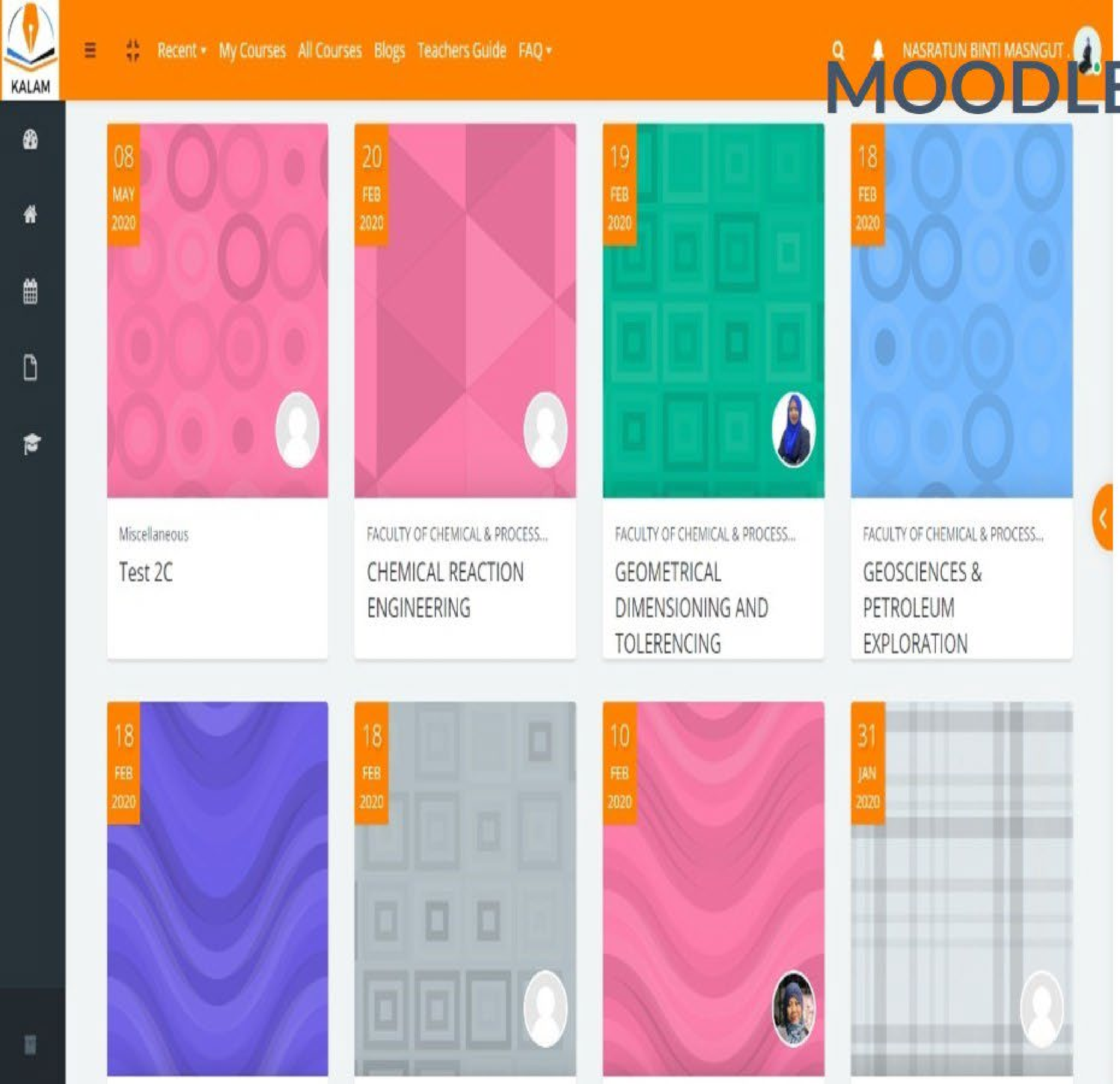
Ability to excel and move beyond learners' capability through exploration of projects or tasks through documenting the progress in a form of tasks given.

Change

Constant changes for better improvement on projects or tasks allow learners to excel in their learning process.

Learning Management System (LMS)

MOODLE



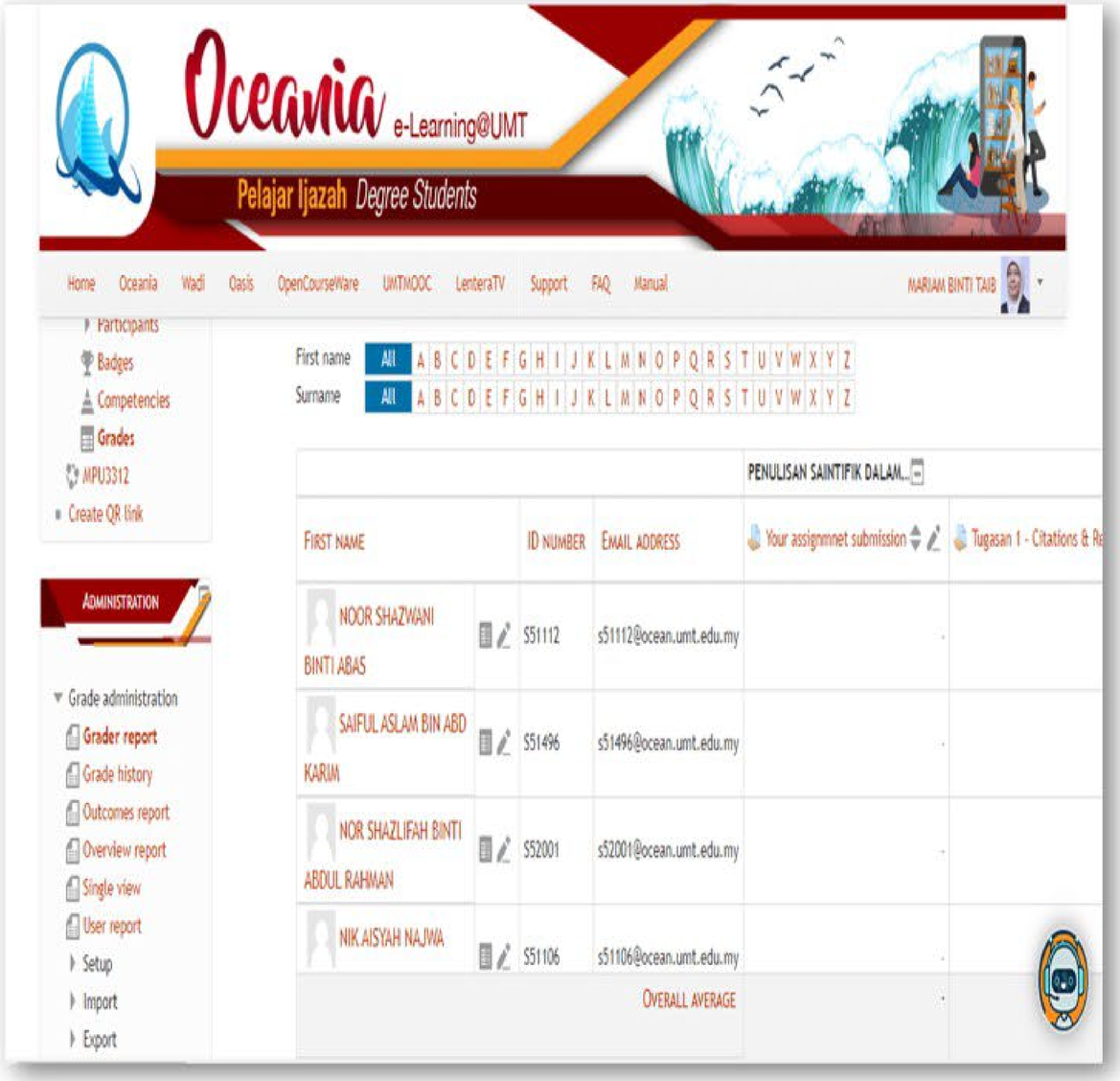
moodle

Moodle is a learning platform which also known as free open source software package that help to create effective online learning environment.

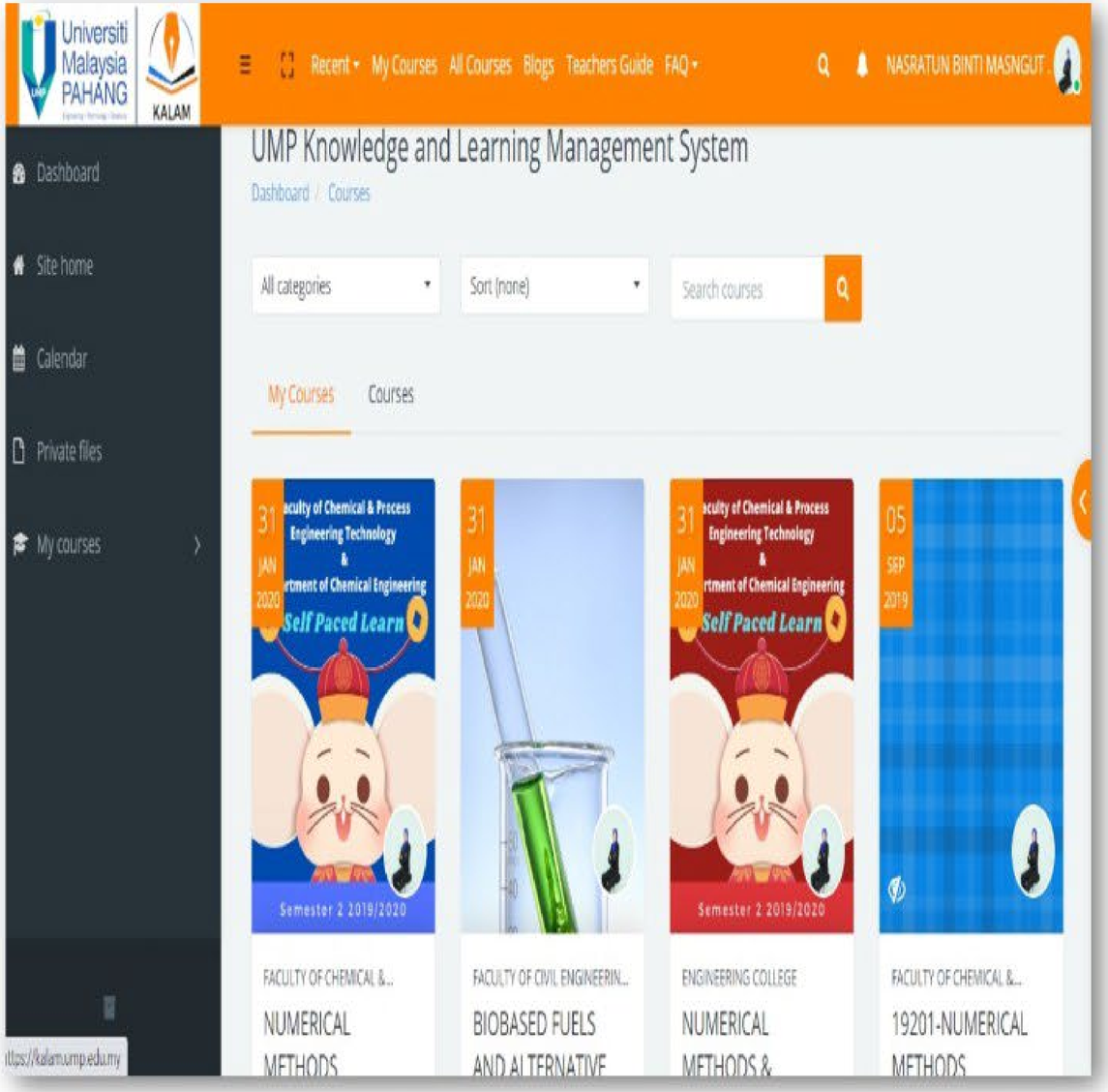
Moodle platform also allow single sign-on with existing systems, active learning, online grading and online and offline learning.

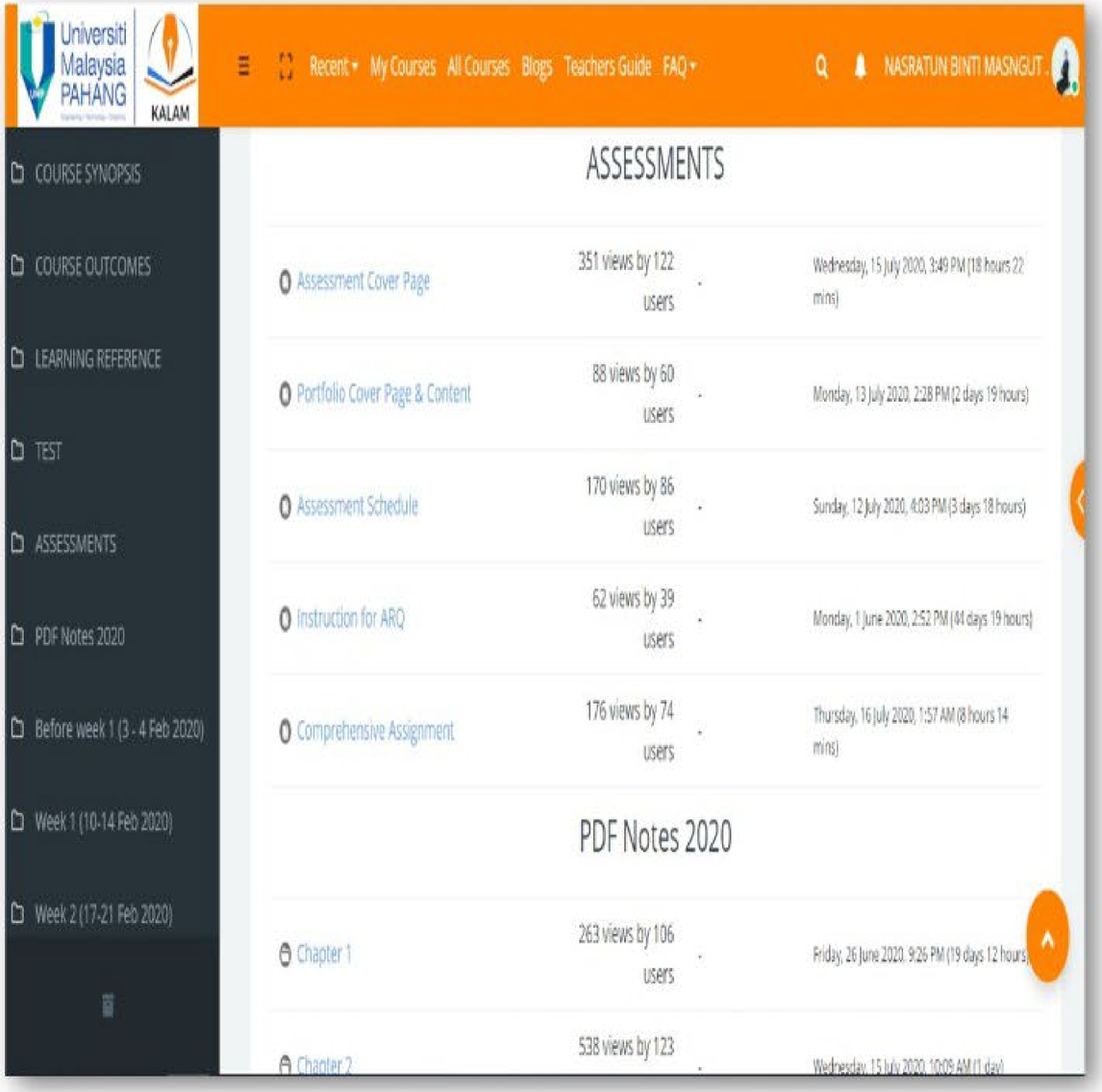
As Moodle is an open source, moodle platform can integrate with existing systems used in the education institutions for further enhancement on its functionality.

Example: MOODLE CLASSROOM

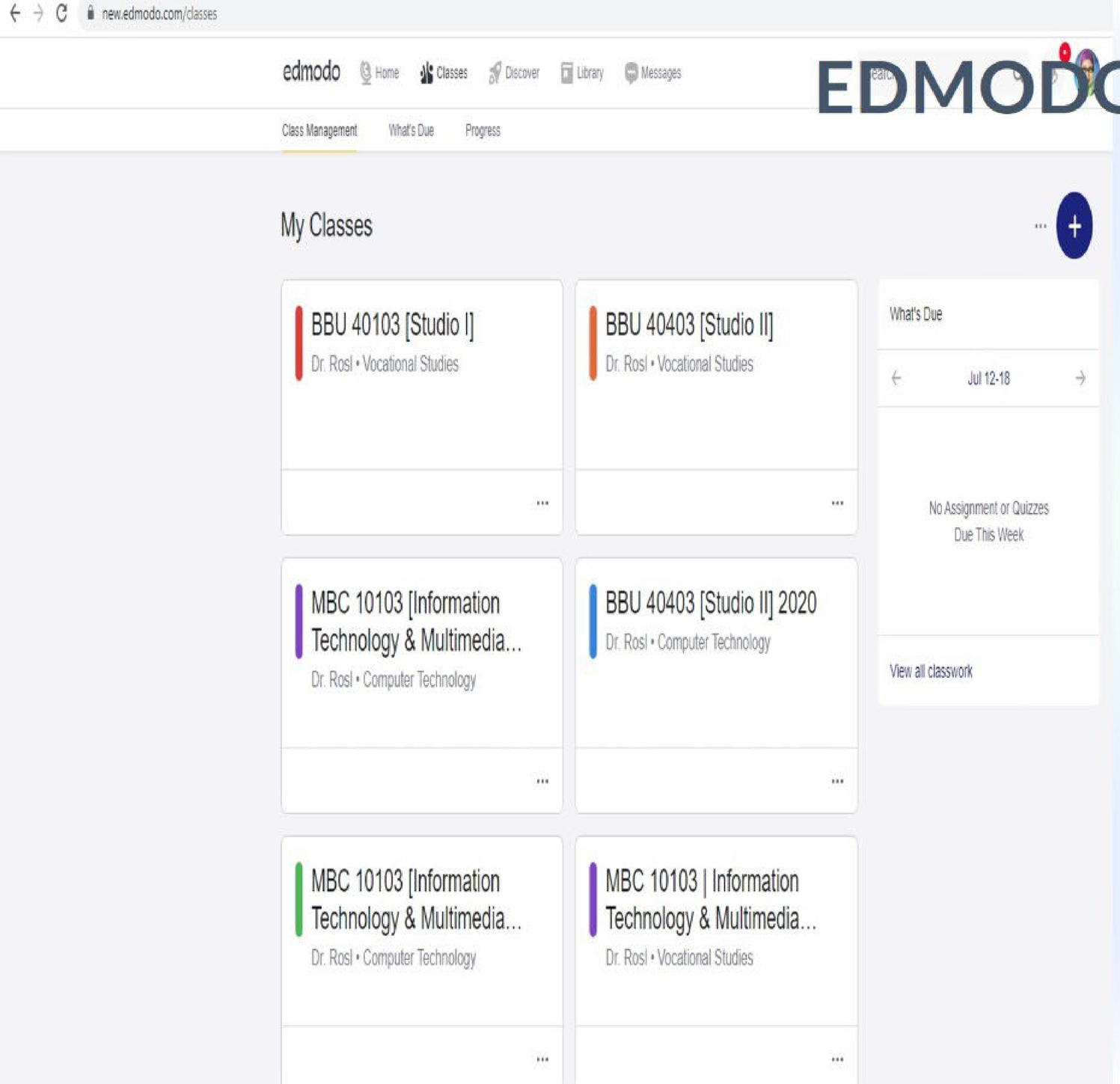


Example: MOODLE CLASSROOM



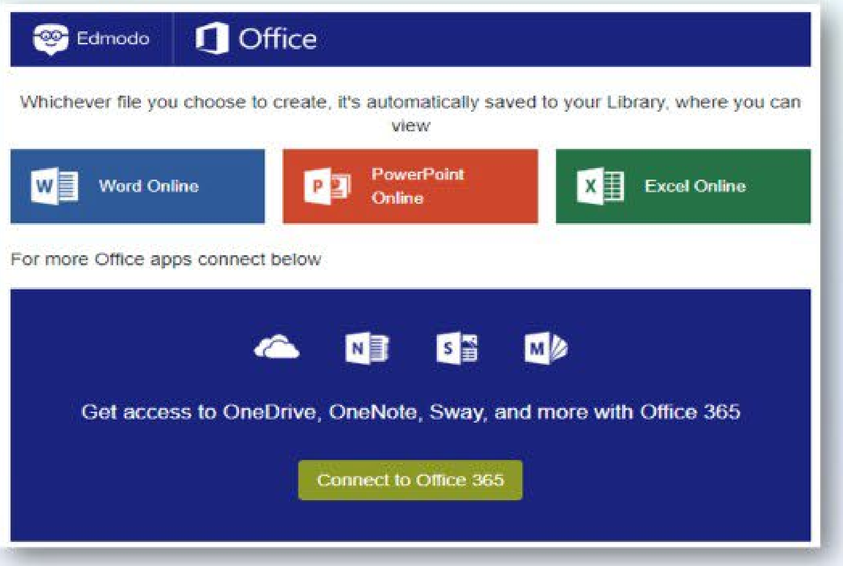


EDMODO

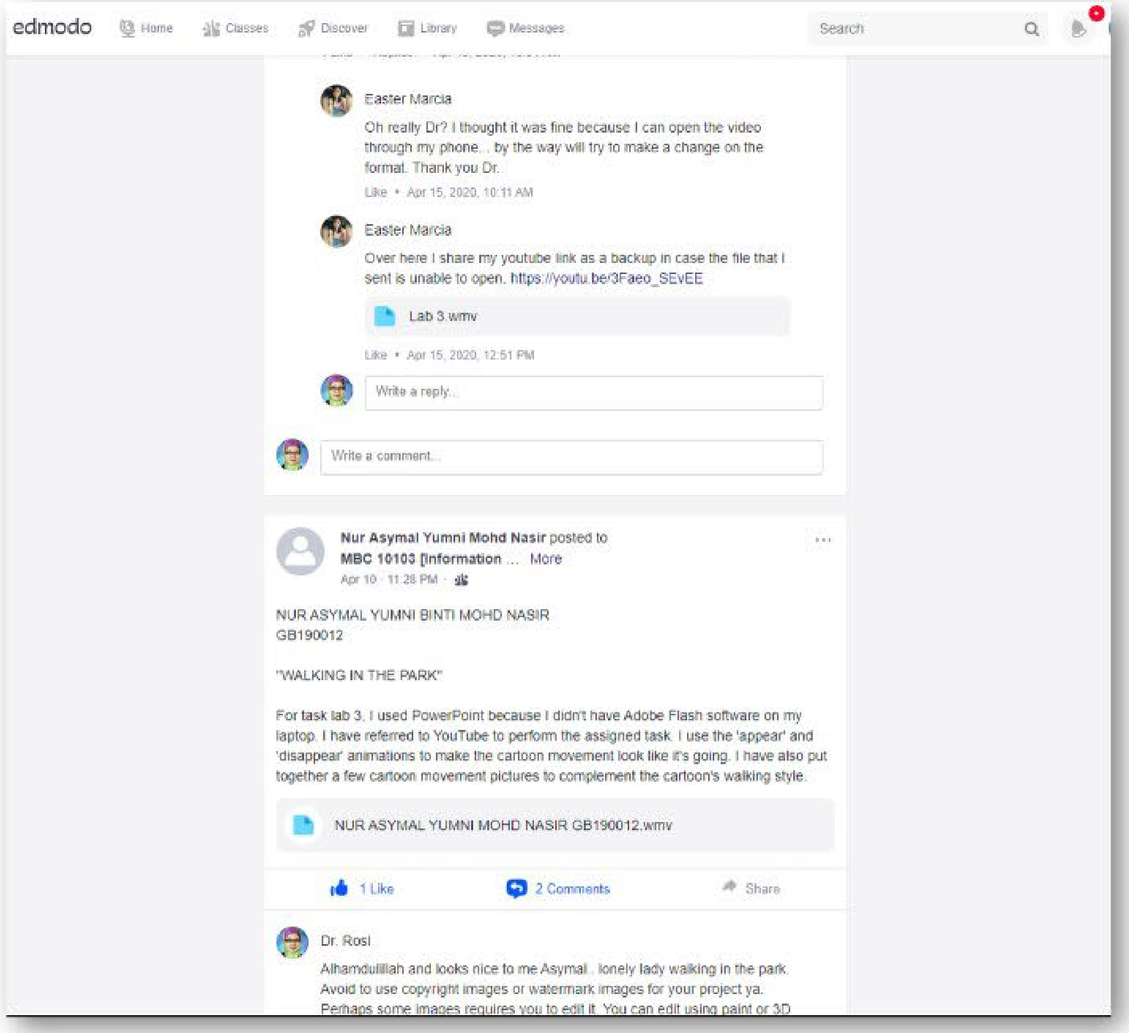


Edmodo is a platform that allow activities such as send messages, share class materials, and make learning accessible anywhere.

Edmodo also includes Microsoft Office features which makes it easier to use, recorded and documented.

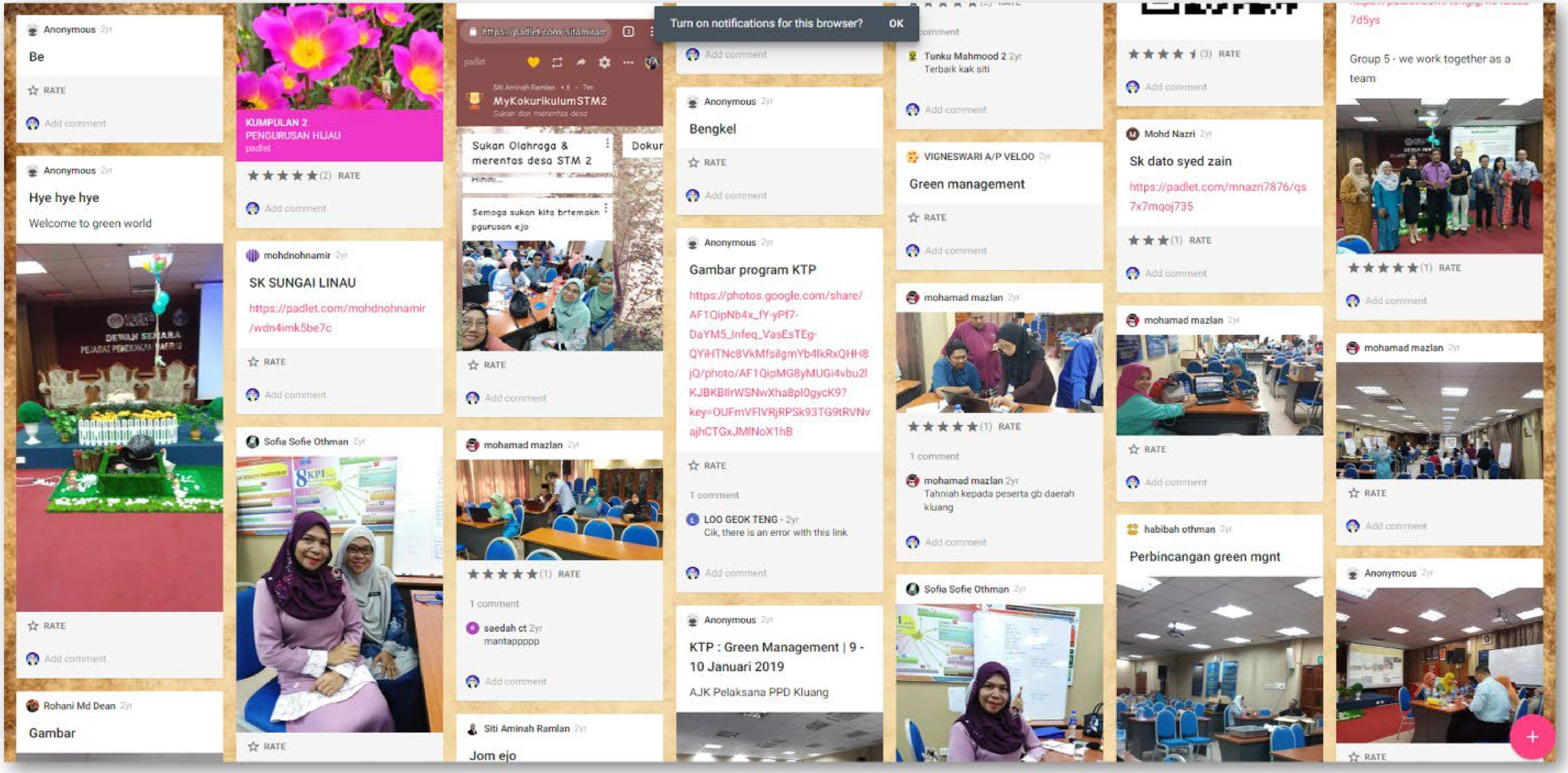


Example: EDMODO CLASSROOM

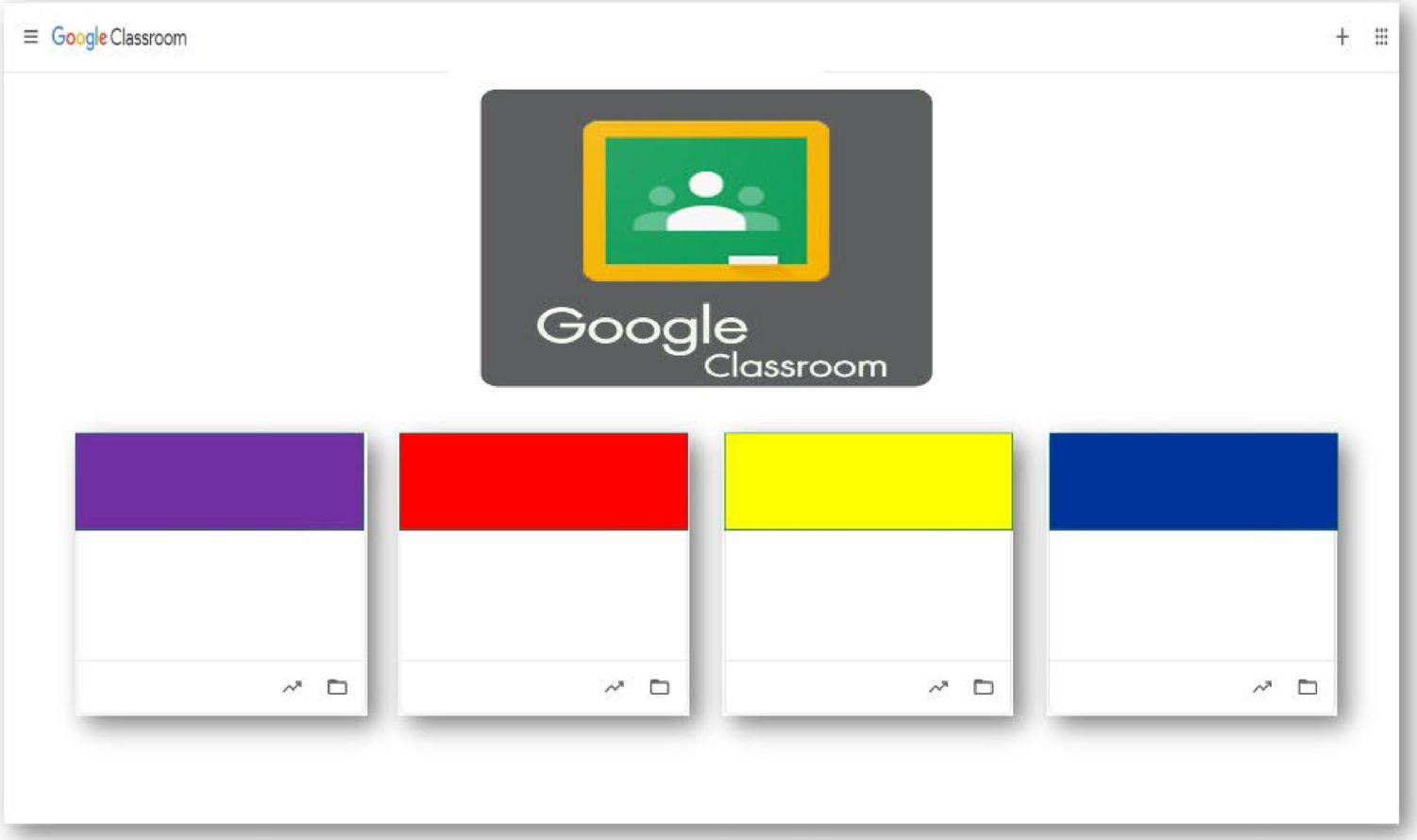


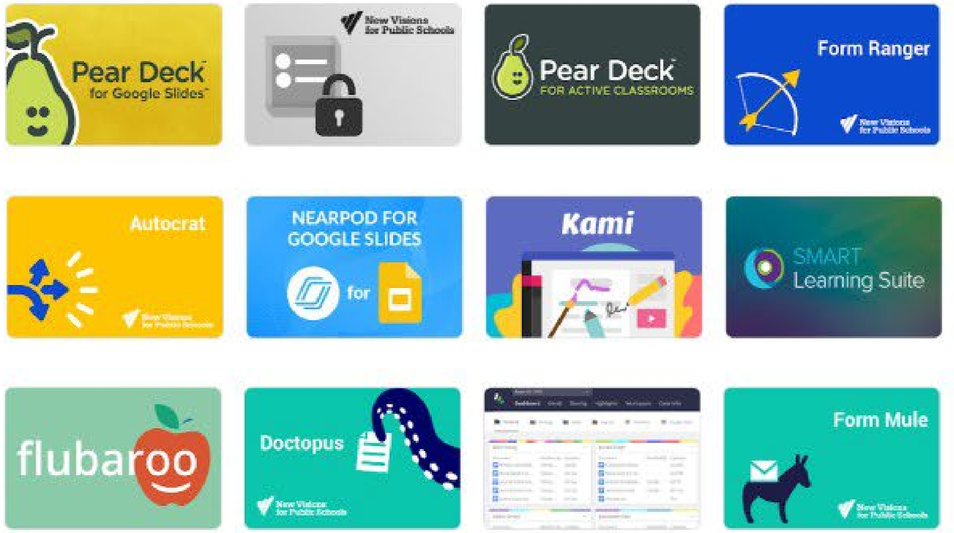
Students	Test 1: BBU 40103	WEEK 5: Task	WEEK 4: Tasks	Assignment: Pencip...	Assignment: Pencip...			
Muhammad Hanif Iqwan ...	Turned In	Turned In		Turned In	Turned In	Turned In	Turned In	Turned In
Siti Nurshahira Ab...	Turned In	Turned In	5 / 5	Turned In	Turned In	Turned In	Turned In	
Siti Aisyah Ahmadi	Turned In	Turned In	5 / 5	Turned In		Turned In	Turned In	Turned In
Nurul Afiqah Bais	Turned In	Turned In			Turned In	Turned In	Turned In	Turned In
fadzil h		Turned In		Turned In	Turned In	Turned In	Turned In	Turned In
Ar Hapis_s5		Turned In	5 / 5	Turned In		Turned In	Turned In	Turned In
CHUA HOONG JIET		Turned In	5 / 5	Turned In		Turned In	Turned In	Turned In
INTAN NUR FARISHA IS...	Turned In	Turned In			Turned In	Turned In	Turned In	Turned In
Ilya Nabeela Jamil	Turned In		5 / 5			Turned In		
MICHEAL LAW M...	Turned In	Turned In	5 / 5	Turned In		Turned In		
Fatin Nursyahira ...	Turned In	Turned In	5 / 5	Turned In		Turned In	Turned In	Turned In
Siti Nurul Asyikin ...	Turned In	Turned In	5 / 5	Turned In	Turned In	Turned In	Turned In	Turned In
Amirah Husna Mohamad...	Turned In	Turned In			Turned In	Turned In	Turned In	Turned In
Fatin Amirah Mohd Tarmizi		Turned In		Turned In		Turned In	Turned In	Turned In
Mohammad Shahr...	Turned In		5 / 5	Turned In	Turned In	Turned In	Turned In	
syahrina s		Turned In		Turned In		Turned In	Turned In	Turned In

Example: EDMODO CLASSROOM



GOOGLE CLASSROOM

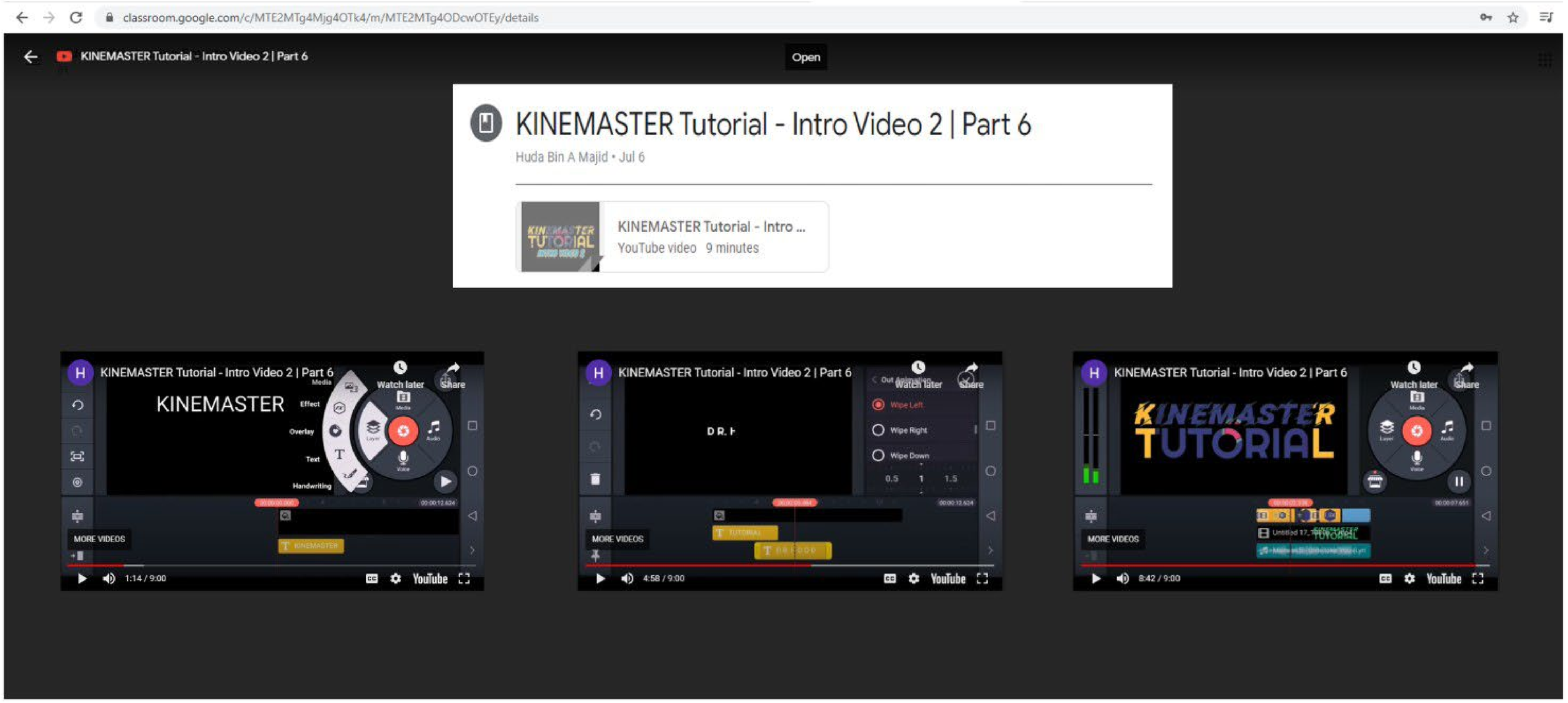




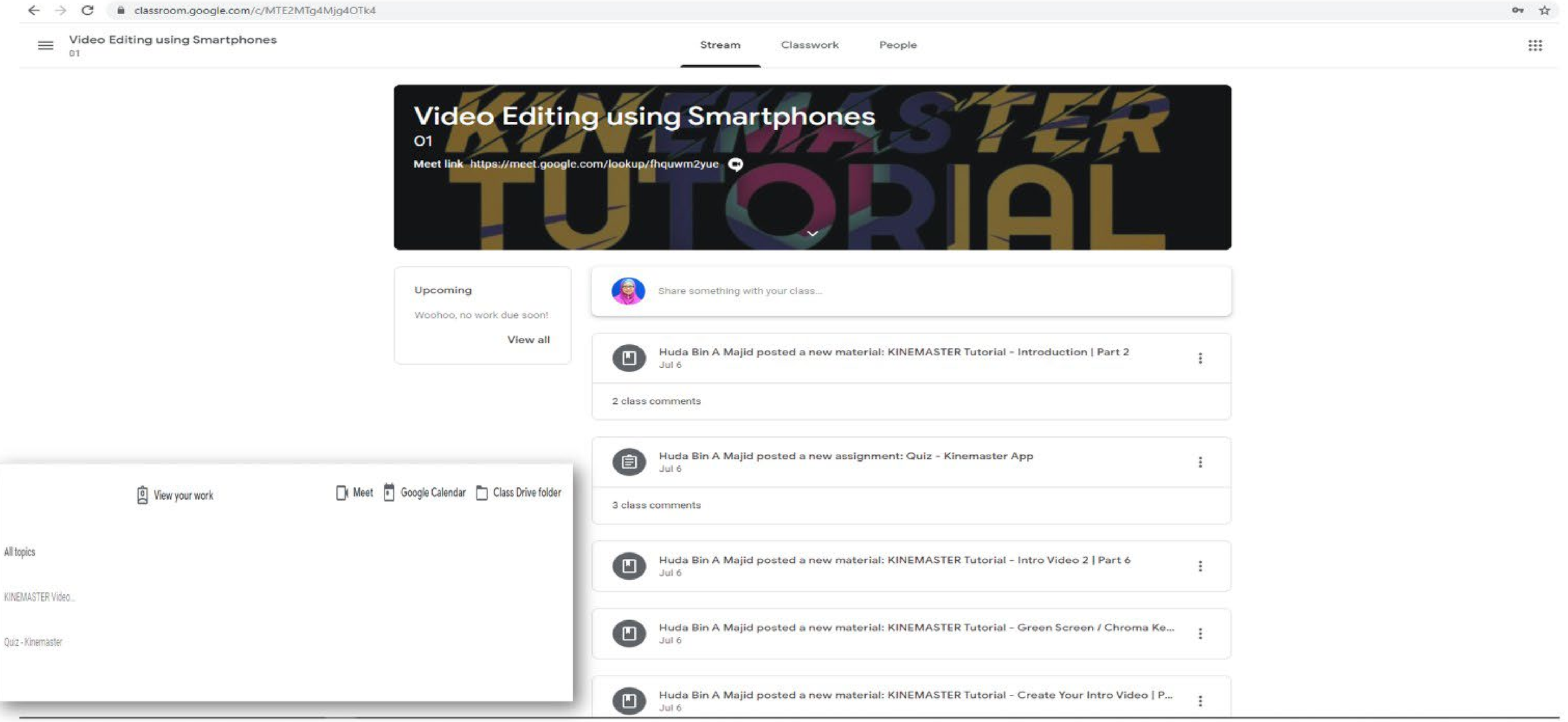
Google Classroom is a free platform used to create online classes that embark learners to participate in the discussion, sharing resources, and graded using google classroom platform.

Advantages of using Google Classroom are the google education applications such as education resources, teacher and admin tools, communication and utilities as to help the learning process meaningful.

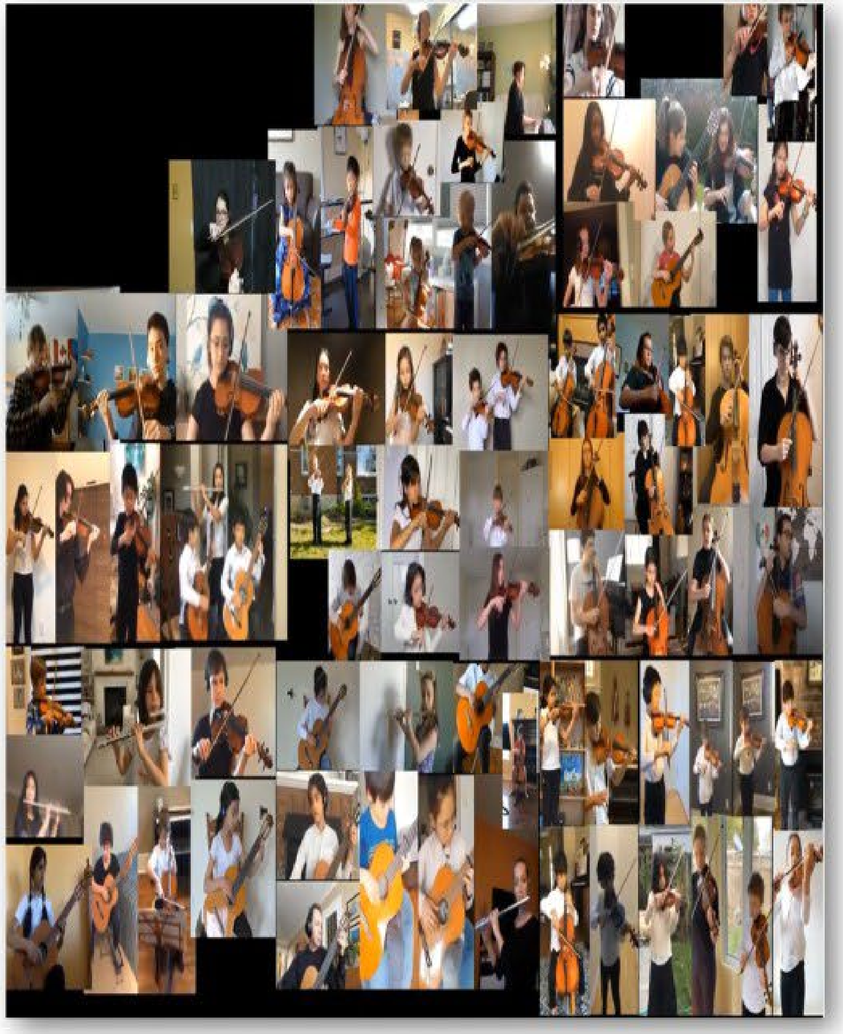
Example: GOOGLE CLASSROOM

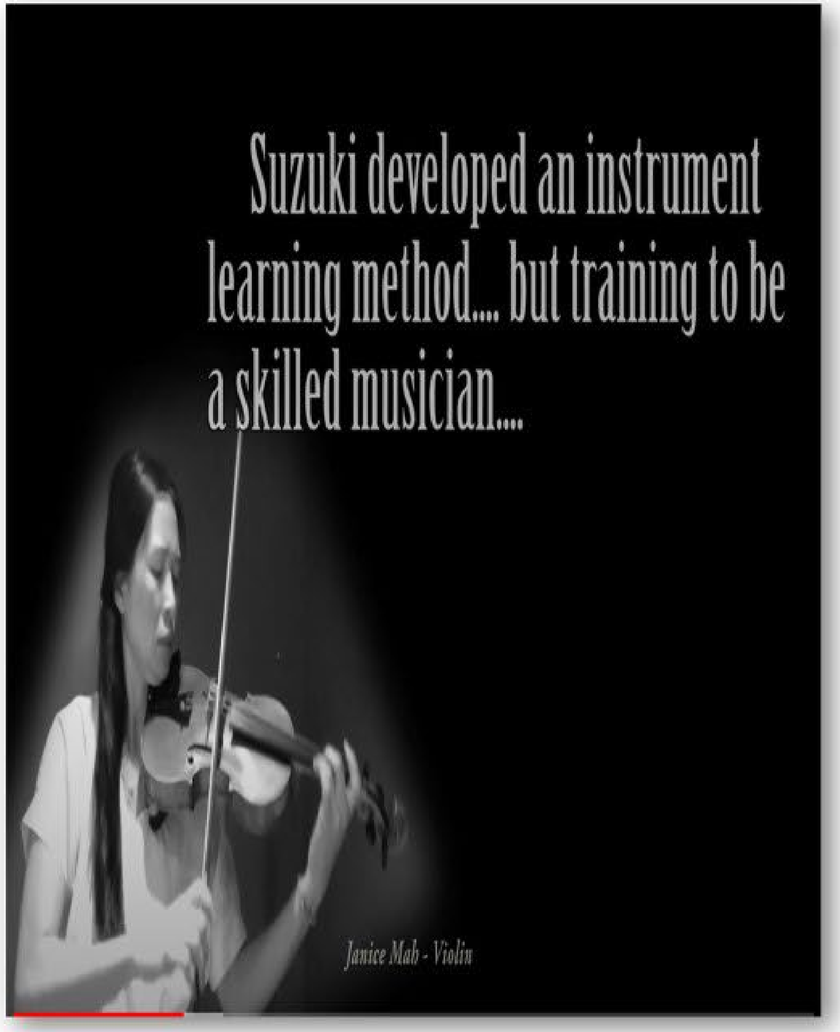


Example: GOOGLE CLASSROOM



Example: GOOGLE CLASSROOM





Virtual Suzuki Concert involve skills performance simulation among learners.

OPEN LEARNING

Courses

Sort by: Popularity

Mu'adz Zulkifli

Rumahku (BM Version)

Pelajari selok-belok pembelian rumah.

203,276 learners On now

Politeknik Malaysia

English For TVET : Processes and Procedures

The English for TVET Series consists of several short on-line self-learning courses for non-native speakers of English who are interested in improving their Eng

34,011 learners On now

OpenLearning

Learning design basics: pedagogy into practice

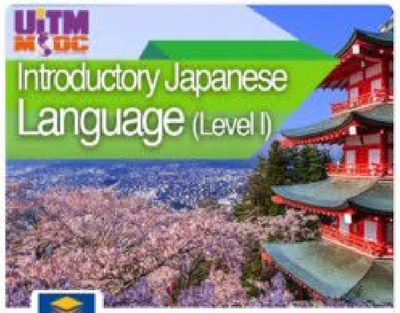
Want to engage and motivate your students? Keen to create authentic and meaningful learning experiences that really connect?

10,598 learners On now

UTS Open

Internet of Things

Get ready for an "IoT Future"! Explore



UiTM MOOC

Introductory Japanese Language (Level I)

Mu'adz Zulkifli

Rumahku (English Version)

Learn the mechanics of buying a

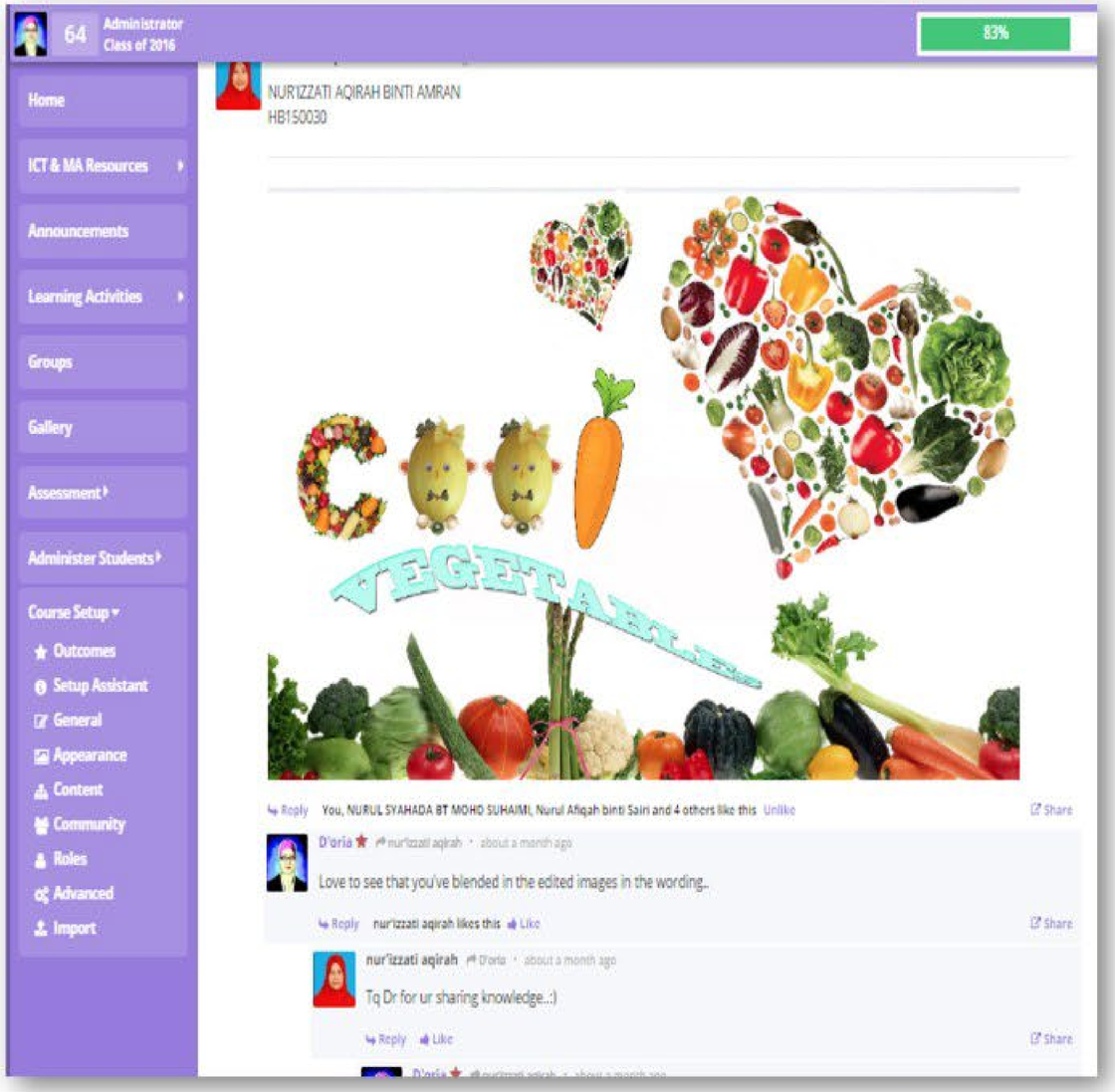
MALAYSIA MOOC
MASSIVE OPEN ONLINE COURSES

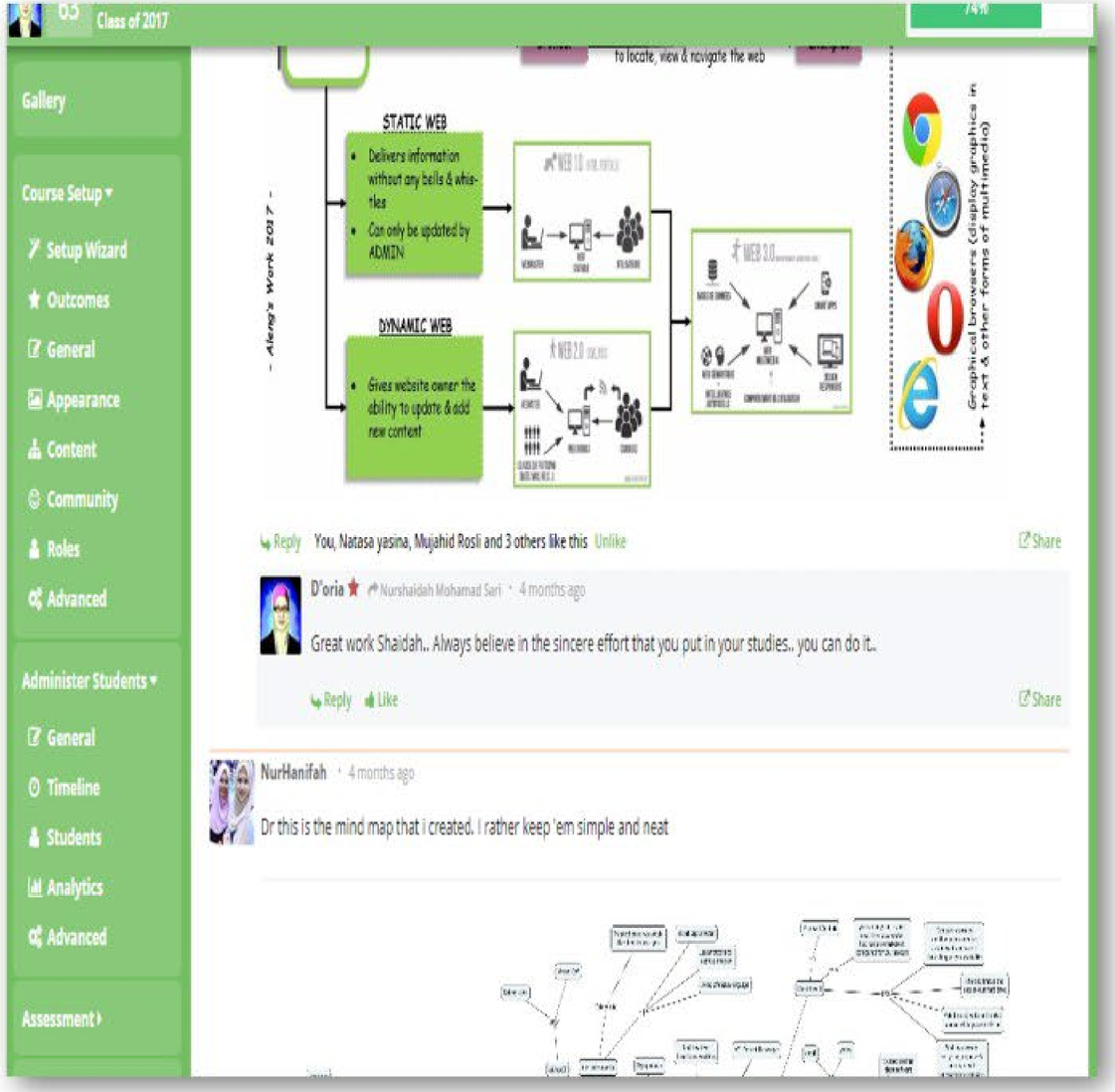
openlearning

Open learning platform empowers learners with world-class courses from educators and institutions in a practical and social learning environment.

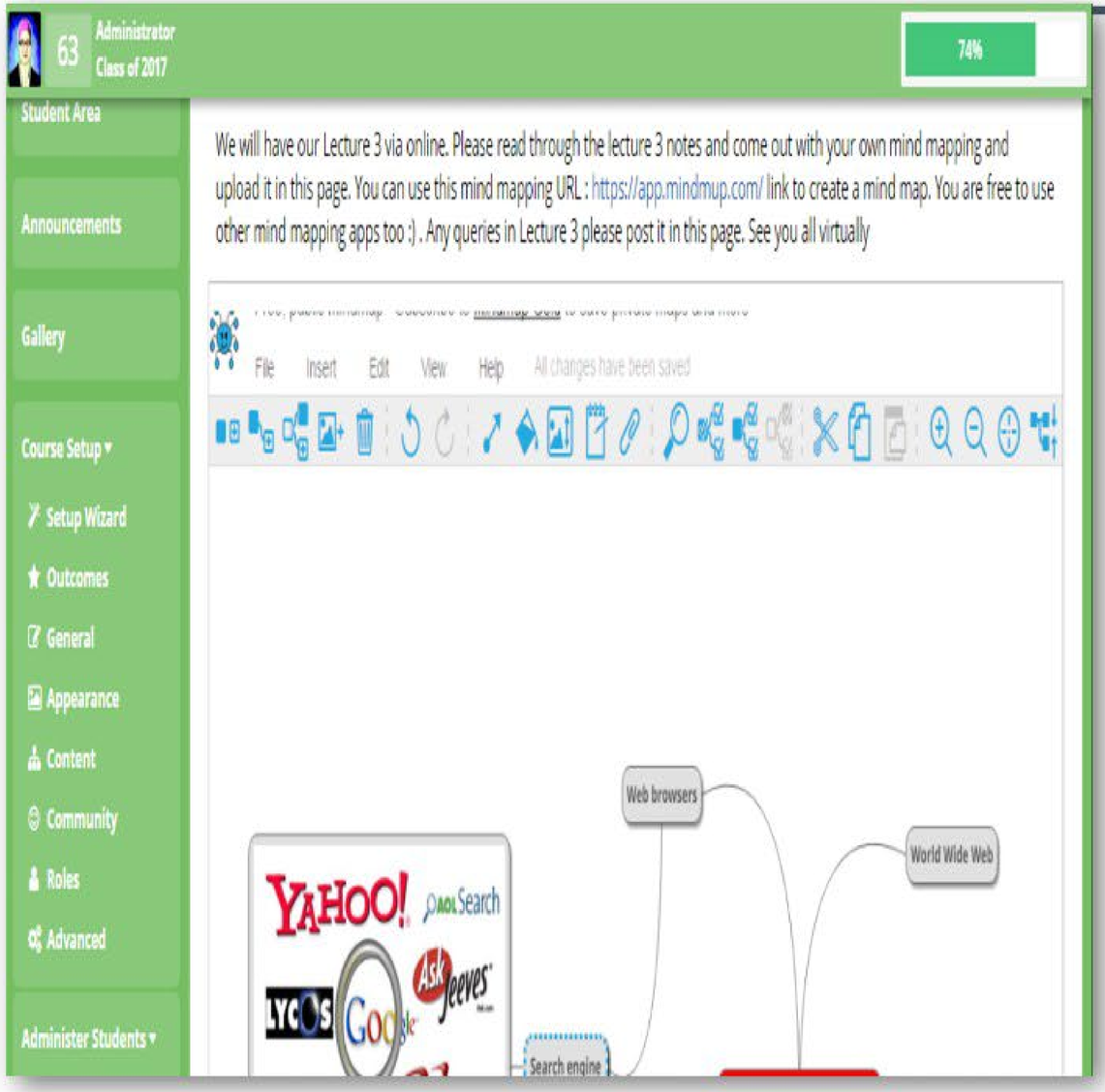
Open learning also offers drag and drop content widgets to add rich multimedia content such as text, video, audio, files and images. It also has flexibility to embed external learning resources.

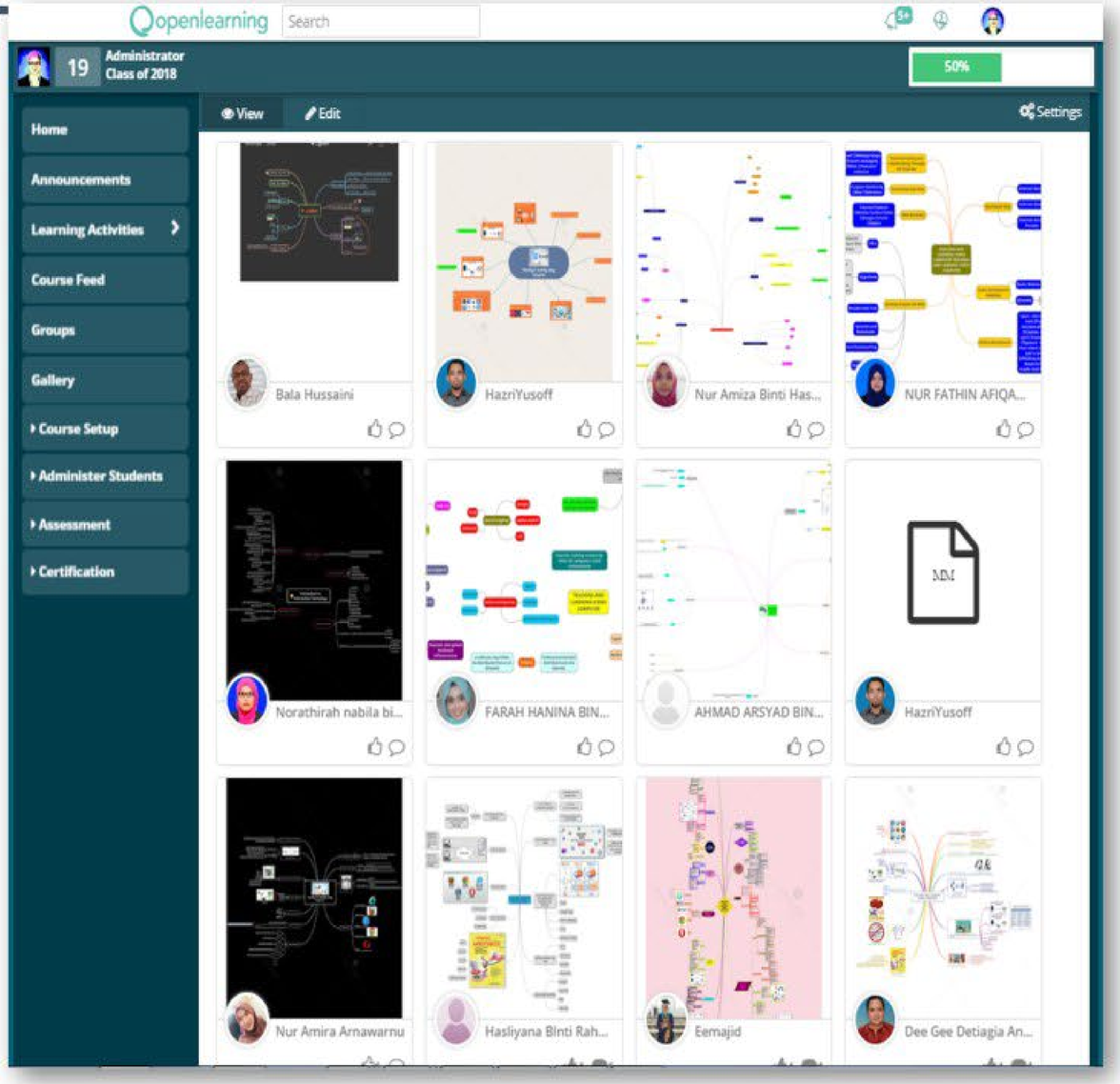
Example: OPEN LEARNING CLASSROOM



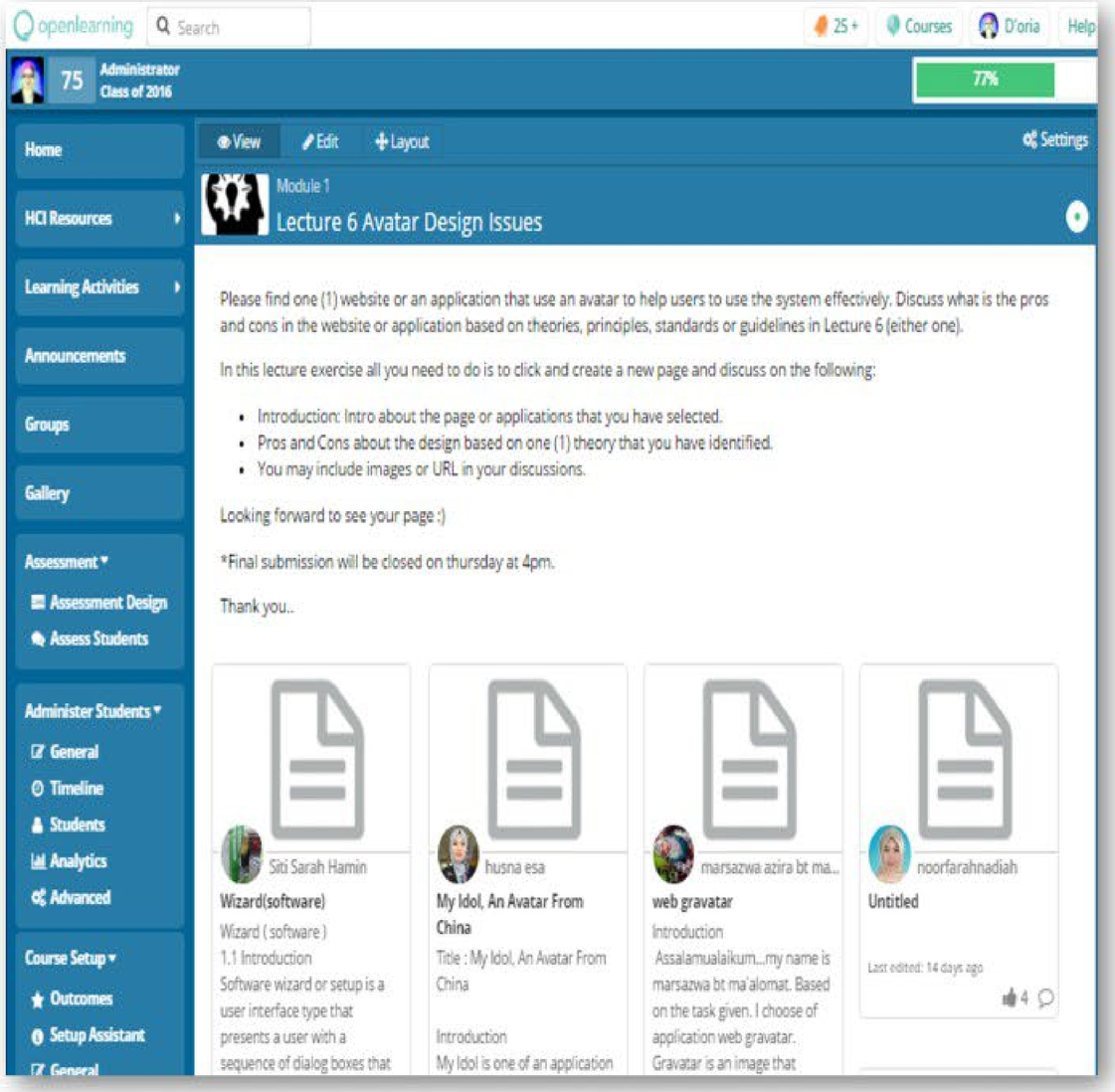


Example: OPEN LEARNING CLASSROOM





Example: OPEN LEARNING CLASSROOM



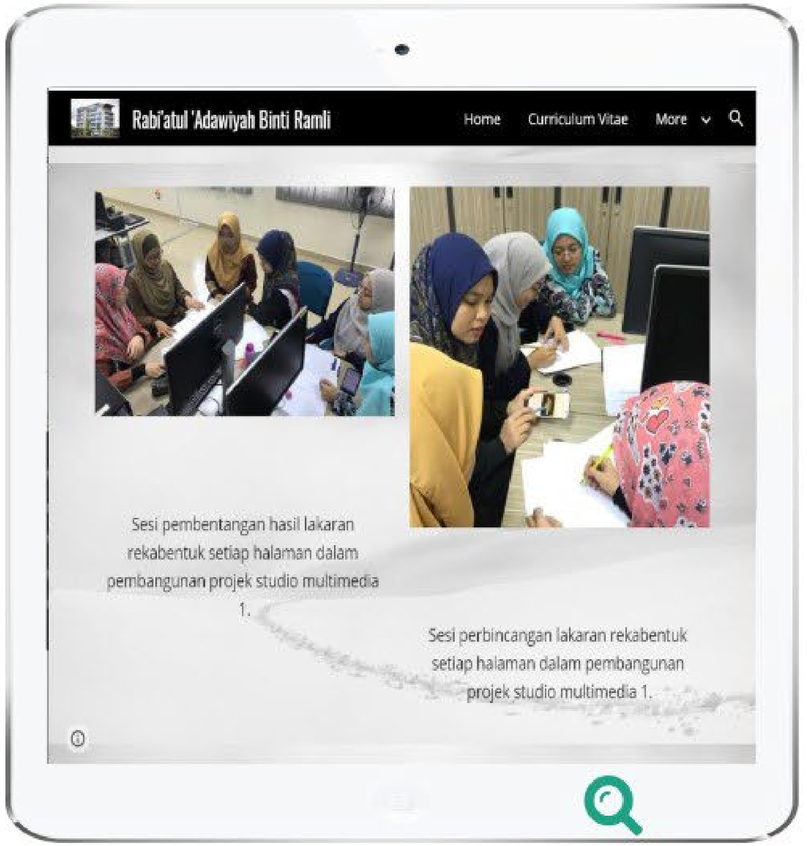
Immersive Online Learning
E-Portfolio
Virtual Reality &
Augmented Reality
Gamification
Game Based
Learning

E-Portfolio

E-Portfolio is a collection of sample tasks, work, demonstration and artifacts that showcases learning progression, achievement, and evidences of what learners can do.

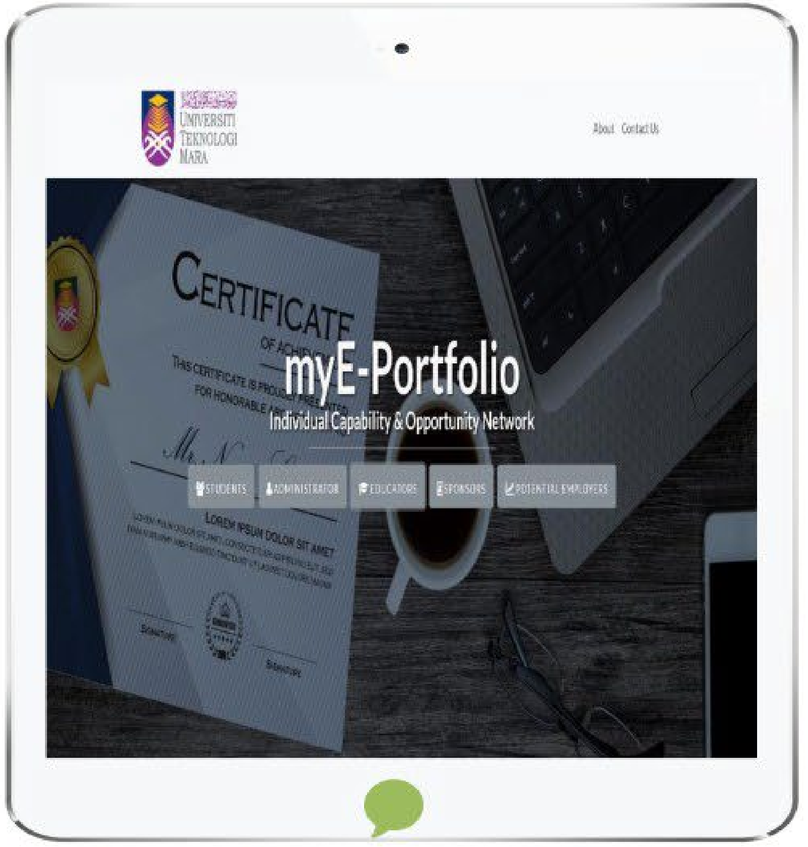
The learning progress compilation include audio, video, presentations, articles, demonstrations, images, data and link from other resources.

E-Portfolio



Class activities

Class activities such as tutorials and labs, discussions are compiled and reported in the e-portfolio.



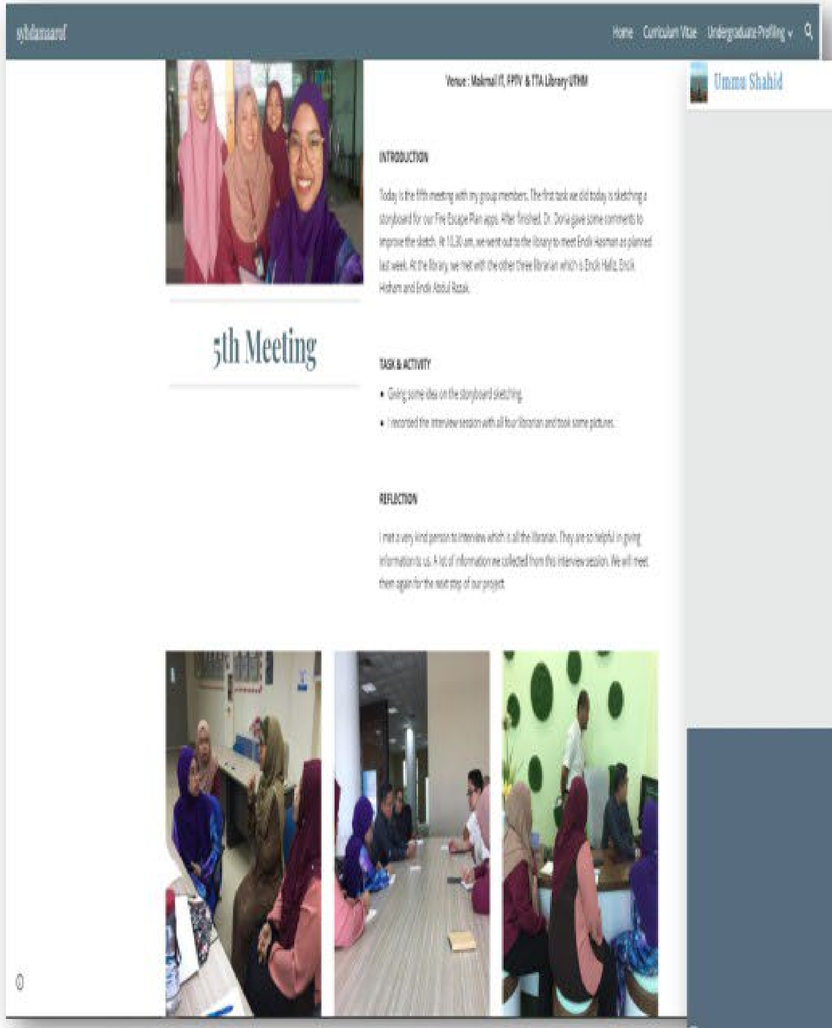
Learning Achievement and Reflection

Student achievement and student reflections allow learners for self-assessments that help learners to improve their own weaknesses in the learning process.

E-Resume

E-resume conveys brief information about student academic performance and curriculum background.

E-Portfolio Excerpts



Student brainstorming session with project manager and client to gather project system requirements.

Student project launching ceremony as an appreciation for project collaboration with industries.

Conference and poster exhibition exposed students for ideas and project discussion with other researchers worldwide.

E-Portfolio Excerpts

THE "EA" MICHEAL

A SARAWAKIAN BORNED IN 1996

LANGUAGE

ENGLISH
MANDERIN
MALAY
JAPANESE

SKILLS

PHOTOGRAPHY
VIDEOGRAPHY
PHOTOSHOP
LIGHTROOM
PREMIERE PRO

EDUCATION

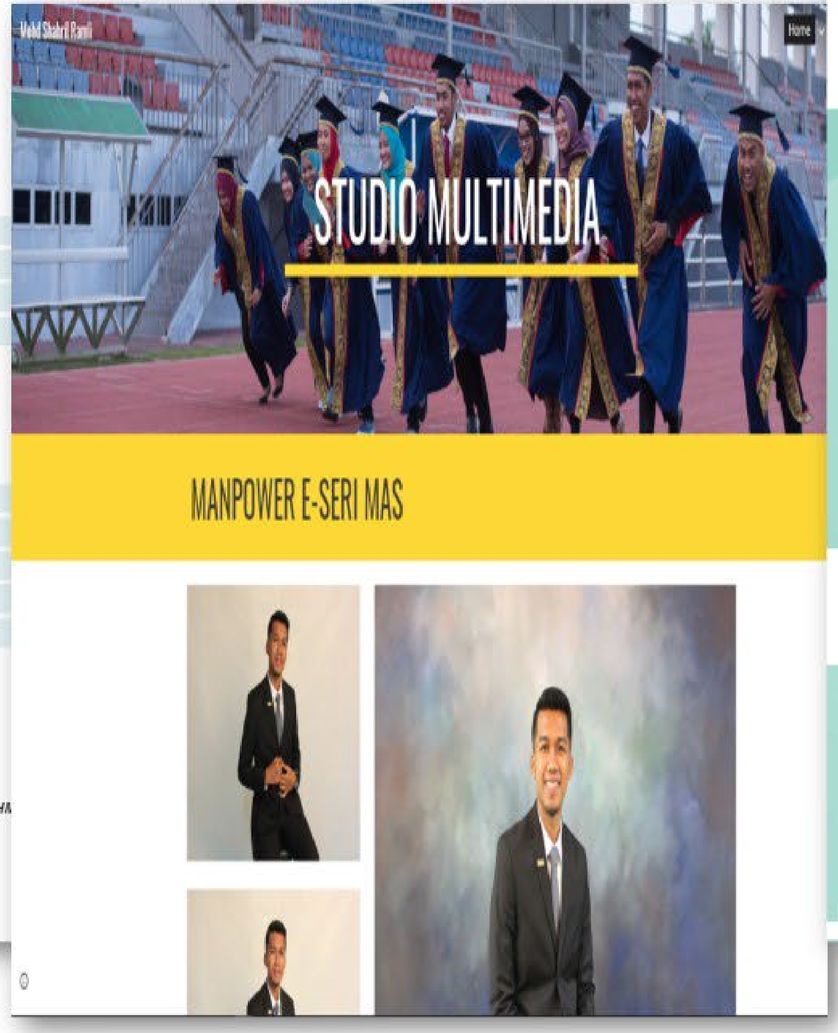
BACHELOR OF EDUCATION IN MULTIMEDIA CREATIVE AT UNIVERSITY TUN HUSSEIN ONN MALAYSIA (UTHM

FEBRUARY 2017 *(EXPECTED TO GRADUATE IN 2020)*

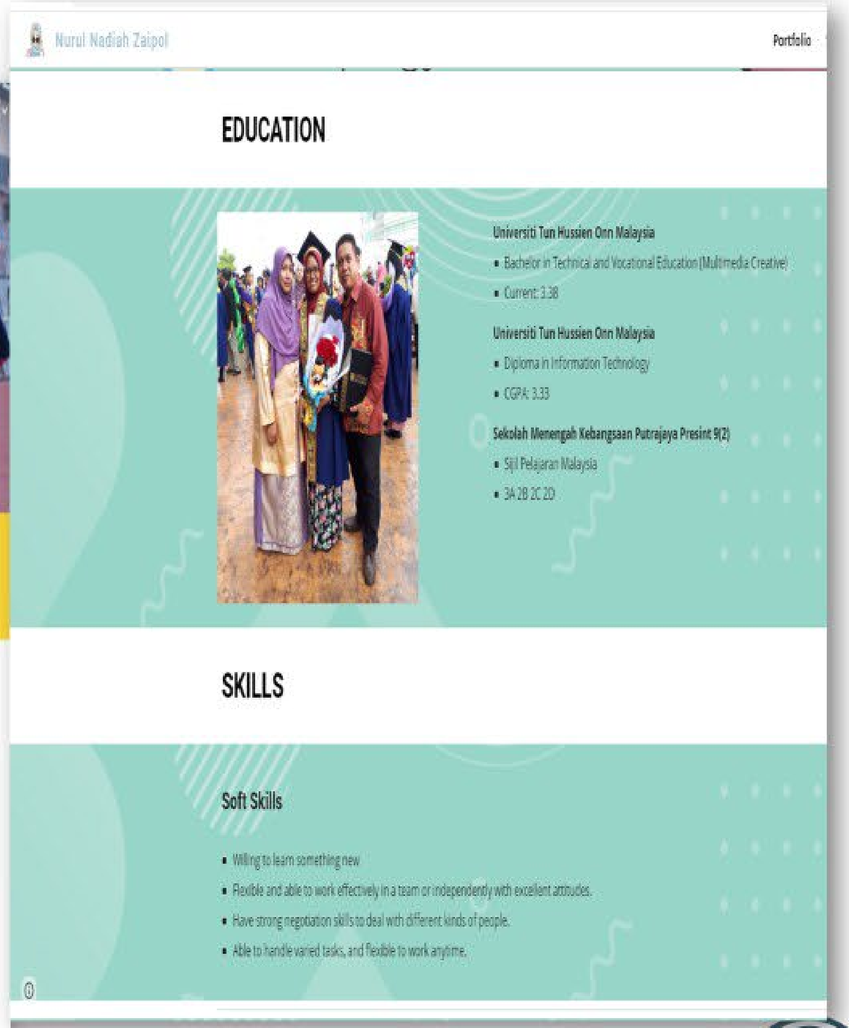
DIPLOMA IN INFORMATION TECHNOLOGY UNIVERSITY TUN HUSSEIN ONN MALAYSIA (UTHM)

JUNE 2014 *(GRADUATED IN 2016)*

Student softskills



Student class activities

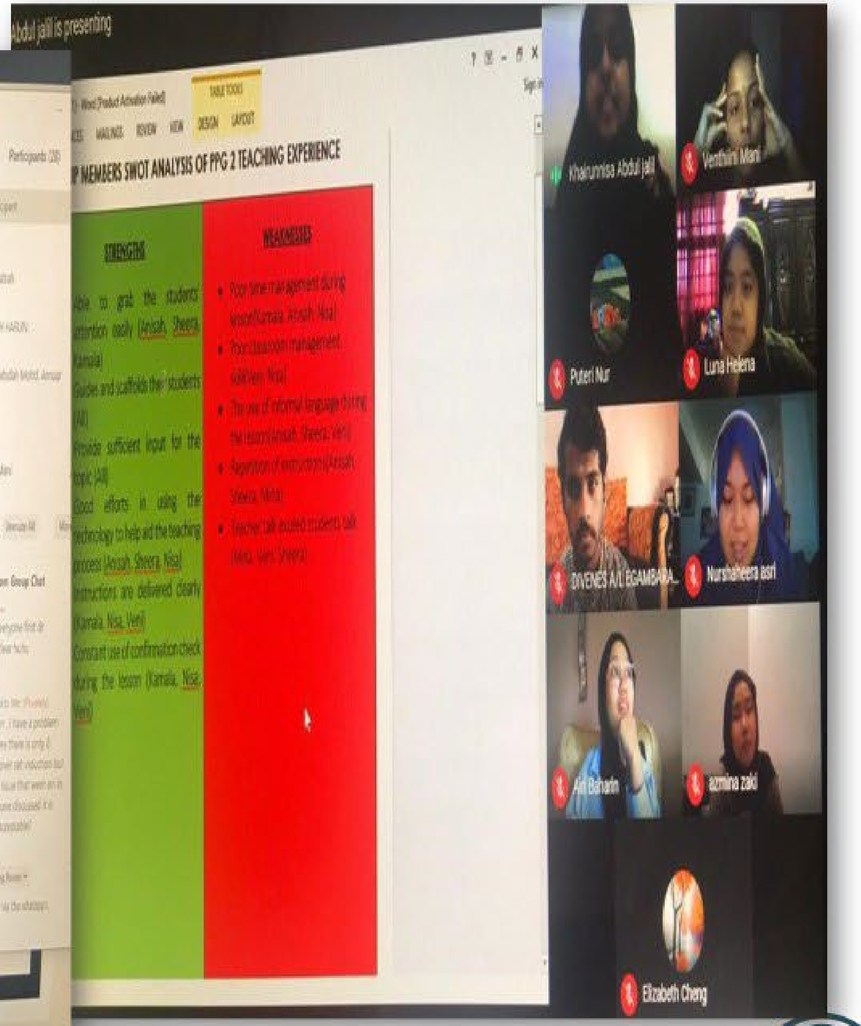


Student academic background

E-Portfolio Excerpts

Progress project feedback continuosly discussed and guided by the lecturer through LMS.

Synchronous discussion with learners using live conferencing and involved two way communications.



Learners able to learn from lecturers and peers.

Virtual Reality/ Augmented Reality

Virtual Reality is a computer-generated environment where learners can navigate, interact and experience real-time simulation through human senses (Guttentag, 2010).

Augmented Reality is a digital content that is superimposed on the users' real surroundings (Flavian, Ibanez-Sanchez, & Orus, 2019)

Virtual Reality Example

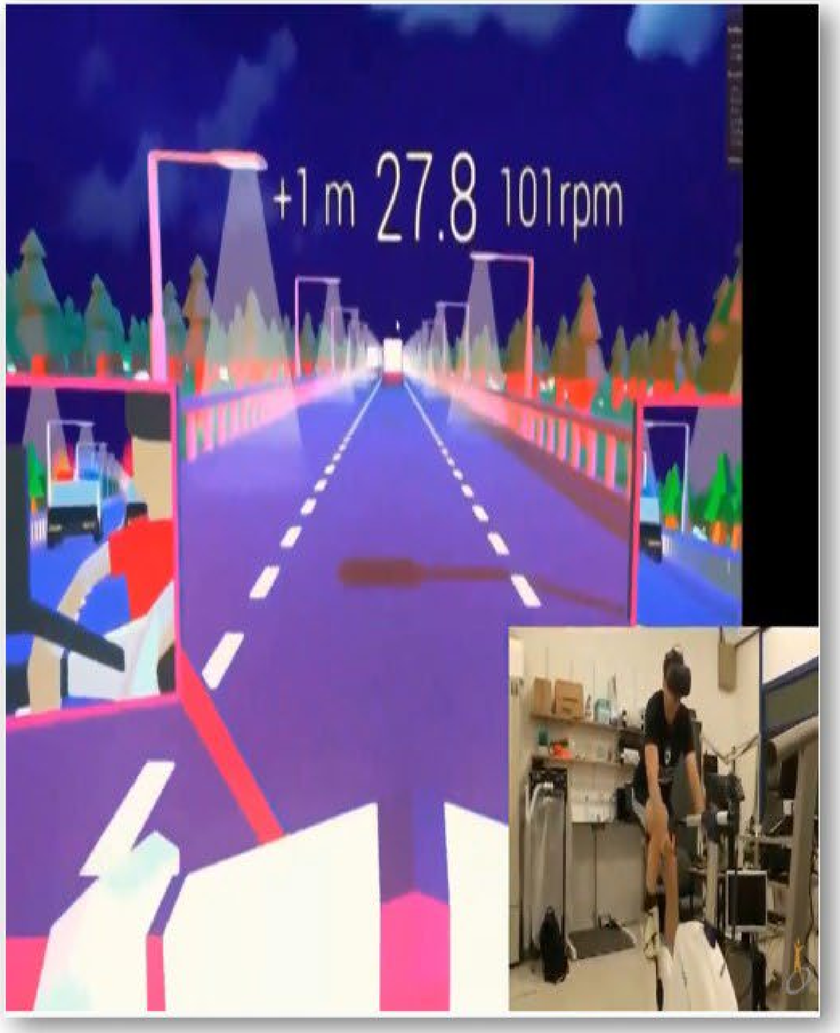
Virtual Constructivism

Using Second Life greatly facilitated frequent and quality art criticism within the class as well as gave opportunities to outside sources to review work

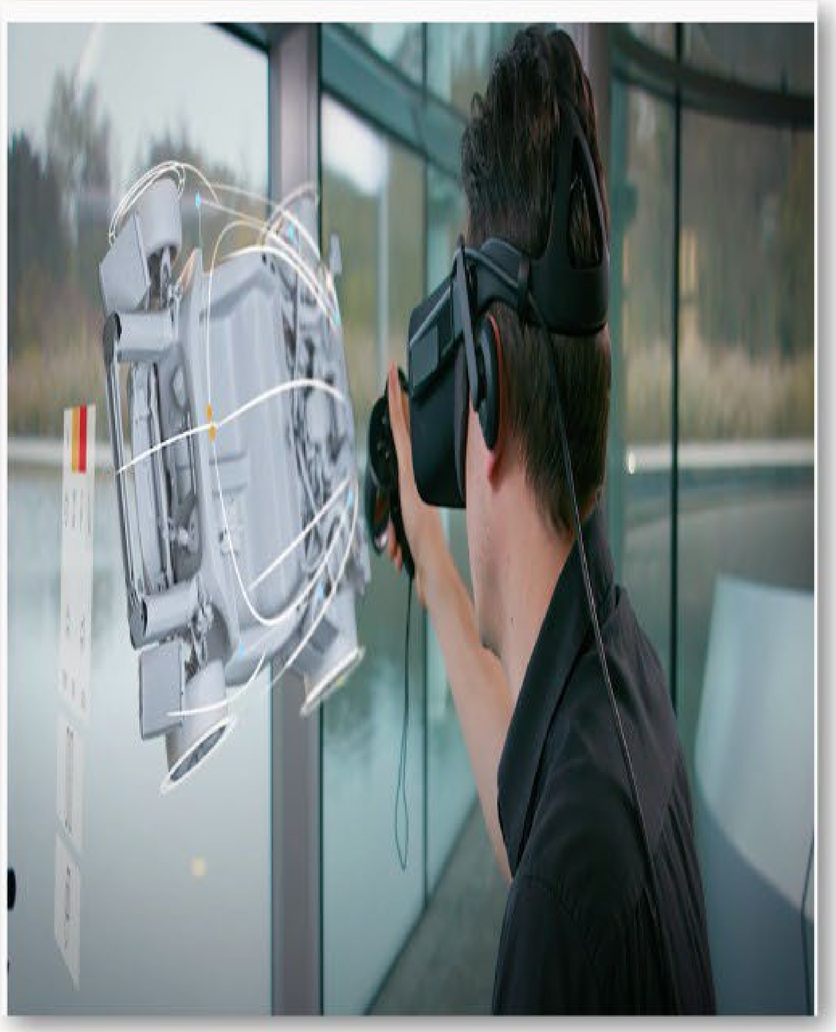
Virtual Collaborative Experimentation

An approach combining remote and local labs. *IEEE Transactions on Education* 51(2) 242-250.

Virtual Collaborative Experimentation



Interactive Feedforward Performance and Maintaining Intrinsic Motivation VR



McLaren Automative uses virtual reality to design its sportscars and supercars

Virtual laboratory scenarios that used different configurations of student collaboration online and physically during pre labs, labs and post labs encouraged student reflection, greatly improved the learning of material, and made real lab work more efficient.

Virtual Constructivism

Virtual reality versus real-time simulations between nurse and physician training

Learners able to get constructive criticism within the class as well as give opportunities to outside sources to review the task given to them through Second Life Virtual Environment. It also addressed certain learning needs of different types of learners including visual, auditory, kinesthetic, and social.

(Meggs, Susan, Greer, Annette & Collins, Sharon, 2011)

Virtual Field Trip

Virtual Field Trip-Seoul & StellarXplorers expose expriential learning which allows learners to have realtime experiences towards learning content.

Virtual field trips should completely replace actual field trips. In fact, they are best used as pre- or post-trip activities where students can be guided and given background knowledge.

Lacina (2004).

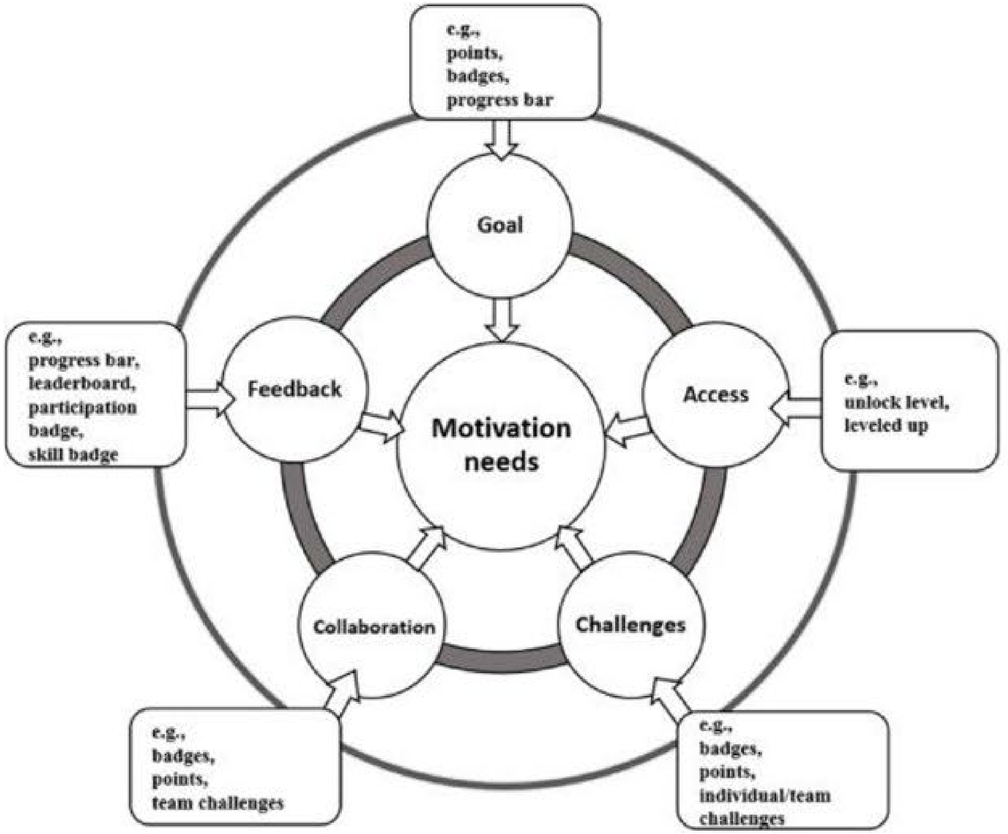
GAMIFICATION

Gamification is the application of games elements in a non-game context such as formal education.

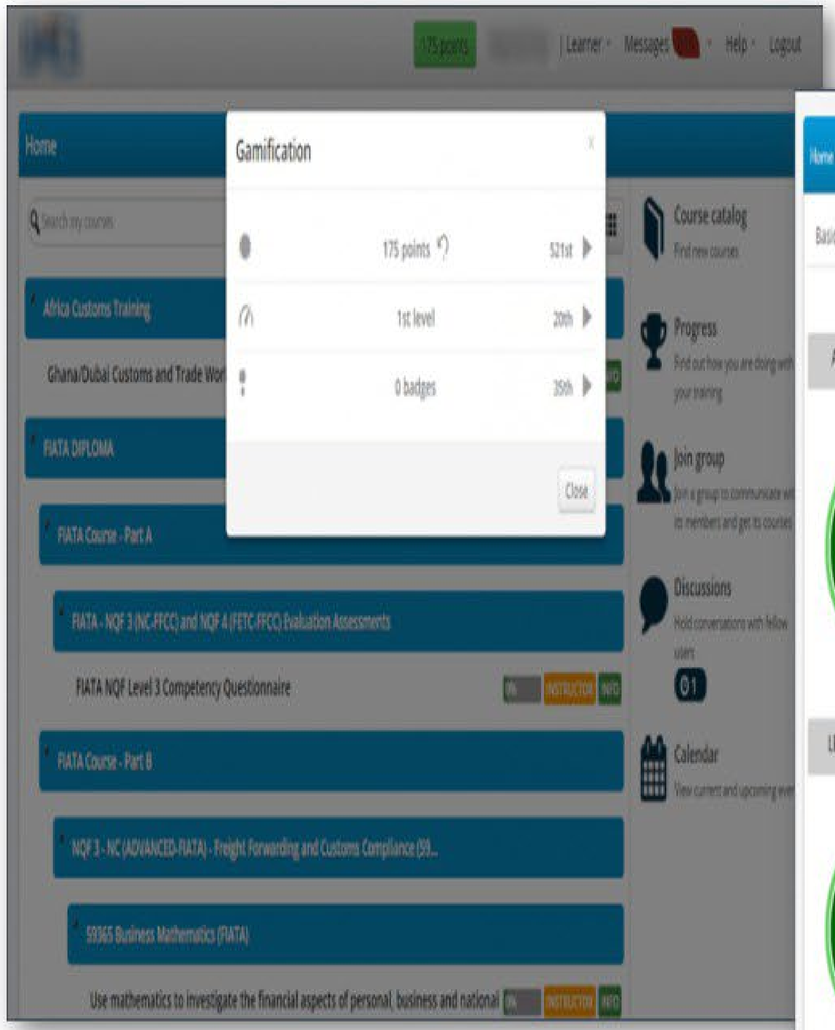
Gamification in education is structured around the used gamification mechanisms, the gamified subjects, the type of gamified learning activities, and the study goals, with an emphasis on the reliability and validity of the reported outcomes.

Gamification is a developing approach for increasing learners' motivation and engagement by incorporating game design elements in educational environments (Author, 0000).

Gamification Education Theory

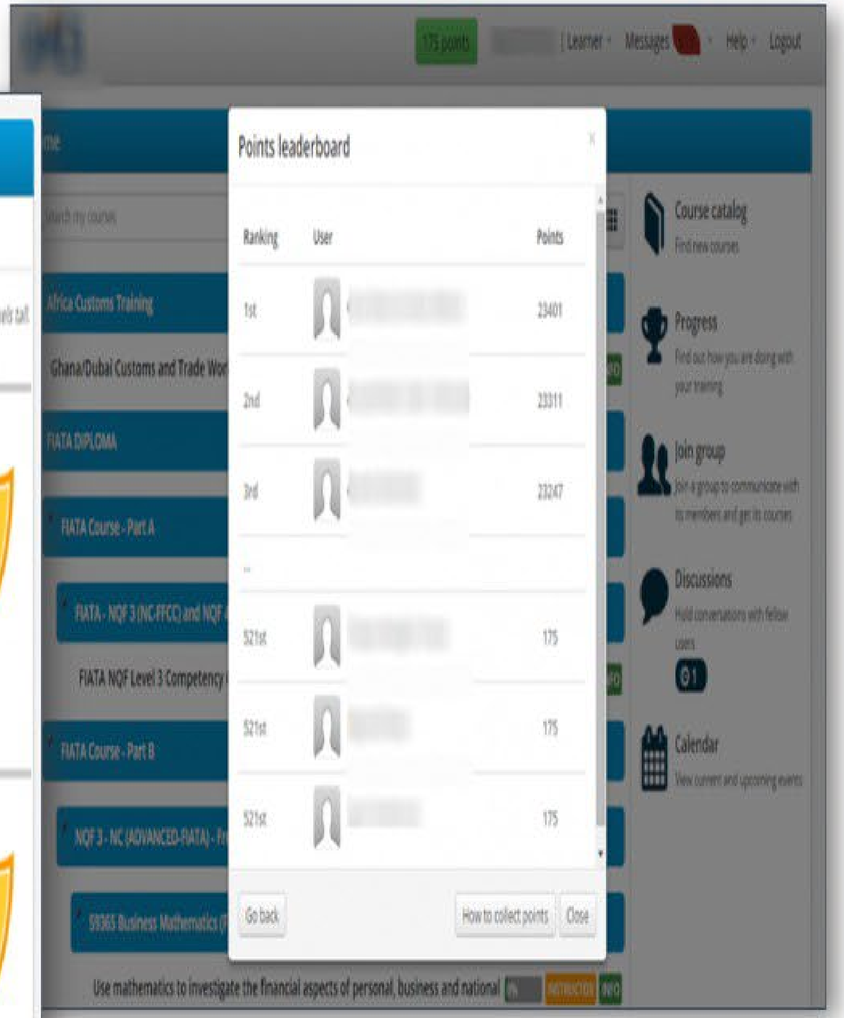


Example: Gamify Learning



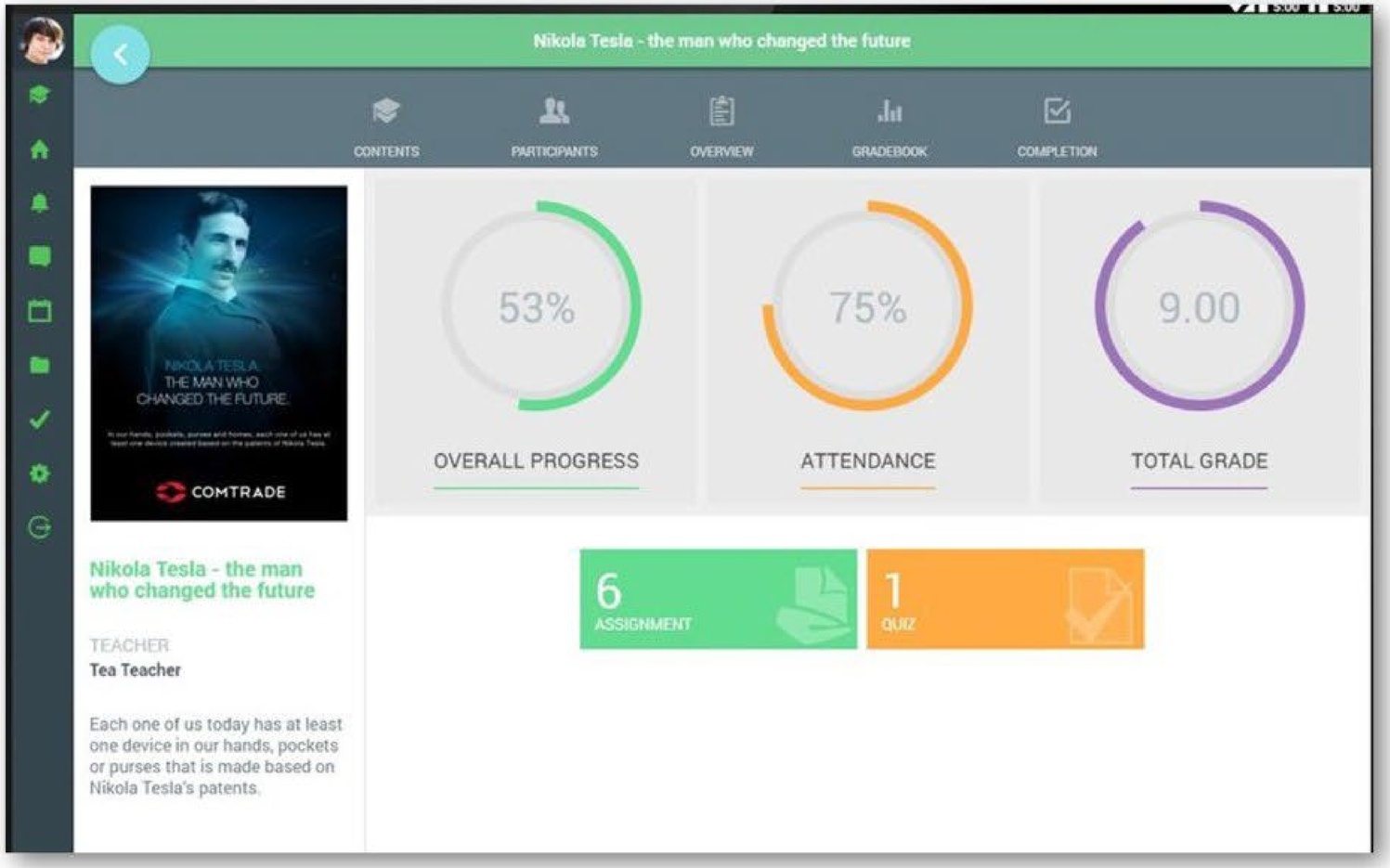
Gamification rewards to boost student learning motivation

Badges for high achiever students



Student activities rewarded in a form of points

Example: Gamify Learning



Gamification concepts adapted in the LMS development in teaching and learning.

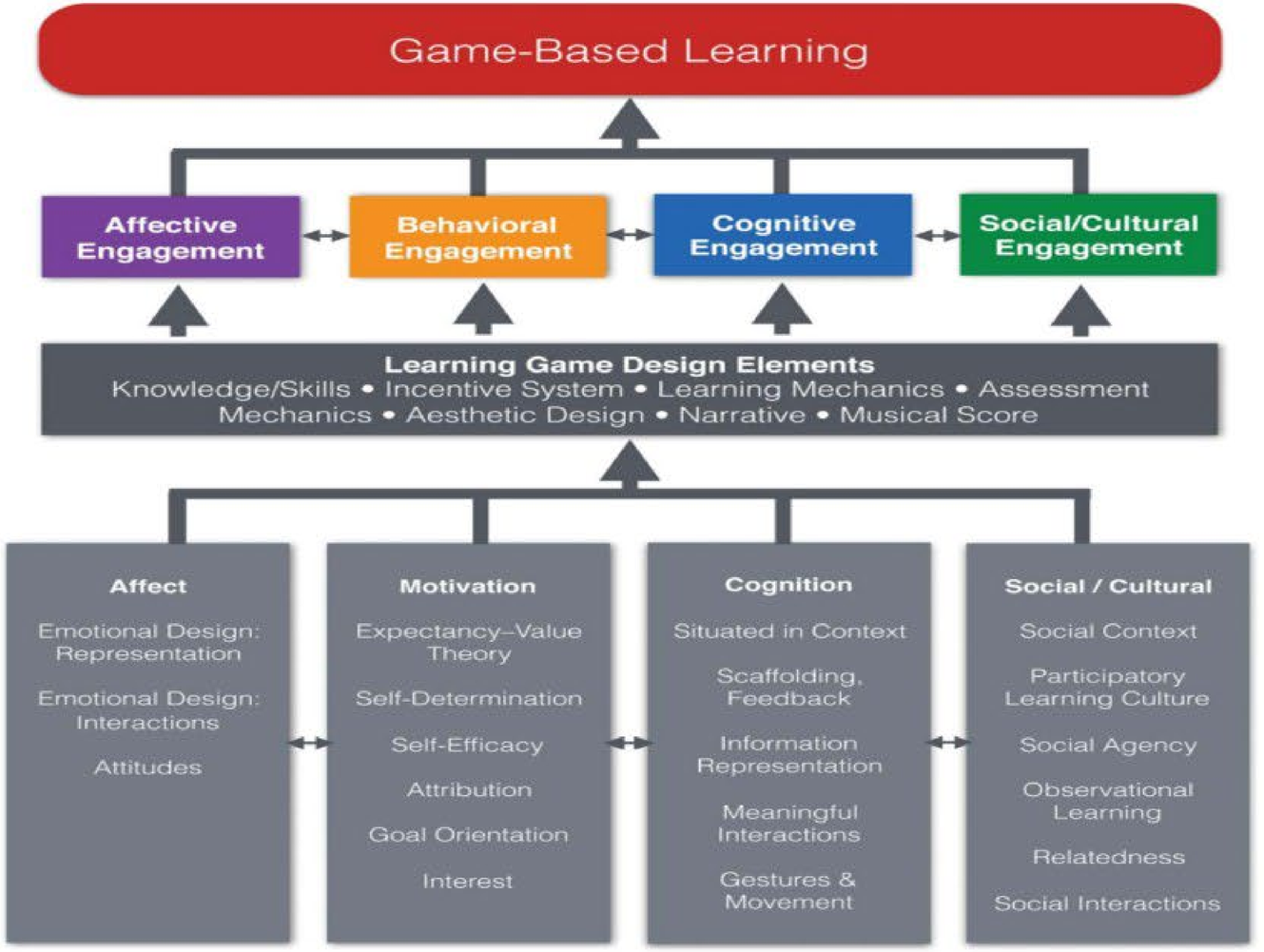
GAME BASED LEARNING

Game Based Learning describes an approach to teaching, where students explore relevant aspect of games in a learning context designed to achieve the learning outcomes.

The use of game can be instrinsic or supplemental, played face-to-face with physical objects or online with a computer.

Game Based Learning Method

Game Based Learning Method is a learning method where learners acquire new knowledge and understanding through playing games or creating games.



Tools to Gamify Learning

TinyTap - Educational Games

Book-and-game builder empowers creativity, boasts vast content library

Bottom line: With some patience and planning, this game maker can be a classroom game changer.

Bloxels EDU

Game-making app focuses on pixel art and level design

Bottom line: If it works, the app is a powerful non-coding way to get students into game design, though the physical cubes are more of a gimmick than anything else.

Scratch

Creative sandbox opens the door to coding in any subject area

Bottom line: Scratch draws students of all types into coding and lays a foundation for future learning.

Codesters

Differentiated text-based coding makes for truly authentic experiences

Bottom line: The well-designed Python lessons and user interface make this a great choice for serious coding instruction.

LittleBigPlanet 2

Accessible yet deep game creator will dazzle and challenge

Bottom line: A deeply charming experience for teachers and students interested in pushing boundaries, making things, and participating in a healthy community focused on boundless creativity.

Sound Shapes

Jazzy music game lets kids design levels and create music

Bottom line: A visually stunning music game that inspires creativity by providing simple but powerful tools to build your own music games to share with others.

The Infinite Arcade by Tinybop

Simple game-design app has endless creative potential

Bottom line: Letting students design, play, improve, and share their own games opens up opportunities for learning potential in many subject areas.

Kodu Game Lab

Open-ended game design and programming tool for visual thinkers

Bottom line: The 3D game-making environment and fun, visual logic will definitely grab some students, but others will need support the game just doesn't provide.

Minecraft

Spiraling sandbox of adventure and creation gets kids to dig deep

Bottom line: An irresistible and seemingly limitless incubator for 21st-century skills that, with a little guidance, can chart new courses for learning.

Gamestar Mechanic

Engaging manga-themed quest to become a game designer

Bottom line: Game design quests have everything students want but perhaps not everything teachers need.

Gamefroot

Fun and challenging platform for aspiring game designers

Bottom line: A great launchpad for students who love games and code.

Ready Maker

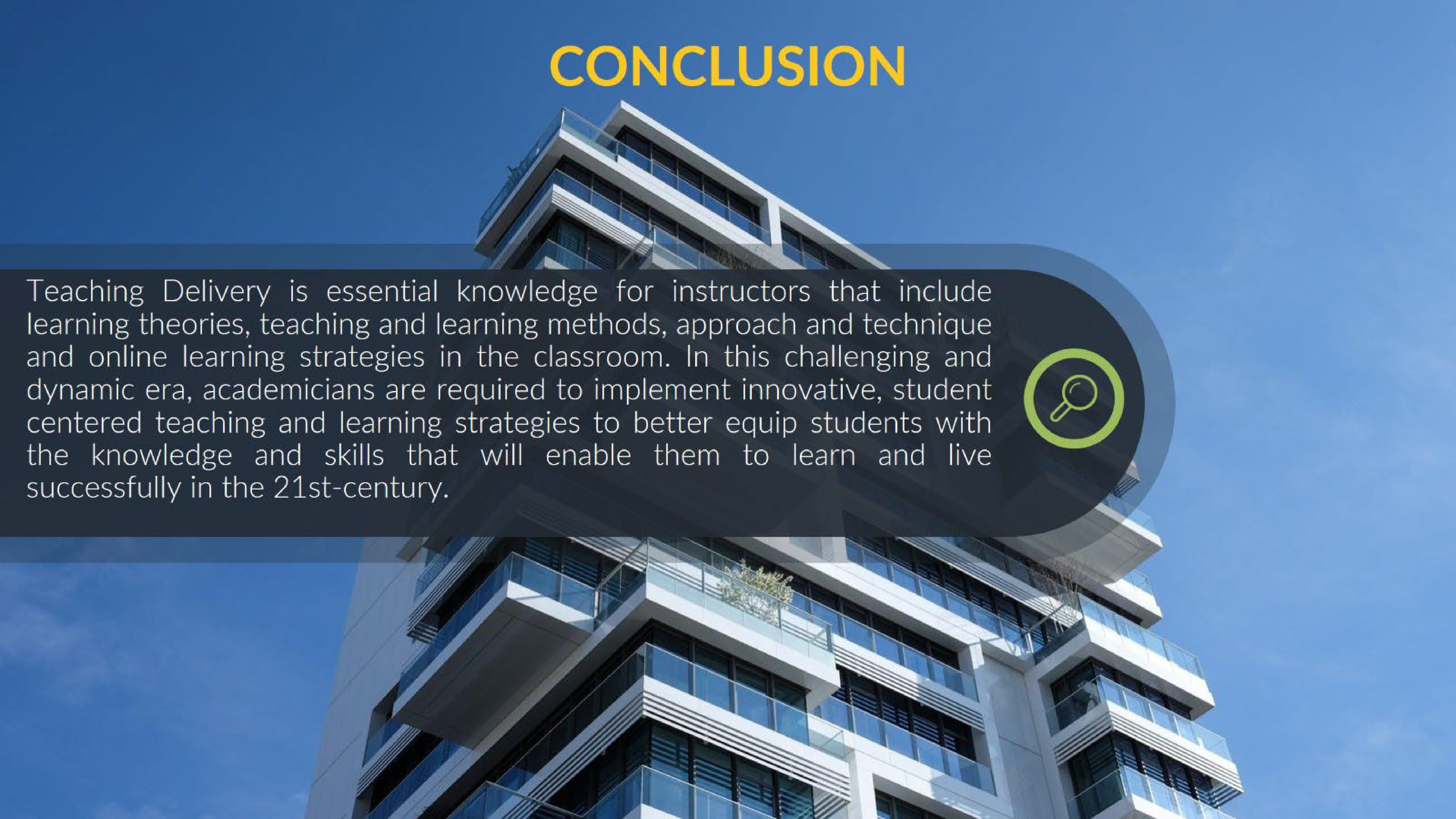
Fun and easy game design yields surprisingly complex creations

Bottom line: With teacher support, a creative introduction to coding and game design.

commonsense.org/education/top-picks/game-making-tools-for-schools

CONCLUSION

Teaching Delivery is essential knowledge for instructors that include learning theories, teaching and learning methods, approach and technique and online learning strategies in the classroom. In this challenging and dynamic era, academicians are required to implement innovative, student centered teaching and learning strategies to better equip students with the knowledge and skills that will enable them to learn and live successfully in the 21st-century.



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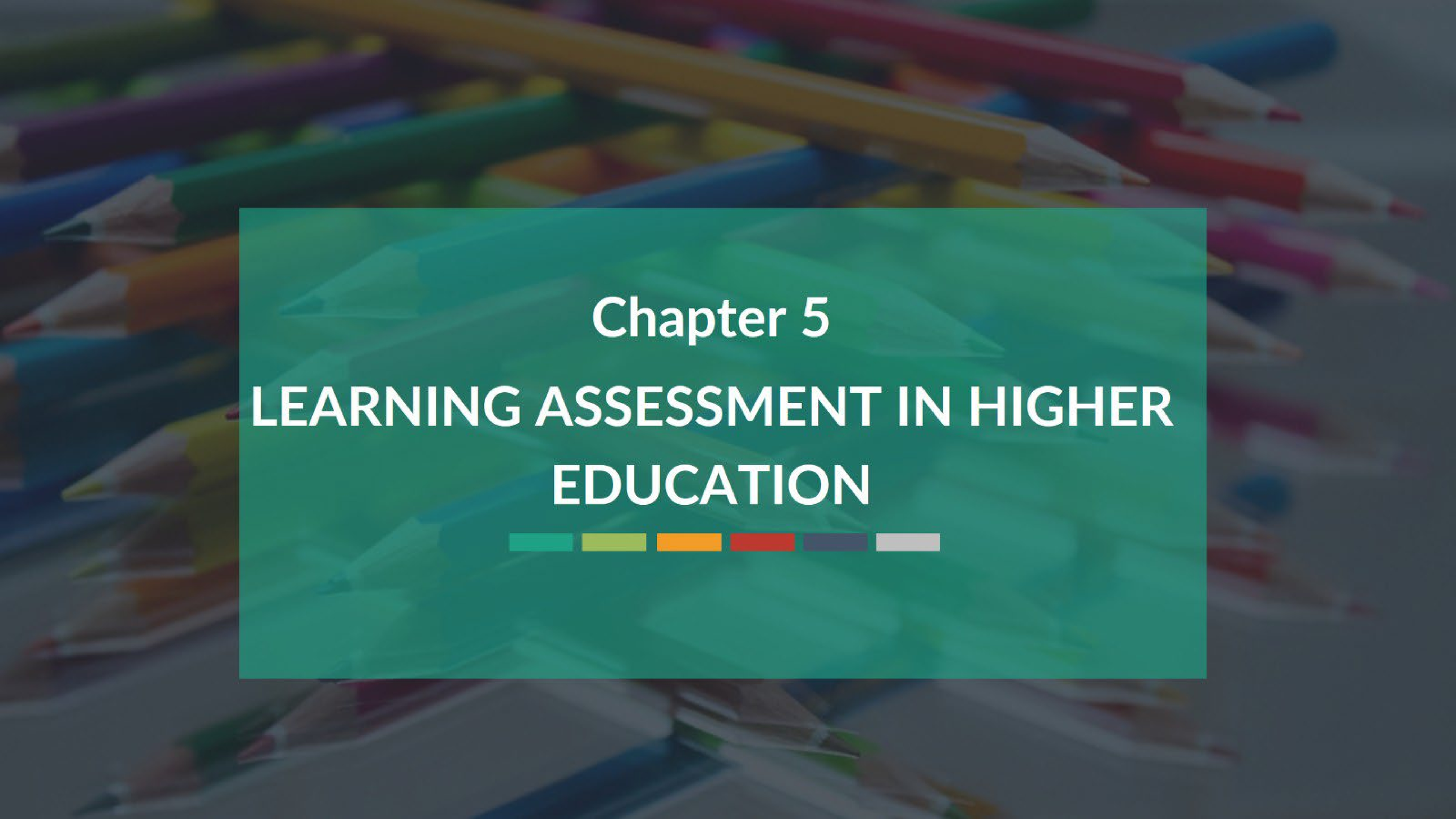


Chapter 5

LEARNING ASSESSMENT IN HIGHER EDUCATION

OVERVIEW

Unit 1 Concepts and Types of Assessment

- *Relationship between testing, measurement, assessment and evaluation*
- *Formative and summative roles of assessment*

Unit 2 Principles of Learning Assessment

- *General principles*
- *Standards and guidelines on assessment*

Unit 3 Assessment Instruments

- *Constructive alignment in assessment*
- *Construction of assessment instruments*

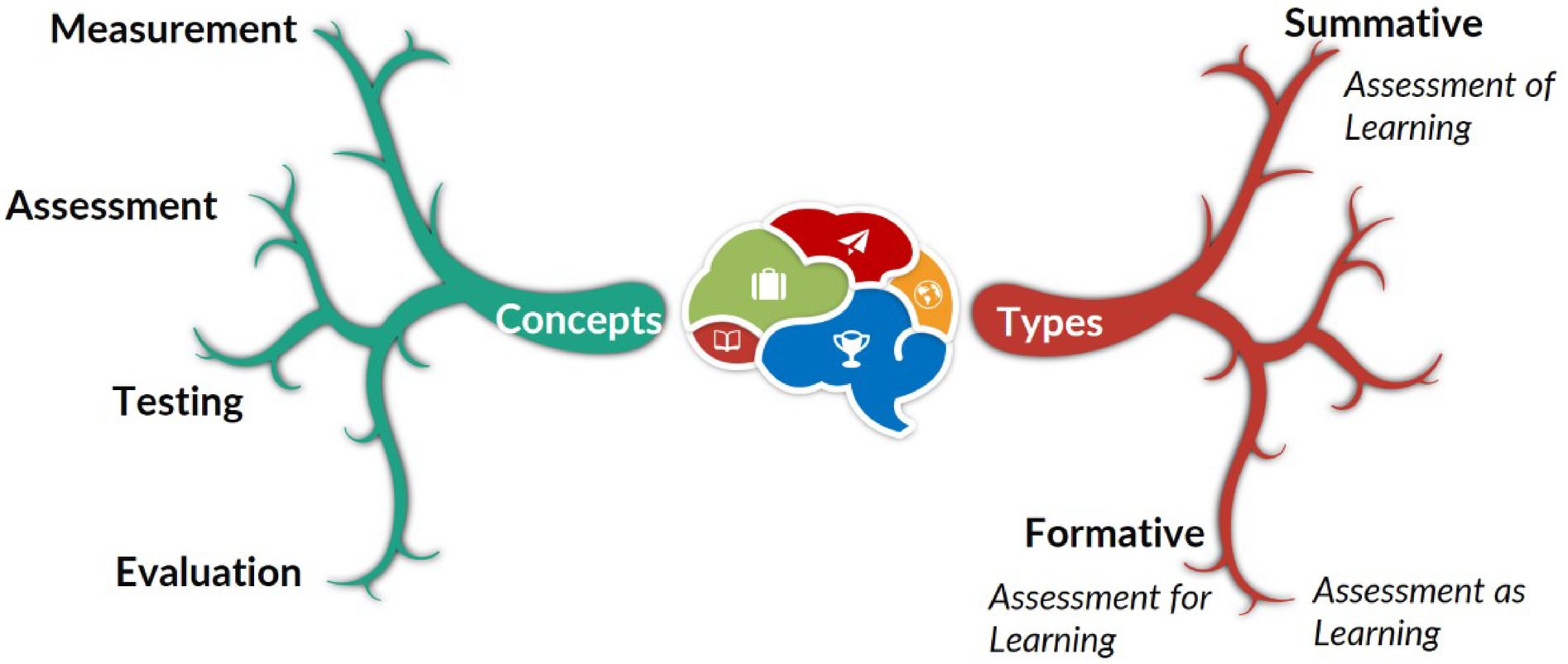
Unit 4 Assessment Analysis and Uses of Assessment Results

- *Quantitative and qualitative assessment analysis*
- *Uses of assessment results*

Unit 1: Concepts and Types of Assessment

Introduction

Purposeful assessment drives instructions and affects learning. Thus, assessment is an integral part of teaching and learning. Understanding the differences between assessment, testing, measurement and evaluation is crucial in assisting educators to design appropriate teaching and learning activities and assessment tasks.



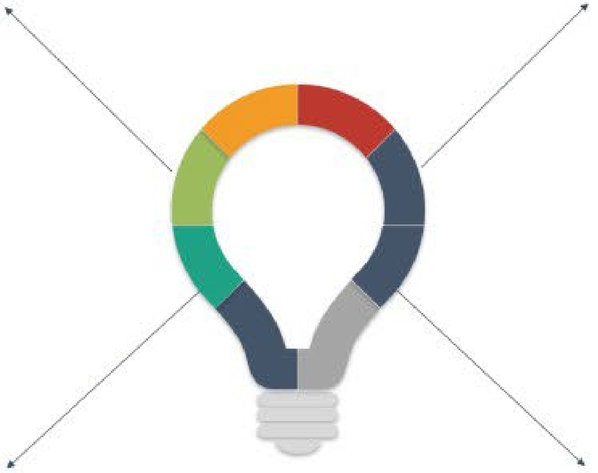
Concepts of Assessment

Testing

- Testing is a method of assessment in which he performance of the students is evaluated in order to inform the attainment of course objectives.
- A test is an instrument for testing.

Assessment

- Assessment is the process of collecting data to monitor the learning process and to make decisions to help students learn (Overton, 2016).
- An assessment can be quantitative (e.g. use of tests, checklists) and qualitative (e.g. observations, interviews).



Measurement

- Measurement involves procedures in using tests to determine scores, ranks, grades and other quantitative measures to inform the students and educators (Overton, 2016).
- Measurement quantifies the data collected from assessment.

Evaluation

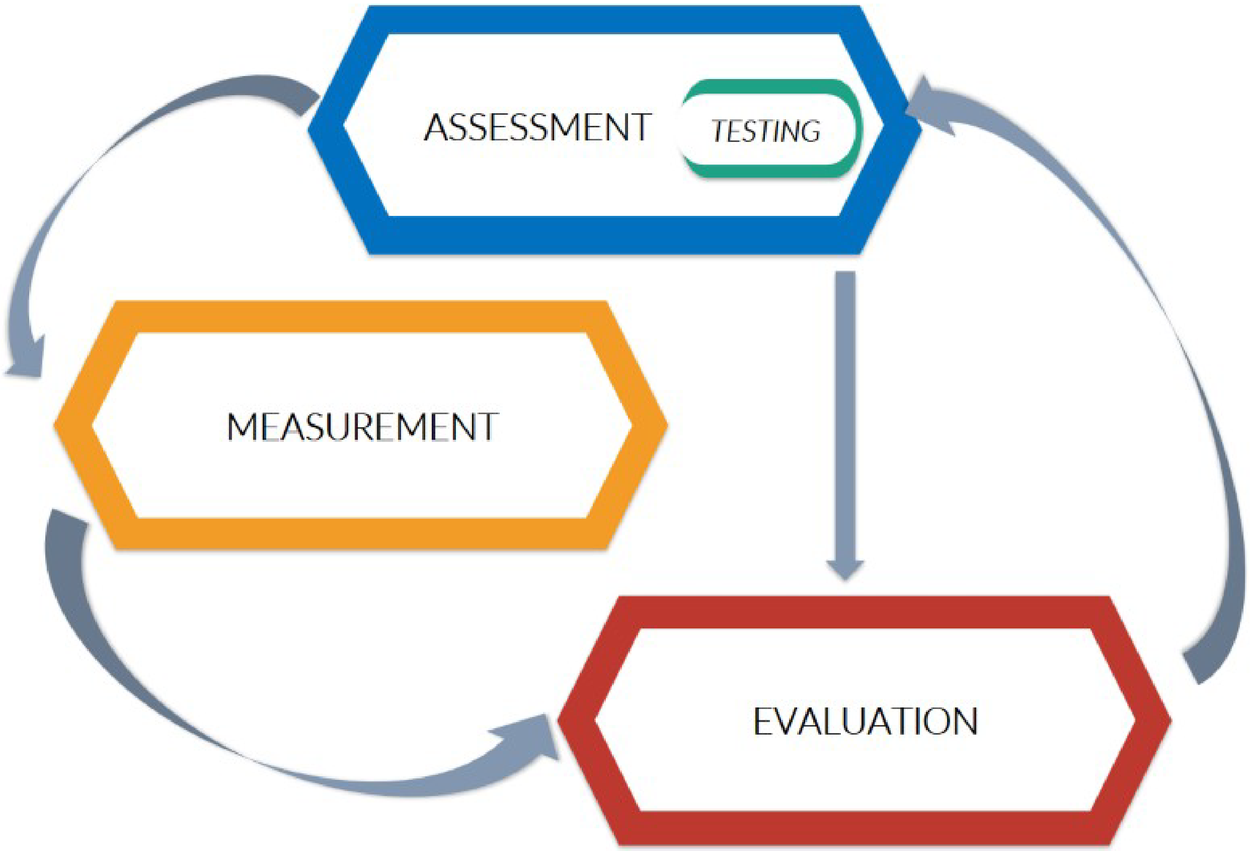
- Evaluation involves the comparison of the actual attainment against preset standards for the preset criteria (Overton, 2016).
- Results of the comparison should be used to lead to judgements, decisions, improvements and problem solving (Alkin, 1972; Cronbach, 1963; Lewy, 1985; Pang & Lajium, 2014, 2017; Rossi, Freeman and Lipsey, 1999; Straton, 1985).

Relationship between Testing, Measurement, Assessment and Evaluation

Assessment is the process of collecting data/information to assist in decision making. Testing is an assessment method that uses a test to collect data. Measurement quantifies and standardises the collected data. Evaluation is the process of judging the quality of the collected data either the standardised quantitative data from measurement (e.g. data from testing) or any data collected directly from assessment (e.g. data from verbal questioning).

After the data was evaluated the process goes back to assessment whereby an informed decision can now be made.

On the part of the educator, decision making involves deciding the performance level of students in a course (for a summative assessment) and the improvement needed in course delivery.
On the part of the students, decision making may involve retaking a course to improve their grades.



Nurulhuda, 2020

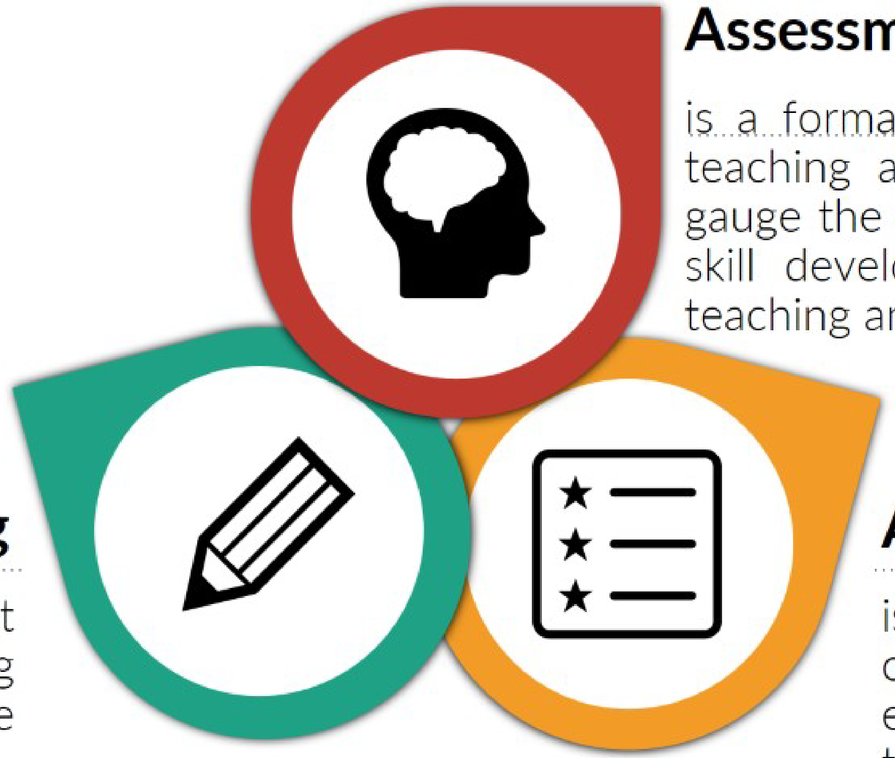
Formative and Summative Roles of Assessment

Formative assessment involves assessment activities that help students to learn in the learning process (Pang & Lajium, 2014, 2017).

Summative assessment involves terminal assessment tasks which assess student performance at the end of a learning unit or a learning period (Pang & Lajium, 2014, 2017).

Assessment for/as/of Learning

The relationship between assessment and learning is manifested in three types of assessment:



Assessment for Learning

is a formative assessment that occurs during the teaching and learning process in which teachers gauge the status of student knowledge, attitude or skill development to inform the next course of teaching and learning.

Assessment of Learning

is a summative assessment that informs the attainment of learning outcomes of the students at the end of a learning period.

Assessment as Learning

is a formative assessment that makes use of assessment as a learning method and enables students to take responsibility for their own learning based on learning goals developed by the students and teachers.

Types of Assessment

Formative

- Continuous assessment for student development
- To plan teaching strategies to improve learning
- Diagnostic
- Question and Answer used during teaching and learning
- Example: During a lecture, the lecturer makes decision on how to proceed with teaching and learning based on the answers/feedbacks from the students

Assessment for Learning

Assessment of Learning

Summative

- Assessment at the end of a step, lesson, topic or the subject as a whole
- Helps parents and schools to make decisions for students
- Enables comparison between students
- Example: the Academic Management Division produces a cumulative score (CGPA) for each student

Assessment as Learning

Formative

- Continuous assessment as a learning method
- Self-assessment, peer-assessment
  - ✓ Student's learning plan
  - ✓ Questionnaire
  - ✓ Portfolio
  - ✓ Self-assessment (quantitative and qualitative) on student's work based on a rubric/guide
  - ✓ Verbal feedback in class
  - ✓ Group or pair discussion
- Example: Using self-assessment, a student recognises his/her own strengths and weaknesses in the content and plans strategies to overcome the weaknesses.

Unit 2: Principles of Learning Assessment

Introduction

There are general principles of learning assessment that should be observed when planning learning outcomes. Close adherence to the recommended standards and guidelines leads to a more transparent assessment experience.

Source: UMS Official Facebook Page

General Principles of Learning Assessment

V	R	O	A	I
VALIDITY	**RELIABILITY**	**OBJECTIVITY**	**ADMINISTRABILITY**	**INTERPRETABILITY**
Validity is the extent to which an assessment measures what it was designed to measure. A valid assessment concurs with the quality it is believed to assess or measure.	Reliability is the extent to which an assessment produces a precise and consistent measurement of learning. A reliable assessment provides consistent scores even when it is administered to the same student at a different time.	Objectivity is the agreement of scores between two or more assessors. An objective assessment reduces the possibility of personal bias among the assessors.	Administrability is the extent to which assessment instructions and procedures are clear and standardised. A well-administered assessment decreases the likelihood for assessment results to be affected by other factors.	Interpretability is the extent to which assessment results are interpreted and applied correctly.

Standards on Assessment

Relationship between Assessment and Learning Outcomes **General Principle**

2.1.1 "Assessment principles, methods and practices must be aligned to the learning outcomes of the programme, consistent with the levels defined in the MQF." V

2.1.2 "The alignment between assessment and the learning outcomes in the programme must be systematically and regularly reviewed to ensure its effectiveness." V

(MQA, 2018, pp. 13)

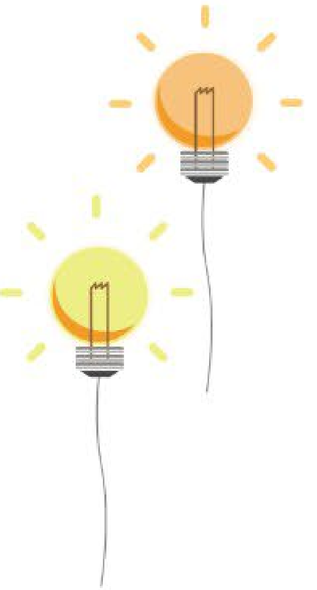
Standards on Assessment

Assessment Methods		General Principle
2.2.1	"There must be a variety of methods and tools that are appropriate for the assessment of learning outcomes and competencies."	V R
2.2.2	"There must be mechanisms to ensure, and to periodically review, the validity, reliability, integrity, currency and fairness of the assessment methods."	V R O
2.2.3	"The frequency, methods, and criteria of student assessment - including the grading system and appeal policies - must be documented and communicated to students on the commencement of the programme."	A I
2.2.4	"Changes to student assessment methods must follow established procedures and regulations, and be communicated to students prior to their implementation."	V R A

(MQA, 2018, pp. 13)

Standards on Assessment

Management of Student Assessment		General Principle
2.3.1	"The department and its academic staff must have adequate level of autonomy in the management of student assessment."	A
2.3.2	"There must be mechanisms to ensure the security of assessment documents and records."	A
2.3.3	"The assessment results must be communicated to students before the commencement of a new semester to facilitate progression decision."	A
2.3.4	"The department must have appropriate guidelines and mechanisms for students to appeal their course results."	V A
2.3.5	"The department must periodically review the management of student assessment and act on the findings of the review."	V R O A I



(MQA, 2018, pp. 13-14)

Guidelines to Improve Validity

Assessment methods and instruments must be appropriate with the desired levels of learning outcomes to be attained.

Assessments given throughout the semester should be in various forms (such as tests, assignments, presentations) to assess the different learning domains and the CLOs determined for the course. More than one task and sources of evidence are needed as a basis of judgment for students' competence.

Test coverage has to be balanced, covering most of the main ideas and important concepts in proportion to the emphasis they received in class.

Assessment methods and instruments must be validated by another person with an expertise in the area assessed.

(MQA, 2014, pp. 27-28)

Guidelines to Improve Reliability and Validity

- For tests, provide clear directions on how to answer. For assignments or projects, provide students with specific guidelines on requirements and expectations, including information on how to ensure authenticity.
- Develop marking scheme/rubric as guide to ensure standardisation in marking.
- Provide clear guides for observing and recording evidences.
- Develop tests of appropriate length. Very short tests are less reliable.

(MQA, 2014, pp. 28-30)

Guidelines to Improve Administrability and Interpretability

- Policies, guidelines, and standard operation procedures should be established and made available to all administrative and academic staff who deal with student assessment.
- Specific assessment guidelines at institution or program level should be developed and implemented to complement the generic guidelines of the Ministry of Education or MQA.
- All program evaluation reports should involve recommendations for continuous improvement of the program, and should be acted upon by program staff.
- The use of visual analytics in assessment report can help to inform useful information for improvement.

Unit 3: Assessment Instruments

Introduction

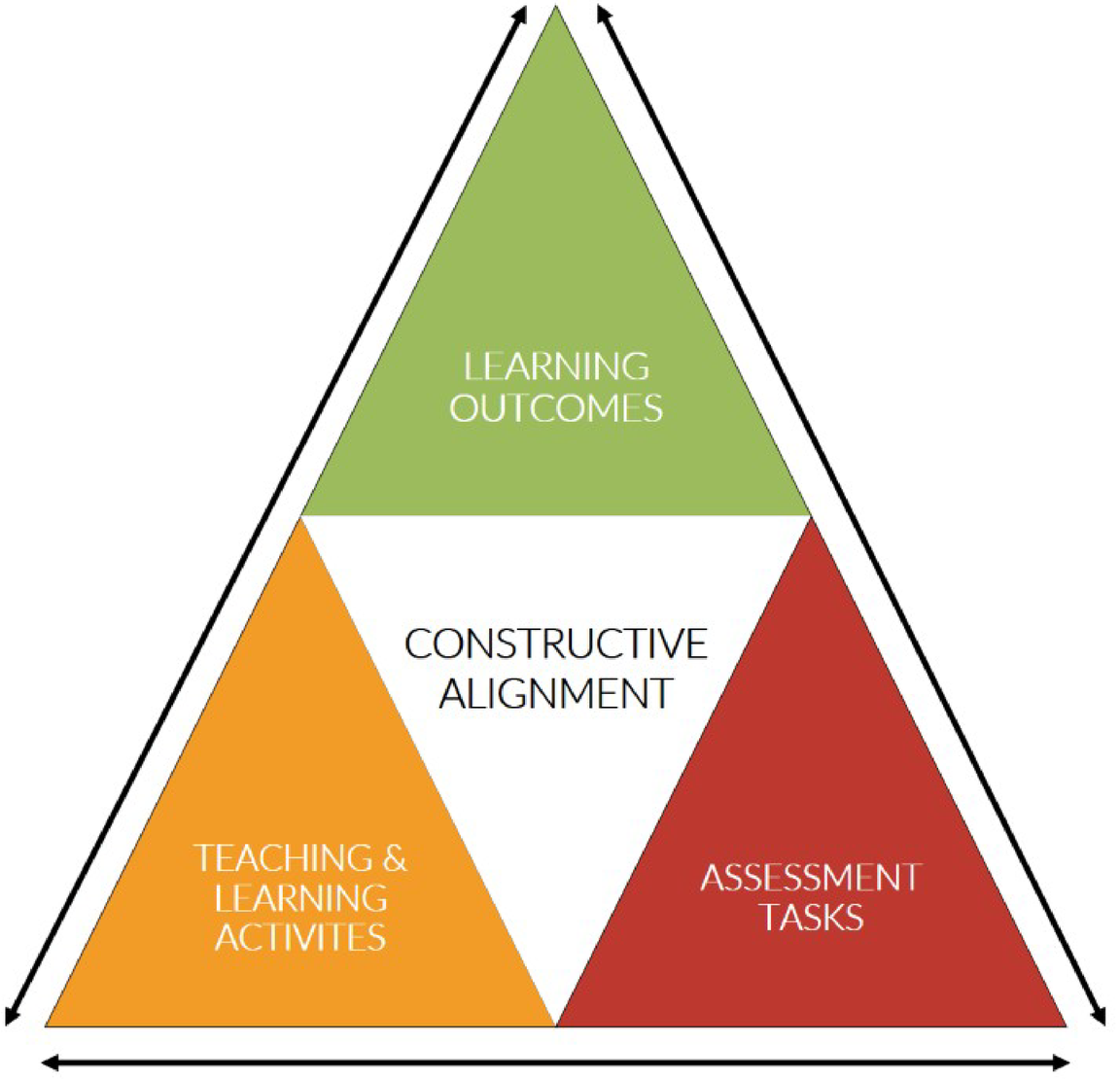
Assessment instruments exist in many forms and functions such as tests, checklists, rating scales and rubrics. There are key steps for constructing valid and reliable assessment instruments to measure the attainment of learning outcomes.

Constructive Alignment in Assessment

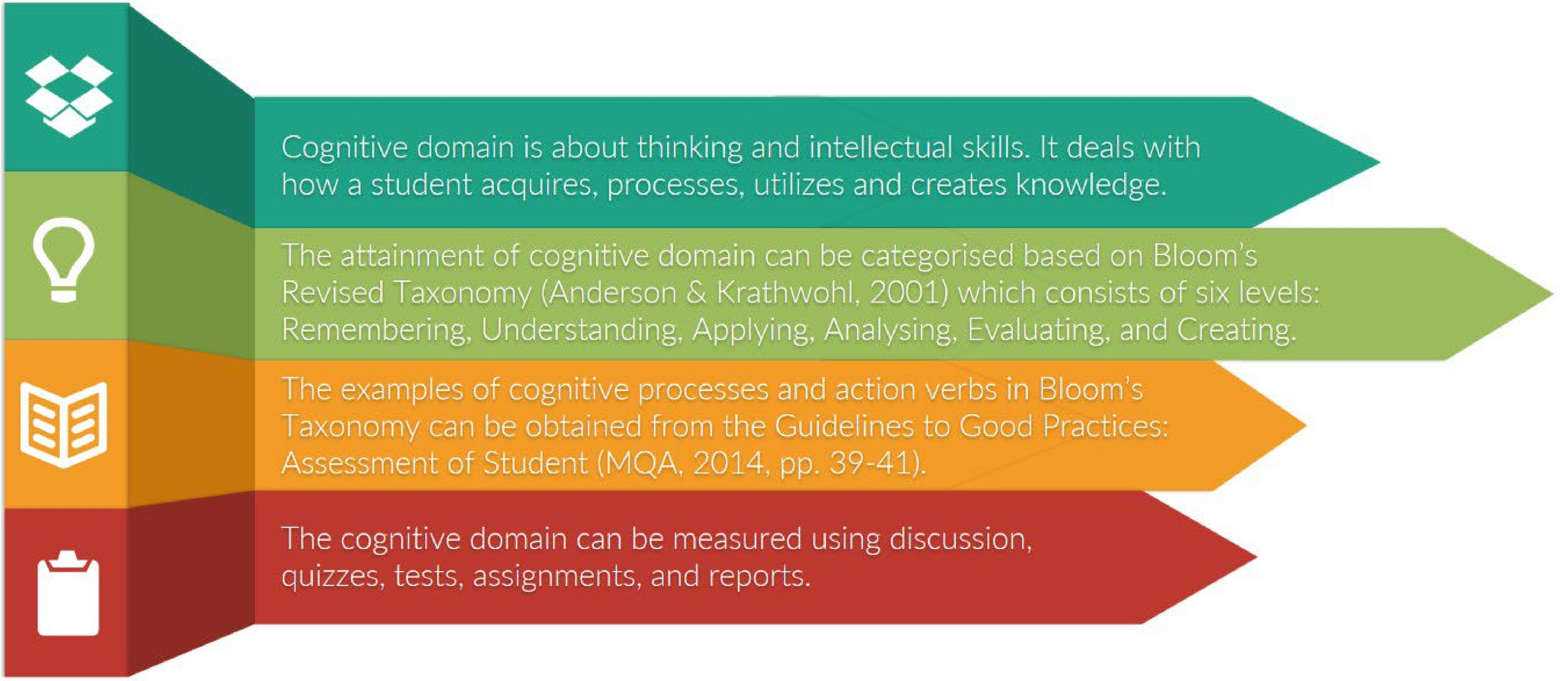
Before the construction of assessment instrument, assessors need to understand and internalise the concepts of learning outcomes and their domains.

Learning outcomes are gained attributes or tasks that student can perform upon the completion of a programme (named programme learning outcomes, PLO) or course (named course learning outcome, CLO).

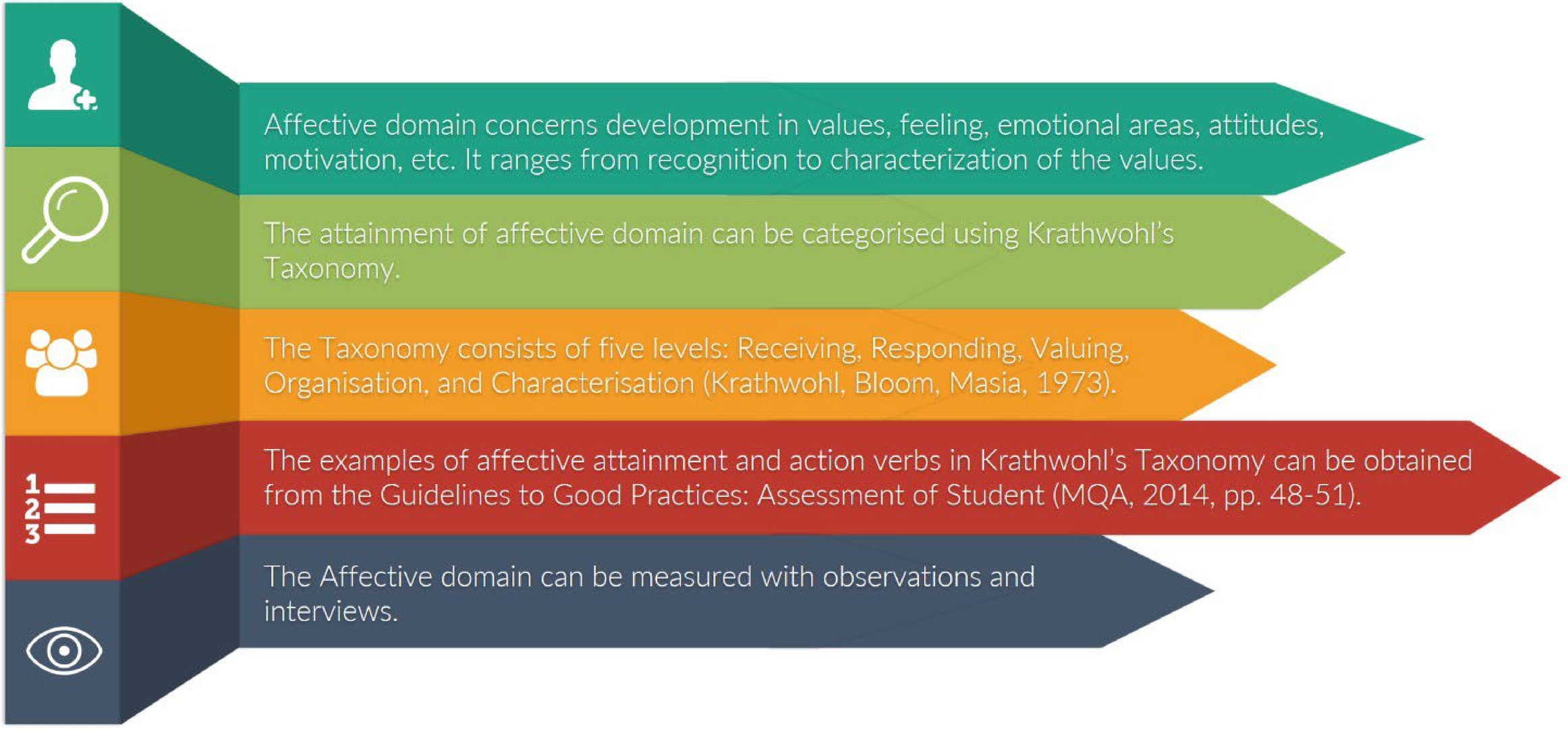
Learning outcomes can be clustered into 3 domains: cognitive, affective and psychomotor.



Cognitive Domain



Affective Domain



Psychomotor Domain

Mapping between Learning Outcomes of MQF (Ver. 2) and Learning Domains

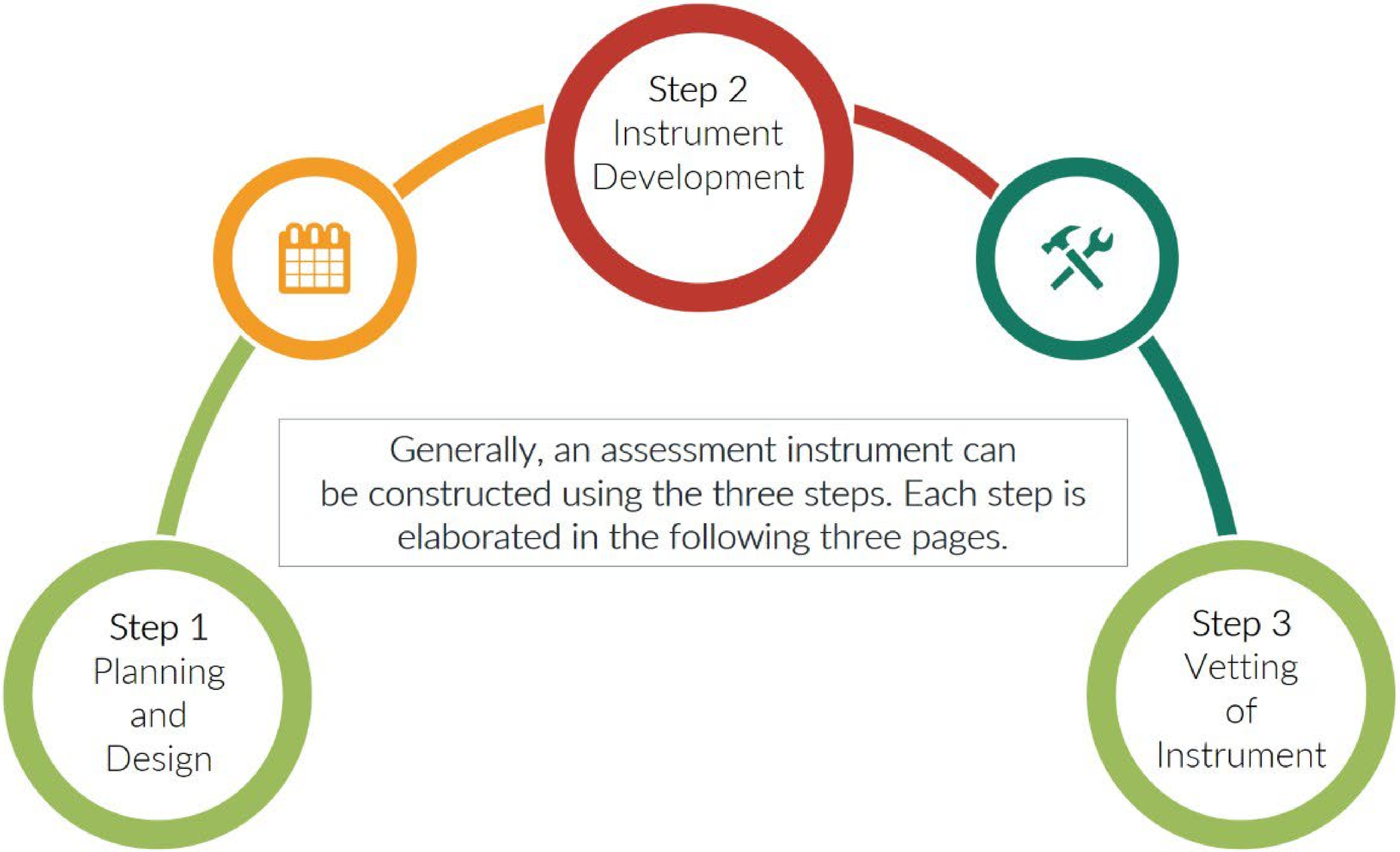
	Cognitive	Affective	Psychomotor
Knowledge and Understanding	✓		
Cognitive Skills	✓		
Interpersonal Skills		✓	
Personal Skills		✓	
Practical Skills			✓
Ethics and Professionalism	✓	✓	
Communication Skills	✓	✓	✓
Digital Skills	✓	✓	✓
Numeracy Skills	✓	✓	✓
Leadership, Autonomy and Responsibility	✓	✓	✓
Entrepreneurial Skills	✓	✓	✓

Examples of Methods, Tasks and Tools for Assessment

Method	Task	Tool
Case study	Work through a case study to identify the problem(s) and to offer potential solutions	Rubric
Concept map	Generate a concept map	Rubric / Checklist
Essay	Write an essay on specified topics with the involvement of literature sources	Rubric
Lab report	Report for a practical session in the Lab.	Rubric
Multiple choice questions	Respond to a list of fixed responses	Marking scheme
Open book exam	Use any or specific resources to answer set questions under time constraints	Marking scheme / Rubric
Oral presentations	Present orally on a particular topic in a specific duration with a presentation application	Rubric for lecturer, rubric for students (peer assessment)

Adapted from University of Reading, 2020

Construction of Assessment Instruments



Construction of Assessment Instruments

Step 1: Planning and Design

Need to consider:

- Alignment with learning outcomes
- Alignment with content and learning activities
- Student learning time
- Learning outcome domain
- Level of attainment

Product of planning and design:

- Test blueprint (for cognitive assessment)
- Assessment plan (for affective and psychomotor domains)

Construction of Assessment Instruments

Step 2: Instrument Development

Construction of Assessment Instruments

Step 3: Vetting of Instrument

Instruments need to be vetted by a panel to ensure validity

Content validity and face validity should be the focus in the vetting process

Suggestions for improvement by the panel need to be incorporated in the revised instrument

Example of Instrument Construction (for Test Paper)

	Step	Process	Product
1	**Planning and design**	• Identify learning outcomes. • Build test specification table considering the student learning time and the levels of the outcomes.	• Test specification table (TST)
2	**Instrument development**	• Build test items based on the TST. • Build marking scheme or rubric.	• Test paper • Marking scheme or rubric
3	**Vetting**	• Vetting of TST, test items, and marking scheme/rubric by a panel • Revision of test items based on panel feedback	• Completed validation and feedback form • Revised test paper and marking scheme/rubric

Example of Instrument Construction (for Academic Writing)

	Step	Process	Product
1	**Planning and design**	• Identify learning outcomes. • Build assessment specification table considering the student learning time and the levels of the outcomes.	• Assessment Specification Table (AST)
2	**Instrument development**	• Describe the details of assessment tasks based on AST. Example: assessment objectives, tasks to be taken by students, content, size of written product) • Build rubric for assessment, specifying marking criteria and standards.	• Description of assessment task for students
3	**Vetting**	• Vetting of AST, assessment tasks, and marking rubric by a panel • Revision of assessment tasks and rubric based on panel feedback	• Completed validation and feedback form • Revised assessment tasks and rubrics

Alternative Assessment

The categorisation of outcomes according to domains tends to promote the assessment of independent domains of learning as in the case of most traditional assessment methods. The demands for more holistic and integrated assessment of learning outcomes have led to the need for alternative assessment:

1. **Authentic Assessment**
   Contextualised tasks that require students to demonstrate their abilities in an authentic environment. An example is Industrial training / teaching practice in schools.

2. **Performance-based Assessment**
   Evaluate students' application of knowledge and skills through meaningful and engaging tasks.

3. **Personalised Assessment**
   Adaptive assessment that is tailored for each learner to provide information on learner's skills and development.

4. **Integrated Assessment**
   Interdisciplinary assessment that connects students with real-life situations. The involvement of industries can provide practical experiences for learners.

5. **Contemporary Assessment**
   Non-traditional methods such as cases and projects, oral and take-home tasks, and apprenticeship model. Digital natives may find these tasks more meaningful.

6. **Real-time Assessment**
   Instructors analyse students' level of understanding during the learning process through observing and conducting surveys.

7. **Challenged-based Assessment**
   A form of assessment that encourages students to collaborate and compete with one another.

8. **Profiling Assessment**
   Analyse learners' values, interests, preferences, English language proficiency and computing abilities. This produces a holistic profile of learners' competencies.

(More details are available in MOHE, 2018, pp. 84-86)

Alternative Assessment for Online Learning

Alternative to conventional test-based cognitive assessment

Level of Access	Alternative Method
(1) No Internet	Open book exam in an educational institution at the locality of the student
(2) Low bandwidth, low immediacy	Online asynchronous open book exam
(3) High bandwidth, low immediacy	Online asynchronous open book exam
(4) Low bandwidth, high immediacy	Online asynchronous open book exam
(5) High bandwidth, high immediacy	Online asynchronous open book exam

Alternative Assessment for Online Learning

Alternative to conventional non-test-based cognitive assessment

Level of Access	Assessment Method
(1) No Internet	Record video, analyse case study and send it by hand or post
(2) Low bandwidth, low immediacy	Record video and send by hand or post. Send case study analysis by email.
(3) High bandwidth, low immediacy	Record video, analyse case study and send it by email
(4) Low bandwidth, high immediacy	Record video, analyse case study and send it by email
(5) High bandwidth, high immediacy	Synchronous online submission of case study analysis and presentation

Alternative Assessment for Online Learning

Alternative to conventional affective assessment

Level of Access	Assessment Method
(1) No Internet	Record video and send by hand or post, phone interview, send physical portfolio
(2) Low bandwidth, low immediacy	Record video and send by hand, post, phone interview, send physical portfolio by hand/post or e-portfolio by email
(3) High bandwidth, low immediacy	Asynchronous online presentations, phone interviews, e-portfolio
(4) Low bandwidth, high immediacy	Asynchronous online presentation, phone interviews, e-portfolio
(5) High bandwidth, high immediacy	Synchronous online presentation, phone interviews, e-portfolio

Alternative Assessment for Online Learning

Alternative to conventional psychomotor assessment

Level of Access	Assessment Method
(1) No Internet	Record video and send by hand or post, phone interview, send physical portfolio
(2) Low bandwidth, low immediacy	Record video and send by hand, post, phone interview, send physical portfolio by hand/post or e-portfolio by email
(3) High bandwidth, low immediacy	Asynchronous online demonstration (recording), phone interviews, e-portfolio
(4) Low bandwidth, high immediacy	Asynchronous online presentation (recording), phone interviews, e-portfolio
(5) High bandwidth, high immediacy	Synchronous online demonstration, phone interviews, e-portfolio

Minimising Issues in Alternative Methods

Issue	Type	Suggested Solution
Candidates' honesty during non-face-to-face test/ examination	Lower order thinking skills (LOTS) - Objective test/ examination	Use a few sets of items Randomisation of items Randomisation of response choices
	Higher order thinking skills (HOTS) - Subjective test (open book)	Use a few sets of items Use original questions Use of variable contexts Use rubric rather than marking scheme
Students' Internet access	Poor (< 1.5 Mbps)	Group messaging Q&A activity
	Moderate (1.5 – 2.5 Mbps)	Online quiz Online submission
	High (> 2.5 Mbps)	Online quiz Online submission Live presentation Oral examination
Lecturer's skills in e-learning	Instructional design	Take up online courses Make a story board Learn from others Join/create a learning community
	Digital skills	Select one method or application at a time Learn from YouTube

Unit 4: Assessment Analysis and Uses of Assessment Results

Introduction

Quantitative and qualitative analyses are needed to make meaning of assessment results. Assessment results indicate the attainment of students in each outcome, course, and programme. It can also be used for feedback and feedforward.

Quantitative Assessment Analysis

- On students
- On instrument

Qualitative Assessment Analysis

Uses of Assessment Results

Quantitative Assessment Analysis

Descriptive Analysis

- Frequencies/ percentage distributions
- Measures of central tendency
  - Mean (for ordinal, interval, and ratio data with normal distribution)
  - Median (for ordinal, interval, and ratio data with skewed distribution)
  - Mode (for nominal, ordinal, interval, and ratio data)

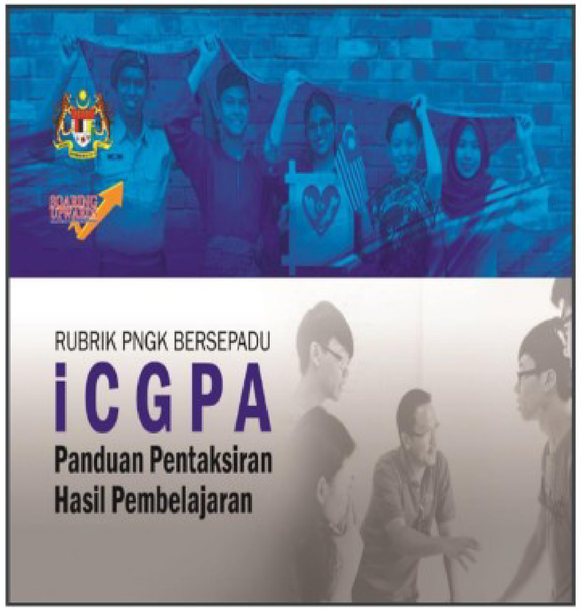
Variability

- Range (uses minimum and maximum)
- Quartile and interquartile range (independent of extreme values)
- Standard deviation (uses all data)

Qualitative Assessment Analysis

Content Analysis

- Analysis of content in written responses, interview, presentation, audio and video recording
- Checklists in the form of yes/no to indicate if students fulfill specific criteria
- Rubrics contain assessment criteria with a clear description of each criterion. They also include measurement scales to evaluate the quality of performance.
  - Example of assessment criteria: Task fulfilment, structure, organisation, language, sources
  - Example of five-level scale: Very limited; Limited; Modest; Satisfactory; Excellent



Note: *Description of each assessment level can be further explored in the ICGPA Rubric Learning Outcomes Assessment Guide*

Description of Each Level

Example of Rubric Description for Problem Solving Skills

Attribute	Sub Attribute	Very Weak	Weak	Satisfactory	Good	Very Good
Problem Solving	Identify Problem	Unable to identify and explain the problem even with assistance	Able to identify and explain the problem with maximum assistance	Able to identify and explain with limited assistance	Able to identify and explain the problem accurately, clearly and in detail	Able to identify and explain the problem very accurately, clearly and in detail

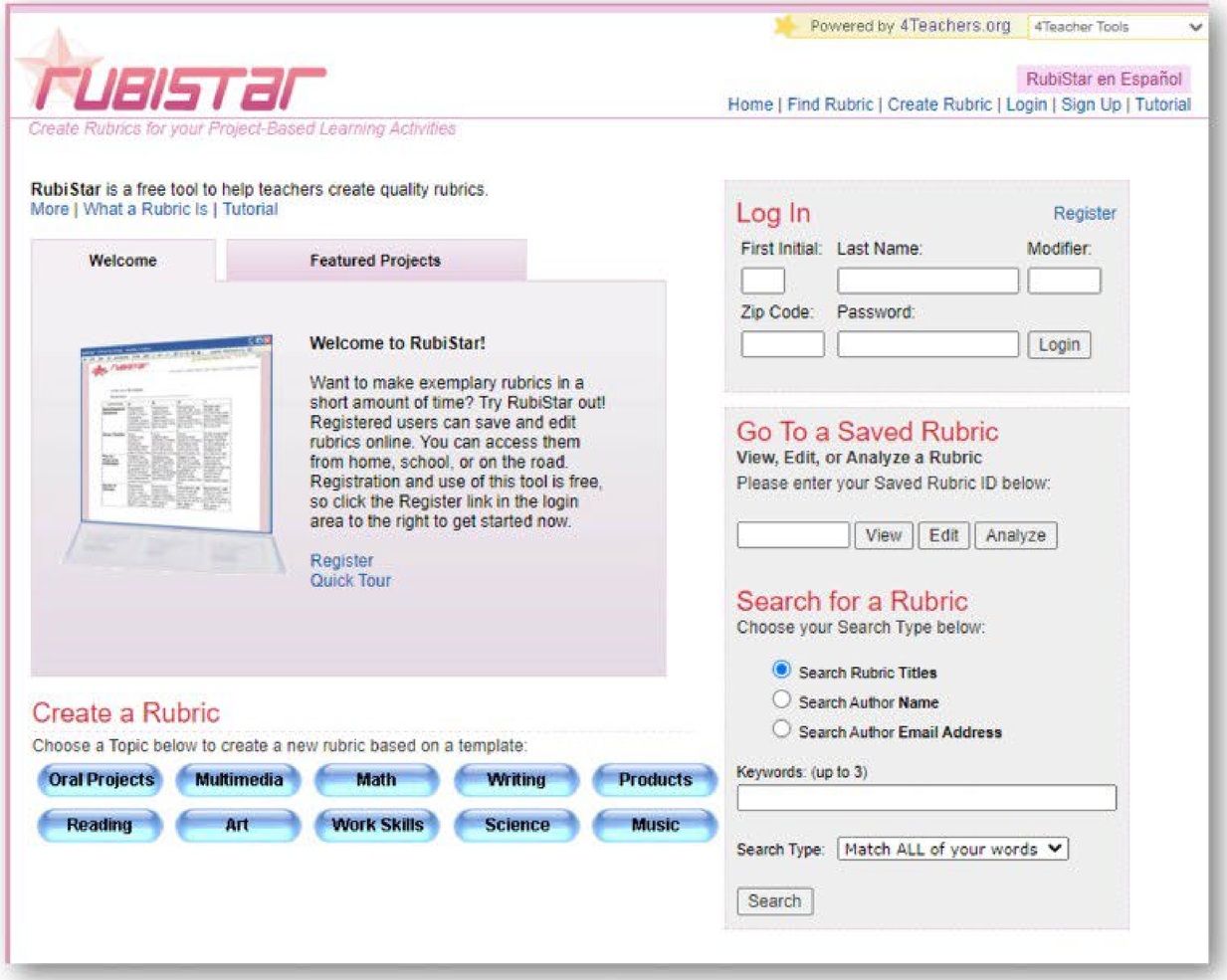
Example of Rubric Description for Oral Communication

Attribute	Sub Attribute	Very Weak	Weak	Satisfactory	Good	Very Good
Oral Communication	Clarity of Ideas	Unable to communicate ideas and need a lot of improvement	Able to communicate ideas and need further improvement	Able to communicate ideas clearly but need slight improvement	Able to communicate ideas clearly	Able to communicate ideas very clearly

An Example of Web Based Tool to Create A Rubric

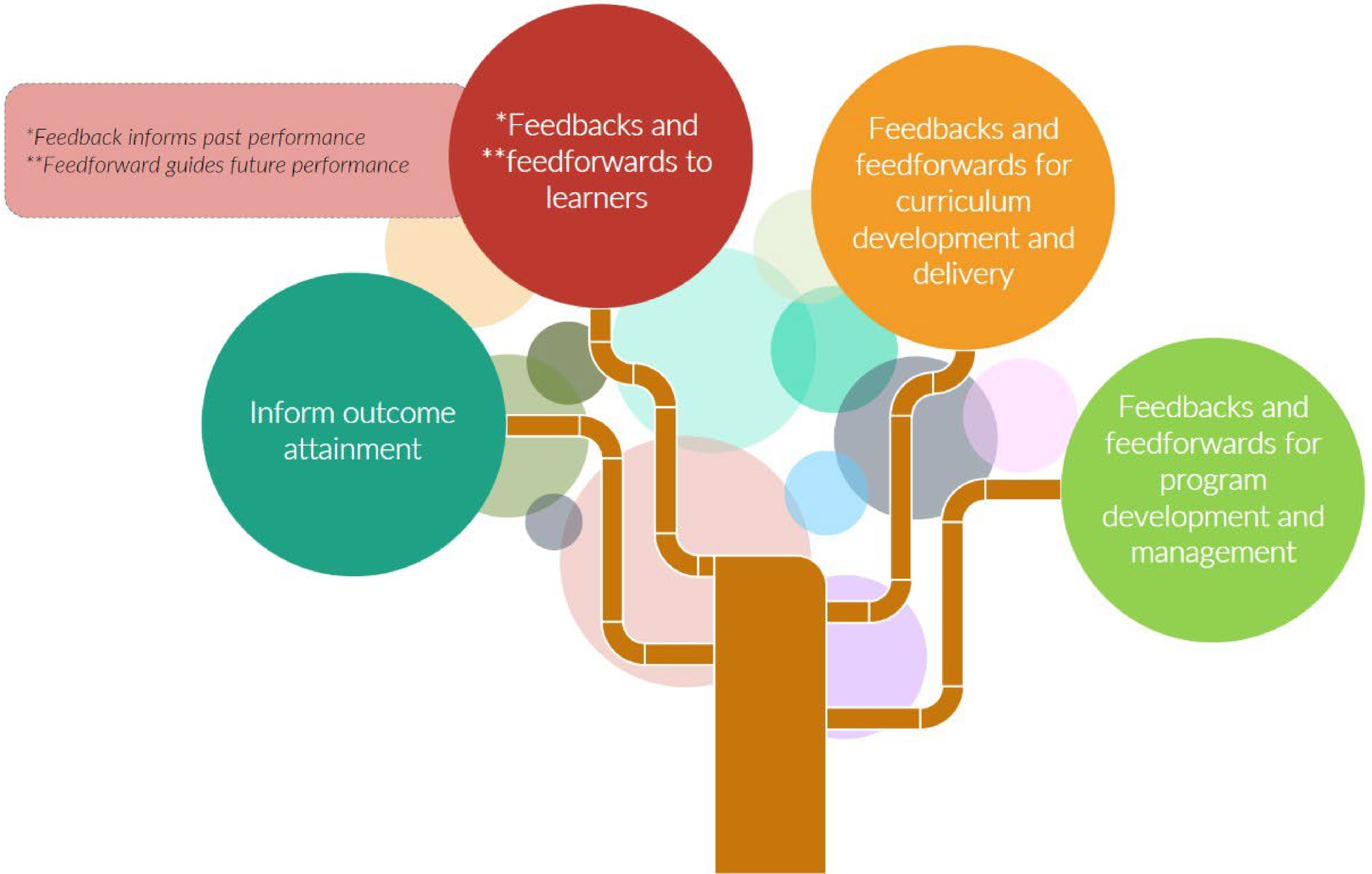
RubiStar

RubiStar is a free web based rubric generator that can be used to create rubrics in a short amount of time. Topics include Oral Projects, Multimedia, Math, Writing, Products, Reading, Art, Work Skills, Science and Music



http://rubistar.4teachers.org/index.php

Uses of Assessment Results

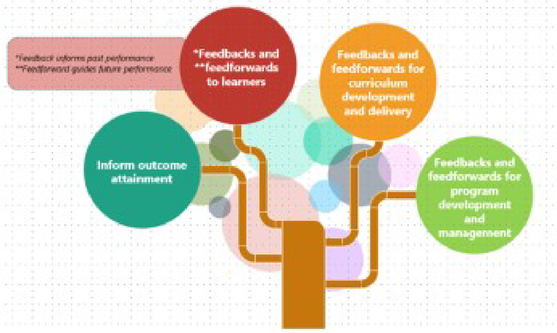


Inform Outcome Attainment

Assessment results inform lecturers on the extent to which each course outcome is attained by the students.

The combination of outcome results leads to information on overall course outcome attainment. This informs the lecturer on the performance of each student in the course.

The mapping of all course outcomes can inform the overall outcome attainment of the programme through a computation and reporting system such as the Integrated Grade Point Average (iCGPA) System. This score indicates the overall performance of the student in the entire programme.



Feedbacks and feedforwards to learners

Tips on Assessment Feedback to Students

Sufficient feedback needs to be provided in enough detail.

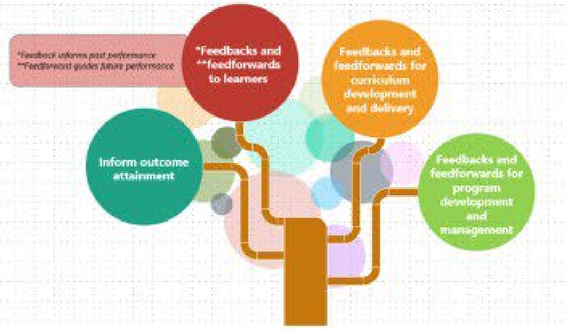
Feedback should focus on students' performance, their learning and on actions under the students' control, rather than on the students themselves and their characteristics.

Feedback should be timely: received by students while it still matters to them and in time for them to pay attention to further learn or receive further assistance.

Feedback should be appropriate in relation to students' understanding of what they are supposed to be doing.

Feedback needs to be received and attended to.

Feedback should be provided in such a way that students act on it and change their future learning.

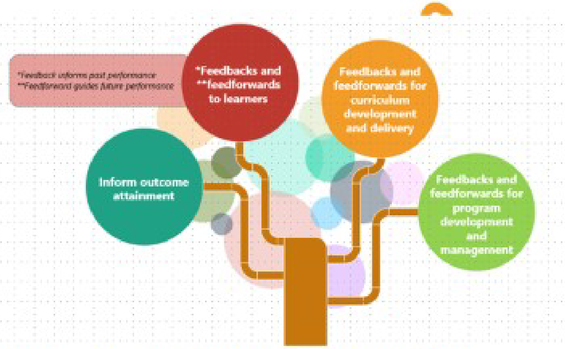


(Gibbs & Simpson, 2004)

Feedbacks and feedforwards to learners

Tips on Assessment Feedback to Students

- Help students to want feedback for their improvements, not just the marks.
- Give some feedback quickly and in details.
- Use a variety of ways to give feedback and actively involve the students.
- Make appropriate use of technology.
- Link feedback to learning outcomes and criteria.
- Use feedback as an integral part of your lectures.
- Ensure your feedback includes feedforward.
- Use self and peer assessment and feedback.
- Allow students to practice understanding and using feedback.
- Make feedback interesting and motivating.

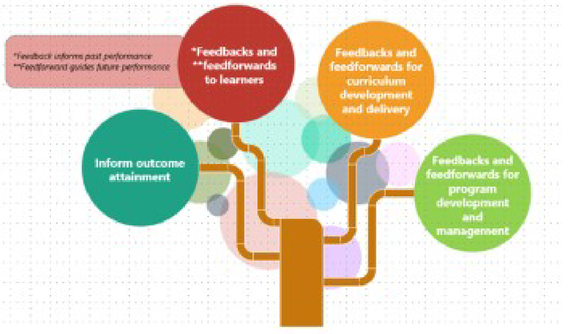


(Gibbs & Simpson, 2004; Smith & Kimball, 2010)

Feedbacks and Feedforwards for Curriculum Development and Delivery

Reflective questions for continuous curriculum and delivery improvement

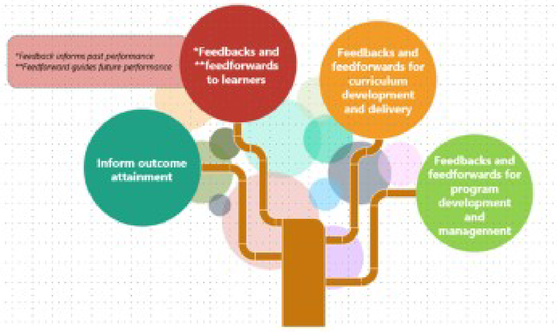
- Is each of the course learning outcome attainable and realistic? How can the outcome be rephrased more accurately?
- Is each course outcome relevant? What should be a more valid outcome?
- Why are some course outcomes less attained?
  - Is it due to unrealistic outcomes or issues in curriculum delivery?
  - How can teaching and learning method be improved to optimise outcome attainment?
- Why are some course outcomes less attained by certain group(s) of students?
  - Is the difference due to differential item functioning (DIF) of assessment tasks?
  - How can the assessment tasks be rephrased to avoid DIF?



Feedbacks and Feedforwards for Program Development and Management

Reflective questions for continuous curriculum and delivery improvement

- Is each of the programme outcome attainable and realistic? How can the outcome be rephrased more accurately?
- Is each programme outcome relevant? What should be a more valid outcome?
- Is non-attainment of a course outcome related to the competency of the lecturer?
  - Is he/she qualified?
  - Has he/she been pursuing continuous professional development?
- Is non-attainment of programme outcomes related to deficiency in the provision of finance/tools/equipment/facilities/infrastructure/environment/support services? How can these provisions be adjusted to optimise outcome attainment?
- Is non-attainment of a programme outcome related to issues in programme design? How can programme monitoring, review and continual quality improvement play a part in ensuring the outcomes are attained in future?



CONCLUSION

Higher education instructors need to understand the concepts of testing, measurement, assessment and evaluation in order to put them into effective practice. There is also a need for educators to explore assessment for learning and assessment as learning as opposed to focusing solely on assessment of learning.

The design, planning, implementation, and evaluation of assessment need to be guided by the principles of validity, reliability, objectivity, administrability and interpretability. The assessment of learning outcomes can be done through the assessment of 11 learning domains as prescribed in MQF version 2, which can be mapped to broader cognitive, affective, and psychomotor domains. The use of alternative assessments can help to ensure that learning outcomes are assessed effectively.

Good use of information about strengths and weaknesses through assessment results can lead to the improvement of student performance in the future. It can also contribute to future development and implementation of courses as well as programmes.

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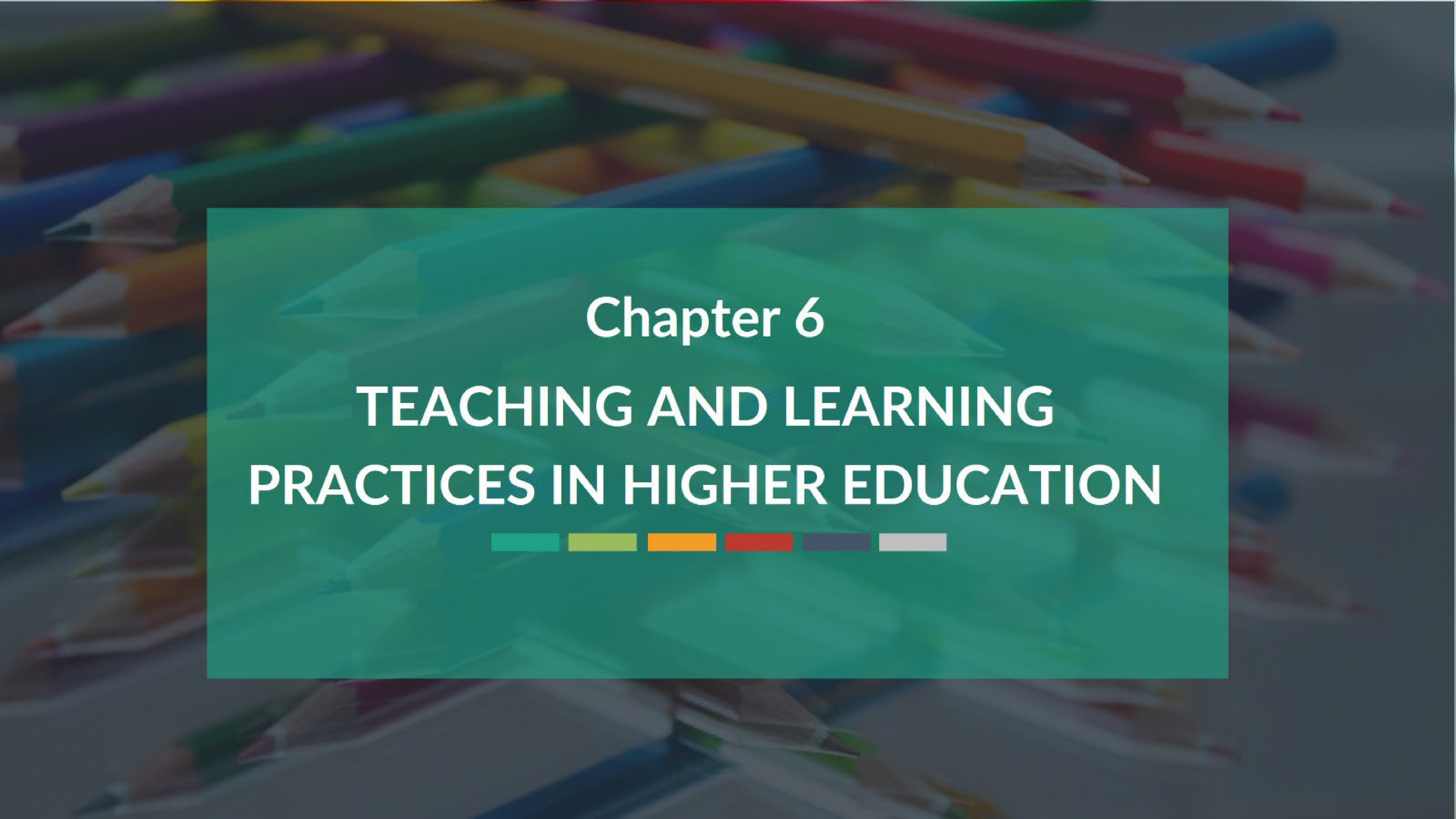
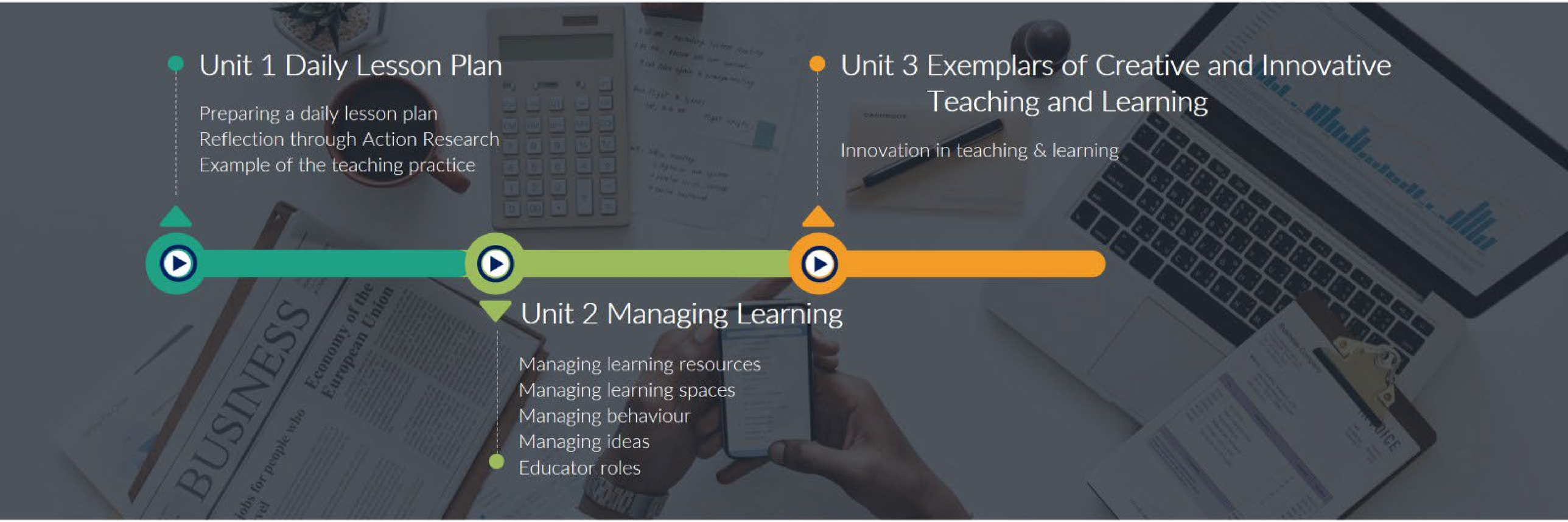


Chapter 6

TEACHING AND LEARNING PRACTICES IN HIGHER EDUCATION

Overview


Unit 1 Daily Lesson Plan
Preparing a daily lesson plan
Reflection through Action Research
Example of the teaching practice
Unit 3 Exemplars of Creative and Innovative Teaching and Learning
Innovation in teaching & learning
Unit 2 Managing Learning
Managing learning resources
Managing learning spaces
Managing behaviour
Managing ideas
Educator roles

Unit 1: Daily lesson plan

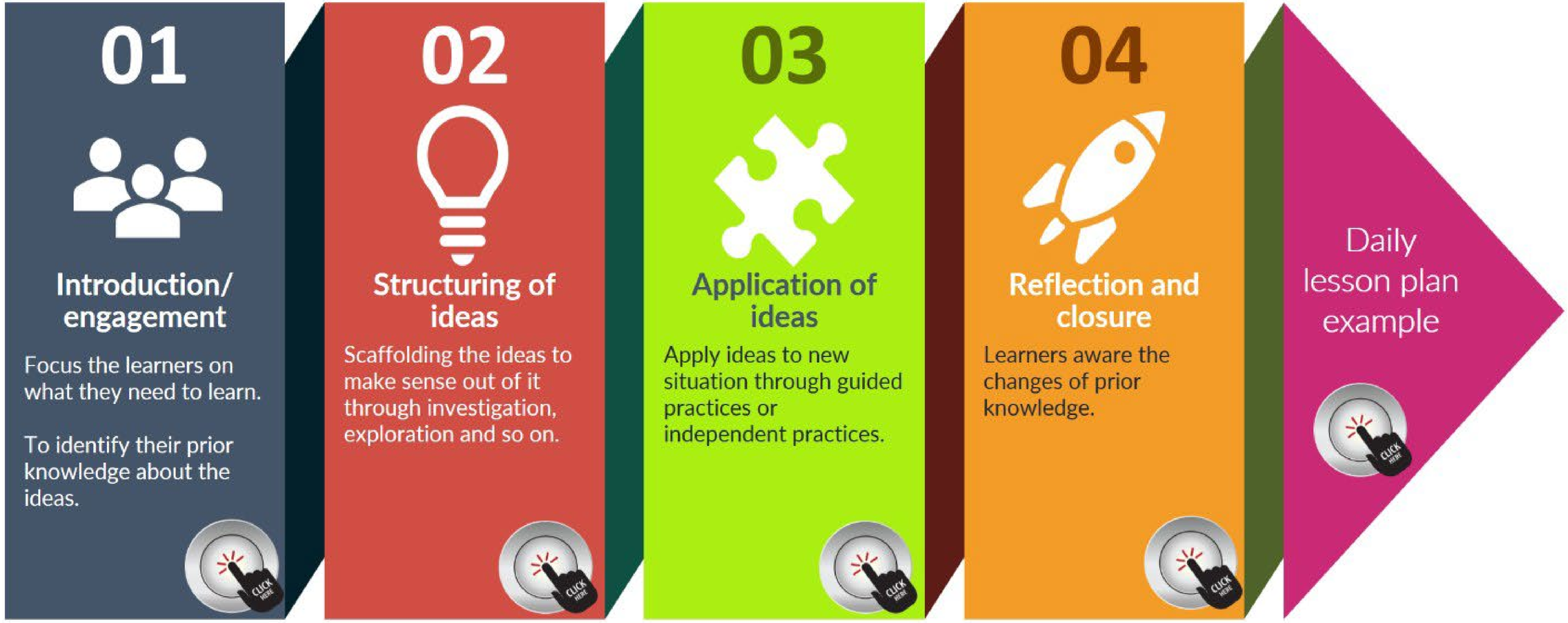
Introduction

Daily lesson plan provides a guidance on how a teaching and learning session can be conducted. The plan can be prepared following FOUR (4) phases: Introduction, Structuring or restructuring of ideas, Application of ideas and Reflection & Closure. The plan should be prepared based on a syllabus approved by the University.

For the conducted teaching & learning session, it's important for an educator to reflect on their teaching and learning to improve the student learning process. It also help the educators to evaluate the effectiveness of the practices. Two ways to do it either by a simple Routine Reflection or more systematic approach through Action Research.

Preparing a daily lesson plan

The phase is following four-phase teaching model (adapted from Needham five-phase constructivism model)



01 Introduction/ engagement

Each phase can be carried out by dividing it into:

- Phase
- Content
- Educator task
- Students' activities
- Notes

Ice breaking game

3 easy Icebreaker Games to lay on video conferences e.g. Zoom, Webex or Google Meet to kick start your lesson (Elevate Experiences)

Phase	Content	Teacher's activities	Students' activities	Notes
Introduction & Elicitation of ideas (15 minutes)	STEM approach Examples of science and engineering practices Technology	Show video clips of hands-on small projects. Ask students how we can incorporate these types of activities in a physics lesson but in the context of problem solving. https://www.youtube.com/watch?v=NuaVacHFgfw Review the inquiry learning method and 5E teaching model Show LOs and give an overview of the lesson Elicit ideas using mentimeter Q&A template	Respond to verbal questioning and questions on mentimeter	Assessment: Q & A Interactive Lecture Tools: Brainstorming, video clips and Q&A using mentimeter

Example

02 Structuring of ideas

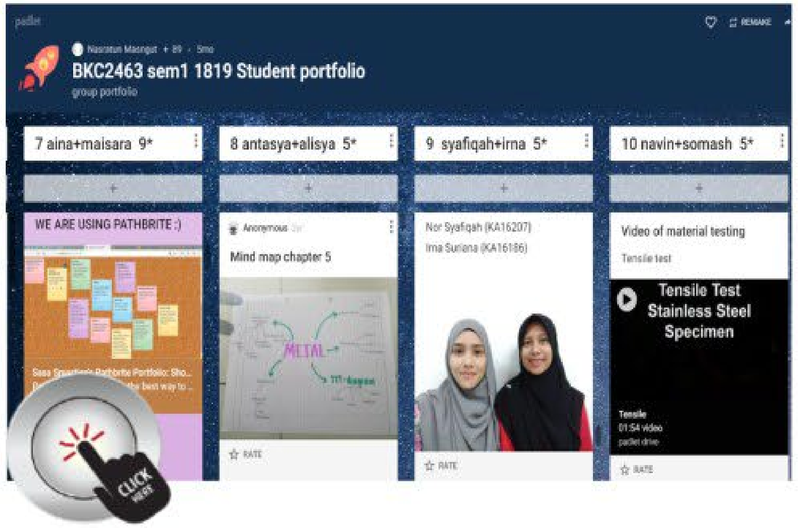
Phase	Content	Teacher's activities	Students' activities	Notes
Structuring/ restructuring of ideas (50 minutes)	STEM approach in teaching and learning Science and engineering practices Mathematical thinking and computational thing Big ideas in science Technology Engineering design process	Group students into 5 or 6 students in each group for later breakout session. Explanation of the content using genially slides and interspersed with several Interactive Lecture Tools such as verbal Q&A, two-minute paper & focus listing. https://view.genial.ly/5f55cc863913970d6490fd3f/horizontal-infographic-timeline-the-stem-approach	Listening, note-taking, asking questions, and participating in responding to questions posed verbally or written in Padlet .	T&L method: Interactive Online Lecture Interactive Lecture Tools: Q&A, Two-minute paper & focus listing Assessment: Verbal Q&A, Two-minute paper & focus listing using Padlet as the medium for answers Attitude: Aware of the advantages of learning using the STEM approach

Example

Preparation of engaging materials for virtual classroom

How an educator can create engaging materials to help on delivering the lesson in virtual classroom session (FacilitadorTube)

03 Application of ideas



Using Padlet for sharing learners works

An online bulletin board where students can have interactive conversations, show their thinking, showcase their work, and much more!

Phase	Content	Teacher's activities	Students' activities	Notes
Application of ideas (75 minutes)		Show and explain four examples of lesson plans based on the STEM approach and 5E teaching model/learning cycle. Breakout session for small group discussion Facilitate small group discussion by joining in the separate group discussions Give feedbacks and feedforwards	Listening to explanation & asking questions Discuss in groups: Designing a STEM approach physics lesson Upload lesson ideas on Padlet Representatives of the groups present their lesson ideas Comment on other groups' ideas	T&L method: Direct lecture Group discussion Assessment: Evaluate lesson ideas and give feedbacks and feedforwards Attitudes: Aware of the advantages of learning using the STEM approach

Example

04 Reflection and closure

Phase	Content	Teacher's activities	Students' activities	Notes
Reflection & Closure (10 minutes)		Assess students' understanding using Kahoot! Give further readings https://www.semanticscholar.org/paper/STEM-Learning-through-Engineering-Design%3A-Impact-on-Shahali-Halim/4684b56699ba8d8ed578faeb2afbe0e387bbbef0	Respond to the questions.	Assessment: Q&A using Kahoot!

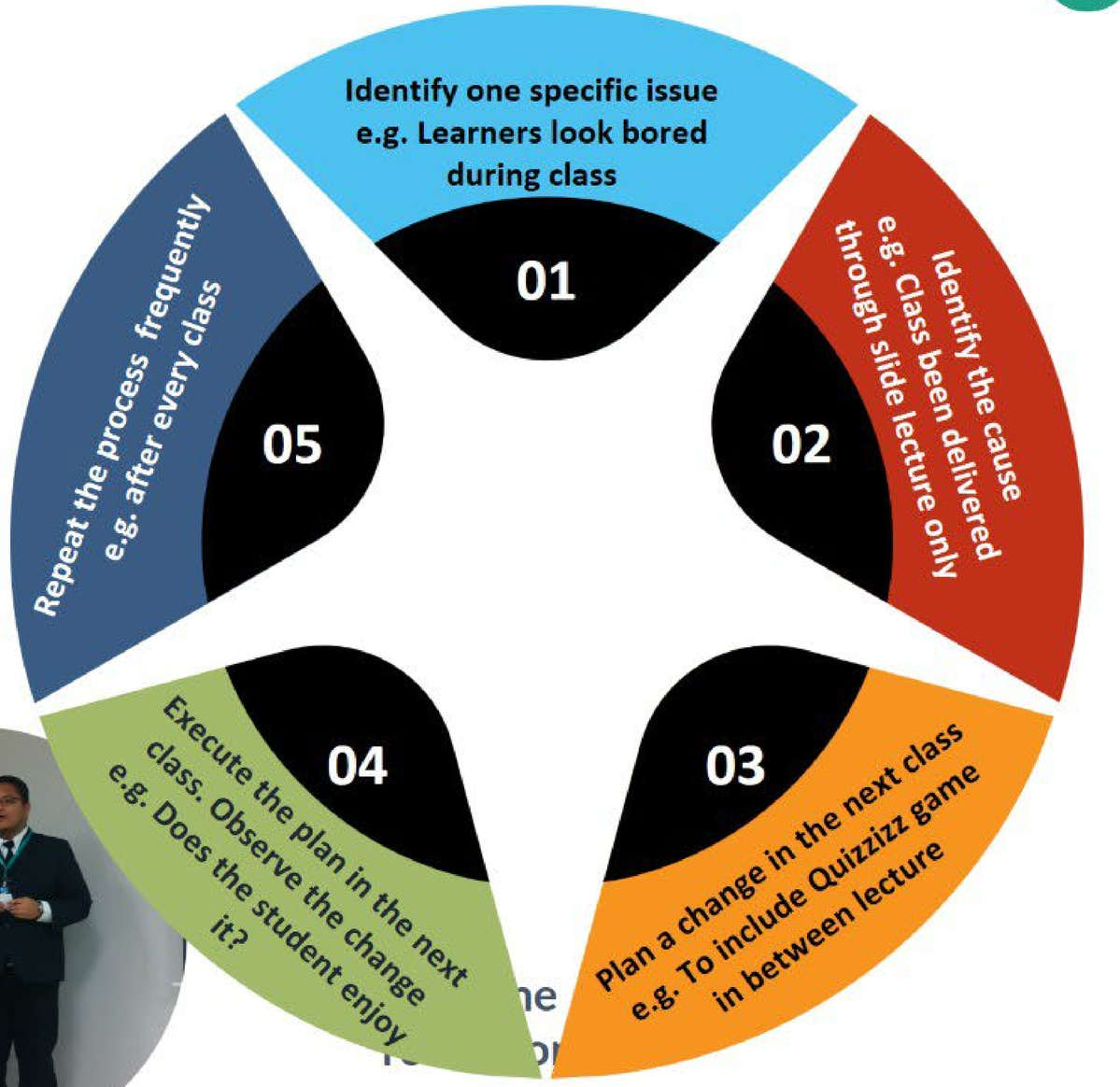
Example

Routine Reflection

It is a good practice for educators to have a routine reflection

Routine reflections normally is to identify one specific issue that the educator need to act upon for the purpose of improving for the next teaching and learning session.

Routine reflection can be done following the step suggested in the figure, but not limited to.



Action Research

Action research is a process in which educator examines their own educational practice systematically. It can be used to chart the effects of implementation of a curriculum or strategy, to study learners learning and responses, or to profile individual learners. It is about how educator can change the instruction to impact learners (Ferrance, 2000).

Problem identification

Use quiestionaire to identify the problems. Limit the question to one that is meaningful and doable in the confines of daily work

Data collection

Multiple sources of data collection can be used to better understand the scope of happenings

Data interpretation

Analyse and identify major themes. Depending upon the question, educators may wish to use classroom data, individual data, or subgroup data

Act on evidence

Using information from the data collected, design a plan of action to make a change and study the change

Results evaluation

Assess the effects of the intervention to determine if there is improvement. If, yes, does the data provide the evidence? If no, what can be done to produce better results?

Example of teaching practices

Teaching using the 4-phase Teaching Model

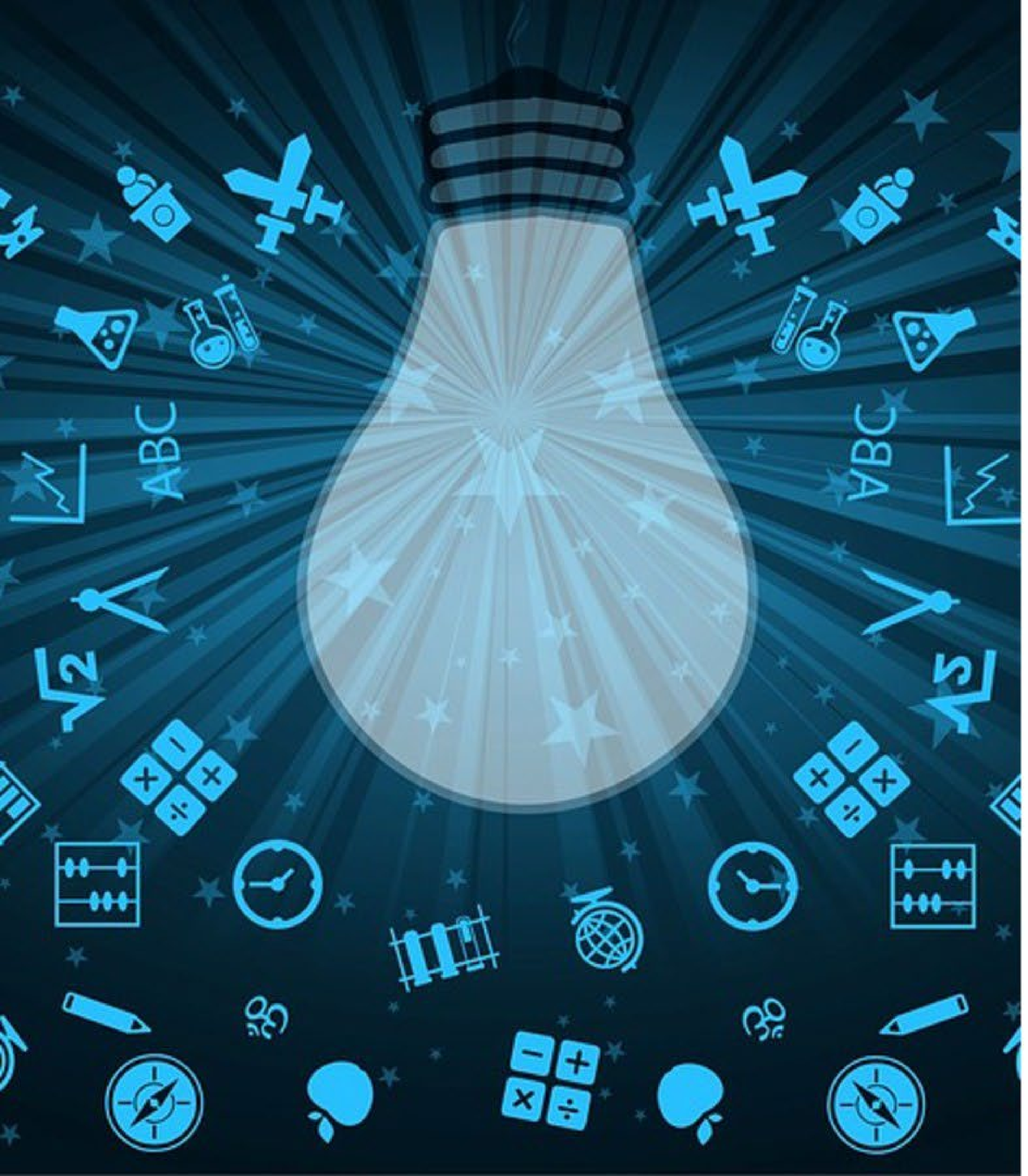
A teaching practicum delivered by including all 4 phases in a daily lesson plan (Arif, 2019)
Phase 1 2:00
Phase 2 5:11
Phase 3 13:57
Phase 4 15:58

Teaching using chat application

Can a lesson be created and delivered using chat application? The answer is YES. In this video, an educator shared the idea on how to do it using WhatsApp or Telegram (Alias, 2020)

Optimising video for chat app. lesson

How educators can minimise the video size to suit the low bandwidth user (Alias, 2020)



Unit 2: Managing Learning

Introduction

Learning management is the capacity to design pedagogic strategies that achieve learning outcomes for learners. Managing learning develops knowledge, skills and practices for planning effective teaching and learning experiences, and for creating and maintaining safe and supportive learning environments. Managing learning includes managing learning resources, learning spaces, behaviours and ideas.

Managing learning resources

Conceptual knowledge requires examples, familiarity with the concept's features, contexts, and engagement/experience. Learning resources are used to improve learners' conceptual knowledge, abilities, and skills, to monitor their progress, and to contribute to their overall development and upbringing. Learning resources such as teaching aids, dynamic tools, Web 2.0 tools, Open Educational Resources (OER) can also help to motivate learners.

The use of learning resources may help to

Promote variety

Allow for varieties in delivery and increase the use of various senses

Inculcate interest

Increase learners' interest towards the course

Increase understanding

Help to understand abstract or something that is difficult to accomplish and support the different learning styles

Exhibit educators' professionalism

Ability to use various resources to create and curate learning materials

Learning resources

Teaching aids

Choices will depends on the physical factors, subject matter and educator skills

Dynamic tools

Slide, audio, video, interactive media, simulation

Static tools

White board, flipped chart, poster, module

Instructional resources

Items that assist the information aspect of teaching

Conventional resources

Lectures, talks, writings, project rubrics, guidelines

Web 2.0 tools

Free digital programs that can be used for creating and sharing learner-generated projects and products

Assessment resources

Standardised tests, classroom assignments, online submissions

Open Educational Resources (OER)

Journals, expert blogs, open courseware

Learning Management System (LMS)

A software application for the administration, documentation, tracking, reporting, automation and delivery of educational courses.

Choosing the right learning resources

On choosing the right one, these are the things to be taken into consideration:

- The size of the class
- Learning area arrangement
- Existing T&L facilities *i.e.* projector, white board, learning space
- Learning styles
- Subject matter
- Educator competencies

Managing learning spaces

Learning space is a dedicated space (physical or virtual), purposefully designed by the educator, in which learners are invited to meet and engage in knowledge creation. Through its design and affordances, the educator suggests and encourages learners to create their own unique learning environment for optimal learning (Hunter, 2006).

Physical spaces

The spaces can be a traditional classroom, library, faculty office, outside on the green, in a lounge or any suitable physical facilities.

Virtual spaces

Unlike physical spaces, virtual spaces come and go. They can be spontaneous as well as deliberate, synchronous or asynchronous. Participants (educators and learners) and their relationships in the virtual learning space can shift rapidly. Participants can also multitask, "inhabiting" more than one virtual space at a time.

Choosing the learning spaces

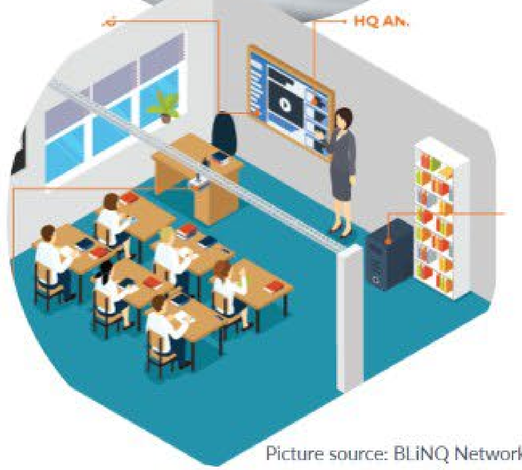
1. Accommodate the use of as many kinds of materials as possible
2. Enable the display of and access to those materials by all participants
3. Provide the leaners with interactive tools that enable exploration, probing, and examination. Example: applications installed on the computer that controls the room's displays or set of communication tools
4. Have devices or program that can capture classroom discussion and debate, which can be distributed to all participants for future reference and study

Example on how to manage learning spaces

1. Class materials can be access anytime so that the active and social work of learning can continue outside the formal classroom
2. The design of "neutral" spaces, such as hallways and corridors, could be rethought and re-equipped to promote learning
3. Small discussion spaces in corridors so that discussion begun in class can continue when class ends
4. As for the virtual space, it should be well-integrated to support collaborative projects and resource sharing

Collaborative learning exercise in solving a board game

Space maker is a collaborative work space to facilitate exploring, learning and making using various tools, equipment and materials



Digitally equipped spaces with huge variety of teaching and learning methods

Picture source: BLiNQ Networks

As the education scene is changing, the learning space changes as well. Now in addition with the physical learning spaces, the virtual one like Zoom, Microsoft Teams, Google Meet, Webex, Telegram, WhatsApp, Facebook- are now the new “classroom”.

Managing Behaviour

Behaviour management is important in the classroom, not least because it creates an appropriate environment for learning to take place. If there are clear boundaries then learners are able to develop positive behaviour, such as respect towards each other. Behaviour management also supports learning in a safe and calm environment (Verykios et al. 2019)

Way to manage the behaviour can be divided into two learning environment, *i.e.* face-to-face and online learning.

Managing behaviour in face-to-face (F2F) learning

Example learners behaviour through a F2F learning

1. Come late to class
2. Sleep in the class
3. No engagement in class
4. Unfinished homework/ unreturned homework

Educator roles to mitigate this behaviours for F2F learning

1. To mitigate discipline problem (e.g. late to class, sleep in the class), educator can set a rule and make the student aware and understand if certain rules was broken, there will be a penalty.
2. To improve student engagement and maintain it, the class should be carried out as an active learning. Flipped classroom can be applied to get student ready before the class begin.
3. Brainstorming session will get the student to interact with peers and encourage their active thinking
4. Interactive class activities can be carried out to maintain student engagement through out the class

Managing behaviour in online learning

Example learners behaviour through an online course (Verykios et al. 2019)

1. Leaners are more active during the non-working hours and the first two days of the week when a new chapter starts
2. Learners' activity decreases until the fifth week of study and then it increases until the end of the course
3. Several learners lose their interest in the middle of the course
4. Learner who did not submit quizzes and assignment increases from 10% to 20% at the end of the course
5. Some learners have accessed the quizzes and assignments without submitting them.
6. Most of the educational content has been accessed by most of the learners

For further reading click here

Educator roles to mitigate this behaviours

1. The course can be redesigned
2. The educational material can be revised in order to maintain the interest of the learners from the start to its end
3. Identify the learners who are losing their interest, retain their interest, and encourage them to keep their pace
4. Educators must prompt learners to actively participate in the LMS and keep a reminder nearing the due date.
5. Activities of the last week of the course can be enhanced to better prepare learners for the final evaluation of the course

Managing ideas

Managing ideas is a process of generating, capturing, discussing and improving, organising, evaluating and prioritising valuable insights or alternative thinking that would otherwise not have emerged through normal processes. Here are four ways on how an educator can manage ideas.

1

Way to stem the tide of learner questions

2

Effective feedback attributes

3

Moving from feedback to feedforward

4

Strategies to promote thinkers

1 Way to stem the tide of learner questions

Control when

Set the appropriate window when questions can be asked. Beyond that time, no questions are allowed

Control what

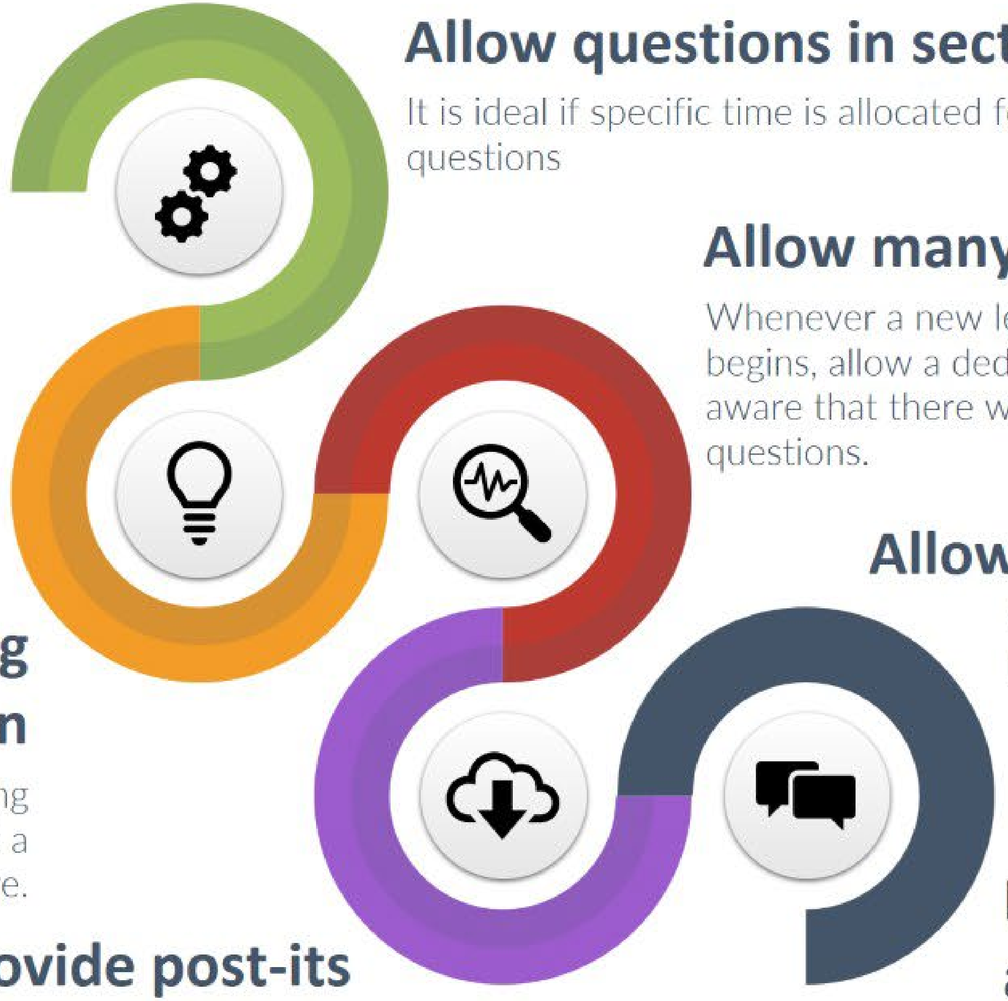
Define for the learners what topic(s) are on the table and open for questions.

Don’t take question during instruction

Always wait until you have finished giving instructions before taking questions. Make it a policy, just to be sure.

Provide post-its

Have sticky note or tiny square scratch paper available for learners to write down their questions



Allow questions in section

It is ideal if specific time is allocated for questions

Allow many sections

Whenever a new lesson or a new topic of discussion begins, allow a dedicated questioning time. Learner will be aware that there will always be a dedicated time for asking questions.

Allow time for any questions

Open the floor for questions by defining the topic.

Don’t answer what has already been asked

Never answer a repeated question.

2 Effective feedback attributes

CONSISTENT
Feedback needs to be stable, accurate and trustworthy

ONGOING
Learners receive a lot of opportunity to improve

TIMELY
Feedback should be given ASAP

Adopted from article by Holly Clark and Matt Miller. Further reading click here

GOAL REFERENCES
Feedback leads learners to reach a goal

TANGIBLE & TRANSPARENT
The intended result of the feedback should be clear

ACTIONABLE
Leaners should know what to do with the feedback

USER FRIENDLY
The feedback should be easy to understand and take action

3 Moving from feedback to feedforward

What is feedforward?
When educator give feedforward, instead of rating and judging a learner's performance in the past, educator focus on their development in the future (Hirsch,2017).

Example situation: Suppose a student is writing an essay. Instead of waiting until the student is finished, then marking up all the errors and giving it a grade, educator will read parts of the essay in the middle of writing process. Educator can point out things the educator's noticing, and ask questions to get the student thinking about how to improve the writing.

Effective Feedforward attributes

Generates talent

Helps learner see opportunities for growth - new opportunities or new roles.

Expand possibilities

Effective feedforward starts with what is and helps add to it, expanding what's possible, rather than simply pointing out problems.

Particular

Find ways to give the learners specific pointers while they work, and only one thing at a time, so learners can process and act on it right away.

Authentic

Describe what's happening, explain why it's a problem, then prompt the learner for a solution. Puts the learners at ease, takes them off the defensive. It is clear, it is concise, it's locating the problem, it's looking for solutions together.

Refines group dynamics

Educator can ask colleagues from different expertise for feedback. Learners can ask different department mates for fresh input

Has Impact

Bite size. Don't give out more than they can chew. It's best to lay out the step-by-step action to be taken by the learner to improve the shortcoming.

Adopted from article by Jennifer Gonzalez.
Further reading

4 Strategies to promote thinkers

CATS (Classroom Assessment Techniques)

This can be a "Minute Paper" . Question can be "What was the most important thing you learned in today's class?" The educator selects some of the papers and prepares responses for the next class meeting

Cooperative Learning Strategies

Learners perform more of the active, critical thinking with continuous support and feedback from their peer and the educator

Case Study /Discussion Method

Solve for the real case/ made case study. Using prepared questions, the educator then leads learners through a discussion, allowing them to construct a conclusion for the case

Using questions

- Mutual Peer Questioning
- 3rd party's Questions

Use Writing Assignments

With written assignments, an instructor can encourage the development of dialectic reasoning by requiring learners to argue both (or more) sides of an issue

Conference Style Learning

The educator is a facilitator of a conference.

Dialogue

- Written dialogue
- Oral group dialogue

Ambiguity

Don't give learners clear cut material. Give them conflicting information that they must think their way through

Adopted from article by Walker centre. Further reading

List of questions to promote thinkers

All of the strategies to promote thinkers will involve the use of questions. Below are selected questions that can foster higher order thinking.

Concept development

- [redacted]ur own words, [redacted]t is (insert the [redacted]pt being taught)?
- [redacted] is an example of [redacted]_____? Why?
- [redacted]s this an example [redacted] of _____?
- [redacted]ne an example of _____.
- [redacted] the examples to [redacted]efinition of ____.
- [redacted] is the difference [redacted]een the example [redacted]ne non-example?

Skill development

- [redacted] did I know how [redacted]o (insert skill [redacted]modeled)?
- [redacted] did I know that [redacted]was the correct answer?
- [redacted] did I know how [redacted]interpret the answer?
- [redacted]at did I use to [redacted]ure that I knew [redacted]o find the _____?

Guided practice

- [redacted]v did you know [redacted] to _____?
- [redacted]v did you know [redacted]t this was the [redacted]rrect answer?
- [redacted]v did you use to [redacted]e that you knew [redacted]o find the _____?
- [redacted]v did you know [redacted]to interpret the answer?
- [redacted]n steps was most [redacted]lt for you? Why?

Relevance

- [redacted]ch reason is the [redacted]relevant to you? Why?
- [redacted]anyone have any [redacted]reason as to why [redacted]s is important?

Closure

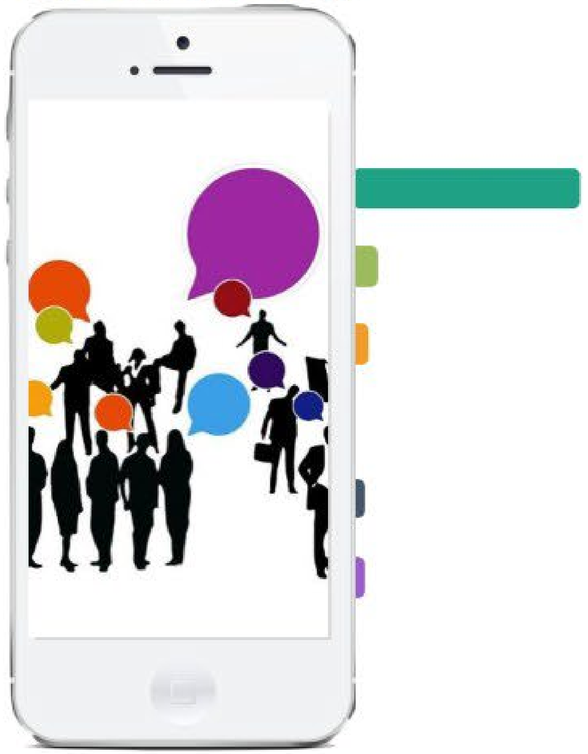
- [redacted] will this lesson [redacted]efit you in the future?
- [redacted]v did the lesson [redacted]t the Learning Objective?
- [redacted]at did you learn today?

For more question list, click here

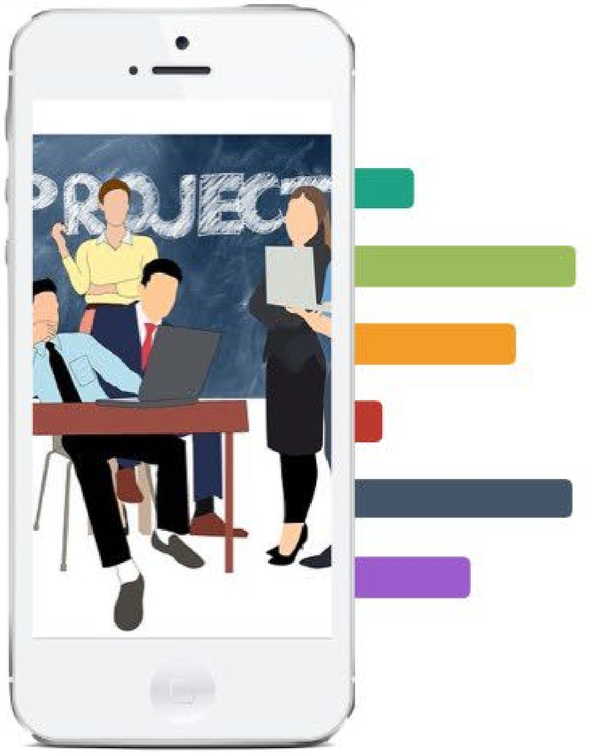
Managing Learning: Educators Role

Educators role set the tone of their classrooms, build a warm environment, mentor and nurture learners, become role models, and listen and look for signs of trouble. Educator can be the Sage-on-the Stage, Guide-on-the-Side and Meddler-in-the Middle

Sage-on-the-Stage



Guide-on-the-Side



Meddler-in-the-Middle

Educator involvement

Learner involvement

Learner freedom

Active interventionist pedagogy*

Active learning

Self-directed learning

Further reading

Active interventionist pedagogy: Educators are mutually involved with learners in assembling and/or dis-assembling knowledge and cultural products.

1 | Sage-on-the-stage

Educator is an ultimate provider of knowledge.

The teaching process following Transmittal model. The model assumes that the learner's brain is like an empty container into which the educator pours knowledge.

Educator's role: The central figure, the "sage on the stage," the one who has the knowledge and delivers that knowledge to the students.

Learner's role: Simply memorise the information and later reproduce it on an exam often without even thinking about it.

2 | Guide-on-the-Side

Educator as facilitator and become glorified managers in directed the self-discovery learning.

The teaching process follows the Constructivist model. The model places learners at the centre of the process. Learner is like a carpenter (or sculptor) who uses new information and prior knowledge and experience, along with previously learned cognitive tools (such as learning strategies, algorithms, and critical thinking skills) to build new knowledge structures and rearrange existing knowledge.

Learners' role: Actively participating in thinking and discussing ideas while making meaning for themselves.

Educators' role:

- ❑ Facilitating learning in less directive ways.
- ❑ Responsible for presenting the course material, in ways that make the learners apply the information, able to manipulate ideas and relate them to what they already know.
- ❑ Facilitate student-student and student-material interactions in their knowledge-producing endeavour.

3 | Meddler-in-the-Middle

Meddling is a re-positioning of educator and learner as co-directors and co-editors of their social world. As a learning partnership, meddling has powerful implications for what "content" is considered worthy of engagement, how the value of the learning product is to be assessed, and who the rightful assessor is to be.

Learners' role:

- ❑ As co-directors and co-editors of their social world.
- ❑ Processing information, co-theorising and solving puzzles.

Educators' role:

- ❑ Mutually involved with learners in assembling and/or dis-assembling knowledge and cultural products. As a learning partnership, meddling has powerful implications for what "content" is considered worthy of engagement, how the value of the learning product is to be assessed, and who should be the rightful assessor.
- ❑ Make active student engagement as the norm in the classroom.
- ❑ Provide support and direction through structure-rich activity in which educators themselves are highly involved.

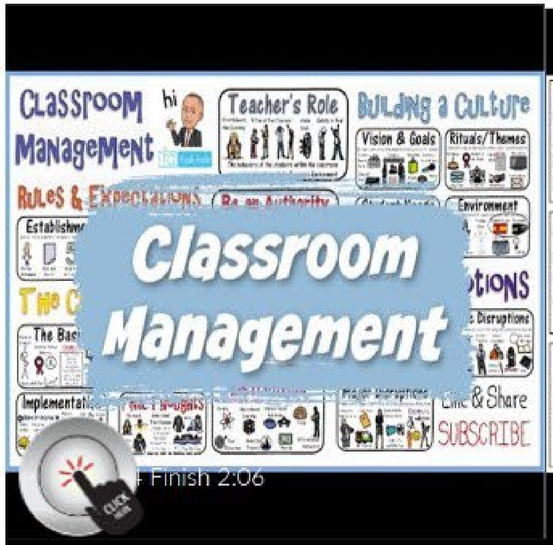
All in all | Educator characteristic

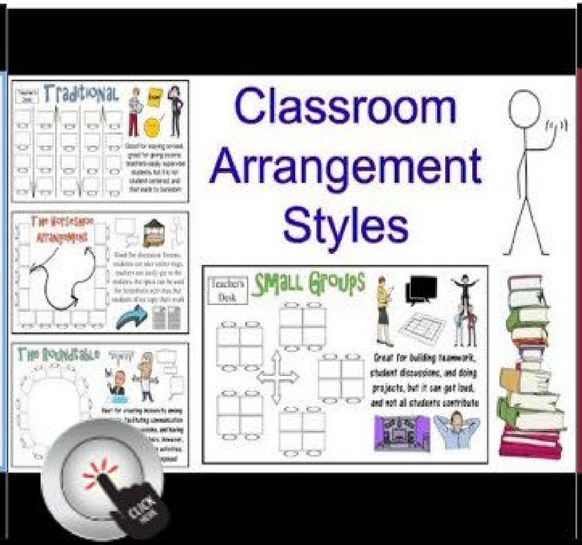
Teaching in the 21st century is an altogether different phenomenon; everywhere, all the time, on any possible topic, supporting any possible learning style or preference. The role of educator also changing into as Facilitator, Inspirer, Resource guide. While the role of learner as a Contributor, Producer, Creator of knowledge, Self expresser.

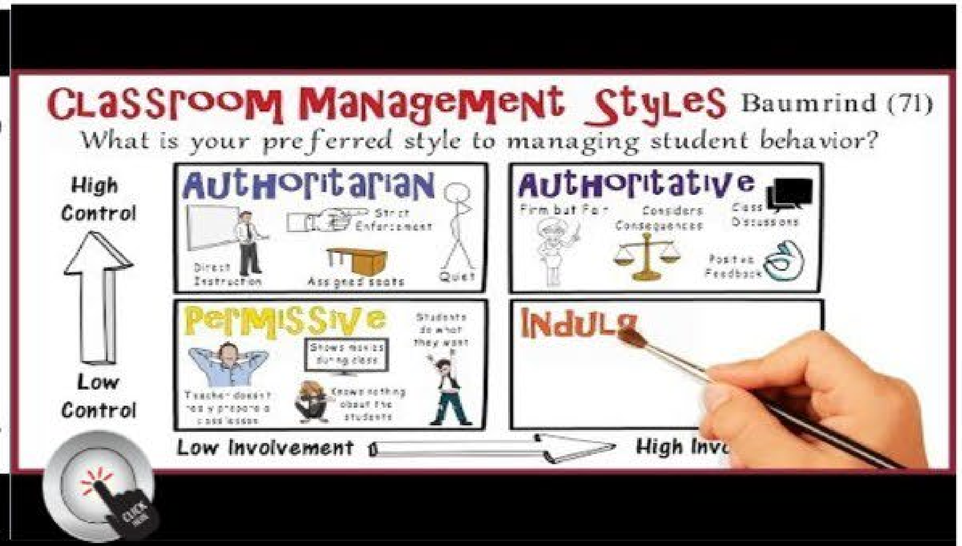
The characteristic of an educator nowadays:

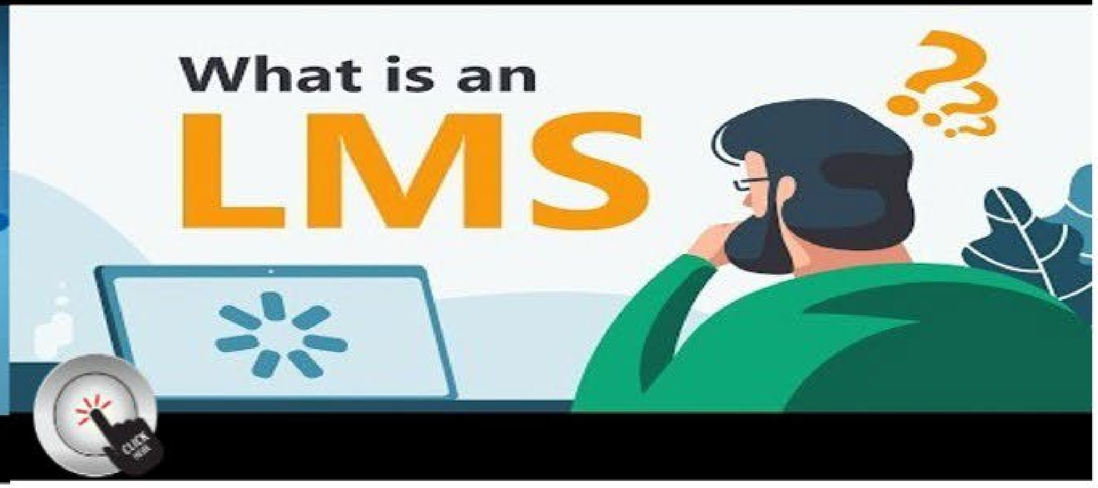
1. Flexible & adaptive to the emerging teaching and learning environments
2. Lifelong learner: It's not enough to know things, but to remain curious about what tomorrow brings
3. Tech savvy
4. Team leader & collaborator
5. Creative & Innovative
6. Mentor & role model
7. Personalize instructor

Related videos in managing learning









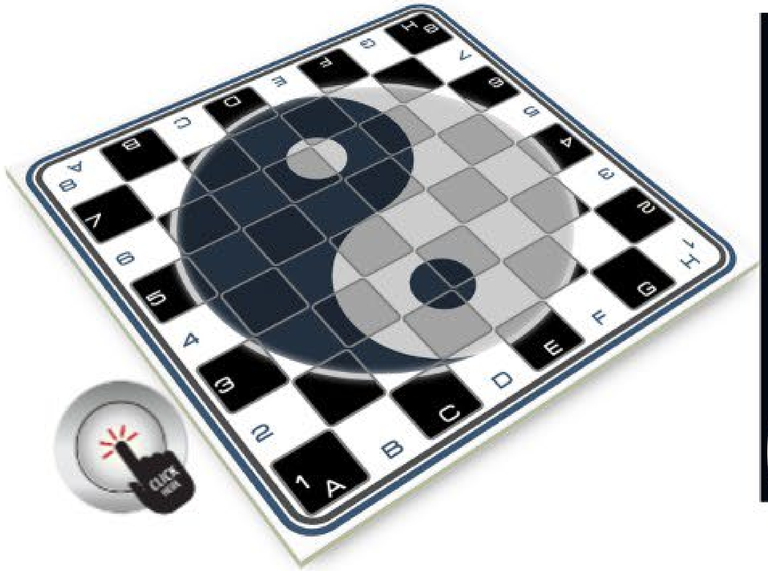
Unit 3: Exemplars of Creative and Innovative Teaching and Learning

Introduction

Creativity and innovation in teaching and learning can be done using various methods and platform. It does not necessarily to include the use of latest technology although the latter will somehow related to innovation and helping the educator and learners becoming innovative.

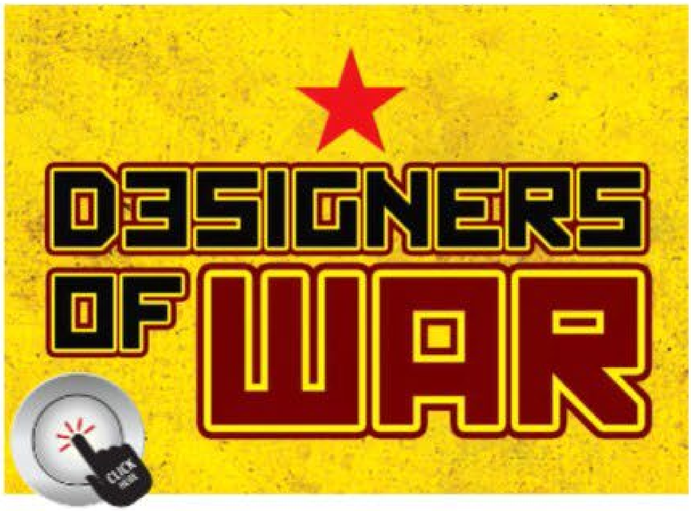
This unit will exhibit various examples on creativity and innovation that has been practices in teaching and learning.

Exemplars of creative and innovative learning activities



Learners build their own board game to learn about Analytical Chemistry (Sofian, 2019)

A video showing how to incorporate gamification in teaching & learning (Rahman, 2018)

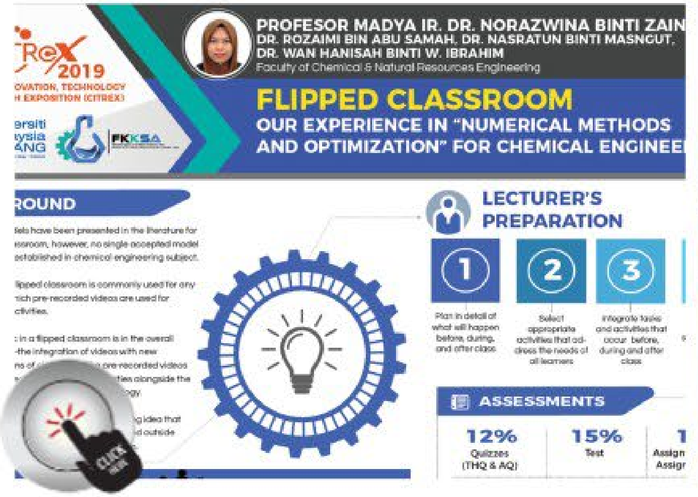


Card game built by learner to learn about Designers of War (Official UPSI Edu Innovation)

Exemplars of creative and innovative teaching and learning

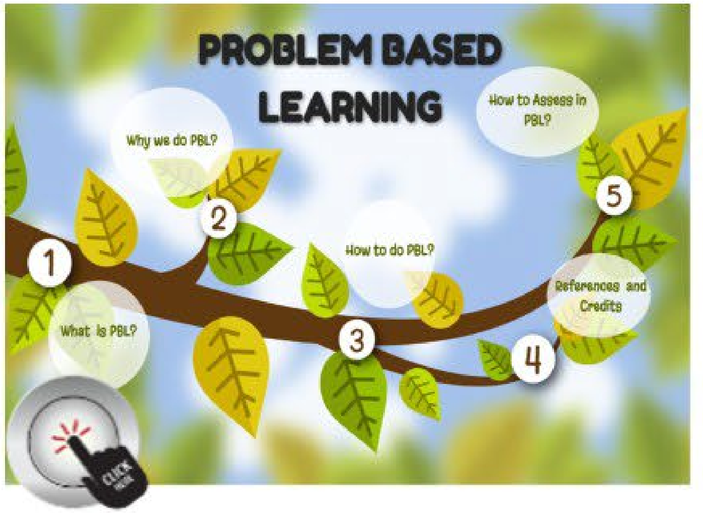
Self paced learning

A student-centered learning approach that provides students with the tools and assets they need in order to learn at their own pace and make choices about the sequence and focus of their learning.



Flipped classroom

An instructional strategy and type of blended learning that reverses the traditional learning environment by delivering instructional content, often online, outside of the classroom. It moves activities, including homework, into the classroom.



Problem based learning

1.Starting point is a problem
2.Authentic for professionals
3.Knowledge organized around problems
4.Students have responsibility for learning
5.Most learning in small groups, not lectures

Exemplars of creative and innovative teaching and learning

Cooperative learning

A teaching and learning method or activity that involves learners working in small groups to accomplish a common goal and guided by the following several principles.

Interactive lecture

A lecture that is interspersed with other activities besides listening and note-taking, that enable learners to actively participate during the lecture involving learner-educator, learner-learner, learner-material and learner-technology interactions.

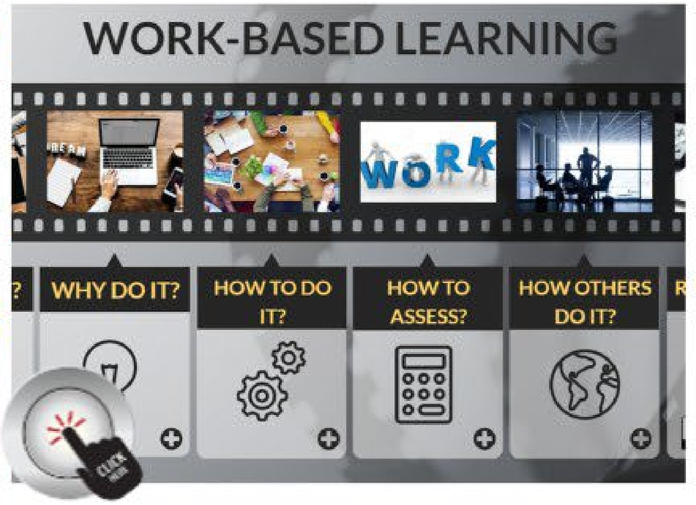
Inquiry based learning

A process of discovering new causal relations, with the learner formulating hypotheses and testing them by conducting experiments and observations.

Exemplars of creative and innovative teaching and learning

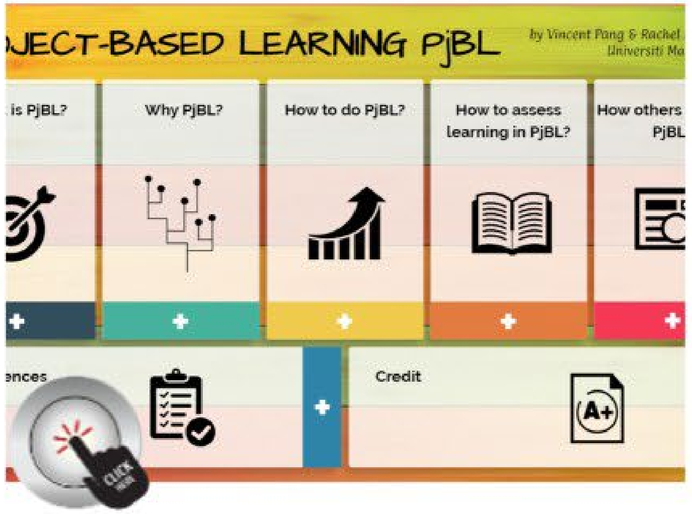
Gamification

The application of game-design elements and game principles in non-game contexts.



Work based learning

It is a subset of work place learning similar to that of an apprenticeship.



Project based learning

A learning approach that enables students to acquire not just knowledge and skills in content area, but also attributes which are essential for them to perform and success at workplace in particular and in life in general.

Conclusion

Make the best possible choice in the shortest time

Plan really well

It is crucial to have a proper planning to execute teaching and learning. Start planning early to avoid disruption during semester run. Be ready for tweaking here and there. After all the teaching and learning activities are progressively changing according to the trend.

Educator professionalism

It would be ridiculous if one execute any teaching and learning technique without proper knowledge. Go and seek help from the practitioner to properly learn the execution method, the tips and the tricks Last but not least, reflect our action strategically trough Action Research.

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Chapter 7

QUALITY IN HIGHER EDUCATION

Overview

Unit 1: Quality Assurance (QA)

Unit 2: Programme Monitoring & Review

- Programme Monitoring
- Programme Review

Unit 3: Continual Quality Improvement (CQI)

Unit 1: Quality Assurance (QA)

Introduction

In higher education, among the many policies and related initiatives during the last decade is the framing of national qualifications. Globally, it has been seen as an important and key initiative in improving learning, skills and competencies in supporting national policy and development goals (MQF, 2017). It is a planned and systematic process to ensure that acceptable standards of education, scholarship and infrastructure are being met, maintained and enhanced (COPPA, 2017).

The Malaysian Qualifications Framework (MQF) serves as a basis for quality assurance of higher education and as a national reference point for all qualifications conferred in the country. It is an instrument that classifies qualifications based on a set of criteria that is approved nationally and benchmarked against international good practices. These criteria are accepted and used for all qualifications awarded by a recognised Higher Education Provider (COPPA, 2017, p. 2).

Quality Assurance Documents (QAD)

Quality Assurance Documents (QAD) are references to assist in the accreditation of programmes and qualifications in higher education providers (HEPs). The development of these documents are inline with input from subject matter experts and stakeholders and benchmarked to international good practices. The quality assurance evaluation process is primarily guided by:

The Malaysian Qualifications Framework (MQF)

is an instrument that develops and classifies qualifications based on a set of criteria that are approved nationally and benchmarked against international best practices, and which clarifies the earned academic levels, learning outcomes of study areas and credit system based on student academic load.

The Code of Practice for Programme Accreditation (COPPA)

is a guideline for quality assurance towards programme accreditation.

Qualifications Standards

is a set of general guidelines for certain qualification levels based on the Malaysian Qualifications Framework (MQF).

The Code of Practice for Institutional Audit (COPIA)

is a guideline for quality assurance evaluation towards institutional accreditation.

The Code of Practice for Open and Distance Learning (COP-ODL)

is a guideline for quality assurance evaluation towards open and distance learning programme accreditation.

Programme Discipline Standards

are criteria set based on what is considered the minimum level that should be attained by the Higher Education Providers (HEPs) to ensure academic programme in a particular field of study can be adequately delivered. It covers all the MQF qualification levels; from certificate up to doctoral degree.

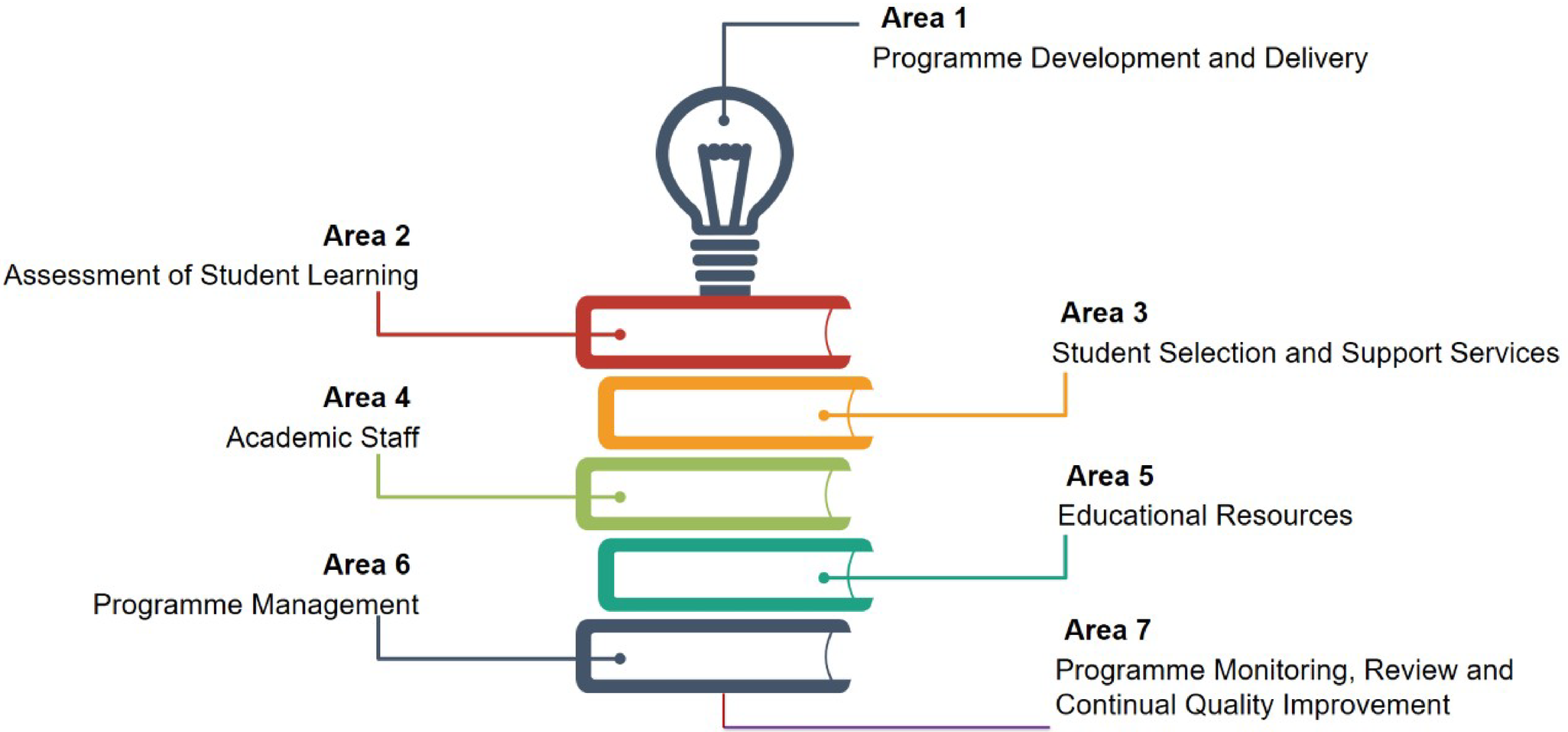
Guidelines to Good Practices (GGP)

The documents are part of a series of guidelines that are similarly designed to assist HEPs implement the practices and standards of Practice).

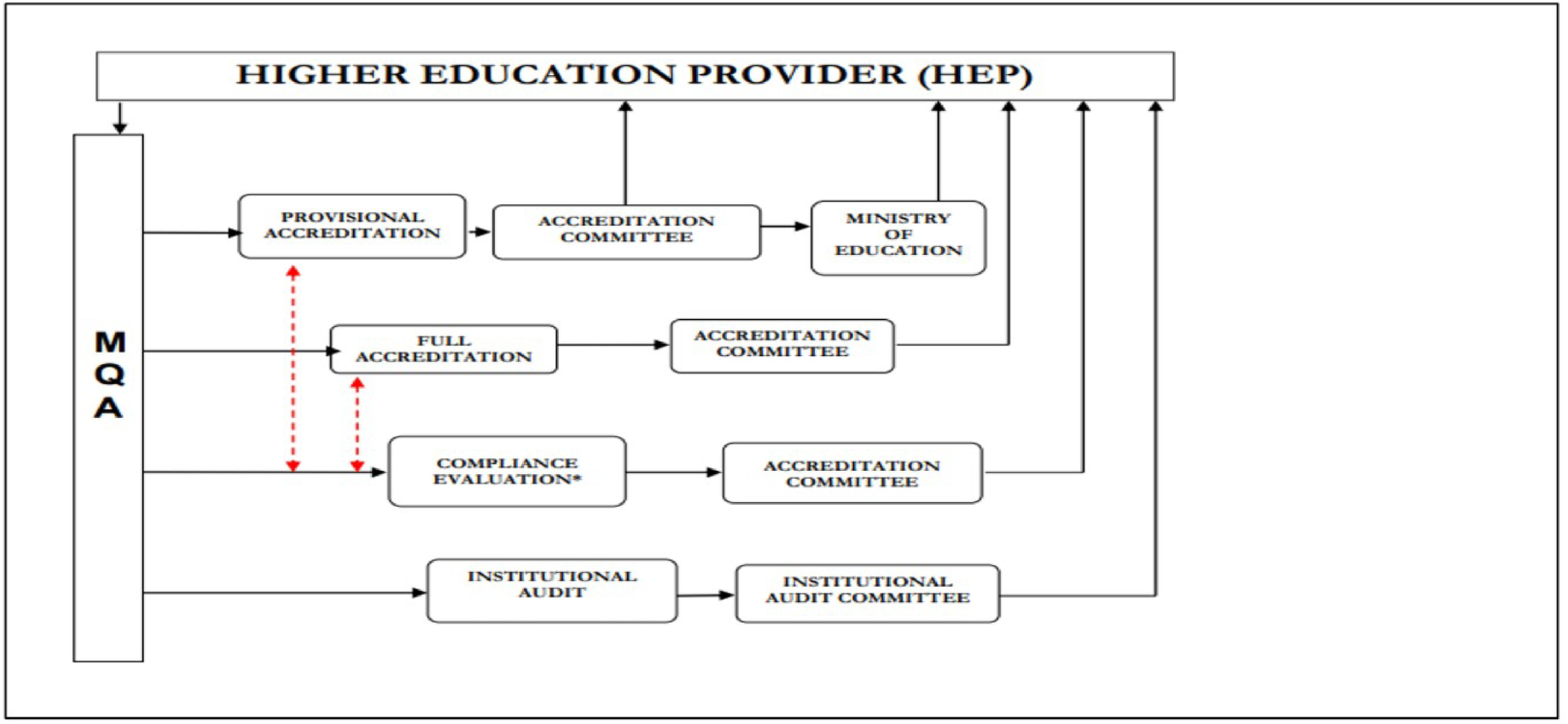
Source: Quality Assurance Documents, MQA
https://www2.mqa.gov.my/QAD/

7 Areas of Evaluation for Quality Assurance

The Code of Practice for Programme Accreditation (COPPA, 2nd Edition) which has seven areas of evaluation for quality assurance guides the HEPs and the MQA in assuring the quality of educational programmes. COPPA is dedicated to programme evaluation for the purpose of programme accreditation.



The Quality Assurance Process: An Overview



* Monitoring shall be triggered by one or more of the following:

1. Set duration for monitoring;
2. Request by stakeholder;
3. As part of Provisional or Full Accreditation, where required; and
4. Any other factors that necessitate monitoring.

Source: Code of Practice Practice for Programme Accreditation (COPPA, 2017, p.111)

Unit 2: Programme Monitoring & Review

Introduction

Programme monitoring and review is a Continual Quality Improvement (CQI) process that takes place at the curriculum level. Programme monitoring looks into each academic programme in its entirety; constituent modules, curriculum, learning and teaching, assessment methods, learning environment, physical and educational resources (including digital educational resources), staff, students and industry advisory board input. It is undertaken on a timely basis to track the quality of the programme and to identify areas of risk as they arise. Programme review is the periodic re-evaluation and re-assessment of the programme along the lines of being significant to current needs, able to fill the expectations of the workforce as well as ensuring that the programme remains relevant, flexible and sustainable through change.

The Concept of Programme Monitoring and Review according to the Malaysians Qualifications Framework (MQF)

In compliance with MQF, COPPA and Programme Standards, programme monitoring and periodic review is necessary for all higher education providers. Professional body reviews and accreditation are prioritised.

Periodic Programme Review/Reassessment		
At least every three to five years, departments are expected to conduct programme reviews by external panels according to the HEP's programme review policy and procedure.	Programme reviews include MQF, COPPA and programme standards compliance.	Outcomes of the programme reviews are passed to the HEP's highest academic body, which then approves the outcomes of the review.

Source: Guidelines to Good Practices: Monitoring, Reviewing and Continually Improving Institutional Quality (MR CIIQ, 2014, p.40

The Purpose of Programme Monitoring and Review

Needs and accountability towards HEPs are constantly changing and the explosive growth in global knowledge is being rapidly and widely disseminated. In facing these challenges, higher education providers must become dynamic learning organisations that continually and systematically review and monitor various rising issues to meet the demands of the constantly changing environment (COPPA, 2008, pp. 30-31)

01 To sustain the strength of higher education towards nation building

02 To ensure the needs of stakeholders are continuously addressed

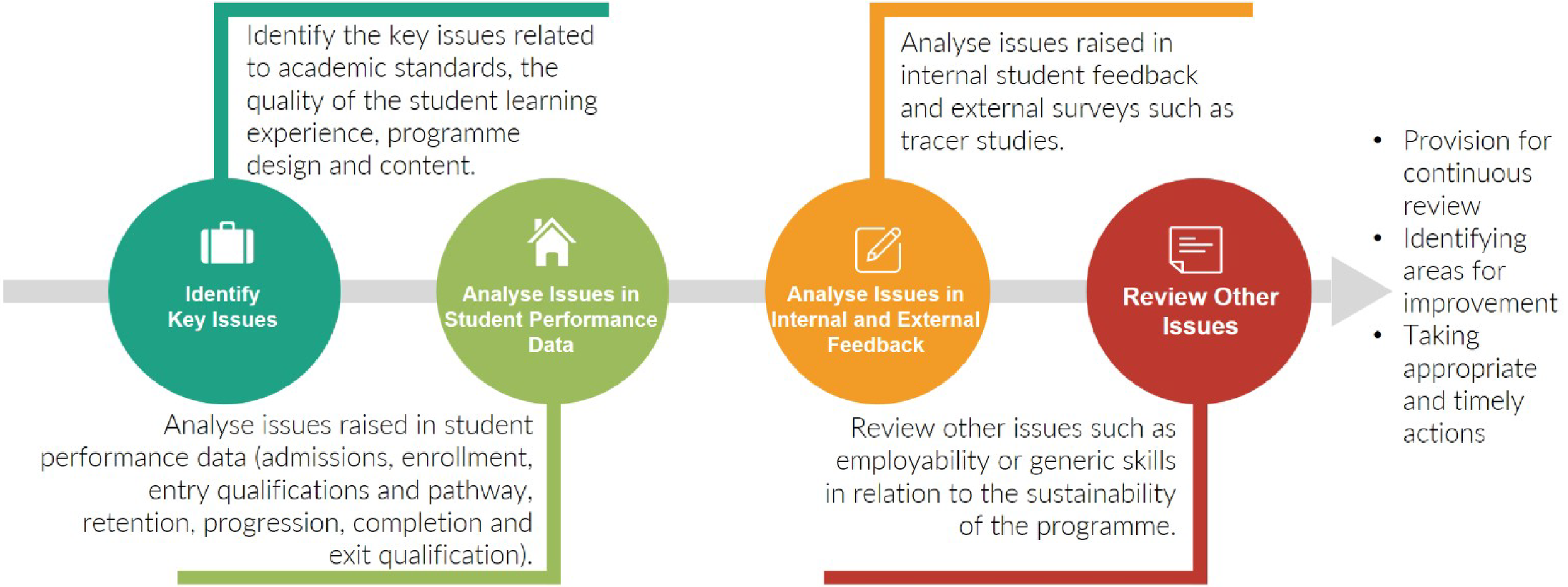
03 To maintain academic standards

04 To provide quality experience for students

05 To suggest improvements for constructive development

What is Programme Monitoring?

Programme monitoring provides information on whether the academic standards and threshold standards are maintained. It identifies the issues and shortcomings in maintaining academic standards, so that necessary action can be taken to improve the academic standards.



What is Programme Review?

Programme review is a process that is more comprehensive than programme monitoring and is undertaken periodically to make judgments as to the quality and compliance with the given standards and qualifications. Programme review makes judgements based on the following three criteria:

CRITERIA 1

Fulfillment of MQF framework, COPPA and MQA Programme Standards, inclusive of professional bodies requirements

CRITERIA 2

Contribution to strategic HEP's strategic directions and goals

CRITERIA 3

Provision of quality student experience

The Process for Programme Review

External Review Panel

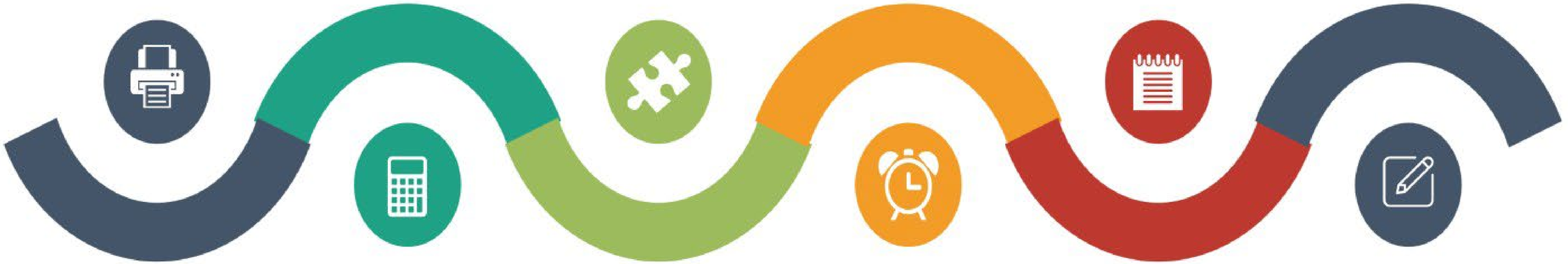
Convene to evaluate programme, conduct site visits and present oral exit report (including final evaluation)

Report tabled at Senate

Finalisation of the overall evaluation

University Quality Unit

Internal quality improvement process monitors the implementation of the action plan



Programme Leader and Team

Undertake programme self-review and write self-review report

External Review Panel

Writes programme review report, including commendations, recommendations and final evaluation

Programme Team

Develop and implement action plan to address panel report recommendations

Source: Guidelines to Good Practices: Monitoring, Reviewing and Continually Improving Institutional Quality (MR CIIQ, 2014, p.47.

Unit 3: Continual Quality Improvement (CQI)

Introduction

Continual Quality Improvement (CQI) refers to the broad process of ensuring and improving quality in HEPs at institutional, departmental, module and programme levels. Maintaining and improving quality is a continual process essential in achieving the HEP's vision, mission and learning outcomes.

Mechanism for Effective Implementation of CQI

A mechanism to effectively implement CQI is through the institute's Internal Quality Assurance (IQA) system. The IQA system addresses the implementation of the HEP's directions and achievement of its goals in the changing world.

Plan

Develop or revise the HEP's strategic and/or improvement plan

Implement

Deploy the strategic and/or improvement plan

Monitor and Review

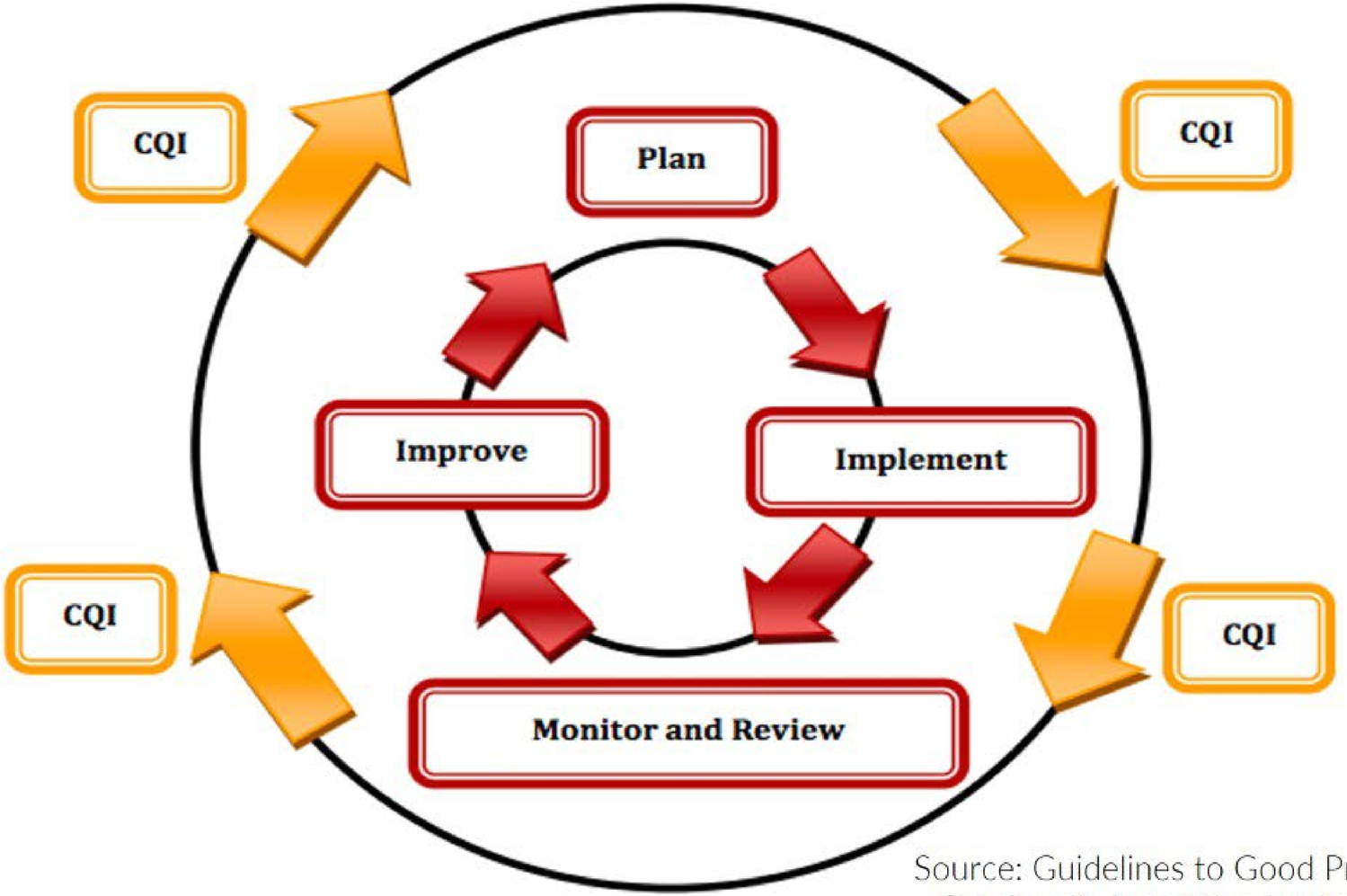
Measure and analyse the achievement of the targets set, reflect on gaps in achievement and on the suitability of the strategic and/or improvement plan

Improve

Implement improvement or develop an improvement plan based on performance in relation to targets and the suitability of the strategic and/or improvement plan

CQI Process Model

A commonly used and accepted CQI process model is the Plan-Do-Check-Act (PDCA Cycle), or also known as the Deming Cycle (1950).



Source: Guidelines to Good Practices: Monitoring, Reviewing and Continually Improving Institutional Quality (MR CIIQ, 2014, p.5.

Determining Elements and the CQI Process

The CQI process include determining elements such as OBE, Learning Outcomes, Assessment Process, Reporting and Realignment. The CQI process ensures a continuous cycle of ensuring the quality of the curriculum is maintained.

Implementation of CQI at Different Levels of Institutional Governance

Institutional Level

A process of regularly reviewing and updating the HEP's activities to improve quality through applying the CQI stages. CQI focuses on the effectiveness of the strategic and/or improvement plan, and of the HEP's Internal Quality Assurance (IQA) system in terms of administrative structure, leadership and governance, planning and monitoring and review mechanisms.

Departmental Level

The focus is on the effective implementation of the strategic and/or improvement plan, and the alignment of the department's academic programmes to the plan. It is also concerned with supporting the operation of the HEP's IQA system. It considers administrative structure, leadership and governance, planning and monitoring and review mechanisms.

Programme Level

The process of regularly reviewing the tools (such as surveys and data collection and their analysis) and activities (for example, improvements in curriculum) used for programme monitoring and review.

Examples of CQI Practices

PLEASE READ THIS FIRST

Please follow the instructions below in sequence. Once finished, your report will be automatically generated in CDL OBE-SCL worksheet.

1 Click button 'CDL OBE-SCL'.
Please enter :
i. Name of Faculty
ii. Programme Name
iii. Programme Code
iv. Part of programme being evaluated
v. Course Codes being evaluated

2 Click button 'COURSE GPA'. *(You can get the results from SIMS@ Laporan Peperiksaan 7.7.2)*
Please enter number of students achieving each grade,
for each course code registered in worksheet 'CDL OBE-SCL'.

3 Click button 'EXIT - ENTRANCE'.
Please enter number of frequencies for each Exit - Entrance survey values
for each course code.

4 Click button 'SUFO'
Please enter the number of frequencies for each SUFO scores
for Lecturers of each course.

5 Click button 'CO-PO-LO-KI'.
Please evaluate the items with 1 or 0 or N/A (1=Yes, 0=No, N/A=Not Available)

6 Click button 'OBE-SCL Implementation'.
Please evaluate items for each course code.
Use the Rubrics for Assessing OBE impl worksheet as your scoring guide.

7 Please save the data of CDL OBE-SCL in another file before clearing and repeating the CDL process for other parts/semesters.

CDL OBE-SCL

Outcome Attainment Report

CLICK HERE TO START

CDL v10.34SP 2016

Developed by:
mnmy/UHEK@UiTM

CQI @UiTM (2011)

1

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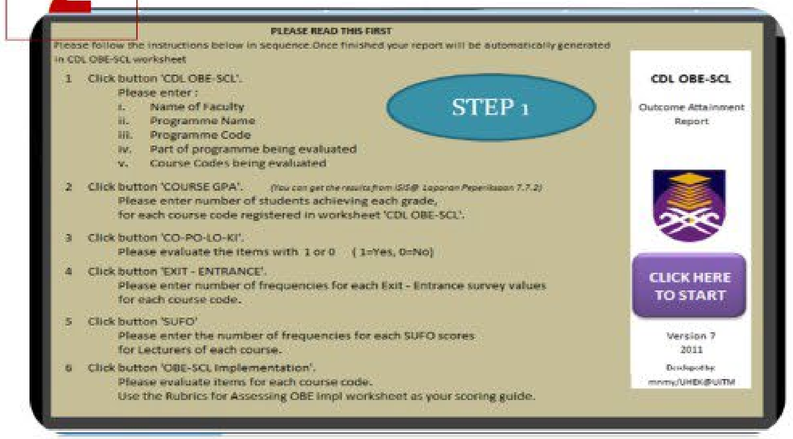

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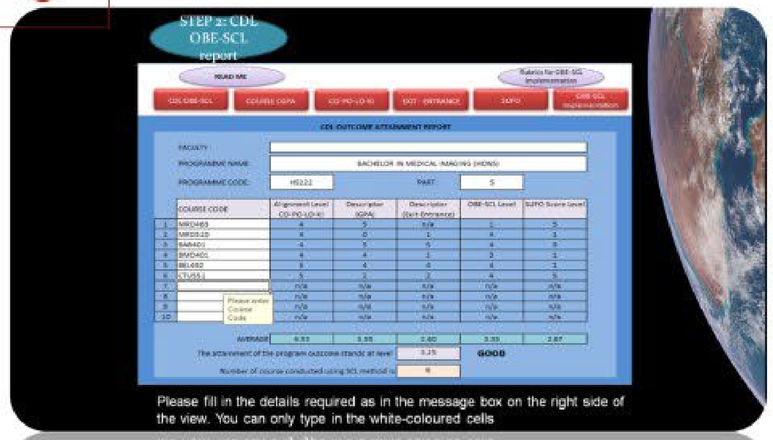

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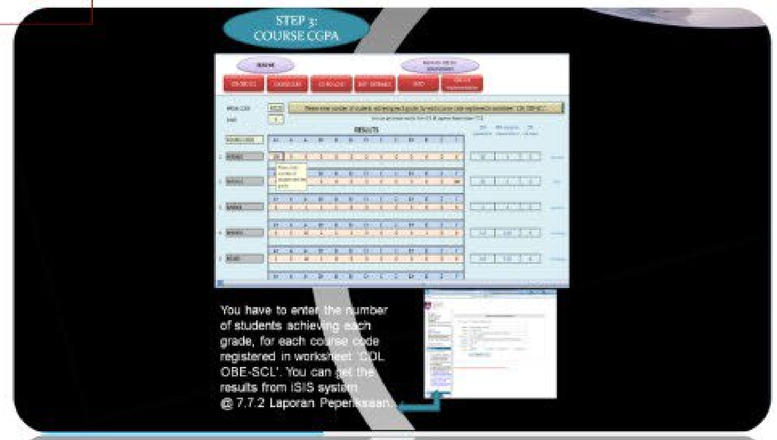

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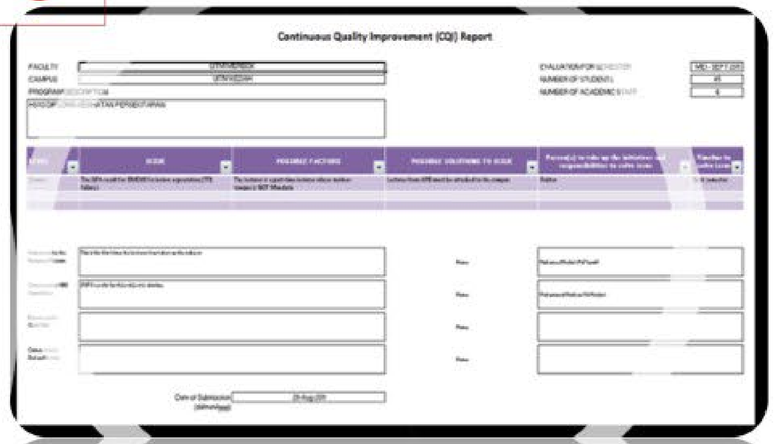


CQI @UTM (2014)

1

Assessment Process - Steps

STEP 1 : Planning the Assessment

STEP 2 : Developing / Using Appropriate Assessment Tools

STEP 3 : Collecting Detail Data

STEP 4 : Calculating the Result of Achievement

STEP 5 : Analysing the Result

STEP 6 : Propose Improvements

STEP 7 : Documentation

2

Assessment Process – Calculating

STEP 4 : Calculating the Result of Achievement

In previous academic system, only the total mark and grade matters. Under OBE, the PO achievement of each individual students need to be calculated.

Hence, detail calculation has to be carried out in order to determine on how much the student achieved his/her PO. It is a tedious work

3

Assessment Process – Analysing

STEP 5 : Analysing the Result

The results / findings are numbers. Analysing is to give meaning (interpretation) to the numbers .

4

Assessment Process – Improvements

STEP 6 : Propose Improvements

The Analysis made on the results / findings, provides the necessary information on what and how actions need to be taken in order to improve students achievement.

5

Assessment Process – Improvements

Table 5 : CQI Actions

NO	RESULTS / FINDING	CQI ACTION
1	POs Achieved or Above KPI	To be maintained, enhanced and continuously monitored. More involvemnt from other courses.
2	PO 3 and PO 4 below KPI	Provide more tarining / examples / questions that relevant to PO 3 & 4 assessment. More exposure in early year of study. More courses addressed and assessed these POs
3	POs below KPI at course level	Identify courses that frequently achieved PO below KPI and determine the main factors. Course owner to undergo training on various T&L techniques to improve delivery and assessment of low Pos. Encourage team teaching and mentor-mentee concept to improve POs achievement
4	Higher no of samples for analysis	Involvement from many more courses including service courses. More systematic procedure in retrieving, documenting and storing the PO data. Development of on line web based system to facilitate the PO analysis process.

Conclusion

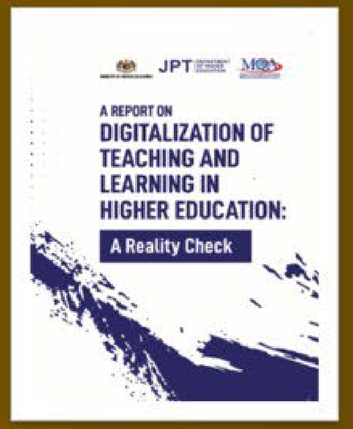
The Programme Monitoring and Review process is critical in ensuring the continual improvement of the programme. It formulates a periodic review that is essential towards ensuring the relevancy and sustainability of the programme.

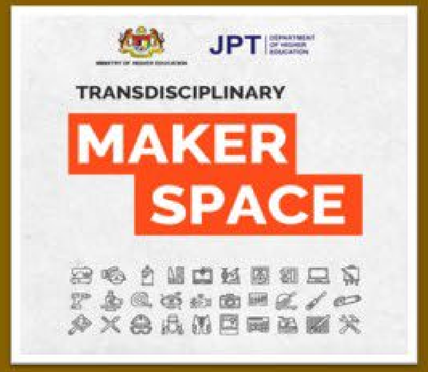
Summary

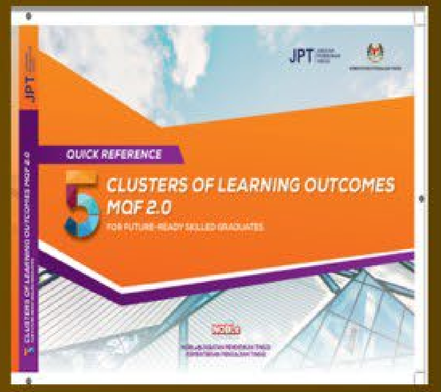
As educators, we need to remain vigilante not only in terms of content but also of changing times. The fluidity of the teaching and learning process allows for the creativity of approaches in efforts to inspire learners in their learning.

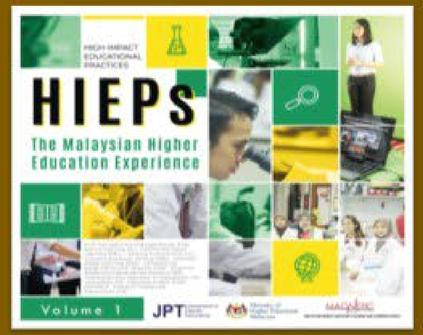
Moving forward, it is hoped that this book on teaching and learning will bring educators up to date with current practices and demands of the changing technological influenced educational ecosystem.

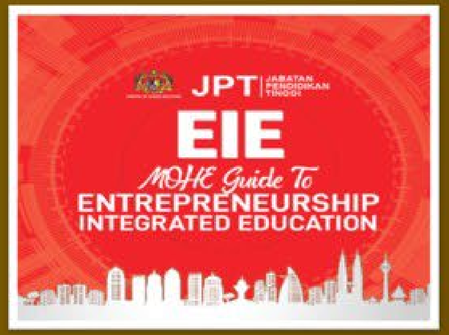
ACADEMIC EXCELLENCE PUBLICATIONS

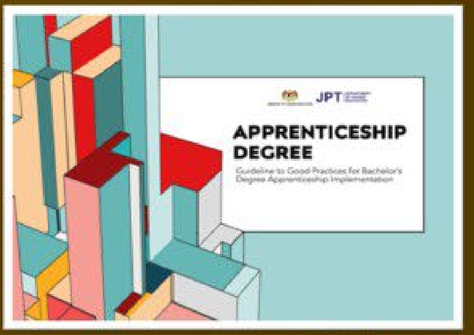












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