Agensi Kelayakan Malaysia
Malaysian Qualifications Agency

GUIDELINES TO GOOD PRACTICES:
ASSESSMENT OF STUDENT LEARNING

Guidelines to Good Practices: Assessment of Student Learning
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FOREWORD

The Malaysian Qualifications Agency (MQA) has published numerous quality assurance documents, such as the Malaysian Qualifications Framework (MQF), Code of Practice for Programme Accreditation (COPPA), Code of Practice for Institutional Audit (COPIA), Code of Practice for TVET Programme Accreditation (COPTPA), Code of Practice for Programme Accreditation: Open and Distance Learning (COPPA: ODL), Standards, Programme Standards (PSs), and Guidelines to Good Practices (GGP), to ensure that the programmes offered by the Higher Education Providers (HEPs) in Malaysia meet international practices. It is imperative that these documents be read together with this GGP for the assessment of students learning.

This GGP outlines sets of characteristics that describe the minimum levels of acceptable practices and are divided into areas:

a. Part 1: The Overview of Assessment in Higher Education;

b. Part 2: Assessment of Students' Learning;

c. Part 3: Assessment Management;

d. Part 4: Assessment in Diverse Contexts; and

e. Part 5: Communicating Assessment and Outcomes.

Accordingly, the GGP covers different levels of standards leading to the award of individual qualifications prescribed in the MQF 2nd Edition (2018), ranging from the level of certificate (Level 3, MQF) to the level of Doctoral Degree (Level 8, MQF).

This GGP was developed by the MQA in collaboration with the Ministry of Higher Education. It represents the significant contribution of the panel members from both public and private HEPs, and in consultation with various HEPs, relevant government and statutory agencies, industries, alumni, and students through stakeholder workshops and online feedback. The GGP developed reflects national and international best practices to ensure programme development from the HEPs in Malaysia is on par with those in other countries.

This GGP encourages diversity and allows programme providers to be innovative in creating their niches. HEPs should ensure that they produce graduates that meet the current and future needs of the industry, and at the same time, fulfil their obligations to society. Among others, this document includes statements of types of assessment in various contexts, which are intended to give clarity and are not intended to be adopted in a verbatim manner.

The MQA would like to express its appreciation to all the panel members and various stakeholders for their valuable input, as well as to all MQA officers who contributed to the development of this GGP for Assessment of Student Learning. It is hoped that this GGP is beneficial to different stakeholders for the development of the competencies required of our students, for both job and higher education prospects.

Dato' Prof. Dr. Mohammad Shatar bin Sabran (DIMP, DPMP)
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Malaysian Qualifications Agency
November 2023

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GLOSSARY

No	Term	Explanation
1.	Alternative Assessment	Alternative assessment is an assessment other than the paper and pencil tests of examination. Alternative assessment has elements of being holistic, authentic, collaborative, and related to the world and has the potential to provide meaningful and ensuring ways of learning. Note: Refer to this link for relevant publications related to JPT, MoHE initiatives https://jpt.mohe.gov.my/portal/index.php/ms/penerbitan?start=10. Related to GGP:AoSL is Ebook on Alternative Assessment in Higher Education and Ebook on NOBLe.
2.	Analytic Judgement/Grading	Judgement is based on specific assessment tasks. This can be part of the judgement made in measuring or evaluating the performance quality of students and programmes.
3.	Assessment	Assessment is the systematic process of documenting and using empirical data on the knowledge, skills, attitudes, and beliefs to refine programmes and improve student learning. Assessment can focus on the individual learner, the learning community (class, workshop, or other organised groups of learners), a course, an academic programme, the institution, or the educational system. It is a systematic and cyclical way to improve the quality of students' performance and development by continuously collecting, analysing, and discussing direct and indirect data and evidence of students learning from multiple and diverse sources. Its purpose is to have a deep understanding of what the students really know and can do and to provide feedback to improve students' learning, educators' teaching (feed-forward), curriculum planning, and the overall programme's effectiveness. The data collected in assessments is used by students, educators, curriculum planners, and administrators to promote student learning and is not meant to make judgements.

4.	Assessment Data	Assessment data can be obtained from directly examining student work to assess the achievement of learning outcomes or can be based on data from which one can make inferences about learning.
5.	Assess Forward	This concept is used in the document to indicate the opposite of the design-backwards concept when designing a curriculum. It refers to the process of collecting data starting at the classroom level and proceeding to the course level. Eventually, the data becomes part of the evidence required in determining students learning, leading to improved/modified instructional approaches and improving the effectiveness of a programme and the institution.
6.	Assessment Method	Assessment methods define the nature of the assessor's actions and include examining, interviewing, and testing in a structured or self-paced mode. The ‘examine' method is the process of reviewing, inspecting, observing, studying, or analysing one or more assessment objects, i.e., specifications, mechanisms, or activities. The assessment methods are simply the ways and strategies to collect data. It can be classified into four categories: i. Selected Response & short answer; ii. Constructed or Extended Written Response; iii. Performance Assessment; and iv. Personal Communication. This can be done in a formal or informal engagement.
7.	Assessment Instruments/Tools of Measurement	The measuring device is used for learners to qualitatively and quantitatively provide direct and indirect evidence of learning and for educators, curriculum designers, and administrators to collect direct and indirect evidence of students learning gains and overall students' learning experiences. This device must be constructively aligned with the learning outcomes (valid). By using appropriate assessment criteria, the device can

		provide highly accurate (reliable) data related to learning outcomes, attainment, and achievement. Different measuring devices (belonging to any of the assessment methods) will be required to collect data dealing with different and varied learning outcomes. Alternative assessment tools for measurement can include a checklist, rubric, interview or observation protocol, and anecdotal records as an instrument to measure learning.
8.	Assessment Item	The questions or statements are constructed in an assessment instrument that will allow students to directly or indirectly demonstrate how much and how well they know, understand, and can transfer what they know to various authentic contexts.
9.	Assessment Task (AT)	An assessment task is a specific work (performance or product) given by educators to students, allowing them to show how much and how well they have mastered the learning outcomes. The task is given using an appropriate and aligned assessment instrument. It must be integral to the attainment of learning outcomes, provide explicit instruction and information about what students are required to do, inform the learner about the amount of time appropriate to complete the task, and provide clear and explicit scoring/assessment criteria and benchmark standards. Results from this task can be used to improve students' learning, measure their performance, make judgements about achievement, and assess programmes' effectiveness.
10.	Classroom Assessment	Classroom assessment is a form of continuous evidence collection that is usually done during face-to-face learning activities. Classroom assessment aims to diagnose existing learning barriers and identify students' progress in attaining the learning outcomes. This evidence is used by educators to address the existing barriers and promote student learning by changing or adjusting the classroom instructional strategies and delivery system.

11.	Competency	Competency is an underlying characteristic of a person/performer regarding his/her knowledge, skills, and abilities that enables him/her to successfully and meaningfully complete a given task or role.
12.	Constructive Alignment (CA)	Constructive Alignment is an approach to curriculum design in which the teaching and learning activities are designed to maximise (enhance) learning by requiring students to engage and activate the verbs specified in the learning outcomes and for them to activate the same verb in the assessment tasks. The term construct refers to students constructing and structuring their prior knowledge and understanding by giving meaning to what is to be learned. Alignment refers to a learning environment set up by the educators that allows students to meaningfully engage with the action verb of the learning outcomes and engage the same action verb again in the assessment task to solicit how well the outcomes are learned.
13.	Continuous Assessment	Data collection processes are continuously done throughout a course, module, or programme to gather evidence of learning to improve learning, modify teaching, and adjust the curriculum design. It also includes data gathering that is used to assess how well courses offered by the programme support attainment of the Programme's learning outcomes. Examples of Continuous Assessments: alternative assessments, lab- or workshop-based tasks or assignments, midterm examinations, tests, and quizzes.
14.	Continuous Quality Improvement	Continuous Quality Improvement (CQI) in assessment establishes the monitoring metrics to evaluate improvement efforts and outcomes routinely and ongoing for students' performance. It is meant to improve efficiencies in processes, communication, the quality of delivery of the required assessments, and the body of knowledge implemented in the courses.

		For **Continual Quality Improvement**, please refer to GGP: PDD, and COPPA (Area 7)
15.	Course Learning Outcomes (CLOs)	The CLO is intended or desired learning gains in terms of i. Declarative knowledge (factual, conceptual, procedural), ii. Functional knowledge (knowledge transfer), iii. Metacognitive knowledge, iv. Cognitive skills, v. Practical skills, vi. Habits of mind, vii. Performance, and viii. ways to respond to events and people as a result of the learning experiences in the course/module. It contains the measurable action verbs, the substance/content to be learned, and the targeted competency level.
16.	Coursework Assessment	The conventional continual content-based data collection process and analysis, such as testing, writing, presenting, or performing, are used to evaluate students' performance and how well they have learned the content, which can also be used as part of the learning outcomes attainment. The score/grade contributes towards the final grade.
17.	Criterion-referenced Assessment (CRA)	It is a method of assessment in which a person's grade, or score is compared to their learning standard and performance level, independent of other students.
18.	Design Backward	An approach to curriculum design that begins with the goals in mind. The goals begin with crafting the programme aim (purpose and justification to offer the programme and the adopted philosophy) that support the attainment of the country’s and university's mission. Once this aim is agreed upon, programme designers then craft the programme educational objectives (PEO) that will be used to support the attainment of the programme aim.

This is followed by deciding on the programme learning outcomes (PLOs), the performance criteria, the performance and outcome indicators, and the target intended for each PLO.

Students' development and assessment towards being competent for each PLO are then nurtured by planning an appropriate combination of courses to be taken each semester, appropriate course learning outcomes (CLOs), and relevant course content for each course.

19. Direct Evidence — Evidence is collected and analysed to demonstrate that actual learning has taken place.

It informs students, educators, and other stakeholders of the depth, breadth, and performance quality (what, how much, and how well) that students have gained in terms of the relevant knowledge, understanding, skills, habits of mind, and ways of responding to people and situations. Such evidence of students' learning may also include their performances and grades.

20. Evaluation — Evaluation is the process of using the evidence collected through assessment to make a value judgement on students' performance and programme performance relative to the benchmark standards specified by the learning outcomes' performance criteria and performance target.

For example, assigning a score/grade to an assessment task for a course and deciding on the students' next course of action or the programme's course of action is considered evaluating the student or the programme.

21. Formative Assessment — Learning activities that are carried out to find out the level of achievement based on the learning outcome.

It focuses on providing feedback (with/ without giving scores/marks) to students for improvement, unlike the scores/marks given in summative assessment, which determines students' overall performance.

Formative assessment is a form of low-stakes assessment for FOR and AS learning and is part of the instructional process. It is about continuously collecting data as learning is in progress.

		In this sense, formative assessment informs both educators and students about student understanding at a point when timely adjustments can be made. These adjustments help to ensure students achieve the targeted learning outcomes within a set time frame. Formative assessment, formative evaluation, formative feedback, or assessment for learning, including diagnostic testing, is a range of formal and informal assessment procedures conducted during the learning process in order to modify teaching and learning activities to improve student attainment. The goal of a formative assessment is to monitor student learning and provide ongoing feedback that can help students identify their strengths and weaknesses and target areas that need work. It also helps faculty recognise where students are struggling and address problems immediately. It typically involves qualitative feedback (rather than scores) for both students and educators that focuses on the details of content and performance.
22.	Functional Graduates	Graduates who are competent and are able to persistently, responsibly, and ethically transfer their knowledge, understanding, skills, and abilities to identify and solve ill-defined, complex, and difficult problems in their personal, social and professional journeys.
23.	Grading Criteria	This concept is used when making judgements on the quality of the performance of assessment tasks or learning outcomes. Grades are usually based on either indirect grading of learning outcomes (analytical judgement of the assessment task aligned with the learning outcomes) or direct grading of the learning outcomes (holistic judgement). Performance quality for each grade is clearly described in the criteria.
24.	Graduate Attributes	Graduate attributes are the learning traits and characteristics that are relevant and appropriate to the graduate's personal, social, and professional role in life. These attributes are clearly indicated in the Malaysian Qualification Framework 2.0

25.	High-Stake Assessment	High-stake is a conventional method of assessment that has significant consequences or impact on individuals, based on their performance. It is usually conducted in a controlled area like examination halls and most likely uses a written-based type of examination, where examination has undergone rigorous development, validation, and security measures to ensure fairness and accuracy. It enables students to demonstrate competencies, strengths, and the synthesis of course outcomes across the full course.
26.	Holistic Judgement	Judgement that defines the performance quality and standard by combining all the performances solicited by assessment tasks.
27.	Indirect Evidence	Indirect evidence is evidence or data collected for the purpose of seeking students' perceptions of their learning and their learning experiences. Examples include: Programme entrance and exit surveys, student interviews (e.g., graduating seniors), and alumni surveys.
28.	Learning Taxonomies	A classification system dealing with varying degrees of cognitive complexity, skill complexity, and the complexity of the value system adopted when acting or responding to people, events, and environments.
29.	Lesson Learning Outcomes (LLOs)	These are the outcomes to be achieved upon completion of a lesson. The lesson outcomes are systematic formative measures for developing students' attainment of the CLOs.
30.	Measurement	Measurement is used to provide a score as a product of measuring and quantifying tangible and intangible attributes and/or learning outcomes. The measuring tools used are those described in the assessment instruments section.
31.	Norm-referenced Assessment (NRA)	Norm-referenced assessment is an assessment approach where students' grades are determined by comparing their performance to other students' performance based on the normal bell-shaped curve.
32.	Outcome/Performance Indicators	See Performance Criteria/indicators.

33.	Outcomes-Based Assessment (OBA)	It is an integrated, valid, reliable, fair, continuous (rather than continual and judgmental testing), and aligned approach to collecting evidence of students learning for the purpose of improvement by focusing more on formative assessment and providing timely feedback. It considers student diversity and employs multiple and diverse assessment methods. It is criterion-referenced where the learning outcomes and the benchmark standards become the assessment criteria when judgement is made at the end of a course or at the end of a programme.
34.	Outcomes-Based Education (OBE)	An approach to education that begins with clearly focusing on high-quality, culminating demonstrations of significant learning in context and organising everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. This means starting with a clear picture of what is important for students to be able to do, then organising the curriculum, instruction, and assessment to make sure this learning ultimately happens to all students.
35.	Outcomes-Based Grading (OBG)	An approach to making judgements on students' performance quality in a course based on how well they have attained the learning outcomes. Course grades are assigned based on either indirect and analytical grading of assessment tasks aligned to the learning outcomes or direct and holistic grading of the learning outcomes.
36.	Peer Assessment	Peer assessment involves students being responsible for making assessment decisions and judgements on other students' work. It is an important part of formative assessment that should take place, especially in group work, where it becomes a way in which the group assesses itself. This form of assessment assists students' reflections and helps the group members understand that the decisions they make regarding the quality of their work are their own and that they should take responsibility for improving their work.

As with any responsibility, the skill of peer assessment should be further developed incrementally (step-by-step) by the educator.

37. Performance Assessment

An assessment method that uses student activities or products, as opposed to tests or surveys, to evaluate students' knowledge, skills, and development.

Instruments include essays, oral presentations, exhibitions, performances, and demonstrations.

Examples include:

i. reflective journals (daily/weekly).
ii. capstone works and experiences.
iii. demonstrations of student work (e.g., acting in a theatrical production, playing an instrument, observing a student teaching a lesson);
iv. products of student work (e.g., Art students produce paintings/ drawings,
v. Journalism students write newspaper articles,
vi. Geography students create maps,
vii. Computer science students generate computer programmes.

38. Performance Criteria / Indicators

Performance criteria or performance indicators are specific, measurable statements identifying the specific knowledge, skills, attitudes, and/or behaviours students must demonstrate as indicators of achieving the outcomes.

Performance criteria are statements that define learning outcomes and enable faculty to measure student competency.

Each performance criterion must also specifically describe an acceptable level of measurable performance. For performance criteria that are not directly assessable, indirect indicators of performance can be identified.

39. Performance Target

Specifies the threshold score and the threshold frequency to indicate the effectiveness of a programme.

For example, an indicator that the programme is effective in achieving programme learning outcomes related to acquiring and applying of knowledge and understanding is by targeting that 60% of the students score 70 or more in a programme exit examination.

Another example could be to target 80% of the students who indicated a score of 4 or higher on the Likert scale in a programme exit survey to indicate effectiveness on programme learning outcomes related to lifelong learning.

40. Portfolio — An accumulation of evidence about individual proficiencies, especially in relation to the performance criteria for each of the programme learning outcomes.

Examples include, but are not limited to:

Samples of student work include artworks, multimedia projects, journals, exams, papers, presentations, videos of speeches, and performances.

41. Rubrics — A scoring/grading tool that contains a list of criteria and benchmark standards and is used to score or grade assessment tasks or learning outcomes.

Descriptors of the performance quality from the highest quality to the unacceptable quality for each criterion or for each learning outcome will guide both the students in identifying their shortcomings and the educators in reliably scoring and grading the performance/product.

42. Self-assessment — Self-assessment is a learning experience that involves the student understanding assessment criteria and enabling them to take responsibility for making judgements about their own learning. This gives the learners the opportunity to reflect on what they do.

Students best benefit from the use of logs, diaries, and digital recording devices to record their thoughts on the quality of their work so that they can improve themselves.

43. Soft Skills — The generic skills or attributes that employers value and that students require in their professional and societal engagement.

		Examples include the ability to communicate, manage information, manage time, manage resources, engage harmoniously with others, provide leadership, and become responsible and active team members.
44.	Student-Centred Learning (SCL)	Learning environments and approaches that focus on students. This means knowing about learners learning preferences, intelligences, existing knowledge, interests, listening and writing skills, family and cultural background, and other relevant information that can become a barrier to learning or that can enhance their learning and the learning of others in the learning community. Instructional approaches employed in developing their potential must be balanced and diverse to cater to the diversity of learners.
45.	Summative Assessment	Summative assessments are used to evaluate student learning, skill acquisition, and academic achievement at the conclusion of a defined instructional period, typically at the end of a project, unit, course, semester, programme. It is periodically determined at a particular time what students know and do not know related to the content standards. Assignments are presented to students at a specified period throughout the curriculum delivery process. It aims to measure and evaluate students' overall achievement, based on the goals of learning outcomes with grades/scores, which are given to evaluate their performance. It also links to accountability purposes in the summative assessment methods, which have high stakes, which means they have a high point value. The results are usually defining; for instance, they can determine whether a student passes the course, gets a promotion, or secures admission. The goal of summative assessment, usually found in high-stakes examinations is to measure the level of success, performance quality, proficiency, or how well students have achieved the learning outcomes at the end of an instructional unit or a course/module/programme by comparing them against some standard or benchmark.

46.	Test	A test is a sample of items or constructs that measure performance in a specific domain.
47.	Type of Assessment	Generally, various types of assessment typically include: i. Formative ii. Summative iii. Diagnostic iv. Interim/benchmark v. Norm-referenced vi. Criterion-referenced
48.	Weightage	A quantitative way of assigning the significance or weight of a learning outcome in a list of learning outcomes for a course/module. Generally, the weightage is determined by taking into consideration the number of teaching hours spent covering each course learning outcome divided by the total teaching hours before finding its percentage. This weightage indicates how essential the learning outcome is and how the impact of the way the final grade for a course/module is determined in view of the course learning outcomes.

ABBREVIATIONS

AT	Assessment Task
APEL	Accreditation of Prior Experiential Learning
APEL.A	Accreditation of Prior Experiential Learning for Access
APEL.C	Accreditation of Prior Experiential Learning for Credit Award
APEL.M	Accreditation of Prior Experiential Learning for Micro-credentials
APEL.Q	Accreditation of Prior Experiential Learning for Award of Academic Qualifications
CA	Constructive Alignment
CLO	Course Learning Outcomes
COPIA	Code of Practice for Institutional Audit
COPPA	Code of Practice for Programme Accreditation
COPPA:ODL	Code of Practice for Programme Accreditation: Open and Distance Learning
COPTPA	Code of Practice for TVET Programme Accreditation
CPD	Continuing Professional Development
CQI	Continual Quality Improvement
ELT	Effective Learning Time
EXCEL	Experiential Learning and Competency-Based Education Landscape
GGP: PDD	Guidelines for Good Practices: Curriculum Design and Delivery
HEIPs	High Impact Educational Practices LMS Learning Management System
LLO	Lesson Learning Outcomes
LOC	Learning Outcomes Cluster
LOD	Learning Outcomes Domain
MMS	Malaysian Micro-credential Statement
MOHE	Ministry of Higher Education
MOOC	Massive Open Online Courses
MQF	Malaysian Qualifications Framework

NOBLe	National Outcomes Based Learning
OBA	Outcomes-Based Assessment
OBE	Outcomes Based Education
OSCE	Objective Structured Clinical Examination
ODL	Open and Distance Learning
PBL	Problem-Based Learning
PEO	Programme Educational Objective
PIAAC	International Assessment of Adult Competencies
PLO	Programme Learning Outcomes
SIM	Self-instructional Material
SLT	Student Learning Time
SOLO	Structure of Observed Learning Outcomes
TnL	Teaching and Learning
TOS	Table of Specifications
TVET	Procedure Technical and Vocational Education and Training
SDG 4	UNESCO’s Sustainable Development Goal 4
WBL	Work-based Learning

INTRODUCTION

A guideline for the establishment of good practices is essential, especially in ensuring the provision of quality in higher education. The guideline of good practice for assessment of students' learning provides fundamental understanding in assessing students following basic principles. This includes ensuring fairness, relevance, and grounded ethical values that uphold integrity, validity, and reliability. This guideline has been developed with the vision and mission to benefit higher education providers (HEPs) in implementing assessment.

Vision

Ensuring that HEPs are well informed with basic understanding of assessing students' learning, which is key to confirming that learning has taken place. It is envisaged that a clear understanding of the basic principles of assessing students will help HEPs provide quality education in light of the aspirations of the nation.

Mission

Providing a comprehensive guideline that gives room for future development on assessment in higher education.

PART 1
THE OVERVIEW OF ASSESSMENT IN HIGHER EDUCATION

Assessment, whether done informally or formally, is a human activity that involves interaction when feeding descriptive feedback for learners' improvement.

When numbers are assigned to measure learning during an assessment, the scores can be used as an evaluation to form a judgement, to see whether the learning that has taken place is satisfactory based on the standard set.

Various considerations govern the principles of assessment, including equity, fairness, validity, reliability and feasibility as well as free from bias, with clarity in measurement and the tool of assessment, to measure the outcomes stipulated.

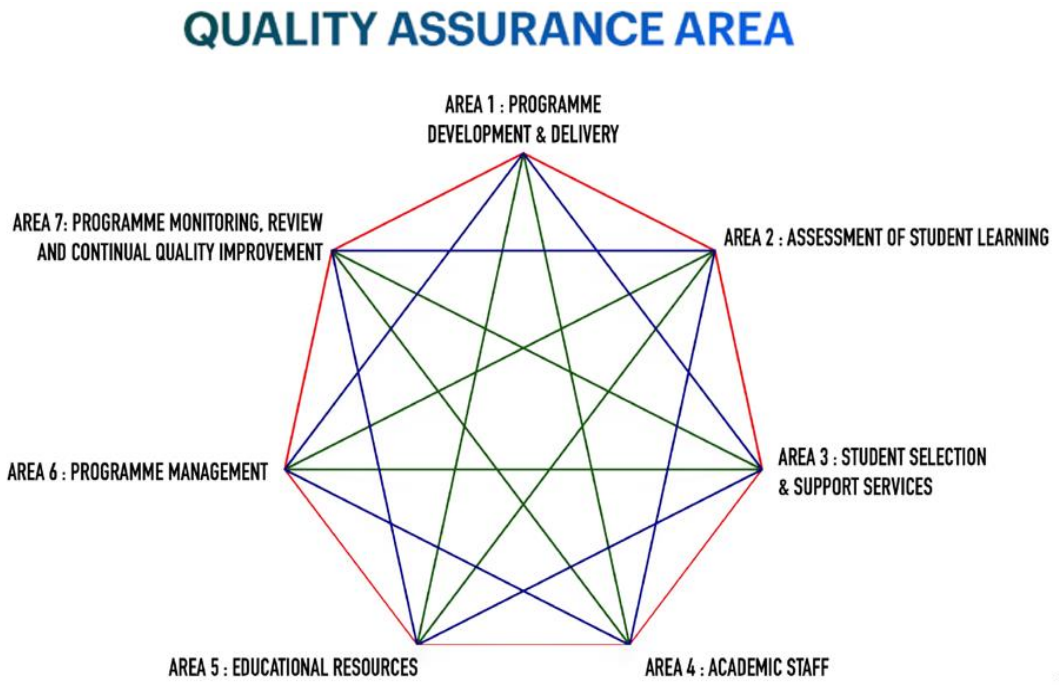
The fundamentals of assessment in outcome-based education require an approach that stresses the notion of beginning with the end in mind since assessment drives learning.

In facing the challenges of the volatile, uncertain, complex, and ambiguous world while adapting to the constant changes of the industrial revolution, assessment in education must also be revisited.

Assessment must be expanded to not only include the conventional method of assessment, which usually comes in the form of a pencil/pen and paper test, or also known as high-stakes assessment, but also to include various alternative ways of assessing in a meaningful, exciting, and authentic way in real-world contexts.

Therefore, the revised version of the 'Guidelines to Good Practices: Assessment of Students' Learning (GGP: AoSL) is a document developed to assist Higher Education Providers (HEPs) in meeting the standards on the item in the GGP: AoSL, marked as Area 2 of the Code of Practice for Programme Accreditation (COPPA), Code of Practice for Programme Accreditation: Open and Distance Learning (COPPA:ODL), Code of Practice for TVET Programme Accreditation (COPTPA) and the Code of Practice for Institutional Audit (COPIA).

Figure 1: The Seven Areas of the COPPA 2nd edition (MQA, 2017)



COPPA is concerned with the practices of HEPs in curriculum design and delivery, while COPIA is primarily concerned with institutional processes applied in curriculum development and delivery.

The second edition of the COPPA, which also relates to and is mapped to standards for diverse programmes and themes, namely open and distance learning (COPPA-ODL) as well as technical and vocational education and training (COPTPA), provides the need to address issues with regards to management and assessment in these diverse contexts.

For both reviews towards programme accreditation and institutional audit, it would be the assessors' concerns on the procedures and practices adopted by the institutions in the areas covered by the Codes and whether these match the provisions of the Codes.

In addressing the needs of the ever-changing context of the learning environment, programmes, and diverse learners, there would be a need to consider various ways of assessment relevant in different areas, such as Area 1 based on the programme design and delivery and Area 7, which relates to the continuous quality of improvement for the course(s) that have relevance to the programme.

HEPs are discouraged from simply copying the guidelines and samples/examples given in the document or appendices. Instead, HEPs must strive to understand and develop their curriculum design, delivery processes, and assessment to best fit the needs and requirements of HEPs and its students.

The GGP: AoSL is premised on the fact that assessments are paralleled with students' learning.

Furthermore, research (see, for example, Biggs, 2003) suggests that assessment drives student learning and directly influences students' approaches to studying.

For example, if assessment tasks for a particular programme and course require students to reproduce or regurgitate information, students will study only to reproduce information.

Figure 2: Assessment of Learning & Teaching Activities

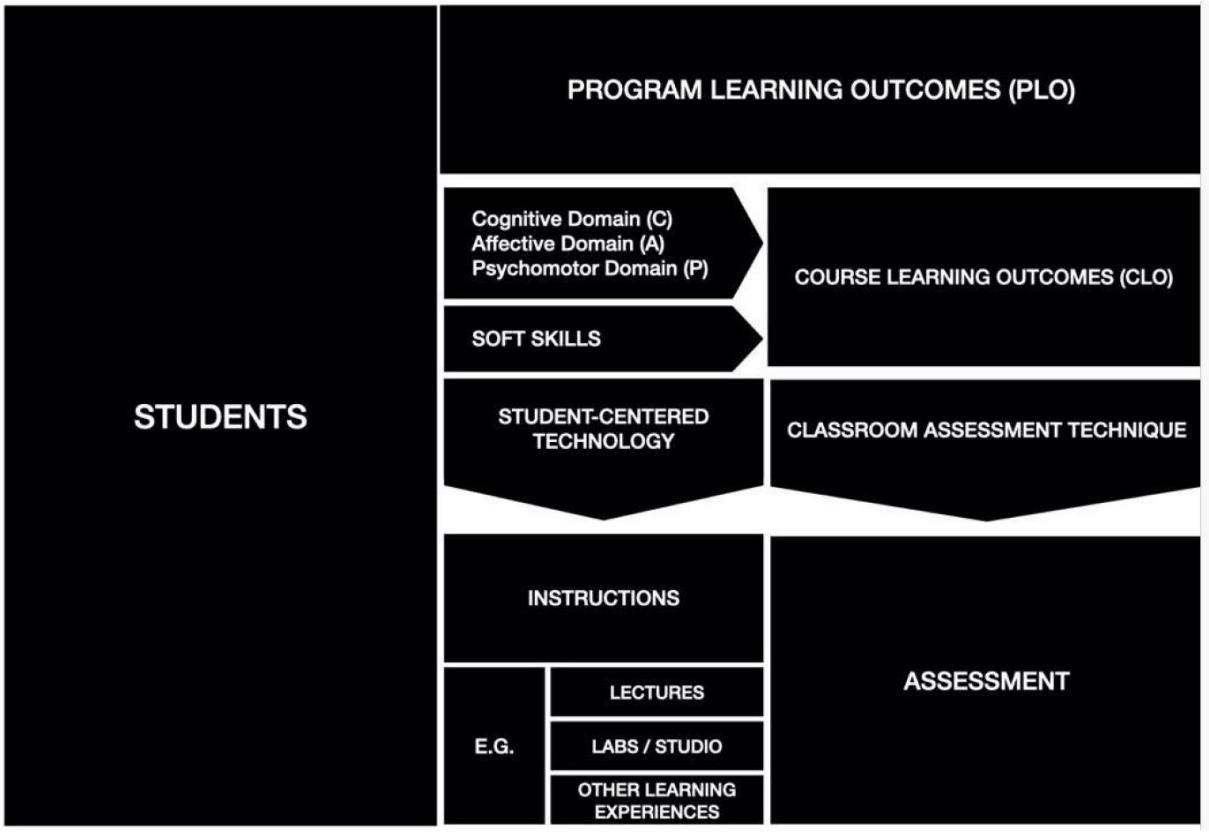


Figure 2 shows the role of assessment in learning and teaching activities in the attainment of outcomes. Since assessment is an integral part of the learning and teaching process, the assessment methods or outcome indicators employed must be constructively aligned with the Programme Learning Outcomes (PLOs) and Course Learning Outcomes (CLOs).

Ensuring this alignment will encourage students to take learning approaches that will result in the achievement of the CLOs and hence assist in the attainment of the PLOs.

This document covers the following areas, which are divided into parts:

i. The Overview of Assessment in Higher Education (Part 1);
ii. Assessment for Students' Learning (Part 2);
iii. Assessment Management (Part 3);
iv. Assessment in Diverse Contexts (Part 4) and
v. Communicating Assessment and Outcomes (Part 5).

Part 1 introduces the notion of assessment and the document.

Parts 2 and 3 provide a fundamental understanding of the alignment of learning outcomes in assessments as well as managing assessments that can be carried out.

Part 4, which is an added component to the GGP: AoSL, ascertains various possible contexts for assessment.

This is followed by Part 5 as the concluding part, which relates to how information about students' assessment and their learning can be communicated to them and other various stakeholders to ensure continuous quality improvement can be made for further development.

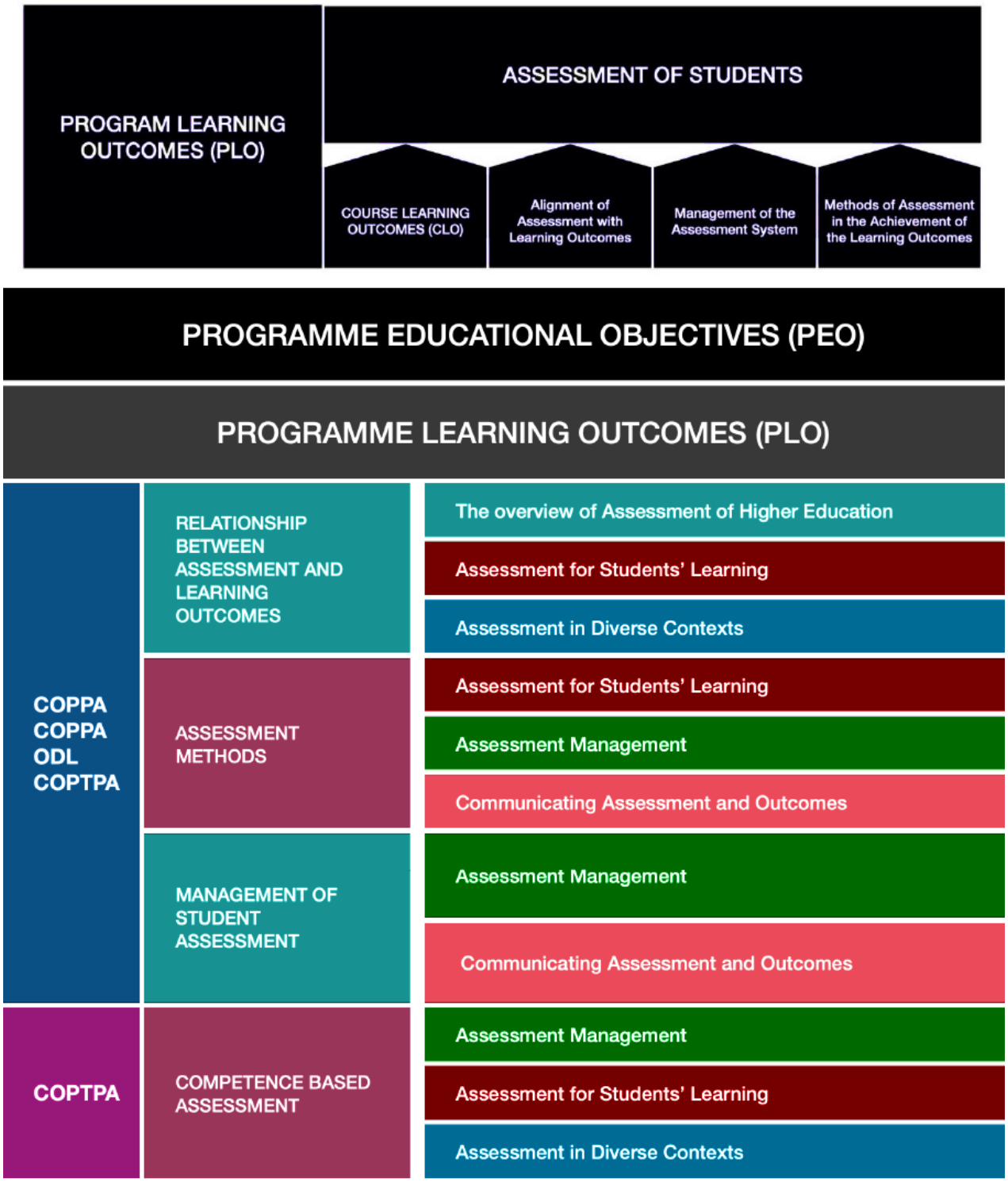
The glossary provides not only the basic terms used in the document but also a brief explanation of these concepts.

Figure 3 shows the relationship between the assessment of students' learning and the attainment of CLOs and PLOs as the means to support the attainment of the Programme Educational Objectives (PEO).

It indicates the need to align assessment methods with the attainment of the learning outcomes (LO) and the need for a systematic student assessment process within the institution in diverse contexts and communication for improvement.

The discussion provided in the five parts of this document addresses Area 2 of Code of Practices Assessment of Student Learning, as illustrated in Figure 3.

Figure 3 :Assessment of Students' Learning and the Structure of the Guidelines



PART 2
ASSESSMENT OF STUDENTS' LEARNING

An Outcomes-Based Assessment is criterion-referenced, where the LOs are the criteria to be assessed. In other words, the process of grading a course is done based on evaluation of student learning against a set of predetermined criteria. This contrasts with norm-referenced assessment, where students' achievements are compared with those of others. Thus, OBE requires academic staff to focus on the achievement of CLOs based on the pre-determined criteria.

Outcomes-Based Assessment (OBA) involves choosing assessment tasks or instruments that are constructively aligned with the attainment of the LOs. It also means choosing assessment methods and tasks that will support learners in their learning progress and that will validate their achievement of the LOs at the end of the learning.

OBA is a systematic assessment approach to find out how well students attain the intended CLOs and PLOs. The assessment of students' learning involves collecting evidence of outcome attainment both at the course and programme level. Evidence gathered through OBA is used to judge how well the criteria specified by the LOs are attained. The attainment of the CLOs is used to infer the attainment of the specific PLO in the programme. Hence, students should be informed of their PLO attainment in each semester to allow them to work on areas that need improvement.

Assessment is the process of finding evidence that the LOs, which are the minimum performance or competence level, have been achieved when students have successfully completed a certain course or graduated from a particular programme offered by the HEP.

Assessment, in general, serves the purposes to:

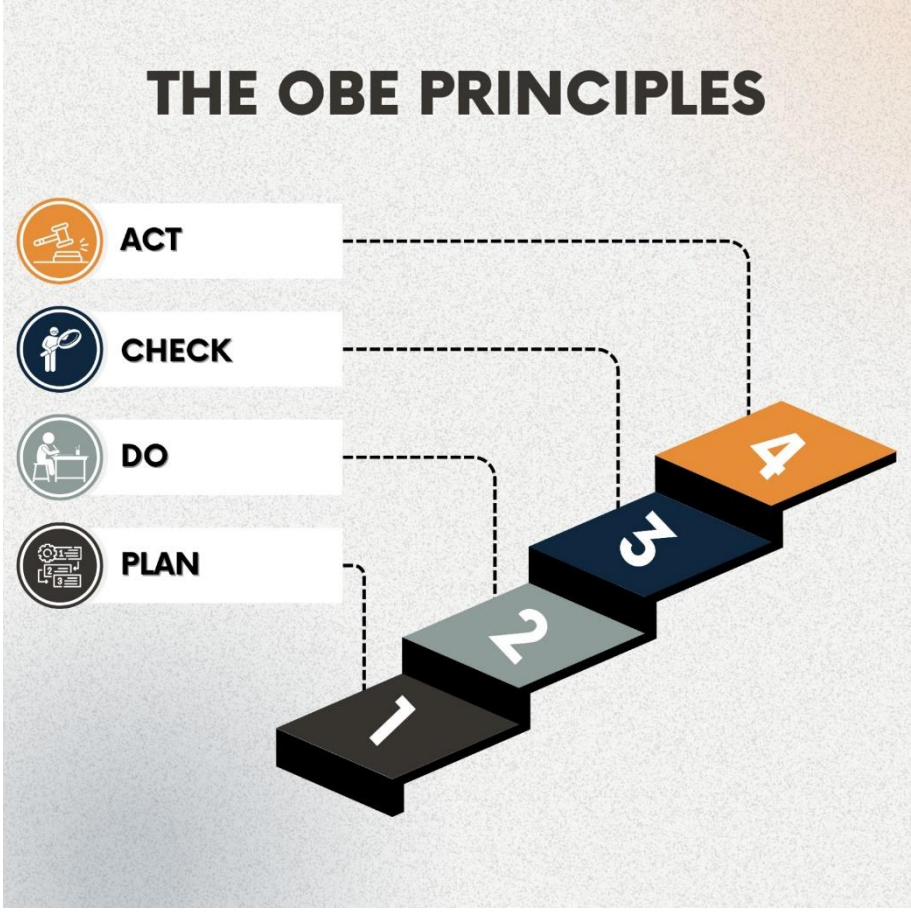
i. promote learning;
ii. measure performance by awarding grades that indicate whether and how well a particular student has attained the stated LOs;
iii. determine whether a particular student is sufficiently well prepared in a subject area to proceed to the next level of instruction;

iv. provide feedback to students that indicates levels of attainment and diagnoses misunderstandings and learning difficulties; and

v. provide feedback to teaching staff to identify and diagnose ineffective teaching methods/techniques.

2.1 NOTION OF ACTIVE LEARNING AND CONSTRUCTIVE ALIGNMENT

Figure 4: The OBE's Principles



It comprises the course assessment plan, its course execution, the required report documentation, analysis of students' performance, and intervention as required.

2.1.1 In completing this process, students' performance reports must be shared with them to ensure that they receive feedback on their PLO attainment, monitor their progress, and take the necessary actions to attain all PLOs upon graduation.

2.1.2 The process of monitoring, evaluating, and analysing is an iterative process as part of closing the loop.

2.1.3 This will also support CQI reporting for each course, thus embracing the OBE implementation. Please refer to the MQA Guidelines to Good Practices: Monitoring, Reviewing, and Continually Improving Institutional Quality.

2.1.4 The implementation of OBE requires active learning and student-centred learning approaches.

2.1.5 Active learning refers to a broad range of teaching strategies that engage students as active participants in their learning during class time with their instructors.

2.1.6 Strategies involve some students working together during class and may involve individual work and/or reflection.

2.1.7 Outside of class time, students continue to be actively engaged in pursuing knowledge and skills.

2.1.8 To ensure the attainment of CLOs, proper assessment planning must be done and meet the principles of constructive alignment.

2.2 CONSTRUCTIVE ALIGNMENT

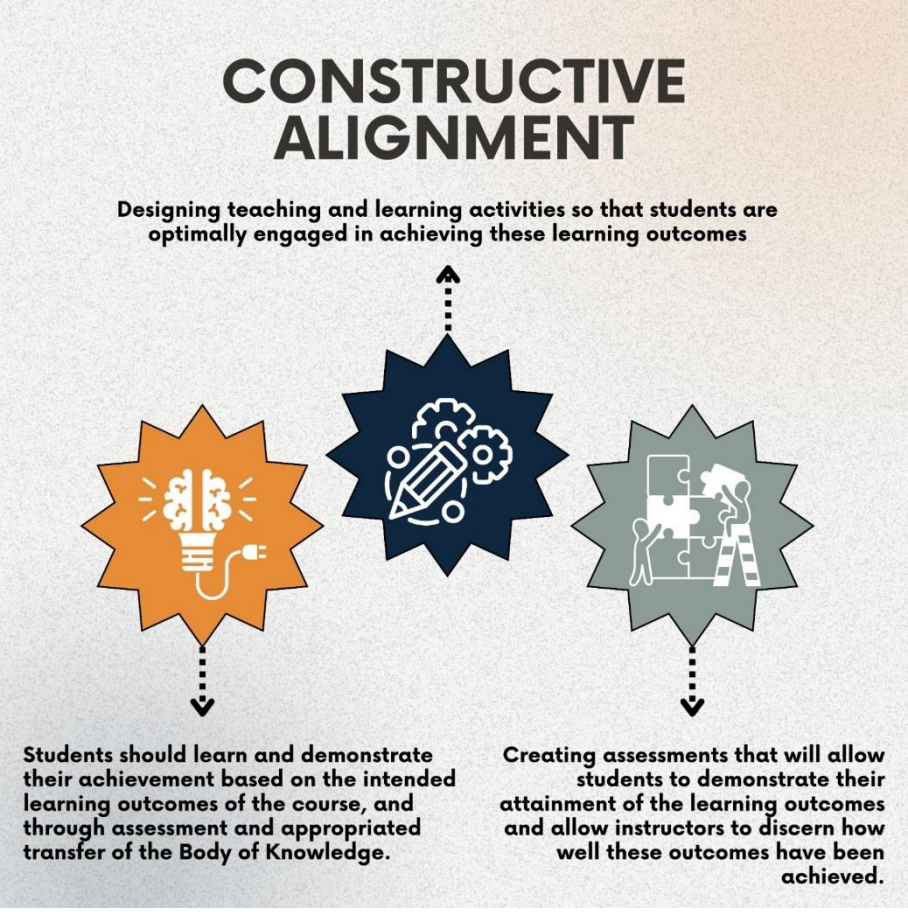
2.2.1 Constructive alignment is a principle used to devise teaching and learning activities and assessment tasks that directly address the learning outcomes intended in a way not typically achieved in conventional lectures, tutorial classes, or assessments.

2.2.2 The term "construct" refers to students constructing and structuring their understanding and personally creating meaning about what is to be learned.

2.2.3 Alignment refers to a learning environment set up by the course owner to allow students to engage with the action verb of the learning outcomes meaningfully and to employ the same action verb again in the assessment task to assess how well the outcomes are learned.

2.2.4 The key is that the components in the delivery of knowledge itself, especially the teaching methods and their suitable assessment tasks, are aligned with the learning activities and the intended outcomes.

Figure 5: Constructive Alignment



2.2.5 Courses generally follow the progression of complexity in abilities (cognitive, psychomotor, and affective) from lower to higher orders.

2.2.6 Assessing students' learning in a course may require varied assessment methods.

2.2.7 The principle of constructive alignment is also applied in assessing other learning outcomes, including PEOs and PLOs.

2.2.8 Referring to Appendix 14, it shows examples of PEOs, PLOs, CLOs, and some constructively aligned assessment methods and indicators. The assessment methods in Appendix 14 are only samples of methods that may be employed to assess students' learning.

2.2.9 The assessment methods chosen must be aligned with the process of finding evidence of the LOs' attainment and must be consistent with the student learning time required to complete the task.

2.2.10 They must also consider practical issues in scoring and providing feedback to promote learning.

2.2.11 Programme learning outcomes (PLO) state what students know and are able to do upon completion of the programme and are derived from MQF 2.0 (2018) LO domains, while outcome indicators are assessment tools used to collect evidence of students' performance and attainment after pursuing a study programme.

2.3 NOTION OF STUDENT LEARNING TIME AND ASSESSMENT

2.3.1 In determining student learning time (SLT) for a course, careful considerations are made about the apportionment of the SLT required to achieve each CLO.

2.3.2 The teaching and learning activities include both guided and non-guided learning. All activities are targeted towards the achievement of the CLOs. Thus, SLT should be the basis for formulating the weightage for assessments to measure the attainment of each CLO.

2.3.3 The weightage of assessment tasks must be proportionate to the emphasis on the CLOs, the learning activities/tasks and the importance of the contents to the CLO attainment.

2.3.4 It is important to note that the weightage must adhere to the stated assessment weighting for the course as approved by an academic committee.

2.3.5 The teaching-learning activities include both guided and non-guided learning.

2.3.6 All activities are targeted towards the achievement of the CLOs.

2.3.7 In the context of OBE, which is designed along a set of predetermined outcomes, it is crucial to link teaching-learning activities to CLOs to allow inferences on students' level of achievement for each CLO and PLO.

2.3.8 The assessment methods are to be aligned to outcomes and instructional delivery as aligned to the learning activities and assessment tasks with the CLOs.

Note: Information on assessment method and SLT based on the course learning outcomes can also be found in HEPs course information provided in Table 4 document (refer to the template provided by MQA), which HEPS provide the summary of the course information. However, Table 1, Table 2 and the exemplar given in Appendix 12 in this GGP, serve merely as an explanation for various components when designing course assessment plan and determining the weightage for assessment.

2.4 ASSESSMENT PLANS

2.4.1 The assessment provides feedback on the degree to which CLOs are achieved.

2.4.2 The LOs for every lesson are mapped to CLOs to contribute to the achievement of one or more of the CLOs.

2.4.3 The topics/contents to be taught are determined based on the lesson LOs to be achieved.

2.4.4 The course instructor must ensure the content assessed represents the course's content.

2.4.5 HEPs may adopt different methods in which determining the manner in the assessment task or examination meets the CLOs.

2.4.6 The template and requirements for the assessment plan may vary across HEPs, but it should be able to illustrate the overall assessments planned to meet the CLOs.

Table 1: Description of Course Assessment Plan

CLO	CLO statement	Taxonomy domain	PLO	Topics/ Content	Contact hours	Teaching and learning method	Assessment methods	Weightage
CLO 1	i	ii	iii	iv	v	vi	vii	viii

Description:			
i	CLO statement that is part attributed towards the PLO; contains the objective of the course's learning outcomes with the appropriate level of verbs that formulates the needed resources, manpower, reading materials. Contact hours for teaching and learning, and the manner of assessment.	v	Contact hours needed to complete the CLO.
ii	The cognitive/affective/psychomotor level	vi	The manner of knowledge/skill transfer (lectures/tutorials/workshop/lab works, etc.) and the mode of delivery: conventional/online/hybrid.
iii	The PLO identified based on the MQF 2.0 (2018) which the CLO's objective would contribute towards the achievement.	vii	Assessment appropriated to measure the CLO to ascertain the evidence in the learning of the topic/content.
iv	Topic and content as reflected in the needed Body of Knowledge.	viii	Commonly measured in percentage to ascertain the needed values to complete the CLOs (please refer to the glossary).

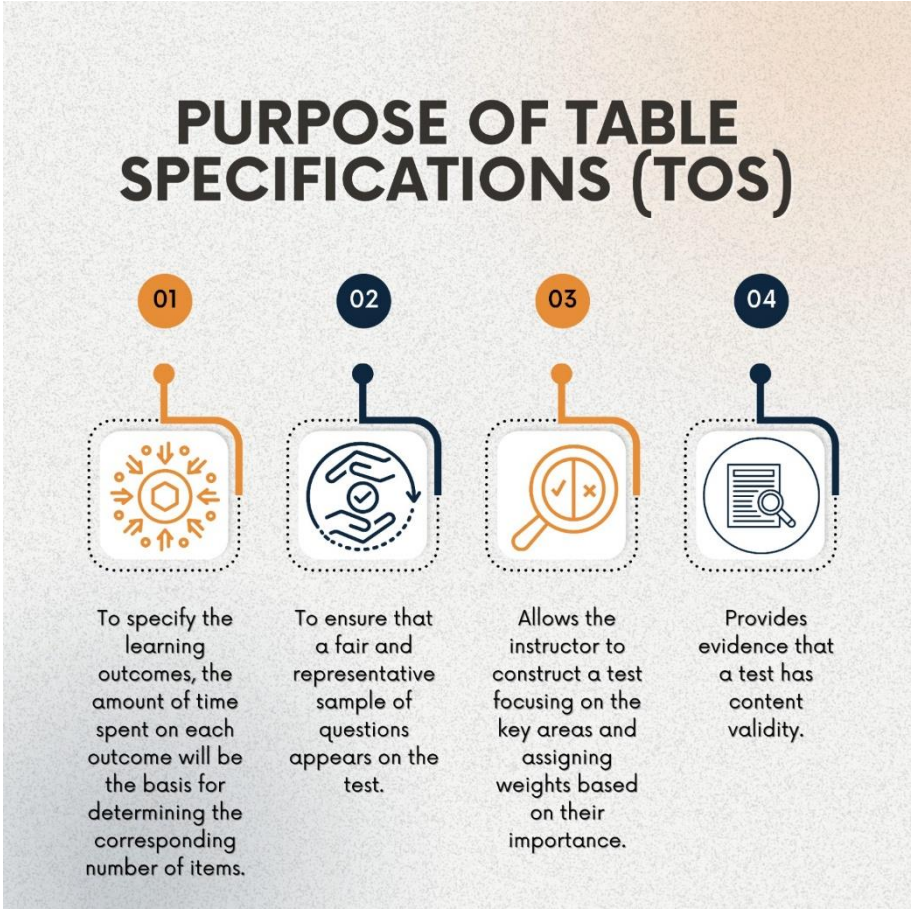
Table 2: Example of ToS Aligned Course Assessment Plan

CLO	COURSE LEARNING OUTCOMES (CLOs)	TAXONOMY DOMAIN	PLO	TOPICS/ CONTENT	CONTACT HOURS	TEACHING AND LEARNING METHOD	ASSESSMENT TASK (%)			SPECIFIC TASK RELATED TO MOHE/MQF 2.0 (2018)
							Case Study	Portfolio	Final Examination	
1.	Discuss the concept, principles, issues and challenges in visual art assessment and evaluation.	C5	2	*List of topics related to the CLO*	21	Interactive Lecture/Cooperative and Collaborative Learning	20%		30%	Case Study (20%) Marks for case study is to deliberate and analyse the issues, trends and challenges related to visual assessment and evaluation from pre-school until higher learning education. Final Examination (30%) factual testing.
2.	Evaluate strategy and approach in measuring learning outcome through assessment and evaluation.	C5	7	*List of topics related to the CLO*	12.6	Case Analysis	10%		20%	Case analysis (10%) Marks for the case analysis deliberate students' critical evaluation in assessing learning outcome through sample of quantitative and qualitative data according to appropriate process and techniques.
3.	Integrate digital technologies and appropriate software for diagnostic, formative and summative assessment, and evaluation.	A4, P1	6	*List of topics related to the CLO*	8.4	Independent Learning		20%		The use of e-Portfolio as evidence-based by focusing the sub-attribute of new ideas, curation, articulation, tools.

2.5 TABLE OF SPECIFICATIONS

2.5.1 Table of Specifications (ToS) is a tool/document used to ensure that an examination or test measures the contents.

Figure 6: The Purpose of TOS



2.5.2 In planning ToS for a test/examination, CLOs are assessed through the test/examination and the topics covered as indicated in the course's assessment plan.

2.6 ASSESSING LEARNING OUTCOMES

2.6.1 In OBE, a learning outcome contains a verb that signifies the domain and level of the outcome, whether it is cognitive, affective, or psychomotor.

2.6.2 The level of the verb is ascertained according to the taxonomy that is used in the design of the course.

2.6.3 For example, in Table 2 (refer to 2.4), Bloom's Taxonomy is commonly used for the cognitive domain, Simpson's for the psychomotor domain, and Krathwohl's for the affective domain. (Refer to Appendix 1)

2.6.4 HEPs may decide to use any of the taxonomies for cognitive, affective, and psychomotor that carry consistency in the delivery. (refer to Appendix 1 for an example of SOLO taxonomy aligned assessment plan).

2.6.5 While written examination questions can be used as an assessment method, it is not the only approach.

2.6.6 This is especially true for complex skills like those in the MQF 2.0 (2018) Learning Outcomes clusters.

2.6.7 At the same time, to assess using alternative methods, the skills to be assessed should be defined according to how they are used and applied in the course.

2.6.8 To help course owners define the skills to be assessed, the scholarly approach of referring to the research literature and the relevant principles or theories are recommended.

2.6.9 The psychomotor domain (Simpson, 1972) includes physical movement, coordination, and use of the motor-skill areas.

2.6.10 Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures, or techniques in execution.

2.6.11 Assessment for each of the MQF 2.0 (2018) Learning Outcomes clusters:

i. Knowledge and understanding
ii. Cognitive skills
iii. Functional work skills with focus a on:

   a. Practical skills
   b. Interpersonal skills

c. Communication skills

d. Digital skills

e. Numeracy skills

f. Leadership, autonomy, and responsibility

iv. Personal and entrepreneurial skills

v. Ethics and professionalism.

2.6.12 For more examples, refer to Quick Reference 5 Clusters of Learning Outcomes MQF 2.0 (2018), *Rubrik PNGK Bersepadu ICG PA (MOHE, 2016) and Programme Standards.*

2.7 KNOWLEDGE AND UNDERSTANDING

2.7.1 Knowledge and understanding refers to a systematic understanding of facts, ideas, information, principles, concepts, theories, technical knowledge, regulations, numeracy, practical skills, tools to use, processes, and systems.

2.7.2 Knowledge and understanding comprise the knowledge dimension and the cognitive dimension, as shown in Table 3.

Table 3: Revised Bloom's Taxonomy for Cognitive Domain

<table>
<tr><th rowspan="2">Knowledge Dimension</th><th colspan="6">Cognitive Dimension</th></tr>
<tr><th>Remember</th><th>Understand</th><th>Apply</th><th>Analyse</th><th>Evaluate</th><th>Create</th></tr>
<tr><td>Factual</td><td>Remember facts</td><td>Understand facts</td><td>Apply facts</td><td rowspan="3">Analyse using facts, concepts, principle, and procedures</td><td rowspan="3">Evaluate using facts, concepts, principle, and procedures</td><td rowspan="3">Create using facts, concepts, principle, and procedures</td></tr>
<tr><td>Conceptual</td><td>Remember concepts</td><td>Understand concepts</td><td>Apply concepts</td></tr>
<tr><td>Procedural</td><td>Remember procedures</td><td>Understand procedures</td><td>Apply procedures</td></tr>
<tr><td>Metacognitive</td><td>Remember metacognitive strategies</td><td>Understand metacognitive strategies</td><td>Apply metacognitive strategies</td><td>Analyse metacognitive strategies</td><td>Evaluate metacognitive strategies</td><td>Create metacognitive strategies</td></tr>
</table>

2.7.3 Although the original intent of the taxonomy was to serve as a guide for designing learning activities, it can also be used in designing assessments.

2.7.4 As seen in Table 3, there are two dimensions to the taxonomy.

2.7.5 The Cognitive Dimension signifies increasing cognitive process complexity—from lower-order to higher-order thinking skills.

2.7.6 Referring to Table 3, there are six levels of cognitive dimension: remember, understand, apply, analyse, evaluate, and create. Table 4 provides examples of assessments for each level.

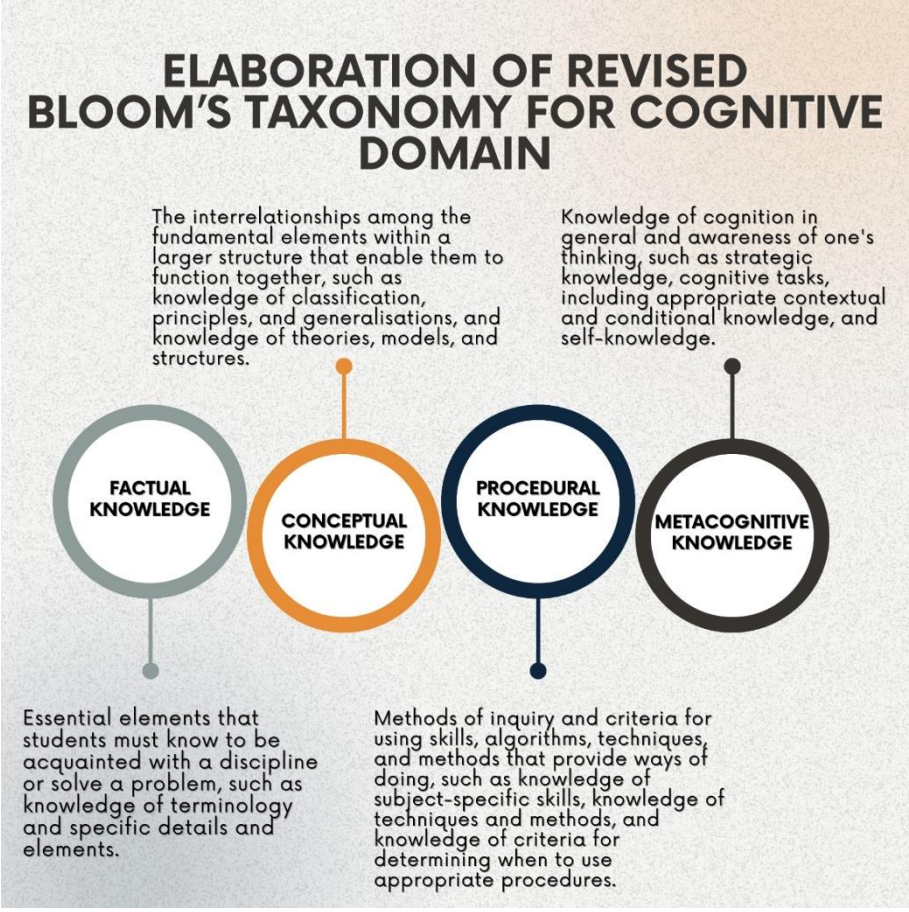
2.7.7 The Knowledge Dimension categorises knowledge into four dimensions that learners may be expected to learn, ranging from the concrete to the abstract.

2.7.8 These types of knowledge that can be tested are factual, conceptual, procedural, and metacognitive.

Table 4: Examples of Assessments Based on Bloom's Taxonomy

Bloom's Taxonomy Level	Example of Assessment
Remember	Written examination questions to recall facts or describe an event.
Understand	Conduct discussion, oral presentation or written examination questions to explain a concept or a phenomenon.
Apply	Conduct an experiment based on the instructions and calculate using a theory to find specific values.
Analyse	Questions or activities that require comparison and contrast justify decisions made in a case study or project, write a critique of an essay/movie, etc.
Evaluate	Assess the performance or suitability of a method or tool, etc., to select the best or most appropriate given contexts in a project.
Create	Design based on various aspects write essays that synthesise various elements of knowledge and contexts.

Figure 7: Elaboration of Revised Bloom's Taxonomy for Cognitive Domain



2.8 COGNITIVE SKILL

2.8.1 In MQF 2.0 (2018), cognitive skills are thinking skills that give a person the ability to utilise knowledge and skills in various intellectual capacities, such as problem-solving, creative and critical thinking, etc.

2.8.2 The higher-order thinking skills in the cognitive domain are also cognitive skills.

2.8.3 Cognitive skills may be assessed using methods other than written examinations. For example, complex problem solving is better assessed through projects where students work on solving complex real-world problems.

2.8.4 An assessment can be made of the problem-solving process and not just of the final product or output.

2.8.5 Major process elements can be defined and assessed as part of problem-solving, such as problem identification, project management, depth of understanding, and creativity of the solution.

2.8.6 One way of assessing cognitive skills is by implementing problem-based learning (PBL), which has been proven to develop self-directed learning and problem-solving skills. The first two assessment tasks are made during the "meet the problem" phase in PBL implemented in a typical class, as shown in Table 5.

Table 5: Example for Assessing Problem Solving and Learning Process for PBL

ASSESSMENT TASK	PERFORMANCE LEVEL		
	1	2	3
Problem Restatement	Copy/rewrite sentences from the problem	Provide general statements of the problem. Summarise the problem without demonstrating a clear understanding of the problem.	Demonstrate a comprehensive understanding of the problem. Reproduce the gist of the problem in his/her own words.
Knowledge and information gap identification (What we know, what we need to know, learning issues)	Unable to identify prior knowledge and missing data or information needed to solve the problem. Identify very minimal/ irrelevant learning issues.	Mixed-up learning issues to be learned (missing data information but concepts already known).	Able to identify all prior knowledge to solve the problem Able to identify knowledge gaps through all the necessary learning issues ant to the problem.
Peer teaching notes of learning issues	Copy and paste from books or other resources List irrelevant questions or issues to be verified.	Summary of learning issues mostly at surface understanding, lacking examples. Questions raised to be verified and lack direction.	Deep understanding is evident in the summary of understood concepts complete with proper examples. Organised and clear questions and issues to be verified.
Action plan using Gantt Charts*	*Example of additional assessment tasks – performance level descriptions can be filled in according to the given learning outcomes and expected standard.		
Other suitable tasks			

2.8.7 Peer teaching is assessed using individual notes submitted before the discussion on new concepts needed to solve the problem. In small-group PBL, peer teaching is normally assessed through tutor observation.

2.9 FUNCTIONAL SKILL

2.9.1 Assessment of Practical Skills

2.9.1.1 Practical skills are work-place skills that can be hands-on or organisational skills, such as:
conducting laboratory experiments, handling equipment or machinery, using devices or software, performing sports, music, drama, singing, or dancing.

2.9.1.2 The development of these skills requires practice and its application, which is measured in terms of procedures or techniques in their execution.

2.9.1.3 Practical skills are assessed based on task coordination, accuracy, and consistency.

2.9.1.4 The assessment tasks involve several operations that are planned in sequence, starting from observation towards the progression of mastery of a skill up to the highest skill, which is invention.

2.9.1.5 The assessment tasks involve several operations planned in sequence, starting from observation towards the progression of mastery of a skill up to the highest skill, which is invention.

2.9.1.6 On the other hand, practical skills related to entrepreneurship include the ability to determine opportunities, conduct market research, organise and adapt projects, and manage risks (Kozlinska et al., 2020).
Table 6 provides examples for addressing CLOs, TLA, and Assessment Tasks based on Simpson's Psychomotor Domain.

2.9.1.7 Possible assessment tasks are performance observation, product observation, or simulation.

Table 6: Example of Psychomotor Domain in Machining Course

Psychomotor Domain	Course Learning Objectives	Teaching and Learning Activities	Assessment Tasks
Perception: Demonstrate an awareness or knowledge of the behaviours needed to carry out the skill	Observe machining techniques for material removal	Demonstration, Discussion, Question and Answer	Recognise the significant components of the lathe machine and tools Identify steps in preparing for the machining process.
Set: readiness to perform the task	Organise the steps in conducting machining operation	Demonstration, Discussion Practical Task	Set up the machining tool Start the machine and record the operational observation Test and adjust the speed settings to control the shape of the surface
Guided: the early stage of leaming a complex shill. It is the first attempt at a physical skill and includes imitation and trial and error. The learner can complete the steps involved in the skill as directed	Demonstrate correctly machining task procedures	Demonstration, Video presentation, Video Simulation, Discussion, Practical Task Coaching. Feedback	Practice the machining process with correct procedures and meet the specifications Adapt the correct usage of machining tools Examine the completed workpieces for defects.
Mechanism: the ability to convert the lamed responses into habitual actions so the movements can be performed with a medium level of proficiency, assurance and confidence	Perform safely and appropriately the machining operations to remove material from a workpiece	Practical Task, Discussion, Video presentation	Demonstrate the correct procedure of setting and operating the machine and tools for the machining process Adapt the work procedures to meet the given specifications Measure completed work places to verify conformance to the specifications
Complex Overt Response: the ability to skilfully perform complex movements correctly. Complex movements are performed quickly accurately and with minimal wasted effort.	Conduct an accurately machining process to remove material from the workpiece according to the specifications	Discussion, Practical task	Organise the machining procedures and tools to shape a given object from the workpiece
Adaptation: the ability to modify the meet new or special requirements.	Modify the machining procedures that suit the design and material specification of the given task	Discussion, Machining Project	Adopt the technical concepts and s of machining procedures in actual projects.

2.9.2 Interpersonal Skills

2.9.2.1 Interpersonal skills are defined in the MQF 2.0 (2018) manual as a range of social skills such as interactive communications, relationships and collaborative skills in managing relationships in teams and within the organisation, networking with people of different cultures, and social skills/etiquette.

2.9.2.2 The expected outcome, such as teamwork skills could be classified under interpersonal skills.

2.9.3.3 To assess team working skills. multiple methods can be used, such as through in-class peer-rating observation, recorded video of team discussions, logbooks, minutes of meetings and learning portfolio.

2.9.2.4 The learning outcomes and levels of attainment may also use the affective domain taxonomy.

2.9.3 Communication Skills

2.9.3.1 The MQF 2.0 (2018) manual defines communication skills as the ability to convey information, reports or ideas professionally and logically in oral and written forms using suitable language.

2.9.3.2 The communication process must be practical and in appropriate forms, in various mediums, and to various audiences in various settings.

2.9.3.3 The ability to communicate in more than one language is also encouraged.

2.9.3.4 Table 7 shows an example of a team oral presentation, divided into individual and team segments of the oral presentation assessment.

2.9.3.5 Possible methods of assessing oral communication are presentation, debate, discussion, and forum. Reports and term papers may be used to assess written communication.

Table 7: Example of assessment For Team Oral Presentation: Individual And Team

Scale	1	2	3
	Individual		
A - Stature & Appearance	Lack confidence, lousy posture, shabbily attired, no eye contact.	Somewhat confidence, proper posture, attire, and maintaining eye contact.	Confident, good eye contact and posture, smartly attired.
B - Presentation & Voice	Not precise, mumbles and swallow words, too slow or too fast, poor intonation, and low voice volume.	Straightforward, but sometimes voice trails off, sufficient speech rate and intonation.	Apparent and fluent, reasonable speech rate and volume.
C - Delivery	Mispronounce most words, often stumbles, reads from notes/ slides, and does not show interest in a topic.	Mispronounce certain words, is somewhat fluent, depends on notes/slides, and shows interest in sharing topics.	Very fluent, rarely mispronounce words, captures an audience, sparingly refers to notes, passionate about a topic.
D - Q & A	Not able to answer, does not understand a topic.	Able to answer but fumbles slightly, demonstrating understanding of the topic.	Answers confidently demonstrate clear and critical knowledge of the topic.
	Group		
E - Content	Unsuitable and disjointed content. Does not show understanding of the material presented.	Suitable Content. Shows understanding but lacks integration of different sources.	Well-developed content with proper elaboration and examples. Shows good understanding & integration from various sources.
F - Slides	It does not support the presentation; too wordy or too distracting.	Support presentation, apparent but dull or distracting in some places.	Enhance and clarify presentation, pleasing design that fits the purpose of the presentation.

2.9.4 Digital Skills

2.9.4.1 Digital skills are essential for current and future graduates to remain relevant in the current and future phases of industrial transformation.

2.9.4.2 Digital skills encompass knowledge and skills related to using information/digital technologies and literacy to support learning and professional life.

2.9.4.3 The skills include sourcing and storing information, processing data, digital design, using applications for problem solving and communication, and ethics in applying digital skills.

2.9.4.4 According to all programme standards and the MQF 2.0 (2018), digital skills must be measured across disciplines and at all qualification levels. Therefore, professionals from different fields should be more than competent to provide better descriptions of appropriate digital attributes for diverse curricula or academic programmes.

2.9.4.5 The criteria are divided into the areas of the learners' adaptability, capability, clarity of the relayed skills and knowledge, coherence, relevance in comparability, recognition, and transferability towards these programmes and qualification frameworks. It provides the overarching framework that integrates into all forms of learning.

2.9.4.6 Depending on the subject-matter area, digital skills can be assessed across all three domains: cognitive, affective, and psychomotor.

Table 8: Digital Skills Framework in Higher Education

Incorporated component	Digital skills		
	Understand	Create	Use
	- identifying the needed digital tools - digital hardware and technology literacy	- digital communication - digital collaboration (industry/affiliated/practise)	- information literacy - computer and technology literacy

Note: Adopted Table from Aris et al., Digital Skills Framework in Higher Education. Proceedings 2022, 82, 61. https://doi.org/10.3390/proceedings2022082061

2.9.5 Numeracy Skills

2.9.5.1 Numeracy skills are the ability to understand and apply mathematics for everyday use, at home, during learning, or at the workplace.

2.9.5.2 It is confidence in using mathematics that demands familiarity in situations such as calculating a budget, managing personal finance, and managing time for events or a travel journey.

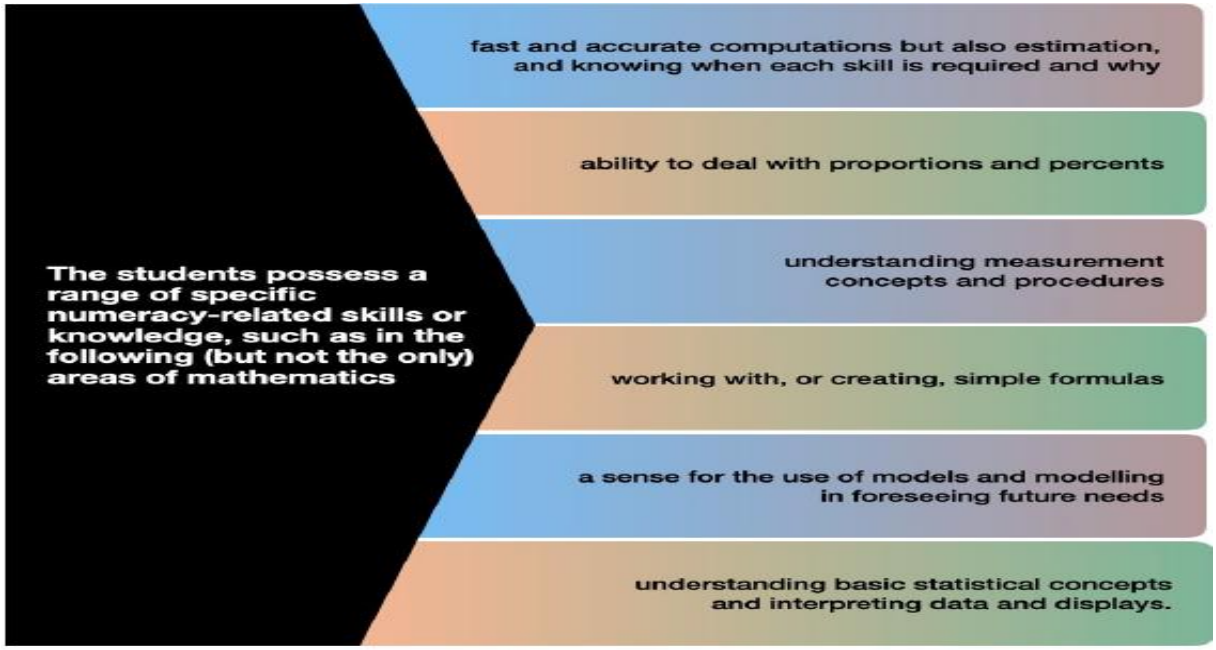
2.9.5.3 It is the capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgements, and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned, and reflective citizen.

2.9.5.4 Depending on the type of programme, numeracy can be complex, going up to the extent of solving a complex problem.

2.9.5.5 Numeracy skills are considered mathematical literacy for learners' capacity to formulate, employ, and interpret in various problem-solving contexts that describe, explain, and predict phenomena.

2.9.5.6 Students can be directly assessed using written examinations, projects, and other forms of assignments that require them to learn and utilise their numeracy skills. Some examples of numeracy skills can be seen in Figure 8.

Figure 8: International Assessment of Adult Competencies (PIAAC) in Numeracy Competency



2.9.6 Leadership, autonomy, and responsibility

2.9.6.1 MQF 2.0 (2018) defines this cluster of skills as an individual's ability to build relationships and work with teams made up of peers or in managerial capacities with varying degrees of autonomy to make decisions or set goals at organisational/unit/team levels; to take responsibility and provide accountability; to be confident, knowledgeable, articulate, honest, professional, concerned, resilient, a risk taker, and possess other intrapersonal skills, including working in and leading teams.

2.9.6.2 The management role is ambivalent and includes negotiation processes based on traditional scientific ideals and managerial logic.

2.9.6.3 The relational aspects of how a professional habitus is formed and negotiated in relation to management ideals and practices. The value of knowledge in itself and collegial decision-making.

2.9.6.4 It concerns the conditions in the field, the academic subjects, and the status relations between teaching and research, as well as to what extent the students and their processes in the field affect the prerequisites for exercising professional judgement.

2.9.6.5 Possible areas for assessing leadership are shown in Table 9.

Table 9: Areas of Assessment for Leadership

Example leadership Assessment	Area of Assessment
Vision	The student demonstrates the ability to craft vision for their group or organisation; and the ability to develop a strategic plan to achieve.
Actions	The student thoroughly demonstrates the ability to identify goals toward the development of shared knowledge among faculty and peers to accomplish a variety of tasks or objectives.
Service	The student thoroughly demonstrates the ability to seek input from diverse viewpoints, critically evaluate, and clearly narrate the rationale on the actions taken.
Protocol	The student thoroughly demonstrates the ability to recognise the value of following proper protocols.

Note: Ref: Entrepreneurship Assessment in Higher Education: A Research Review for Engineering Education Researchers Journal of Engineering Education VC 2018 ASEE. http://wileyonlinelibrary.com/journal/jee April 2018, Vol. 107, No. 2, pp. 00–00 DOI 10.1002/jee.20197

2.10 PERSONAL AND ENTREPRENEURIAL SKILLS

2.10.1 Personal Skills

2.10.1.1 Personal skills are life skills that learners are expected to use daily.

2.10.1.2 They are generally portrayed through enthusiasm for independent learning, intellectual discourse and self-development, confidence and self-control, social skills and proper etiquette, and commitment to professionalism in the workplace.

2.10.1.3 It also includes the capability to plan for career development or further education.

2.10.1.4 Aspects of individual characteristics such as honesty, punctuality, time management, and keeping to and maintaining deadlines that are important in a work environment are also essential personal skills.

2.10.2 Entrepreneurial Skills

2.10.2.1 Entrepreneurial skills require relevant knowledge, skills, and expertise in critical areas of an enterprise.

2.10.2.2 Important personal qualities will include creativity, grit, and drive.

2.10.2.3 The learning outcomes describe the incremental development of these skills.

2.10.2.4 The drive to be an entrepreneur is set as a personal skill but also requires the prerequisites of relevant knowledge and cognitive and functional skills.

2.10.2.5 To assess personal or entrepreneurial skills, aspects of the skills required must be defined before identifying the assessment method. Examples of dimensions to measure personal and entrepreneurial skills are:

i. Opportunity seeking
ii. Persistence
iii. commitment to work
iv. demand for quality and efficiency
v. risk-taking
vi. goal setting
vii. information seeking
viii. systematic planning and monitoring

2.10.2.6 Although attaining entrepreneurial skills through knowledge and cognitive skills are more readily visible than personal skills, both can be authentically assessed through projects with real world problems.

2.11 ETHICS AND PROFESSIONALISM

2.11.1 Ethics and values are essential in personal, organisational, societal/community and global settings as they guide personal actions and interactions at work and within the community.

2.11.2 Respect for ethical, social, and cultural differences and issues is essential in exercising professional skills and responsibilities.

2.11.3 These include integrity, professional conduct (professionalism), and standards of conduct such as upholding regulations, laws, and codes of good practices or professional conduct.

2.11.4 A sensitive approach to other cultures adds value to this learning domain.

2.11.5 Assessment of ethics can fall under any of the domains but likely for the cognitive and affective domains.

2.11.6 Ideally, if the outcome is to develop students' professional and ethical beliefs that will guide their conduct, then the outcome level should be at the high affective taxonomy level, at the valuing or organisation level.

2.11.7 A constructively aligned teaching and learning environment will enable the assessment of ethics, even at the higher levels of the taxonomy.

2.11.8 Joint assessment approaches for ethics include case studies, role play, service learning, learning journals, etc.

Table 10: Example Construction for the Assessment Rubrics

An example in the construction for the assessment rubric by Shuman, Olds and Besterfield-Sacre (2003) used the following five constructs in developing a rubric to assess engineering students' responses to cases with an ethical dilemma.	Recognition of the dilemma - identifying the ethical issues or problems, especially concerning the ethics code.
	Information (argumentation)-gathering relevant information and justifying its importance to understand the situation.
	Analysis (complexity and depth) - analysis of the information, taking into account different aspects and opposing viewpoints and other factors such as the risks and consequences.
	Perspective (fairness) - taking different perspectives of the parties involved (e.g., workers, residents, industry, government, etc.) and looking at a global view to get an overall perspective.
	Resolution (argumentation) - a final resolution which should consider the greater good and risk to the public, with solid justification.

Note: Shuman, L., Olds, B. and Besterfield-Sacre, M. (2003), 33rd ASEE/FIE Frontiers in Education Conference Proceedings, Boulder, Colorado, USA.

PART 3
ASSESSMENT MANAGEMENT

The management of student assessment is key to quality assurance. HEPs should ensure the robustness and security of processes and procedures related to assessment management.

Systematic management is important in encapsulating the assessment's validity, reliability, and integrity.

This chapter addresses the management of conventional assessment and alternative assessment as a way forward.

On that note, every HEP should focus on combating academic misconduct. There may also be differences across institutions in the structures.

The sub-topics are:

i. Management of Student Assessment and its Process
ii. Conducting both Formative and Summative Assessment
iii. Types of Assessment
iv. Assessment Methods
v. Review of Assessment Methodologies and Currency with Development in Best Practices

3.1 MANAGEMENT OF STUDENT ASSESSMENT AND ITS PROCESS

3.1.1 HEPs have significant responsibilities with regard to student assessment.

3.1.2 HEPs need to develop and implement its own assessment processes and procedures through the HEP's administrative processes, as shown in Table 11.

3.1.3 Table 11 provides an overview of the structure, function, and integration of the assessment processes and procedures at the institutional level.

Table 11: Assessment Integration and Process at the Institutional Level

Academic Board/Senate	Approves assessment policies/procedures that establish and maintain academic standards through the principles of assessment and procedures.
HEP's Academic Committee	Develops and reviews assessment policies/procedures - may include external stakeholders such as industry representatives and alumni and submits the review to the academic board/senate for approval.
Faculty/School Department	Oversees the implementation of assessment policies/procedures in academic processes and provides feedback to the HEP's academic committee in the continual review of policies and processes.
Academic Staff	Implements assessment and provides formative and summative feedback to students and faculty/school/department.
Review of Programme/Courses	Input from stakeholders which includes students, alumni, industry representatives, external assessors, and academic staff.

3.2 CONDUCTING BOTH FORMATIVE AND SUMMATIVE ASSESSMENT

3.2.1 Ongoing formative assessments are conducted throughout a course, embedded and linked directly to the current learning and teaching activities.

3.2.2 Through observations and interactions in the classroom, the assessment helps the academic staff gain feedback on students' progress.

3.2.3 In-class tasks can be given to assist students in monitoring and to improve their learning.

3.2.4 Providing feedback to students about their learning is crucial to understanding the use of assessment for learning.

3.2.5 Assessment for learning is seeking and interpreting evidence for use by the learners and academic staff.

3.2.6 The interpretation is then used to decide where the learners are in their learning and to indicate the next step to promote learning (Assessment Reform Group, 2002).

3.2.7 The increased use of coursework and continuous assessment offers the opportunity for academic staff to provide constructive feedback to help learners improve their future learning.

3.2.8 Formative assessment is an assessment for learning.

3.2.9 Assessment as learning requires students to play an active role in becoming independent in their learning and assessment (Earl, 2003).

3.2.10 In order to incorporate assessment as learning into the learning process, academic staff should help students develop skills to conduct self-evaluation, metacognition, and design instructions and assessments to monitor student learning.

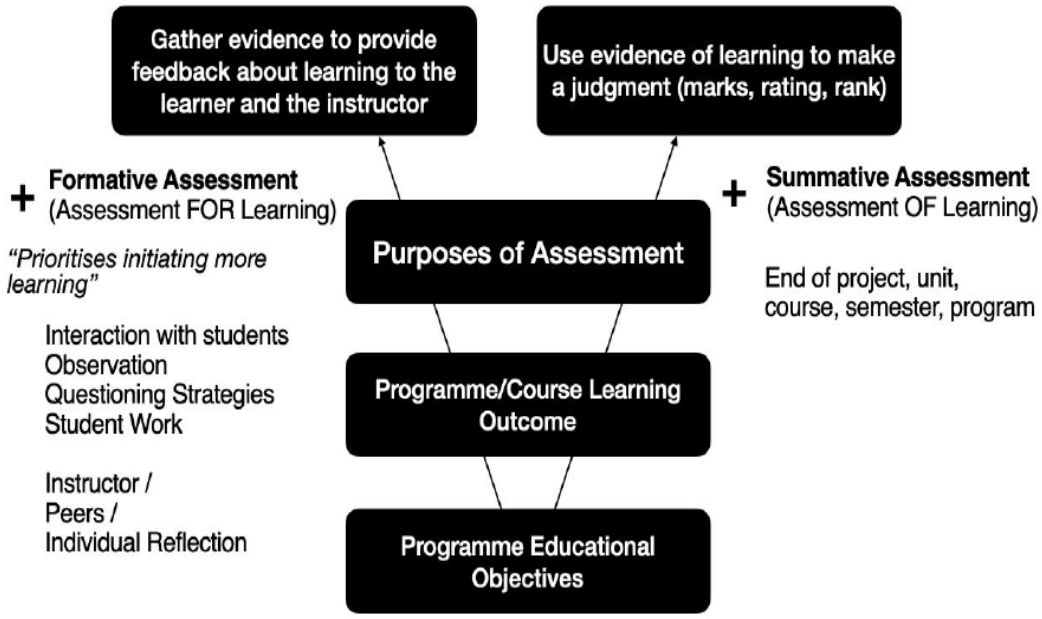
3.2.11 On the other hand, summative assessments measure what students have learned at the end of a learning unit.

3.2.12 Summative assessment refers to the assessment of students' learning, which involves grading and verification and is used for institutional accountability and quality assurance.

3.2.13 The results are then communicated to the stakeholders.

3.2.14 Summative assessment is one of the methods used in the assessment of students' learning.

Figure 9: Formative and Summative Assessment



3.3 TYPES OF ASSESMENT

3.3.1 Various methods of assessment

3.3.1.1 Multiple assessment methods should be adopted to measure the attainment of LOs, including diverse attributes to be measured.

3.3.1.2 The selection of assessment tasks is based on common practices in one's respective field and on the experience of academic staff.

3.3.1.3 The choice of instruments must be determined based on the performance criteria in terms of the qualities and abilities sought in the learner, which are explicitly stated in the LO statements. For example, in requiring students to portray creativity and innovation, the assessor/academic staff may require a studio project, the development of a product, and performance or case studies that can appropriately measure the abilities of the students in producing an output, such as through experimentation, expression, and exploration.

3.3.1.4 Various methods can be used to assess the cognitive domain and critical thinking skills, including critiques, reviews, reports, or tests.

3.3.1.5 Case studies and group projects can determine students' abilities to apply theory to practice, apart from determining their communication, managerial, critical thinking and problem-solving skills among others.

3.3.1.6 Case studies and group projects may also be used to measure the affective domain regarding values, attitudes, professionalism, teamwork, communication, lifelong learning, and ethics.

3.3.1.7 In assessing performance or demonstration techniques, an assessor/academic staff can adopt any of the following methods or may choose to combine these methods:

demonstrations, role play, posters, laboratory reports, illustrated manuals, or simulations.

3.3.2 Coursework and Continuous Assessment

3.3.2.1 The most common data collection processes that are continuously done throughout a course or module may be done in various forms.

3.3.2.2 Although the following list is not exhaustive, the measurement of learning gains through coursework can be made through:

Presentations, essays, critiques, reviews, projects, case studies, portfolios, simulations, development of products, capstone projects, reflective journals, exhibitions, performances (e.g., music, theatre), clinical work, posters, debates, lab reports, manuals, and essays.

3.3.3 Examination and Tests

3.3.3.1 Examinations and tests reflect the cumulative attainment of LOs.

3.3.3.2 Among others, examinations and tests enhance the student's abilities, such as the ability to articulate, argue, analyse, justify, communicate ideas, and assess critically.

3.3.3.3 These abilities can be demonstrated through essays and structured, open-ended questions.

3.3.3.4 Although objective questions can measure higher-order thinking, they do not promote some other abilities that subjective questions can tap.

3.3.3.5 Some tests that can be adopted in classroom assessment are written, oral, practical, and standardised tests.

3.3.3.6 Standardised tests can be purchased to measure communication or critical thinking skills, among others.

3.3.3.7 Apart from the graded tasks, ungraded tasks such as short quizzes and minute papers may provide formative feedback for students to gauge their achievement of LOs and to allow the academic staff to improve or modify their teaching.

3.3.3.8 Procedures that involve elements of self and peer assessment can also be implemented.

3.3.3.9 Self-assessment is a valuable way of encouraging participants to evaluate and reflect on their learning.

3.3.3.10 Peer assessment is especially useful in determining the attainment of leadership, teamwork, and communication skills. (refer to Table 12 for information on management of student assessment and processes involved).

Note: Appendix 2 to Appendix 7 relate to online assessment.

Table 12: Management of Student Assessment and Process

AREA	CONTINUOUS ASSESSMENT	FINAL ASSESSMENT	
	Conventional or Alternative Assessment	Alternative Assessment	Final Examination (Conventional and Online)
Assessment Task	Examples: Assignments, Proposal defence, Written/Oral assessment, Individual assignments, Group assignments, Quiz/Test, Demonstrations, Observation notes, Anecdotal, Presentation, Laboratory reports	**Examples:** Reflective module assessment, Self-reflective report, Final Project Graduate, Exhibition, Expert-based assessment, Reviews and Critiques, Graduate Seminar, Portfolio/Logbook.	• Demonstrate a comprehensive understanding of the problem given a specified time. • Reproduce the gist of the problem in his/her own words.
Level of autonomy in the management of student assessment	System to ensure academic quality, validity, reliability, fairness and consistency of the assessment. Preparation of Assessment Task • Ensure the constructive alignment has been reviewed and approved. • Establish the use of a table of specifications (TOS) when implementing test/quiz/ mid term examination. • Use of alternative assessment not limited to the cognitive domain but also to include affective and psychomotor as well as other skills (where applicable). • Ensure the design and instruction of the assessment process. • Considering assessment planning with the student learning time (SLT). • A subject matter expert (internal or external) reviews questions/items/assignments or any assessment form before administering. • Communication students with criteria, expectations and rubrics.		HEPs must have a system to ensure security and standard/academic quality of assessment. Preparation of Assessment Task: • Establish the use of the Table of Specification (TOS) • Preparing questions following SLT and appropriate weightage. • A committee review to vet the set of examination questions.

Area	CONTINUOUS ASSESSMENT	FINAL ASSESSMENT	
	Conventional or Alternative Assessment	Alternative Assessment	Final Examination (Conventional and Online)
Assessment administration process	Approve questions/items/assignments or any assessment form will be administered to the students. Proper scheduling for continuous assessment within the semester. Communicate with the students on continuous assessment scheduling.		**Conventional** Only an approved set of final examinations will be administered to the students in a conducive and secured location during the stipulated time. **Online Synchronous assessment** Synchronous assessment involves lecturers and students online at the same time. Lecturers need to plan and ensure synchronous assessment can be performed in a prescribed period. Synchronous assessment can be Implemented if the student has good internet access. A synchronous online examination can be carried out in three ways: a. With manual online invigilation. b. With online proctoring. c. Randomisation of questions. **Online Asynchronous Assessment** • Asynchronous assessment involves lecturers and students at different times and locations. This assessment allows lecturers to plan and design the assessment that can be implemented in a predetermined period. • Ensure questions and time are allotted adequate for students to complete the task. • Can use different sets of questions with the same cognitive level.

Area	CONTINUOUS ASSESSMENT	FINAL ASSESSMENT	
	Conventional or Alternative Assessment	Alternative Assessment	Final Examination (Conventional and Online)
Mechanism of marking and grading student assessment	a) Establish an understanding of academic integrity and honesty. b) The area of concern for academic integrity and honesty may include: plagiarism, cheating, fabrication, deception, false information or any related misconduct. c) HEPs shall get advice from the university's legal advisor. d) HEPs may establish a student academic integrity pledge. e) HEPs shall clearly state the process of moderation f) Establish a moderation committee. g) Proper moderation process at programme and course level must be carried out in cases with more than one assessor (inter-rater reliability towards consistency and fairness. h) Marking and grading are guided by an answer key, answer scheme, or rubric. i) Measures to curb biasness when marking are in place.		
Mechanisms to ensure the security of assessment documents and records	System to ensure academic integrity and honesty. Ensure students submit their work and do not plagiarise. HEPs should have a clear disciplinary act for students who commit academic misconduct. Keep the evidence of assessment in a certain period.		a) Highly secure systematic process and mechanism in developing, managing and administrating final assessment. b) Clear invigilator job description and roles. c) Ensuring a strong room is highly secured and meets the minimum specification for safety. To a certain extent, a strong room using online, or cloud services should have a high-security mechanism. d) The final online examination should be administered with a secure browser, remote proctoring, data encryption and IP authorisation and authentication. All of these are mechanism to curb or avoid academic misconduct. e) HEPs should have a clear disciplinary act for students who commit academic misconduct f) HEPs are recommended to provide plagiarism detection in assessing students' academic misconduct. g) Assessment evidence must be kept stored, maintained, and disposed of based on stipulated period.

Area	CONTINUOUS ASSESSMENT	FINAL ASSESSMENT	
	Conventional or Alternative Assessment	Alternative Assessment	Final Examination (Conventional and Online)
Assessment and communication with students	a) Assessment tasks scheduled across the semester. b) Results were returned to students promptly before the submission of the next assessment task. c) Students can act on assessment feedback before submission of the next task. d) System in place for the collection of assignments, marking of assignments, feedback to students.	- Assessment tasks scheduled within the final assessment week - Systematic collection of assessment evidence, marking and grading. - Marks and grading release upon Senate approval. - Students receive notification of final grades through an integrated system- emphasis on integrity. - Processes for students to appeal against the results of assessment must be in place and integrated into the system.	
Periodically review the management of student assessment	System for periodic review of assessment, programme and course. May include input from external stakeholders as review panels e.g., Students' evaluation of teaching Student/staff liaison committee Reviews involve an inquiry process focused on two questions: Does the system provide useful information for making decisions and taking necessary action? Are the actions taken educationally beneficial? More specifically, reviewers consider how well the system adheres to each assessment principle. To ensure that timely and effective reviews are conducted, a continuing group must be responsible for monitoring the review process. Students, other educators and experts also provide feedback about classroom and university practices. Reviews of the overall assessment system and the whole academic programme require broad participation from all stakeholders, including educators, students and assessment and curriculum specialists. The most important criterion for assessment review is that assessment does not harm student learning and promotes active and engaged learning.		

3.3.4 Alternative Assessment

3.3.4.1 Performance-based Assessment

3.3.4.1.1 Generally, it assesses students' ability to apply the skills and knowledge gained from a unit or unit of study.

3.3.4.1.2 Typically, the task requires students to use higher-order thinking skills / high-complex activities to create a product or complete a process.

3.3.4.1.3 Performance-based assessment encourages the application of real-life situations or problems.

3.3.4.2 Workplace-based Assessment

3.3.4.2.1 To ensure the attainment of PLOs and to better prepare for the workplace by training the students to be immersed in a real-work environment, thus relating theories to practice in situ.

3.3.4.2.2 HEPs are encouraged to collaborate with industry when planning, executing, and assessing students during their workplace experience.

3.3.4.3 Interdisciplinary-based Assessment

3.3.4.3.1 Assessment tasks should provide opportunities for learning experience through assessment by allowing the integration of the learning components from two or more courses.

3.3.4.3.2 Integrated assessment is an interdisciplinary approach combining various skillsets, diverse disciplines, and knowledge to better understand a complex situation or environment.

3.3.4.3.3 The collaborative approach is a proposed approach for learning delivery and evaluation.

3.3.4.3.4 Learners must experience a pedagogy beyond “standard” passive lecture. a significant problem for which their own discipline and its way of knowing are necessary but not sufficient contributors to the solution.

3.3.4.3.5 Assessment is valued through observing the learners acquire relevant and important facts outside their own major

disciplines and inserting them into new contexts from multiple perspectives.

3.3.4.3.6 The assessment practice acquiring those facts and manipulating them in those contexts under instructor's supervision.

3.3.4.3.7 Going through this process enables learners to gain insights from various disciplines, synthesise information required for the assessment, before ultimately offering a more complete understanding of an issue.

3.3.4.4 Multidisciplinary-based Assessment

3.3.4.4.1 Multidisciplinary involves two or more disciplines/bodies of knowledge by combining various skill sets and exposing the students to the chain of environment.

3.3.4.4.2 The students should be able to organise and correlate the disciplines being integrated. The students are evaluated through collaborative tasks, the extension of knowledge, and the connections or greatest degree of integration.

3.3.4.4.3 Assessing the quality of multidisciplinary work is complex, concerning exchanging methods, translating categories, and testing outcomes against multiple quality standards.

3.4 ASSESSMENT METHODS

3.4.1 An overview

3.4.1.1 Assessment may require direct examination or observation of students' displayed knowledge or skills, which can be assessed based on measurable LOs.

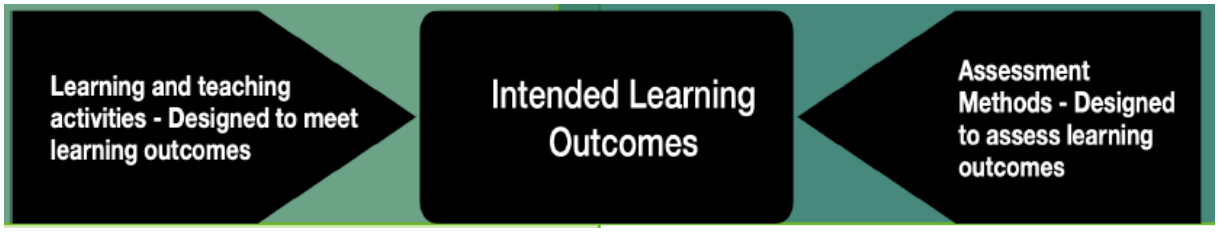
3.4.1.2 Attainment of outcomes in the cognitive and psychomotor domains can be directly assessed, while those of the affective domain, soft skills, and values may be more difficult to assess, resulting in a more subjective assessment.

3.4.1.3 Direct assessments involve examining actual samples of the student's work, including exams, quizzes, reports, portfolios, and presentations.

3.4.1.4 On the other hand, indirect assessments refer to the "analysis of reported perceptions about student mastery of learning outcome" (Allen, 2004).

3.4.1.5 It may be in the form of employer surveys, exit interviews of graduates, and self-reports by students or others, such as the supervisor, during industrial attachment.

Figure 10: Aligning Learning Outcomes, Learning and Teaching Activities and Assessment



Note: Adapted from Biggs (1999) p. 2

3.4.2 Planning Assessment Tasks

3.4.2.1 Attention has to be given to the planning of assessment tasks for students. In the rest of the section, the discussion on assessment tasks focuses on the course LOs.

3.4.2.2 This must be conducted throughout the course, and academic staff must understand the assessment methods.

3.4.2.3 It is of utmost importance that assessment methods are aligned to outcomes and instructional delivery.

3.4.2.4 Constructive alignment, a term coined by John Biggs (1999), posits that the curriculum is designed so that the learning activities and assessment tasks are aligned with the LOs that are intended in the course, resulting in a consistent system.

3.4.2.5 For instance, to achieve the LOs of a certain course, the case study or problem-based learning approach may be regarded as the most suitable.

3.4.2.6 Thus, the chosen teaching approach and activities would demand specific methods of measuring those outcomes.

3.4.2.7 To cater to the diversity in outcomes, the assessment methods must be aligned with the teaching approaches.

3.4.2.8 In conducting good practice in assessing course LOs, various considerations need to be taken into account.

3.4.3 Communicating the Assessment Plan to Students

3.4.3.1 The assessment plan should be communicated to students in writing at the beginning of the semester.

3.4.3.2 Academic staff should provide the course description, which includes a summary of the course topics and requirements, the general format of the course, instructional materials and assessment methods, mark apportionment, grading criteria, and a schedule for the assessments.

3.4.3.3 Clear grading criteria, such as rubrics and performance standards for assessing student work, should be made available to students in hardcopy or electronic form.

3.4.3.4 Academic staff should provide ongoing student performance feedback as the class progresses.

3.4.3.5 They may provide feedback to the class after completing and grading continuous assessment tasks.

3.4.3.6 This could include a summary of the student's overall performance and strategies for improvement.

3.4.4 Planning of Assessment

3.4.4.1 The planning of assessment tasks for a given course must consider the course's level and credit value.

3.4.4.2 The academic staff must gauge whether the number and complexity of the assignments to be given are commensurate with the credit load of the course.

3.4.4.3 The expected time needed to complete a given assessment task must be based on the MQA's Guidelines for Good Practices: Programme Development and Delivery (GGP: PDD) for determining Student Learning Time (SLT).

3.3.4.4 The preparation time needed by students for every hour of a test is also provided in the SLT guideline.

3.4.5 Diversity

3.4.5.1 Assessment tasks should provide opportunities for students to display their knowledge, talents, competencies and/or skills.

3.4.5.2 Based on the LOs, each task has to be planned to determine the achievement of the outcomes.

3.4.5.3 The following table suggests tasks and grading instruments used to measure various attributes.

3.4.5.4 The diversity of assessment may include the size of students, academic and cultural backgrounds, the development of learning level, cross-cultural communication, short time span, and many more.

3.4.5.5 Constructive alignment provides a powerful framework and allows adjustment and modification to increase student engagement and learning.

3.4.5.6 HEPs should be able to manage all the diversity faced by the academic programme with appropriate intervention.

3.4.6 Weightage

3.4.6.1 The weighting of assessment tasks must be proportionate to the emphasis on the learning activities/tasks and their importance to the CLO attainment.

3.4.6.2 Assessment comprises ungraded and graded continuous assignments quizzes/tests/midterm) assessment tasks and may include final graded assessments.

3.4.6.3 Generally the weightage is determined by the number of hours spent covering the course learning outcome over the total teaching hours of the course.

3.4.6.4 The weightage must adhere to the stated assessment weighting for the course as approved by an academic committee. (Refer to Appendix 12 on Course Assessment Plan, Instruction and Rubric).

Table 13: Example of Task and Grading Instrument

Example Leadership Assessment	Attributes to be Assessed	Examples of Outcomes to be Measured	Examples of Assessment Tasks	Suggested Grading Instrument
Cognitive Skills	Complex-Problem Solving, Creativity, Critical Thinking. Design Thinking	Ability to diagnose, analyse, synthesise, and propose solutions	Test, Assignments, Projects, Studio works, Final Examination	Answer Schemes, Answer Keys, Rubrics
Interpersonal Skills	Collaborate. Interact, Maturity, Respect, Sensitivity. Empathy, Social Responsibility. Emotion Management	Practise good social Interaction and respect of other stakeholders' opinions through seminars or discourse	Case Study, Case Analysis, Reflective Writing, Portfolio	Rubrics, Checklists, Direct Observation
Communication Skills	Clear, Confident, Effective, Adaptive, Coherent, Systematic	Ability to present coherent and clear ideas through case studies; and to demonstrate systematic writing in research proposal	Written and oral examination	Rubrics
Leadership Autonomy and Responsibility	Coaching Responsive, Effective, Respect, Autonomy, Adaptable Engagement	Ability to demonstrate responsible leadership through group work project	Case study, Case analysis, Reflective Project, Seminar	Checklists, Direct Observation
Entrepreneurship Skills	Mindset, Skills, Planning and Organising Visionary, Network, Risk Evaluator, Negotiation	Ability to propose working business plans	Project, Pitching, Portfolio	Checklists, Direct Observation

3.4.7 Coverage

3.4.7.1 The assessment provides feedback on the degree to which course LOs are achieved.

Table 14: Mapping of Lesson Learning Outcomes to Course Learning Outcomes

Course Los (CLOs)	Lesson Los contributing to the course LOs
CLO 1	Lesson LOs 1, 4, 6
CLO 2	Lesson LOs 2, 7, 8
CLO 3	Lesson LOs 3, 5
CLO 4	Lesson LOs 1, 4

3.4.7.2 Table 14 shows the example of LOs for every lesson (Lesson LOs - LLOs) being mapped to course LOs to ensure that each lesson LO contributes to the achievement of one or more of the course LOs (CLOs).

3.4.7.3 Consequently, the content to be taught is determined based on the lesson LOs to be achieved.

3.4.7.4 Lesson LOs may differ from assessment outcomes because it is impossible to assess all content taught due to constraints such as time.

3.4.7.5 The assessment may only cover a sample of the content taught, but the staff must ensure that the assessed content represents the course content.

3.4.8 Criteria

3.4.8.1 Assessment criteria must be established for assessing tasks and should be made known to students in writing and given together with the tasks.

3.4.8.2 It guides the academic staff in objectively assessing the tasks and helps learners meet the expectations of the tasks.

3.4.8.3 This practice also encourages students to self-assess, thus improving the quality of their work.

3.4.8.4 Assessment criteria are the standards against which learners' performance is measured. The marks awarded for the attainment of each criterion need to be made clear.

3.4.8.5 It can be communicated through various forms of rubric.

3.4.9 Attainment

3.4.9.1 The overreaching goal of the learning outcome is to measure the attainment for each of the tasks.

3.4.9.2 This attainment is to provide HEPs with data on student performance and identify an area for improvement.

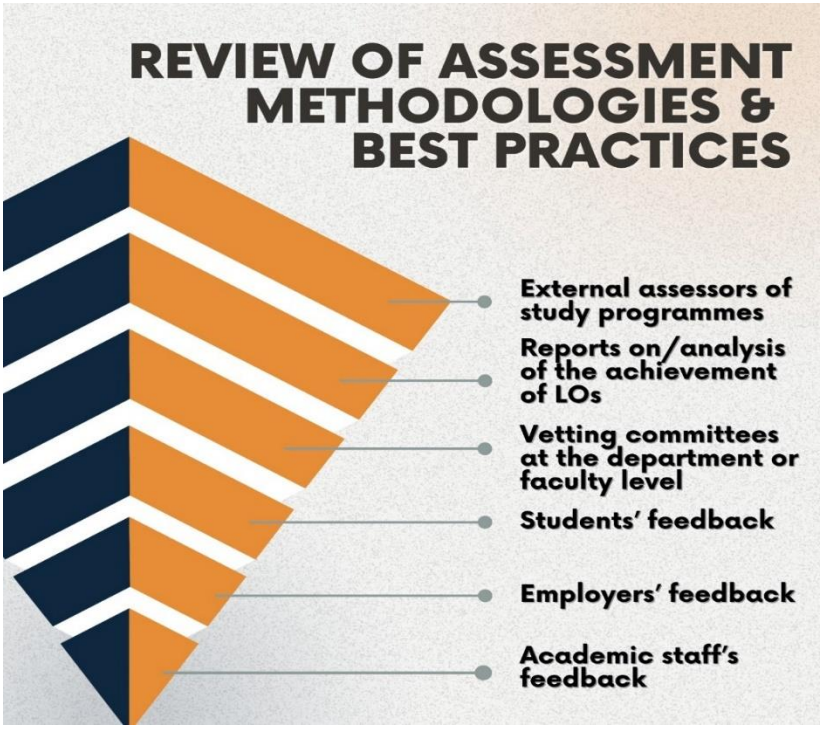
3.4.9.3 The area of improvement is not only focused on the students but also important for the course and programme academics offered.

3.4.9.4 The attainment is analytic data that allows the programme or course developer to reflect on the quality of curriculum, instruction, and assessment.

3.5 REVIEW OF ASSESSMENT METHODOLOGIES AND BEST PRACTICES

Sources determining currency and the best practices for assessment include:

Figure 11: Review of Assessment Methodologies & Best Practices



3.5.1 Validity and Reliability of Assessment

3.5.1.1 Validity and reliability are two important assessment principles, apart from flexibility and fairness.

3.5.1.2 It must be both valid and reliable to ensure that the assessment can provide sufficient evidence of students' competence.

3.5.1.3 To ensure adherence to assessment principles, the HEP policy on assessment must be in place.

3.5.2 Validity of Assessment

3.5.2.1 Validity refers to the ability of the assessment to measure what it is supposed to measure.

3.5.2.2 Among the three types of validity: construct, content and criterion validity, content validity may be the most important to ascertain in developing assessment tasks, especially for examinations and tests.

3.5.2.3 Content validity is based on the extent to which a measurement reflects the specific intended domain of content (Carmines & Zeller, 1991). In other words, content validity shows the extent to which the measurement matches the learning outcomes.

3.5.2.4 Since the coverage of test items may just be a sample of the contents covered in a course, the extent to which the selected test items reflect the entire contents indicates the content validity.

3.5.2.5 The assessment vetting committee determines the content validity of assessment tasks.

3.5.2.6 The vetting committee should also judge the fairness of the distribution of marks and time or each assessment task.

3.5.2.7 The validity issue in the assessment will touch on two areas: relevancy and representative.

3.5.2.8 'Relevancy' is the extent to which the assessment is appropriate to the student's ability. 'Representative',

meanwhile, is concerned with whether the assessment can represent a group of students or a body of opinion.

3.5.3 Reliability Assessment

3.5.3.1 Reliability refers to the degree of consistency and accuracy of the assessment outcomes.

3.5.3.2 It reflects the extent to which the assessment will provide similar outcomes for candidates with equal competence at different times or places, regardless of the assessor experimenting (Department of Education and Training, 2008, pg. 10). Thus, reliability includes consistency in assessment and grading.

3.5.3.3 It reflects the extent to which the marking by an examiner is accurate, consistent, reliable, fair, and acceptable.

3.5.3.4 This could be easily established through conformity to the answer and marking schemes or rubrics.

3.5.3.5 Academic staff are also recommended to provide sufficient and timely feedback on assessment tasks to allow students to improve their performance and progress.

3.5.3.6 Complete and accurate information on assessments must be provided to students.

3.5.3.7 Openness in the assessment must be practised as it requires sharing arrangements, the requirements of the assessment process, and the marking criteria with students in the early part of the semester.

3.5.3.8 Several approaches that can be applied to increase reliability in assessment are illustrated below:

i. Provide clear instructions on how to answer questions in all tests. Ambiguous questions and unclear directions must be avoided. For assignments or projects, provide students with specific guidelines on requirements and expectations, including information on how to ensure authenticity.

ii. Develop marking schemes/rubrics as a guide to ensure standardisation in marking. Vague scoring criteria threaten reliability.

iii. Ensure a fair distribution of marks for each question/task.

iv. Provide clear guides for observing and recording evidence.

v. Ensure that the test venue is conducive and that the tests are administered lawfully.

vi. In cases of multiple examiners, conduct moderation in marking. The appointed moderators determine the appropriateness of the standards and markings.

vii. In order to maintain the validity and reliability of assessments, students undertaking a particular course at all sites must get the same opportunities in terms of contents, coverage, resources, and expertise from academic staff.

viii. Tests and examinations should be given, submitted, and administered at the same time and under the same conditions.

3.5.3.9 Some key factors to ascertain validity in an assessment are as follows:

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

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

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

iv. Another person should validate the examination and test questions with expertise in the area assessed.

3.6 THE PRESENCE OF ARTIFICIAL INTELLIGENCE (AI) TOOL

3.6.1 HEPs must also be aware of the use of technology and artificial intelligence, which require innovative measures to ask questions that are heavily contextual to avoid plagiarism.

3.6.2 It is highly commended for HEPs to advocate the use of plagiarism detection software, which is combined with the use of artificial intelligence algorithms to analyse texts and compare them to a large database of existing content, looking for similarities and matches.

3.6.3 These tools can quickly identify instances of plagiarism and provide detailed reports to instructors, helping them to identify and address academic misconduct.

3.6.4 Preventive measures and methods to address these integrity issues:

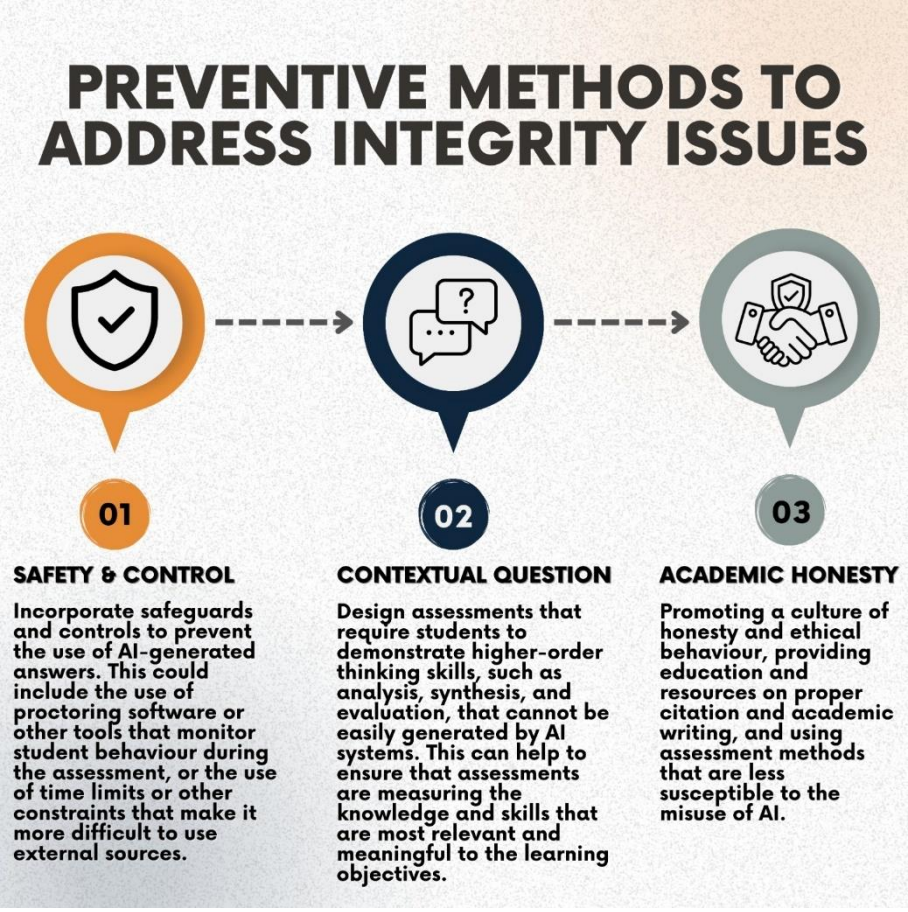
i. Assignments and assessments should be designed to encourage higher-order thinking and critical analysis, which makes it more difficult for students to manner or practise academic dishonesty using AI tools.

ii. Plagiarism detection software can help HEPs identify instances of cheating and ensure that students are submitting original work.

iii. Instructors can randomise assessments and questions to reduce the likelihood of students sharing answers with one another.

iv. HEPs must monitor student activity during assignments, and the processes from draft to final output of works must be genuinely worked on by the students themselves in the process of learning.

Figure 12: Preventive Methods to Address Integrity Issues



Notes for further reading:

1. ChatGPT and artificial intelligence in higher education: quick start guide. Published in 2023 by the United Nations Educational, Scientific and Cultural Organization, https://etico.iiep.unesco.org/en/chatgpt-and-artificial-intelligence-higher-education-quick-start-guide
2. AI and education: guidance for policy-makers. Published in 2021 by the United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org/ark:/48223/pf0000376709. Accessed: March 2023.

PART 4
ASSESSMENT IN DIVERSE CONTEXTS

4.1 OVERVIEW

4.1.1 The assessment for flexible education should still uphold the principles to ensure integrity and credibility in the process of evaluating learners.

4.1.2 Equally there must be a transparent system that is valid, reliable, efficient, and equitable and that is able to evaluate the ability of learners to demonstrate learning outcomes for a set duration of time.

4.1.3 Even though the assessment can be considered as the final stage of constructive alignment, the assessment process should be reflected directly in the teaching processes.

4.1.4 Assessments that use rubrics require the assessor to commonly clarify the areas to be assessed through a given briefing at an early onset, so that the student should know what they are being assessed for.

4.1.5 UNESCO's Sustainable Development Goal 4 (SDG 4) is incorporated Twelfth Malaysia Plan 2021 – 2025, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

4.1.6 This supports learners not only in access but also in a smooth transition to the labour market.

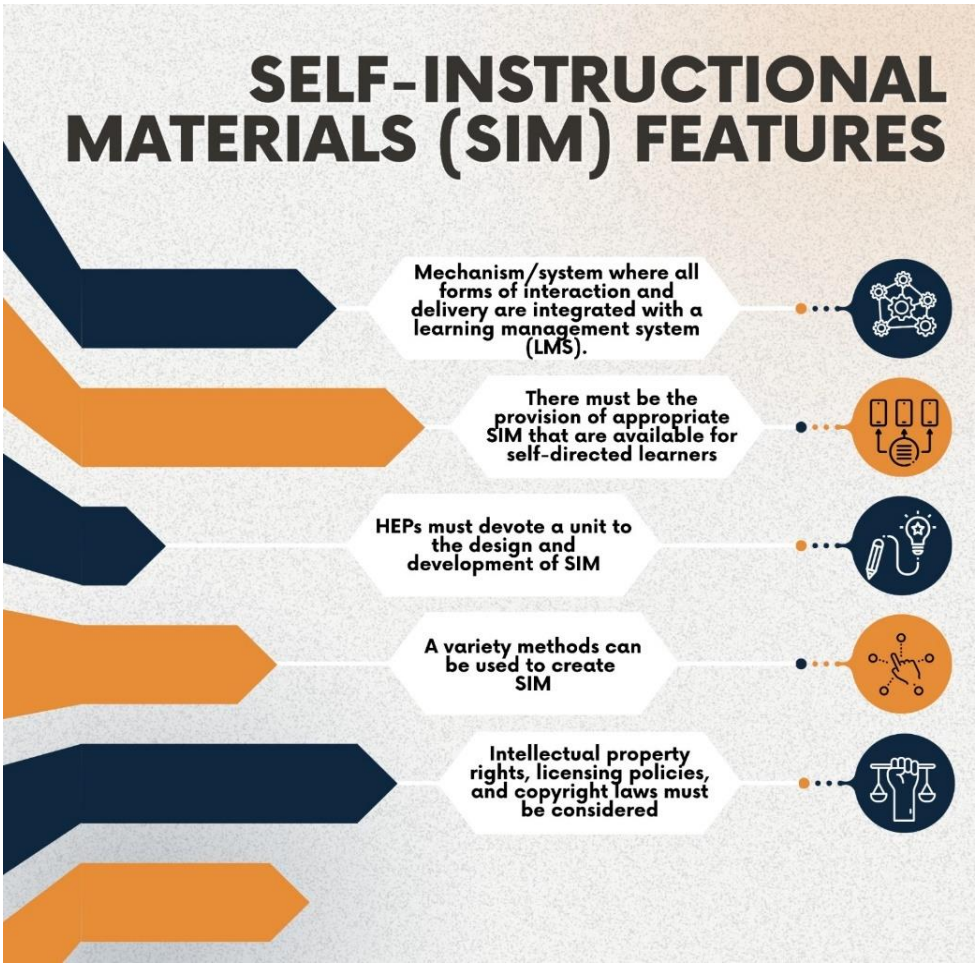
4.1.7 The assessment should be designed not only for assessing whether the student attains the outcomes but also as a form of formal feedback to the student on their learning performances as well as a form of feedback to lecturers/instructors on how effective their teaching approaches are.

4.1.8 The recent pandemic has accelerated the transition of HEPs to approaching the education system in more flexible educational pathways similar to the frameworks arriving from the Open and Distance Learning (ODL) system.

4.1.9 One of the main advantages of the ODL system is that it can be related to Mixed Reality (MR) technology has emerged as a promising tool in the field of education, offering immersive and interactive learning experiences for students.

4.1.10 In order to obtain ODL licenses for a particular programme, institutions will have to create self-instructional materials (SIM).

Figure 13: Self-Instructional Materials (SIM) Features



4.2 STUDENT DIFFERENCES

4.2.1 HEPs must consider marginalised groups, such as senior citizens, inmates, rural residents, indigenous people, differently-abled, conditionally challenged, single parents, or unemployed students to be assessed differently due to their different challenges.

4.2.2 To empower the student with respect to their learning capabilities, renowned HEPs around the world have long applied different methods to assessing their students.

4.2.3 For example, most students may be given 2 hours for a written final examination in the hall, but HEPs may allocate extended hours for differently-abled students certified by medical professionals to ensure fairness and inclusiveness of the differences.

4.2.4 In other cases, HEPs may use interview sessions for different students for the same courses, in case of the differently-abled student's inability to properly answer the assessment paper in written form.

4.2.5 Some HEPs may also provide computerised system assessments for differently-abled students who are unable to write/spell words properly, with recommendations from certified medical professionals.

4.2.6 Lecturers/Instructors should also be aware of differences in different generations that show major traits in different learning capabilities; thus, the assessment may be designed differently.

4.3 CROSS-CULTURAL

4.3.1 Globalisation has encouraged the mobilisation of people, migration, urbanisation, and increasing social and cultural diversity, reshaping countries, and communities.

4.3.2 Assessors should be aware of the differences between societies and cultures. For example, during assessing communication skills, the abilities of students from urban and rural areas may have differences; hence, the rubrics for accessing communication skills should consider the advantages and disadvantages of the previous education system for the learners.

4.3.3 Students from different countries may have different expressions when conversing; hence, the assessment should be fair to all the students.

4.4 PROGRAMME CONDUCTED

4.4.1 Considering the future education system, the Ministry of Higher Education (MOHE) has launched various frameworks and working models to be adopted in the Malaysian HEP's education system.

4.4.2 Figure 14 and Figure 15 show examples of different frameworks or working models that may be adopted specifically in relation to TVET setting in Malaysia (Figure 14) and providing experiential learning and competency-based education in Malaysian Higher Education contexts (Figure 15).

Figure 14: Future-Ready Framework (2020)

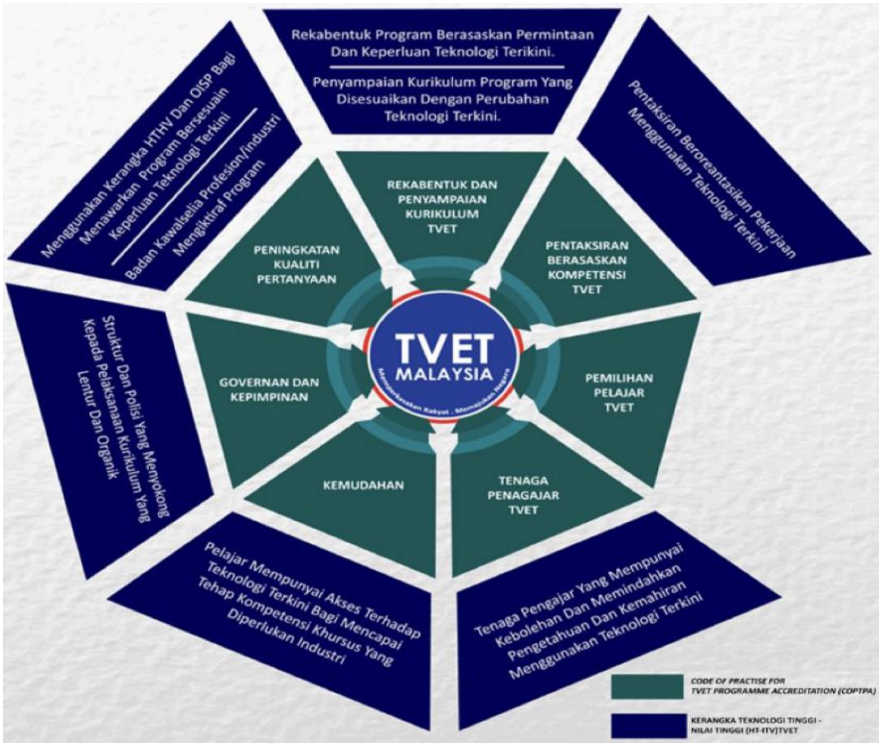
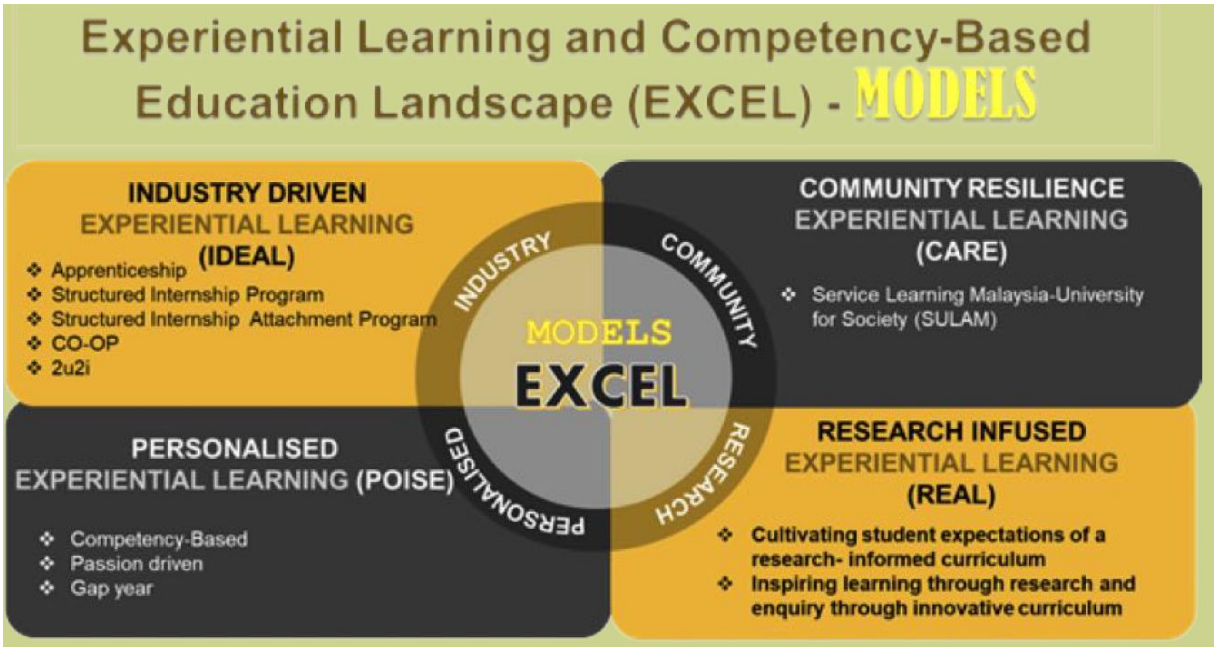


Figure 15: Experience Learning and Competency-Based Education Landscape



4.5 COURSEWORK MODE

4.5.1 Teaching and Learning (T&L) involves a combination of assignments (coursework) with practicum or the production of an assessed project paper to award students' grades.

4.5.2 Assignments/course work can be in the form of writing, presentations, or demonstrations. Examples of dominant assessment activities in this coursework mode are coursework assessment, quizzes, tests, and examinations.

4.5.3 Alternative assessment can also be used. (refer to 3.3.4)

4.6 RESEARCH MODE

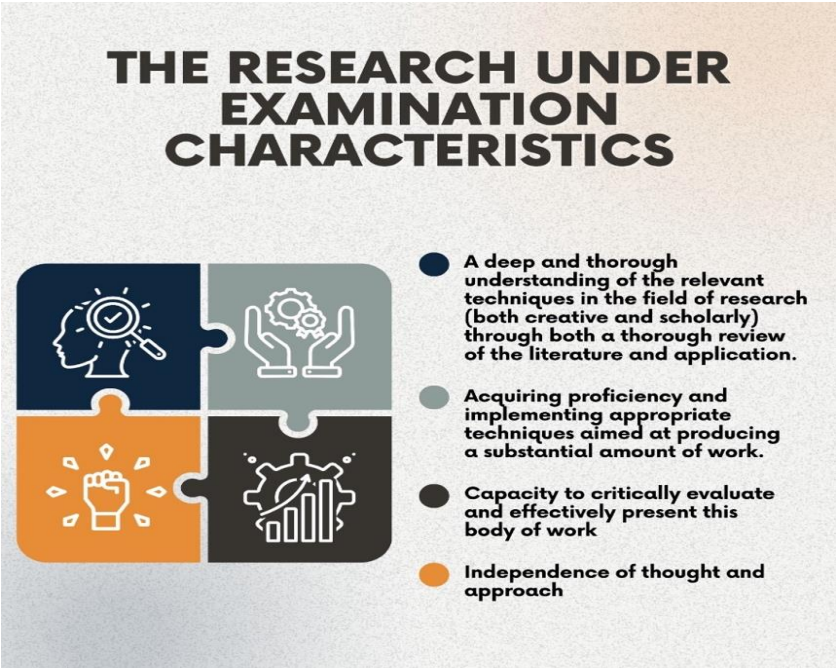
4.6.1 Dedicate entirely to research work leading to the production of a thesis, exegesis, hermeneutic, or dissertation. (refer to Appendix 10 for supervisor's assessment).

4.6.2 HEPs would be required to produce the appropriate guidelines and requirements for the production of the written and/or produced works according to the requirements in the respected programme standards.

4.6.3 The processes may be evaluated through proposal defence, colloquium, poster presentation, paper publications, viva-voce, and written components.

4.6.4 The research under examination should demonstrate:

Figure 16: The Research Under Examinations Characteristics



4.6.5 Please refer to the following suggested Table 15 on the appropriate evaluation criteria:

Table 15: Example Criteria for Thesis Evaluation

	Thesis Evaluation	
Incorporated Component	**Abstract**	- Rationale for the study and problem statement - Hypothesis(es) and objective(s) - Methodology employed. - Findings and conclusions
	Literature Review	- Relevant background on what is known on the topic. - Existing information gap, and importance of bridging the gap. - Appropriate citations - Literature review lead to research question(s), hypothesis(es), and objective(s). - The section present different possible methodologies and the reason for selecting the one that was used in the study.
	Methodology	- Detail of what, when, where, and how the research was performed. - The method relevant to each objective, hypothesis, or research question presented.
	Results	Results presented clearly, concisely, and in logical order for each objective, hypothesis, or research question.
	Discussion	- Presented in a logical order for each objective, hypothesis, or research question (in case of multiple objectives, hypotheses, and/or research questions). - Does the student answer the research question(s), or accept or fail to accept null hypothesis(es) proposed for the study? - Relate the findings to relevant literature with proper citation. - Present satisfactory reasons in the findings reported. - Suggesting direct future research.

4.7 EXEGESIS AND CREATIVE OUTPUT

4.7.1 The Exegesis is a theorised and analytical discourse that presents fresh and authoritative insights into the field by analysing and situating the creative component and thereby setting the stage for the ideas and models that guide the creation of the postgraduate works (by creative project and the Exegesis written component).

4.7.2 The creative output written component shows that the candidate understands the relationship of the investigation to the wider context of the knowledge to which it belongs.

i. the calibre of the creative output and its capacity to aesthetically and conceptually contribute to discussions and praxis in its area;

ii. the ability of the candidate to review pertinent literature and adequately cite statements;

iii. the written work be done in critical analysis that rigorously argues the case of the overall thesis and provides a critical context for the contribution to knowledge made through the creative component;

iv. the effectiveness of the Exegesis to reflect on and situate the creative output;

v. the degree to which the candidate's attitude towards their own work and the work of others is critical and perceptive, whether the literary/ written presentation of the exegesis is satisfactory.

4.8 MIXED MODE

4.8.1 A combination of coursework and leading research to produce a project paper or dissertation.

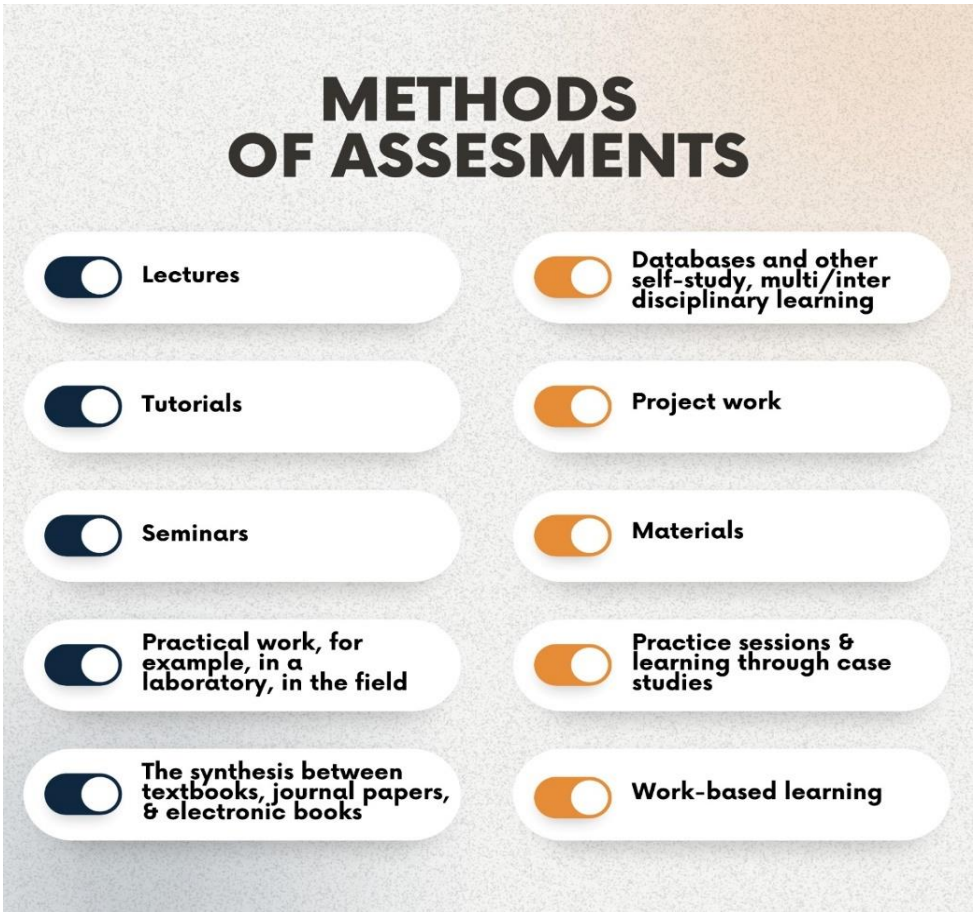
4.8.2 The ratio of coursework to research is commonly balanced between 50:50 and 30:70.

4.8.3 The assessment of a particular course may be the same as the course mode.

4.8.4 However, the weightage of the project paper or dissertation may be as close as the research mode with the expectation of mastery of knowledge or a new contribution of knowledge.

4.8.5 Methods of assessment might include any of the following, selected as appropriate to the discipline or field of study and the programme's aims, mode of delivery, and typical entrants (refer to Appendix 11):

Figure 17: Methods of Assessments



4.9 INDUSTRIAL MODE (WBL, APPRENTICESHIP, 2U2I)

4.9.1 A combination of on-campus and off-campus learning (real-world learning applications in the workplace) throughout the study involving HEPs and industry experts in curriculum development and delivery.

4.9.2 It can be offered in various combinations, such as 3u1i, 2u2i, 2u1i and 1½u1i.

4.9.3 For the industrial-based learning or programme conducted through the Industrial Mode/Apprenticeship, HEPs must have a proper mutual agreement with the respective industry.

4.9.4 A suitable industry mentor should be appointed to assist the students with experiential learning in the industry.

4.9.5 HEPs should involve and if necessary, train the industry mentor to ensure learning takes place as well as to validate assessments and grading instrument for outcome attainment.

4.9.6 In this regard, a systematic buddy system should be established by HEPs to ensure the validity and reliability of assessment during the learning process, within the industrial model.

Table 16: Example Criterions for Practical Evaluation

Types of Work-Based Immersion Programmes	Examples of Outcomes to be Measured	Examples of Assessment Tasks	Suggested Grading Instrument
Practical Training	Ability to solve problems in workplace	Solve specific problems and preparing the reported tasks	Rubrics: The assessor is to rate the student through: - Observation - Discussion with peers/management - Effectiveness of decision
	Ability to communicate orally and in writing	- Reports - Presentations	
	Ability to plan and execute projects assigned	- Proposal - Reports - Presentations - Development of product (if applicable)	
Clinical training	Ability to solve clinical problems	- Written tests - Oral tests	Answer Schemes
	Ability to show analytical skills	- Objective Structured Clinical Examination (OSCE)	
	Ability to demonstrate critical thinking skills	- OSCE - Long case examinations	
	Ability to communicate effectively	- OSCE - Long case examinations - Mini clinical evaluation exercise	Answer Schemes Rubrics

4.10 COURSES OFFERED

4.10.1 Semester-based

4.10.1.1 Semester-based assessment may be implemented within a normal semester system. (refer to GGP: PDD)

4.10.1.2 The assessment activities may include quizzes, tests, projects, and assignments throughout the semester.

4.10.1.3 The department may synchronise the schedule of assessment activities to ensure the assessment is distributed throughout the semester to lessen the students' burden.

4.10.1.4 The assessment activities must also consider the allocated SLTs for the semesters to ensure the assessment is reflected in the intended LOs within the specified SLTs.

4.10.2 Module-based

4.10.2.1 Module-based or also referred to as modular-based does not tie with the semester (14-week/8-week/12-week) system.

4.10.2.2 The assessment can be conducted within the period of the modules according to the specified SLT credits.

4.10.2.3 For example, 1 module will probably be conducted within six weeks with 8 hours per day (40 hours of learning time), which can be reflected in 6 SLT credits.

4.10.2.4 The assessment can be implemented during the module's period without additional weeks for the final examination, compared to a semester-based system.

4.10.3 Continuing Professional Development (CPD)/Portfolio-based

4.10.3.1 Continuing Professional Development (CPD)/portfolio-based system has become popular of late, as the assessment can be implemented within one semester or throughout the programme.

For example, previous co-curriculum courses are normally implemented within one semester.

4.10.3.2 HEPs may implement a CPD/portfolio-based system for students at their own pace to prepare all the records needed to collect hours and badges to claim credits for particular courses.

4.10.3.3 Students may be evaluated by various approaches, including interviews or challenge sessions, to prove that they have attained the intended learning outcomes.

4.10.4 Micro-credentials

4.10.4.1 Micro-credentials is a "…term that encompasses various forms of certifications, including 'nano- degrees', 'micro-masters', 'credentials', 'certificates', 'badges', 'licences' and 'endorsements'" (UNESCO, 2018:10).

4.10.4.2 As the name implies, micro-credentials focus on a much smaller learning volume than conventional awards, allowing learners to complete the required study over a shorter duration.

4.10.4.3 A micro-credential can lead to an academic award in Malaysia, and there are three ways to do it.

i. Component of Accredited programme (one HEP)
ii. Component of Accredited programmes (multiple HEPs)
iii. Stand-alone courses

4.10.4.4 The attainment of the outcomes should be demonstrated through suitable assessment methods and reported in a user-friendly manner.

4.10.4.5 The mode of delivery, the pace of learning, and assessment methods should be appropriately personalised for optimal learning by different learners.

4.10.4.6 When implementing micro-credentials from accredited programmes, the HEP can adjust the teaching, learning and assessments of course(s) offered via micro-credentials, provided that constructive alignment is always maintained and demonstrated.

4.10.4.7 Information on the type of assessments (examinations, tests, projects, etc.), grading (marks, grade points, alphabetical grades, etc.), and quality assurance should be stated in the Malaysian Micro-credential Statement (MMS).

4.10.4.8 For more information on micro-credentials, refer to Guidelines to Good Practices: Micro-Credentials by MQA.

4.10.5 Exam on-Demand

Please refer to the Consideration of 'Exam On-Demand' in Appendix 13.

4.10.5.1 Exam on demand (self-paced assessment) has been one of the most popular approaches in the flexible education system. Learning today extends beyond traditional classroom (Learning without walls) and instruction (Learning without lecture).

4.10.5.2 With the latest developments, such as online learning, students can understand a theory or concept through videos on mass media learning such as massive online open courses (MOOC).

4.10.5.3 This self-paced learning can give students the freedom to determine their learning time.

4.10.5.4 Fast learners may finish one course earlier than others, depending on their time spent for the assessment.

4.10.5.5 To ensure the validity of the assessment, the lecturer must have made multiple exam questions with the same level of difficulty and outcomes.

4.10.6 Community-based

4.10.6.1 Community-based assessment can be implemented through the semester-based system or module-based system.

4.10.6.2 HEPs may also implement the community-based assessment outside of the semester system.

4.10.6.3 The assessment can also be evaluated through a portfolio, case study report, project report, etc., depending on the intended outcomes.

For example, the student may claim credit for the co-curriculum course by submitting a report after attending a community-based programme during the semester break.

4.10.7 Mobility-based

4.10.7.1 Mobility-based assessment can be implemented for a student participating in a mobility programme.

4.10.7.2 For all students who participated in the mobility programme, the assessment depends on the agreement between the mobility institutions.

4.10.7.3 HEPs may have different mechanisms for transferring credit courses from those mobility programmes.

4.10.8 TVET Practical-based

4.10.8.1 UNESCO-UNEVOC has defined Technical and Vocational Education and Training (TVET) as an educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding, and knowledge relating to occupation in various sectors of economic life.

4.10.8.2 The TVET-practical-based assessment should reflect the ability of a student concerning competencies within certain areas in performing a task that could be directly related to occupational-based (refer to Figure 14, 4.4).

4.10.8.3 The assessment could involve the quality of finishing, the speed of completing the task, assessing skills such as creativity, problem-solving, and communication among others, using appropriate tools of measurement based on competencies and standard set.

4.10.9 APEL (A), (C), (Q) and (M)

4.10.9.1 APEL (Accreditation of Prior Experiential Learning) is a systematic process that involves the identification, documentation, and assessment of prior experiential learning, i.e., knowledge, skills, and attitudes, 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.

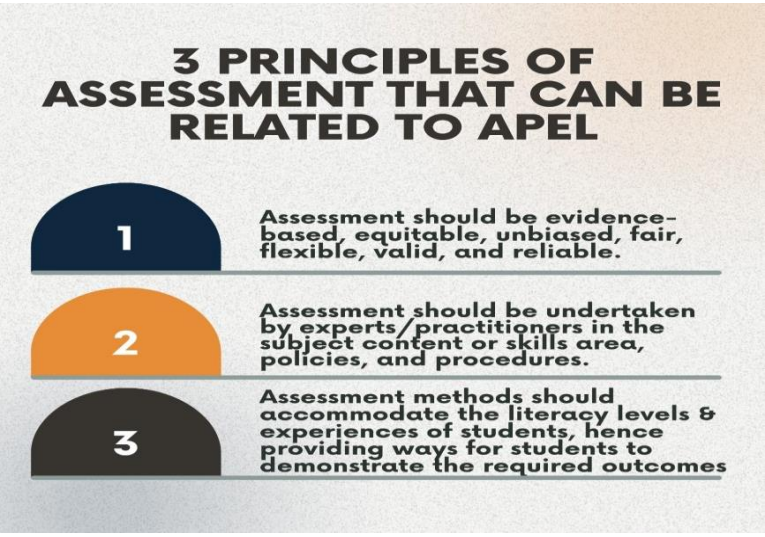
4.10.9.2 Table 17 depicts the details of APEL (A), APEL (C), APEL (Q) and APEL (M).

Table 17: APEL Assessment Mechanism

APEL	ASSESSMENT MENCHANISM
Access (APEL.A)	- Aptitude Test; - Portfolio; and - Interview.
Credit (APEL.C)	- Challenge Test; or/and - Portfolio.
Qualification (APEL.Q)	- Portfolio; - Field And Validation Visit; - Challenge Test, And Capstone Courses.
Micro-credentials (APEL.M)	Portfolio.

4.10.9.3 There are three principles of assessment that can be related to APEL:

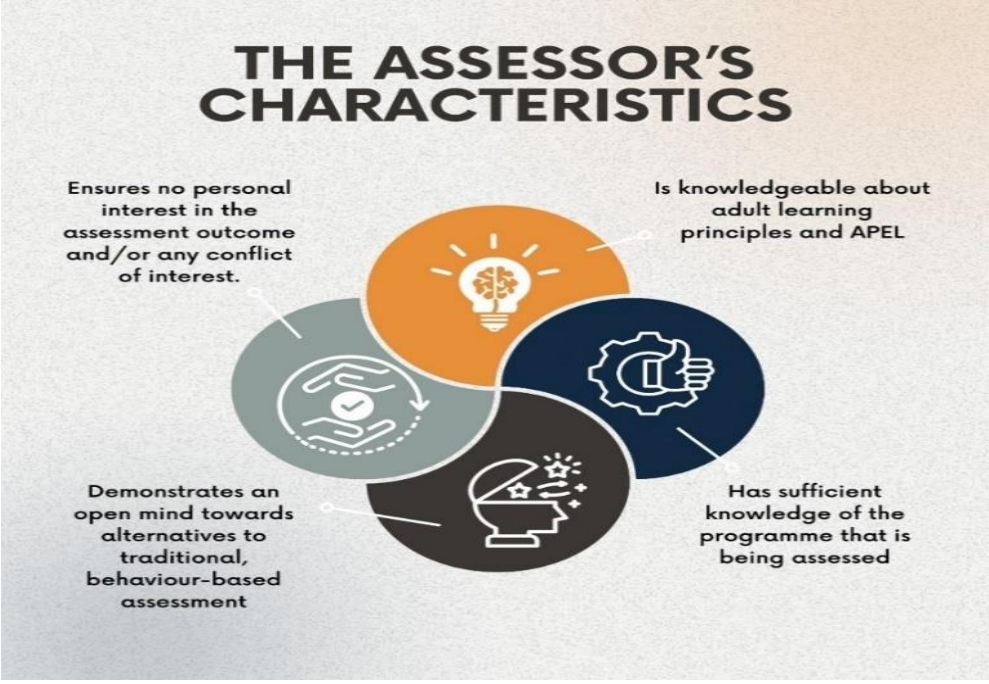
Figure 18: Three (3) Principles of Assessment that can be Related to APEL



4.10.9.4 The assessor appointed would be a subject matter expert/specialist who can evaluate the evidence submitted based on the assessment criteria.

4.10.9.5 In addition, he/she should demonstrate the following:

Figure 19: The Assessor's Characteristics



4.10.9.6 Table 18 describes the types of instruments and descriptions available for APEL assessment.

For more information on the detailed instruments and descriptions available for APEL assessment, can be obtained from the GGP of MQA for APEL implementation in Malaysia.

Table 18: APEL Assessment Instruments

Types of Instruments	Descriptions
Written Test	Multiple-choice, true/false, matching, fill in the blanks, short answer, essay, and situation-based problem solving.
Oral Exam	Structural oral test, one-to-one interview, and panel interview.
Performance Assessment	Simulation, skills demonstration, role play, and observation.
Oral Exam	Structural oral test, one-to-one interview, and panel interview.

PART 5
COMMUNICATING ASSESSMENT AND OUTCOMES

5.1 CONTINUOUS QUALITY IMPROVEMENTS (CQI)

5.1.1 Quality in higher education comes with continuous quality improvements (CQI) at course levels to provide information for the continual quality improvement at the programme level.

5.1.2 The manner of utilising assessment even online, and evaluation process provides critical information to the faculty and administrators of the HEPs.

5.1.3 HEPs that use a CQI system and tools based on digital feedback, loops through course/faculty evaluations easily.

5.1.4 These allow for appropriate real-time reports on the effectiveness of the programme design, delivery, and objectives.

5.1.5 They will enable the institution to enhance the quality of education, and the process will continue year after year.

5.1.6 Thus, the HEP would encourage building an environment of safe engagements as well as discussion sessions.

5.1.7 The call on the stakeholders is to ask questions and equally show appreciation for the diverse views expressed by them during the discussion sessions.

5.1.8 Apart from CLOs and PLOs, PEOs must also be systematically assessed.

5.1.9 The assessment of PEOs should be done in about one cycle after graduation, normally within three to five years.

5.1.10 The faculty or department must create a proper database on their alumni according to the programmes attended.

5.1.11 The outcomes of the PEO assessment are to be used for CQI, which will further improve the academic programme.

5.1.12 Apart from employer and alumni surveys, other assessment methods to assess the attainment of PEO can be adopted.

5.1.13 These methods include interviews (face-to-face or online) with alumni and employers and focus group interviews.

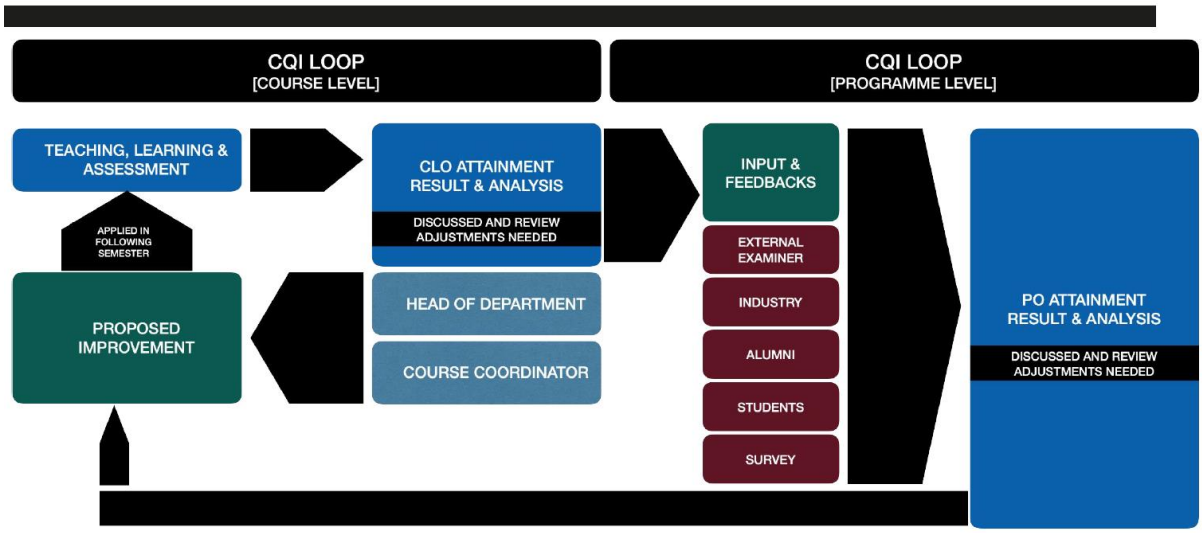
5.1.14 Performance criteria or targets can be set to determine the level of achievement.

5.1.15 Such evidence can only be captured by taking a systematic approach to assessment.

5.1.16 Hence, at the programme level, a programme's impact is assessed by finding evidence of the attainment of PLOs.

5.1.17 This allows HEPs to plan for continuous quality improvement (CQI) based on the attainment levels of the CLOs and PLOs as shown in Figure 9.

Figure 20: Overview of the CQI Process



5.1.18 With systematic monitoring that began at the course levels, students should be able to demonstrate attainment of all PLOs by the end of the academic programme, acquiring the full skills set to perform as functional graduates.

5.1.19 Assessment of students' learning provides evidence of their level of attainment.

5.2 REVIEW OF ASSESSMENT AND DEVELOPMENT

5.2.1 This attainment is to provide HEPs with data on student performance and identify areas for improvement.

5.2.2 The area of improvement is not only focused on the students but also important for the academic courses and programmes offered.

5.2.3 The attainment is analytic data that allows the programme or course developer to reflect on the quality of curriculum, instruction, and assessment such as:

i. Embed evaluation of teaching quality within broader evaluation processes.

ii. Ensure that assessments of assessment quality, and evaluations of initiatives to foster quality, are included in broader quality assurance processes and assessments of overall institutional performance.

iii. Articulate the inter-connections between different types of internal and external evaluations in use to promote coherence across them and develop a clearer understanding of the contribution each one makes to quality assessment.

iv. Eliminate those evaluation processes that do not contribute significantly to achieving the institution's objectives, and verify that the data collected is appropriately and fully used as well as relevant to the strategic goals of the institution.

v. Build evaluation into the design of every assessment initiative, specify the criteria and evidence for judging success, and communicate these publicly.

vi. Develop benchmarks for assessment quality and seek to build a knowledge base of evidence, connecting with real-world and industry needs, with real improvements that have impacts on learning outcomes.

vii. Encourage a culture of evidence-informed practice and use evaluations to deepen understanding of the relationships between inputs and processes and learning outcomes as well as identifying external factors likely to affect them.

CONCLUSION

Assessment that is constructively aligned to the intended learning outcome, has a formative function, by providing 'feed-forward' for future learning that can be acted upon for continuance improvement.

The amplification in the use of technology and distance learning as well as flexible education had come about under the needed conditions, which paralleled the conventional ways of assessment that provides the significance for the use of alternative assessment.

This method for assessing the academic achievement of a learner includes activities requiring the application of acquired knowledge and skills to real-world situations, and it is often seen as an alternative to standardised testing.

As the tasks should be challenging, demanding higher-order learning and (for employability), integration of knowledge learned in both the university and practical contexts that encourage metacognition, and promote thinking about the learning process, should encourage thinking beyond settling just the learning outcomes.

Whilst ensuring fairness and quality of assessment when managing assessment for various contexts, there should be an opportunity and a safe context for diverse students to expose problems with their studies and for HEPs to gather the appropriate methods for improvement through the appropriate medium of learning facilities.

With the engagement from related stakeholders (industry, government, and non-government bodies, alumni, etc.), it strengthened the manner of updating the required bodies of knowledge, the current industry practices, and professional practices.

Through these segmented stakeholders and with appropriated processes such as surveys, interviews, case studies, industrial engagements, and feedback will ensure the active exchange of discourses on the nature of teaching and learning and relevant ways in the students' assessment in achieving the appropriate nature of the courses' learning outcomes (CLOs), which align with the programme's learning outcomes (PLOs).

This creates a balanced, structured approach while still allowing flexibility as needed to improve the programme's approach and relevance to the needs of the industry.

These periodical assessments will pivot the feedback, surveys, correspondences, and meetings, which eventually will affect the courses' learning outcomes as they revise newer texts and literature, current practices, case studies, and a new and updated technological presence, which eventually shifts the fulcrum of the Programme's Learning Outcomes.

With the acquired clearly defined data and the needed tasks that arrive from these resources, HEPs will need to execute the stages of reviewing or revamping their courses and programmes, to be relevant.

The focus at this phase would be to generate knowledge that would inform development in the HEP in making informed decisions at the planning and policy levels.

The mutual benefit is to produce competent graduates equipped with necessary skills to deal with community challenges.

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APEL MQA. - https://www2.mqa.gov.my/apel/

MQA's GGP Assessment of Student MQA -https://shorturl.at/bhmH3

Garis Panduan Pembangunan programme Akademik - https://shorturl.at/oxyzM

SDG UNESCO - https://en.unesco.org/sustainabledevelopmentgoals

TTAC Manual MBOT - https://ttasmbot.org.my/srr.php

High Technology High Value (HTHV) KPT - https://shorturl.at/bRV58

Future Ready Framework KPT - https://shorturl.at/abhsv

ExCEL KPT -https://shorturl.at/O1679

GGP 2u2i KPT - https://shorturl.at/glC28

GGP: APEL.A and APEL.M: https://www2.mqa.gov.my

GGP: Micro-credentials: https://www2.mqa.gov.my

FURTHER READINGS

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APPENDIX 1

Table 19: Example of SOLO Taxonomy Aligned Assessment Plans

SOLO level	Type of outcome	Solution category	Structure of essay
1 – Prestructural Misses the point		Completely incorrect solution.	Inappropriate or a few issues identified. No framework for discussion and little relevant material selected. Poor structure to the essay. Irrelevant detail and some misinterpretation of the question. Little logical relationship to the topic and poor use of examples.
2 - Unistructural Single point	State Recognise Recall Quote Note Name	Correct answer to a simple algorithmic problem requiring substitution of data into a formula. Correct solution of one part of a more complex problem.	Poor essay structure. One issue is identified and this becomes the sole focus; no framework for organising discussion. Dogmatic presentation of a single solution to the set task. This idea may be restated in different ways. Little support from the literature.
3 - Multi- structural Multiple unrelated points	Explain Define List Solve Describe Interpret	Correct solution to a multiple-part problem requiring the substitution of data from one part to the next. Poorly-structured project report or practical report on open tasks.	Essay poorly structured. A range of material has been selected and most of the material selected is appropriate. Weak introduction and conclusion. Little attempt to provide a clear logical structure. Focus on a large number of facts with little attempt at conceptual. explanations. Very little linking of material between sections in the essay or report.
4 – Relational Logically related answer	Apply Outline Distinguish Analyse Classify Contrast Summarise Categorise	Elegant solution to a complex problem requires the identification of variables to be evaluated or hypotheses to be tested. Well-structured project or practical report on open task.	Essay well-structured with a clear introduction and conclusion. Framework, which is well developed, exists. Appropriate material. Content has logical flow, with ideas clearly expressed. Clearly identifiable structure to the argument with discussion of differing views.
5 - Extended abstract Unanticipated extension	Create Synthesise Hypothesise Validate Predict Debate Theories	Solution to a problem that goes beyond the anticipated answer. Project or practical report dealing with a real-world ill-defined topic.	Well-structured essay with a clear introduction and conclusion. Issues clearly identified; clear framework for organising discussion; appropriate material selected. Evidence of wide reading from many sources. Clear evidence of sophisticated analysis or innovative thinking.

Note: Biggs and Collis' (1982) Structure of Observed Learning Outcome (SOLO) taxonomy is another considered assessment for cognitive learning.

It is especially beneficial when setting cognitive tasks or assessment items and designing rubrics (performance standards) for grading the task.

When using this taxonomy for writing learning outcomes and grading, it informs learners and faculty staff on the criteria and the standards of answers required to show evidence of attainment at the various competency levels or levels of cognitive performance.

The QR reference shows a representation of the SOLO taxonomy, which has five levels, starting from no knowledge (pre-structural), through surface learning (uni-structural and multi-structural), to deep learning (relational and extended abstract).

The psychomotor domain (Simpson, 1972) includes physical movement, coordination, and use of the motor-skill areas. The development of these skills requires practice and is measured in terms of speed, precision, distance, procedures, or techniques in execution. This domain includes seven major categories that are listed from the simplest behaviour to the most complex namely perception, set, guided response, mechanism, complex overt response, adaptation and origination.

The MQA and MOHE LO domains belonging to the psychomotor taxonomy include practical skills and entrepreneurship.

The Affective Domain addresses interests, attitudes, opinions, appreciations, values, and emotional sets. This domain includes the manner in which we deal with things emotionally, such as feeling, value, appreciation, enthusiasm, motivation, and attitude. The five categories in affective domain include receiving, responding, valuing, organisation and characterization by value. The MQA and MOHE LO domains belonging to the affective taxonomy include communication, teamwork and social responsibilities, ethics, morality, professionalism, lifelong learning, management, and leadership. Other taxonomy examples could also be considered by HEPs appropriated into their programme design.

APPENDIX 2

Table 20: Example of The Forms of Online Assessment (Multiple Choice Questions and Fill in The Blanks)

Question Types	Grading Type	Common Verbs in Bloom's	Advantages	Disadvantages
Multiple-Choice Question	Automatically graded	Knowledge, Recall, Comprehension, Application, Analysis	MCQs are the most versatile of the closed-ended question types.	When compared to true/false and matching, multiple-choice items can be more challenging to write.
			This versatility stems from the fact that the questions can contain more elaborate scenarios that require careful consideration on the part of the student.	They also require the creation of plausible "distractors" or incorrect answer options. As with other closed-ended questions, multiple-choice assesses recognition over recall.
			The probability of students guessing is also relatively low.	
Fill-In-The-Blanks	Automatically graded	Knowledge, Recall, Comprehension, Application,	Fill-in-the-blank (FIB) questions assess unassisted recall of information rather than recognition. They are relatively easy to write.	FIB questions are only suitable for questions that can be answered with short responses.
				Additionally, because students are free to answer any way they choose, FIB questions can lead to difficulties in scoring if the question is not worded carefully.

APPENDIX 3

Table 21: Example of The Forms of Online Assessment (True/False and Essay Questions)

Question Types	Grading Type	Common Verbs in Bloom's	Advantages	Disadvantages
True/False Questions	Automatically graded	Knowledge, Comprehension, Recognition	True/false questions are among the easiest to prepare.	True/false questions are limited in what kinds of student mastery they can assess.
				They have a relatively high probability of students guessing the correct answer (50%).
				True/false also assesses recognition of information, as opposed to recall.
Essays/Short Answer	Manually graded	Knowledge, Analysis, Comprehension, Application, Evaluation	Essay questions are the only type of question that can effectively assess all six levels of Bloom's Taxonomy. They allow students to express their thoughts and opinions in writing, granting a clearer picture of the level of student understanding. Finally, as open-ended questions, they assess recall over recognition.	There are two main disadvantages to essay questions - time requirements and grading consistency.
				Scoring can be difficult due to the variety of answers, as well as the "halo affect (students are rewarded for strong writing skills for the mastery of utilising the right vocabulary, as opposed to demonstrated mastery of the content).

APPENDIX 4

Table 22: Online Engagement, Platform and Assessment (Asynchronous)

Assessment Types	Examples	Platform	Considered Tools
Traditional Paper/Report Submission Asynchronous	- Essays - Case studies - Article reviews - Proposal writing - Report writing	- CN - Google Classroom - Canvas - Blackboard Learning Online marking and feedback - ExamSoft - Emails - Cloud-sharing Drives	- Turnitin - iThenticate - Quetext - Grammarly
Automated Online Assessment Asynchronous	- Online Quizzes (MCQs, MROS, FIBs, T/F matching) - In-video quizzes -In-Class Live Answer (Assessment of prior knowledge)	- CN - Google Forms - Plickers - Poll Everywhere! - Mentimeter - Nearpod - Goformative.com - Fipgrid - Kahoot	Asynchronous (time-based) Automated result and in- situ for the students
Critical Reflection & Meta-Cognition Asynchronous	- Electronic portfolios - Online journals, logs, diaries, blogs, wikis - Embedded reflective activities - Peer & self-assessment	- e-portfolio - Wikis - Blogs - Academic's Preferred peer assessment platforms	Requires the examiners to apply the appropriate rubrics to the submitted works

APPENDIX 5

Table 23: Online Engagement, Platform and Assessment for Continuous and Authentic Assessment

Assessment Types	Examples	Platform	Considered Tools
Continuous Assessment (Individuals) Asynchronous	- Contributions to forums, chats, blogs and wikis - Reading summaries - Collaborative learning - Critical reviews	Blogs/wiki/Google docs	Requires the examiners to apply the appropriate rubrics to the submitted works
Continuous Assessment (Group) Asynchronous	- Online presentations - Group online projects - Role play - Online debates	- Screencast (Ink2Go) - Blog Platform Video based platform (Vimeo, YouTube, Instagram - Loom - Google Docs	
Authentic Assessment Asynchronous	- Scenario-based learning - Laboratory/field trip reports - Simulations - Case studies/Role play - Online oral presentations and/or debate	- Google Docs - Google Forms - Plickers - Poll Everywhere - Mentimeter - Nearpod - Goformative.com - Flipgrid - Kahoot	The assessment are activity based, continuous assessment in variant forms of academic-student engagement, Elements of Academic dishonesty are low and requires minimal invigilation

Invigilated Online Exam Assessment Synchronous	- Mid-semester exam - Final exams	Assigned online video platform (e.g.: MS Teams, Zoom, Google, Meet, etc)	AI Proctoring may be required (Utilising AI to assist facial recognition as well) - Honorlock - Protorio - Talview - RPNow - Examus AI Proctoring - Questionamark - Mercer Mettl Online Examination and Proctoring Solutions - Think Exam Multiple invigilators may be required to assess the suspicious case or condition for the high percentage. Recommended Cloud-based, secure on-line biometric scan for students' identity verification. The standard requirement for lights, camera and microphone settings in viewing the spacing of candidates to the viewed and monitor.

Note: This list is not exhaustive. HEPs are advised to explore other AI proctoring that may provide a more comprehensive and secure data encryption

APPENDIX 6: Data Encryption During Transmission of Examination

a) Data encryption plays an important role in preventing unauthorised access to question banks. It also helps to avoid result manipulation and blocks access without valid credentials. It is a vital feature to ensure the security of the examination.
b) The online examination system's data has been encrypted to prevent any kind of misuse.
c) Question bank and exam data are stored in a highly secure and encrypted manner.
d) The entire communication between the server and examination client is also encrypted with a secure mode of communication.
e) This ensures the confidentiality of the question papers being exchanged between the server and the client.
f) A timer may be set for each section and each question in the exam, and if any student is unable to answer within the specified time, the system moves on to the next question.

APPENDIX 7

Conditions and Requirements for Online Assessment

a) Stable Internet Line with the acceptable minimum appropriate speed.
b) The data are secure, while prepared, stored, delivered, and retrieved.
c) Exam materials are optimised to be on low data to ease the high bandwidth.
d) Appropriate hardware and the application platform to conduct the examination.
e) Preparations of the set exams by the HEPs are appropriated to the level of MOF 2.0 (2018) and the Bloom's Taxonomy Educational Objectives.

APPENDIX 8

Example of Approximation in Assessment Tasks

Time requirements for certain assessment tasks
(Nitko & Brookhart, 2010)

Type of task	**Approximate time per task (item)**
True-false items	20–30 seconds
Multiple-choice (factual)	40–60 seconds
One-word fill-in	40–60 seconds
Multiple-choice (complex)	70–90 seconds
Matching (5 stems/6 choices)	2–4 minutes
Short-answer	2–4 minutes
Multiple-choice (w/calculations)	2–5 minutes
Word problems (simple arithmetic)	5–10 minutes
Short essays	15–20 minutes
Data analyses/graphing	15–25 minutes
Drawing models/labeling	20–30 minutes
Extended essays	35–50 minutes

APPENDIX 9

Example of Technical Time Allowance for Submission in Online Exams

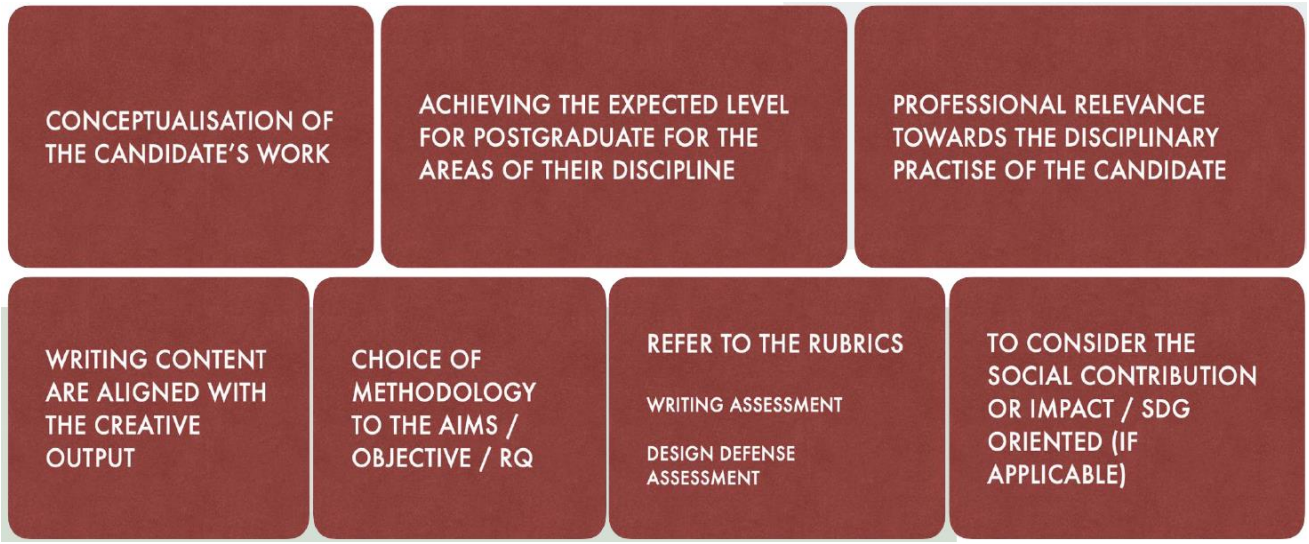
Exam Length	Technical Time Allowance
Up to and including 75 minutes	15 minutes technical time
76 minutes to 179 minutes	30 minutes technical time
180 minutes or more	60 minutes technical time

Note:

- For students sitting for online examination outside of HEP vicinities and with moderate internet coverage.
- Technical time allowance refers to the acceptable period for submission (depending on the length of the examination) after the online examination ends.

APPENDIX 10

Example for Supervisor's Key Areas of Assessment



APPENDIX 11

Example for Postgraduate Level of Assessment

Evidence of PLOs achieved or in process can be observed through these processes and modes of assessment.

Students Processes Include Their:	Modes Of Assessment
• **Participations** • **Preparations** • **Engagements with Supervisor** • **Engagements with Stakeholders** • **Process of Creation** • **Presentation of Creative Works** • **Presentations** • **Writings** • **Prepared Journals (Whichever Media Form]** • **Preparation for Viva Voce**	Project Paper and Oral Presentation Reviews and Critiques Presentation Paper/Seminar Work Exhibition Survey Analysis Exegesis/Thesis/Dissertation Journal (Written, Audio/Visual) Industry Report Research Progress Report Graduate Seminar Presentation Assignments Capstone Project Graduate Studio Work Proposal/Design Defence Publication Works (During Study) Viva Voce

APPENDIX 12

Course Assessment Plan, Instruction and Rubric

Exemplar of a Course Assessment Plan

Please note that this is merely to show an example to help understand what is discussed in terms of constructive alignment in Part 2 and managing assessment in Part 3 (Weightage, Table of Specification and Rubric). HEPs are required to apply the knowledge appropriately in their own contexts. This exemplar is for two of three course learning outcomes in the course.

To prepare your course assessment plan and to calculate the weightage, you need to refer to the information in your syllabus.	
Based on the course information from your syllabus:	
A.	State the credit hour for your course.
B.	State the total Teaching time allocated for the course or Total Student Learning Time. Note: for distance learning context, Total Student Learning Time can be used.
C.	State your method of assessment.
D.	Determine Teaching time allocated by CLO (**D1**) or the SLT by CLO (**D2**) based on the emphasis placed on each CLO and method of assessment,
E.	Calculate the weight of each assessment. Time spent Teaching/Learning for each CLO x 100 Total Teaching/Learning for the course The sum of the assessment weight **must equal to 100%.**

The following is an example.

Course Code: SPGP3023
Course Name: Assessment in Digital Context

Brief Synopsis

This is an undergraduate course designed for education programme specialising in IT. Exposure to various aspects of assessing in digital context include theories and principles on visual arts and digital technologies that can be used when assessing and evaluating learning. Fundamental concepts of assessment and evaluation using quantitative data and qualitative data are introduced before opportunities to integrate digital technologies and relevant software for various types of assessment are provided.

Description of Assessment:

This course consists of 50% coursework (covering CLO1, CLO2 and CLO3) and 50% final examination (covering CLO1 and CLO2 only). There will be two assignments for the coursework:

1) Case Study and Analysis - 20% + 10% and
2) Group e-portfolio Project – 20%

A) Credit Hour		3		
B) Total SLT/Teaching Time		120 / 42		
CLO	**C) Method of Assessment**	**D1) Teaching time by CLO**	**D2) SLT for CLO**	**E} Weightage**
CLO1: Discuss the concept, principles, issues and challenges in visual art assessment and evaluation. (C2)	Case Study (20%) Final Examination (30%)	21 hrs	56 hrs	1) 21/42 *100 = 50% 2) 56/120*100 = 46% (±40 - 50%) **50%**
CLO2: Evaluate quantitative and qualitative data in measuring learning outcome through assessment and evaluation (C5)	Case Analysis (10%) Final Examination (20%)	12.6 hrs	40 hrs	1) 12.6/42*100 = 30% 2) 40/120*100 = 33% (±30 - 35%) **30%**
CLO3: Integrate digital technologies and appropriate software for diagnostic, formative and summative assessment and evaluation. (A4, P1)	Group Project (e-Portfolio) (20%)	8.4 hrs	24 hrs	1) 8.4/42*100 = 20% 2) 24/120*100 = 20% (20%) **20%**

Course Assessment Plan Instruction and Rubric

Once the weightage is determined, it can be used to plan the number of items based on the related CLO and topics for the final examination. However, since only CLO1 and CLO2 in this exemplar are used in the final examination, there is a need to also determine the weight for the final examination questions to determine the number of items by CLO. Total weightage for CLO1 and CLO 2 is 80%. To determine the weightage of the final exam questions there is a need to find the weightage of the final examination only.

For example, CLO1 (50/80*100 = 60%) and CLO2 (30/80*100 = 40%).

A Table of Specifications for the number of items based on the related CLO and topics for the final examination can also be determined with the weightage.

Below is an example of two cases when planning the final examination types of questions. Case 1 is used when the questions are structured, or essay type and Case 2 is used when the questions are in the multiple-choice type of questions.

Case 1: Final Examination – structured and essay (CLO1 and CLO 2)

(Refer to Appendix 8 for the duration by type of questions)

Duration of the Exam is 3 Hours.

Item	No of Item	Approximate Time
Short-Answer	3 min x 0	0 minutes
Short Essay	15 min x 9	2 hour and 15 minutes
Long Essay	45 min x 1	45 minutes
Total	10	3 hours
60% come from CLO1	6 items (Part A – 4 questions, Part B – 2 questions)	
40% come from CLO2	4 items (Part B – 3 questions (short essay) 1 long essay questions)	

To Determine The Table of Specification based on Weightage for CLO1 & CLO2 (Final Examination). (Note: The Highest Cognitive Level Targeted Is C5)

TOPIC	HRS Spent on Topic	% HRS	Marks Allocated	CLO & C Level	C1	C2	C3	C4	C5	C6	Total Marks Developed
Topic 1	11	10 (11.5)	10	CLO1 (C2)	Q A1 5 m	Q A2 5 m					10
Topic 2	15	20 (15.6)	20	CLO1 (C2)	Q A3 10 m	Q A4 10 m					20
Topic 3	30	30 (31.3)	30	CLO1 (C2)	Q B1 10 m	Q B2 20 m					30
Topic 4	20	20 (20.8)	20	CLO2 (C5)			Q B3 10 m	Q B4a 10 m			20
Topic 5	20	20 (20.8)	20	CLO2 (C5)				Q B4b 5 m	Q B5 15 m		20
TOTAL	**96/120hrs**	**100**	**100**		**25**	**35**	**10**	**15**	**15**		**100**

Case 2: Final Examination - MCQ (CLO1 and CLO2)

Duration of MCQ - 1 hour 30 minutes

(Refer to Appendix 8 for the duration by type of questions)

Note: Assuming there will be 60 items in the MCQ, based on the weightage 60% of 60 items (36 items) come from CLO1 (C2) and 40% of 60 items (24 items) come from CLO2(C5). The highest cognitive level is C5.

Topics	PLO (MQF2.0) (2018)	CLO	Weightage	C1	C2	C3	C4	C5	C6
				easy		average		difficult	
A B C	Cognitive Skill	CLO1	60% (36 items)	Q1, Q2, Q3, Q10, Q11, Q9, Q12,	Q15, Q22, Q25, Q26, Q27, Q31, Q36	-	-	-	
D E F				Q4, Q5, Q6, Q7, Q8, Q13, Q14,	Q16, Q17, Q18, Q19, Q20, Q23, Q24, Q28, Q29, Q30, Q32, Q33, Q34, Q35, Q21,	-	-	-	
G H I	Numeracy skill	CLO2	40% (24 items)	-	-	Q38, Q39, Q40, Q37, Q41, Q42, Q43, Q44,	Q50, Q51, Q52, Q53, Q54, Q45, Q46	Q55, Q56, Q57, Q47, Q48, Q49, Q58, Q59, Q60	
				14	**22**	**8**	**7**	**9**	

Coursework Assignment for CLO1 and CLO2

Instruction:

Given a case of one course and its course assessment plan you are to discuss the relevance of the design and evaluate its effectiveness in measuring learning.

No.	COURSE LEARNING OUTCOMES (CLO)	MQF 2.0	TAXONOMY DOMAIN	Portfolio Final Examination	ASSESSMENT TASK (%)			SPECIFIC TASKS RELATED TO MOHE/MQF LOD ATTRIBUTE
					Case Study	Portfolio	Final Examination	
1	Discuss the concept, principles, issues and challenges in visual art assessment and evaluation.	2 (Cognitive skill)	C2	Interactive Lecture / Cooperative and Collaborative Learning	20%		30%	SPECIFIC TASKS RELATED TO MOHE/MQF LOD ATTRIBUTE
2	Evaluate strategy and approach in measuring learning outcome through assessment and evaluation.	7 (Numeracy skill)	C5	Case Analysis	10%		20%	Case analysis (10%) Marks for the case analysis deliberate students' critical evaluation in assessing learning outcome through sample of quantitative and qualitative data according to appropriate process and techniques. Final Examination (10%) testing student metacognition.
3	Integrate digital technologies and appropriate software for diagnostic, formative and summative assessment and evaluation.	6 (Digital skill)	A4	Independent Learning		20%		The use of e-Portfolio as evidence-based by focussing the sub-attribute of new ideas, curation, articulation, tools)
5	Note: This is just an example of how this course assessment was designed for case study of an assignment that combined **TWO CLOs**							

Example of Rubric for CLO1 and CLO2:

Learning Outcome	Rubric for Case Study/ Analysis					
	Category	**Exemplary (5)**	**Proficient (4)**	**Partially Proficient (3)**	**Incomplete (2)**	**x 2**
Cognitive Skills (C2) (CLO1 Discuss the concept, principles, issues and challenges in visual art assessment and evaluation) [Ability to discuss] **(20%)**	Explanation in discussion	Excellent explanatory, and inventive account; fully supported, verified, and justified; deep and broad	Good explanatory, and inventive account; fully supported, verified, and justified; deep and broad	Sufficient explanatory, and inventive account; fully supported, verified, and justified; deep and broad	Poor explanatory, and inventive account; fully supported, verified, and justified; deep and broad	
	Idea	Guiding ideas is rich and novel, compelling statements that lead to strong forms.	Guiding idea is well written and conceived with some allusion to form	Guiding idea is basically explained	Guiding idea is basically poor	
Learning Outcome	**Category**	**Exemplary (5)**	**Proficient (4)**	**Partially Proficient (3)**	**Incomplete (2)**	**x 1**
Numeracy Skills (C5) (CLO2 Evaluate assessment strategy and approach in measuring learning outcome through assessment and evaluation) [Ability to evaluate using the appropriate measuring tool and reflect on implication in practice] **(10%)**	Reflection	Demonstrates strong reflection on personal experiences with assessment strategy, and critically evaluates the effectiveness of these practices.	Demonstrates some reflection on personal experiences with assessment strategy but lacks critical evaluation of the effectiveness of these practices.	Demonstrates limited reflection on personal experiences with assessment strategy and lacks critical evaluation of the effectiveness of these practices.	Fails to demonstrate reflection on personal experiences with assessment strategy, and lacks evaluation of the effectiveness of these practices.	
	Critical Thinking to use appropriate measuring tool for measuring learning.	Demonstrates high-level thinking skills in the analysis and evaluation of formative or summative assessment practices using appropriate measuring tool to measure learning.	Demonstrates some level of thinking skills in the analysis and evaluation of formative or summative assessment practices using appropriate measuring tool to measure learning.	Demonstrates limited thinking skills in the analysis and evaluation of formative or summative assessment practices with inappropriate measuring too to measure learning.	Fails to demonstrate acceptable thinking skills in the analysis and evaluation of formative and summative assessment practices with misconception.	
30%		Percentage obtained				

APPENDIX 13

Consideration for Exam on Demand

a) The Exam-On-Demand System

For HEPs to consider conducting an "exam-on-demand", it requires careful planning, technological infrastructure, and considerations to ensure fairness, security, and effective assessment. Here are the steps you can take to conduct exams on demand:

b) Determine Feasibility:

Assess whether an "exam on demand" approach is suitable for your course, subject, and educational institution. Consider factors such as the subject's nature, assessment requirements, available technology, and the willingness of instructors and students to adapt to this approach.

c) Choose a Platform:

Select or develop a suitable online platform or learning management system (LMS) that can handle exam-on-demand scheduling, submission, grading, and feedback. The platform should also ensure the security and integrity of the assessment process.

d) Design Assessments:

Create exam questions that assess the intended learning outcomes effectively. Ensure a mix of question types, such as multiple-choice, short answer, and essay questions, to cater to various types of knowledge and skills.

e) Set Guidelines and Policies:

Establish clear guidelines for taking exams on demand. Communicate rules, expectations, and any restrictions to students, such as time limits, use of resources, and guidelines for submitting answers.

f) Prepare Technology:

Ensure that both instructors and students have access to the necessary technology and resources to participate in the "exam on demand" system. Provide technical support and training as needed.

g) Create an Exam Repository:

Develop a repository of exam questions that can be randomly selected for each student to ensure fairness and prevent academic dishonesty.

h) Implement Scheduling:

Set up a scheduling system where students can choose a suitable time slot to take the exam. This can be done through the LMS or an online scheduling tool.

i) Provide Flexibility:

Allow students a window of time during which they can start and complete the exam. This accommodates different time zones and personal schedules.

j) Submission and Grading:

Design a process for students to submit their completed exams through the online platform. Develop an automated or efficient grading system, especially for multiple-choice questions, to provide prompt feedback.

k) Feedback and Support:

Provide personalised feedback to students after the exam, highlighting strengths and areas for improvement. Offer opportunities for students to ask questions or seek clarification about their performance.

l) Maintain Integrity:

Implement measures to ensure exam security and prevent cheating. This might include randomising question orders, using online proctoring tools, and setting time limits for individual questions.

m) Continuous Improvement:

Gather feedback from instructors and students about their experiences with the "exam on demand" system. Use this feedback to refine the process, address challenges, and enhance the overall effectiveness of the approach.

n) Monitor and Evaluate:

Continuously monitor the effectiveness of the "exam-on-demand" approach in terms of student performance, engagement, and satisfaction. Make adjustments as needed to improve the process.

APPENDIX 14

Example of Statements

	PEO	PLO	CLO
Definition	Broad statements that describe the career and professional accomplishments of graduates within five (5) years upon graduation.	The abilities (cognitive, psychomotor, and affective) that are graduate should be able to demonstrate at the time of graduation	Specific statements of what the learners are expected to achieve at the end of the courses.
Example of Statement (Cognitive Domain)	IT Instructors who apply fundamental knowledge and practical skills in providing services to the IT industries locally and globally.	At the end of the programme, students should be able to: - Apply mathematics and science concepts, principles, theories and law essential to IT; - Perform algorithm, programming and diagnostic procedures essential to IT.	At the end of the course, students can: - Explain differentiation and integration concepts, principles and algorithms. - Perform second-order differentiation and triple integration techniques to determine slopes, sign of the slopes area and volume of mathematical functions.
Example of Statement (Psychomotor Domain)	IT professionals who can provide technology solutions and services to meet the evolving needs of the industry.	At the end of the programme, graduates are able to diagnose and troubleshoot technical issues related to computing software, and design and implement databases.	At the end of the course, students are able to: - Implement database security measures including user authentication, access control and data encryption. - Design and develop data schemas using industry standard

			database management tools.
Example of Statement (Affective Domain)	IT professionals who lead and effectively communicate with team members in solving workplace professional issues.	At the end of the programme, students should be able to: - Demonstrate effective communication skills. - Demonstrate effective teamwork in a multidisciplinary team and - Demonstrate leadership skills.	At the end of the course, students should be able to: - Give a verbal presentation by utilising ICT technology. - Support and respect team members' opinions and ideas during team-related tasks. - Demonstrate leadership skills in team-related tasks.
Example of Statement Methods/Outcome	- Alumni surveys - Alumni interviews - Employer surveys - Employer interviews	- Entrance Survey - Exit Survey - Exit Interviews - Exit Exam	- Tests - Projects - Reports - Oral presentation
Indicators	- Job offers. - Starting salaries (relative to national benchmarks) - Admissions to graduate school.	- Standardised test (eg. Graduate Record Examination (GRE), the Collegiate Learning Assessment (CLA) and the National Survey of Student - Evaluation (NSSE)	- Proposal - Summary - Critiques - Assignments - Journals - Portfolio

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10.	En Zulkifli Mat Som	Institut Pendidikan Guru. Kementerian Pendidikan Malaysia
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GGP: ASSESSMENT OF STUDENT LEARNING