JPT | JABATAN PENDIDIKAN TINGGI

KEMENTERIAN PENGAJIAN TINGGI

QUICK REFERENCE

5 CLUSTERS OF LEARNING OUTCOMES MQF 2.0

FOR FUTURE-READY SKILLED GRADUATES

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FOREWORD

MINISTER OF HIGHER EDUCATION

The Malaysian Qualifications Framework (MQF) contains information on the qualifications offered by higher education providers (HEPs) in Malaysia. Serving as the main reference point for all qualifications, the framework provides quality assurance information and explanations on the national equivalence of foreign qualifications for academic recognition.

It is important for us in the higher education sector to keep abreast with current developments when preparing our future graduates for the job market in the age of globalization. Realizing this, the Ministry of Higher Education is vigilant in supporting strategic and innovative methods of providing education.

I am glad that MQF echoes this aim and has successfully remained flexible in its system implementation to ensure continuous growth of knowledge, skills and values provided by HEPs.

I would like to congratulate the National Outcome-Based Learning committee and those who have participated in producing this Quick Reference guideline, namely, the Division of Academic Excellence under the Department of Higher Education, the Malaysian Qualifications Agency, expert panels, authors, MAGNETIC and all contributors.

I hope this book will aid educators in executing their responsibilities and in achieving higher levels of education excellence in the near future.

Digitalisation of Higher Education landscape to empower a skilful and talented manpower in accommodating potential future graduates

YB Datuk Seri Dr. Noraini Ahmad
Minister of Higher Education

"Learning is not the product of teaching. Learning is the product of the activity of learners." – John Holt

Malaysian universities aim to provide high-quality educational experiences by emphasising teaching and learning outcomes to ensure our learners develop knowledge and skills relevant to their own needs and equip them for their future undertakings. Higher Education Providers (HEP) are responsible for designing student learning experiences to fulfil programme educational objectives. The quality assurance framework for higher education in Malaysia encompasses the varied roles within universities, the Malaysian Qualification Agency (MQA) and the Ministry of Higher Education.

The role of higher education is guided by the National Education Philosophy as well as Malaysia Education Blueprint 2015-2025 (Higher Education), which outlines the strategies, plans, key performance indicators, responsible departments, institutions and agencies within several strong enabling legal frameworks such as the Malaysian Qualifications Framework (MQF). MQF acts as an overarching framework with objectives to improve learning, skills and competencies in supporting national policy and development.

MQA has revised Malaysian Qualifications Framework 2.0 (MQF 2.0) to serve its purpose in the dynamic and constantly changing social needs and interconnected world demands. MQF 2.0 also ensures the relevance of our higher education system with the international standards since it was benchmarked to several regional and international qualifications frameworks. This latest framework also contributes to meeting stakeholder's expectations, especially in finding harmony between curriculum in higher education and employment. In addition, the new skill set emphasised in MQF2.0, such as digital, numeracy and personal skills. Therefore, this Quick Reference 5 Clusters of Learning Outcomes MQF2.0 will help prepare Malaysian graduates to be more resilient and equipped with future skill sets that make them relevant.

Finally, I would like to personally thank all those who have partaken in this guideline.

YBhg. Datuk Seri Dr. Mazlan Yusoff
Secretary General
Ministry of Higher Education

The current job market has been reported to be extremely competitive due to unprecedented changes caused by the pandemic and technological revolutions. To match the demands of today's industries, the higher education sector must develop students who possess the right knowledge, skills and attitudes.

Acknowledging the challenges at hand, the Malaysian Qualifications Agency (MQA) through the Malaysian Qualifications Framework (MQF) is proactively responding to the changing times in efforts of developing and implementing better quality academic programs in higher education institutions.

The purpose of this Quick Reference guideline is to assist higher education providers in developing and strengthening their academic programs, curriculum and syllabus for future-ready skilled graduates. This guideline explains the 5 Clusters of learning outcomes in MQF2.0, consisting of Knowledge and Understanding, Cognitive Skills, Functional Skills, Personal and Entrepreneurial Skills as well as Ethics and Professionalism.

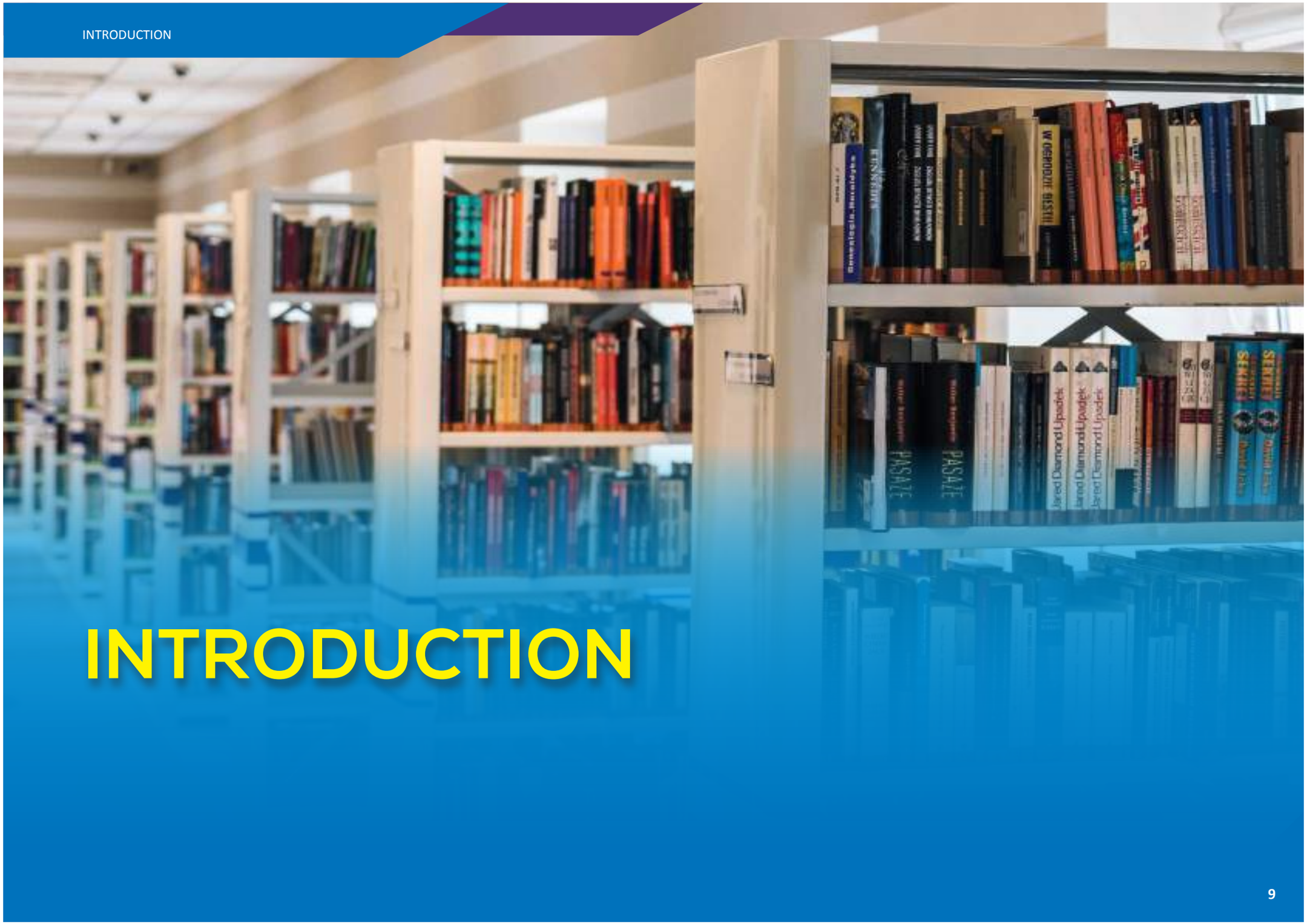
In preparing Malaysian graduates to navigate the current job market, it is necessary to equip them with transferable skills, ethical foundations, resilience and enterprising spirits to forge new opportunities for themselves as well as others. Additionally, digital and numeracy skills are emphasized to prepare them for emerging jobs of the future.

On behalf of the National Outcome-Based Learning Committee, I would like to thank those who have participated in the production of the Quick Reference guideline. I hope it will be an informative read and will stand as a guide that raises Malaysia's higher education sector to greater heights.

YBhg. Dato' Prof. Dr. Husaini B. Omar
Director General of Higher Education
Department of Higher Education
Ministry of Higher Education

PREFACE

The purpose of the Quick Reference is to assist Higher Education Providers (HEP) in developing and strengthening their academic programmes, curriculum and syllabus for future-ready skilled graduates. There is a mismatch between the supply and demand of graduates, with employers bemoaning the graduates lack the requisite knowledge, skills and attitudes. This matter is only expected to get tougher to resolve as there are technological disruptions which would reshape industries and alter the types of jobs available in the 21st Century. The revised Malaysian Qualifications Framework (MQF) to MQF2.0 is a response by the Malaysian Qualifications Agency (MQA) to make the framework more responsive to a better and higher quality of academic programmes in HEP. Preparing Malaysian graduates to navigate this uncertain future does not only require them with transferable skills and ethical foundations, but also the resilience and enterprising spirits to forge new opportunities for themselves and others. This quick reference enlightens on the 5 Clusters of Learning Outcomes in MQF2.0, which consist of Knowledge and Understanding, Cognitive Skills, Functional Skills, Personal and Entrepreneurial Skills, and Ethics and Professionalism in Level 6 (Bachelor's Degree) of MQF qualification only. The content of this Quick Reference also discusses operational definition and descriptor of each cluster. On top of that, this reference also shows examples of Course Assessment Plan (CAP) for each cluster. Finally, National Outcome Based Learning Committee wishes to thank all those who have participated in this Quick Reference guideline, particularly, Ministry of Higher Education, Department of Higher Education, Division of Academic Excellence, Malaysian Qualifications Agency, Panel of expert, authors, MAGNETIC and all the contributors.



INTRODUCTION

ABOUT THE BOOK

The introduction section lays foundation of the book. It highlights concept of Outcome Based Education and importance of constructive alignment in educational curriculum design. Subsequent sections are dedicated to explain each of the five clusters of learning outcomes outlined in the Malaysian Qualifications Framework 2nd Edition. These sections provide further understanding of national education requirement especially for MQF Level 6 Bachelor's degree programmes. It should be noted that the interpretation of these clusters may differ slightly between disciplines of study. For example, numeracy skills may be read together with cognitive skills in most of disciplines of study.

The concluding section emphasises on the importance of the book. It is hoped that this book would help educational providers in curriculum design towards producing quality, well-balanced, holistics, future-ready, and future-proof graduates. MQF is a dynamic framework that sets the classifications, learning outcomes, and academic load for all of the nation's post-secondary qualifications. Therefore, this book provides information on the MQF learning outcomes clusters.

OUTCOME-BASED EDUCATION

Education is a process of changing the behavior patterns and / or knowledge of learners. Learning is cumulative in nature, where nothing has meaning or is learned in isolation. Shuell (1986) defines learning using three criteria: (a) a change in an individual's behavior or ability to do something, (b) a stipulation that this change must result from some sort of practice or experience, and (c) a stipulation that the change is an enduring one.

Spady (1994) has introduced the term Outcome-Based Education (OBE) to describe an educational system which focuses a clear set of learning outcomes. OBE is an educational model in which curriculum, delivery, and assessment are developed, structured and implemented to facilitate key student learning outcomes (Spady, 1994; Driscoll & Wood, 2007) (Figure 1.1).

Learning outcomes play a dynamic role in structuring and developing a curriculum. Curriculum development based on Backward Design promotes Understanding by Design (UbD) (Wiggins & McTighe, 2005).

UbD guides the planning process and structure of curriculum, assessment, and instruction. Two key ideas of UbD are (i) focusing on teaching and assessing for understanding and learning transfer, and (ii) designing curriculum "backward" from those ends. The main concept in planning for outcome based curriculum is constructive alignment (Tyler, 1949; Shuell, 1986; Biggs, 2003).

Figure 1.1. Outcome-Based Education, where intended learning outcomes inform curriculum, delivery, and assessment.

CONSTRUCTIVE ALIGNMENT

Constructive alignment is an approach to curriculum design where all aspects of teaching and assessment are tuned to support and encourage higher-order learning process (Figure 1.2). Figure 1.3 shows the alignment between course outcomes, MQF (LOD - Learning Outcome Domain) , methods of delivery and methods of assessment.

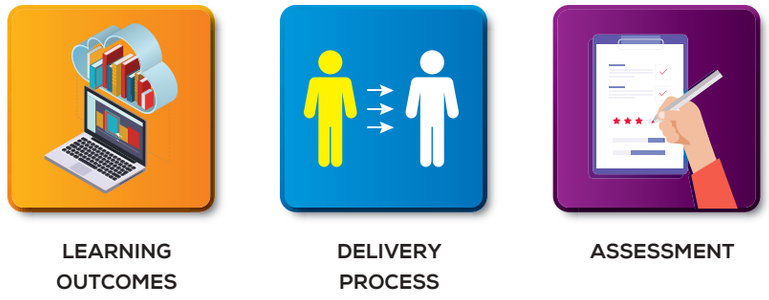


Figure 1.2 Constructive alignment (MoHE, 2016)

Figure 1.3 Alignment of teaching and learning elements (MoHE, 2016)

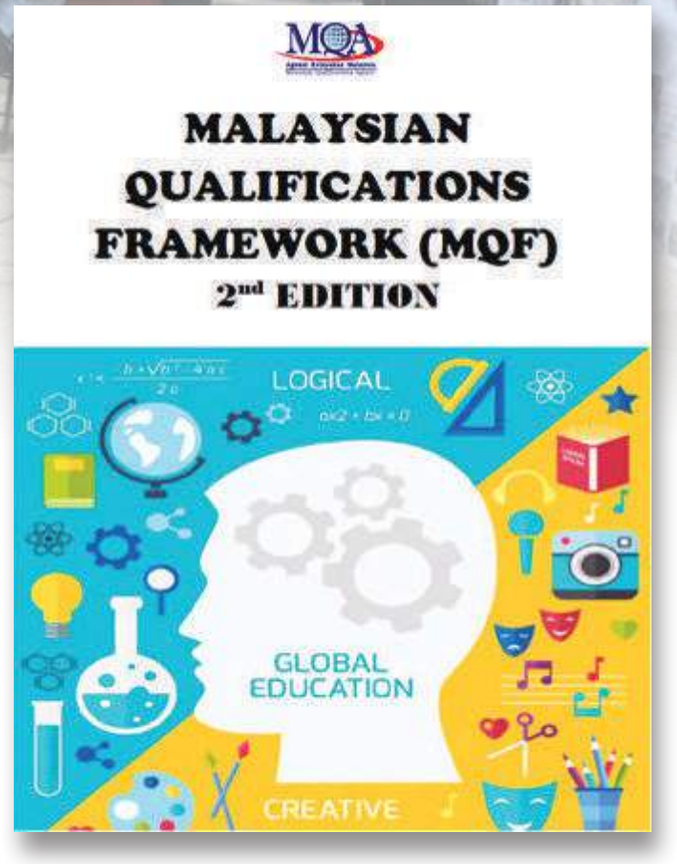
According to Biggs (2003) as shown in Figure 1.4, constructive alignment has two aspects. The 'constructive' aspect refers to the idea that students construct meaning through relevant learning activities. It is not something imparted or transmitted from teacher to learner, but is something that learners have to create for themselves. Teaching is simply a catalyst for learning.

The 'alignment' aspect refers to what the teacher does, which is to set up a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes. The key is that the components in the teaching system, especially the teaching methods used and the assessment tasks, are aligned with the learning activities assumed in the intended outcomes.

Figure 1.4 Constructive alignment is the main pillar of OBE curriculum design (Biggs, 2003)

MALAYSIAN QUALIFICATIONS FRAMEWORK

In 2007, Malaysian Qualifications Agency (MQA) has implemented Malaysian Qualifications Framework (MQF), which encompasses qualification standards of national higher education and training sector quality assurance practices and accreditation. In 2017, the MQF was revised, and it has since been known as MQF 2nd edition.



LEARNING OUTCOME DOMAINS / CLUSTERS OF MQF2.0

MQF addresses a set of generic learning outcomes which applies to qualifications within the academic and TVET sectors.

In 2007, MQF has outlined eight domains of learning outcomes. These outcomes have been clustered, re-profiled and retained to give the five clusters of learning outcomes in MQF 2nd edition. As a general practice, each programme should address all clusters of learning outcomes appropriately.

Figure 1.5 shows changes to MQF generic learning outcomes between 2007 and 2017. HEP has the autonomy to decide on the number of programme learning outcomes. However, each academic programme should measure all the eleven (11) LOD of MQF2.0.

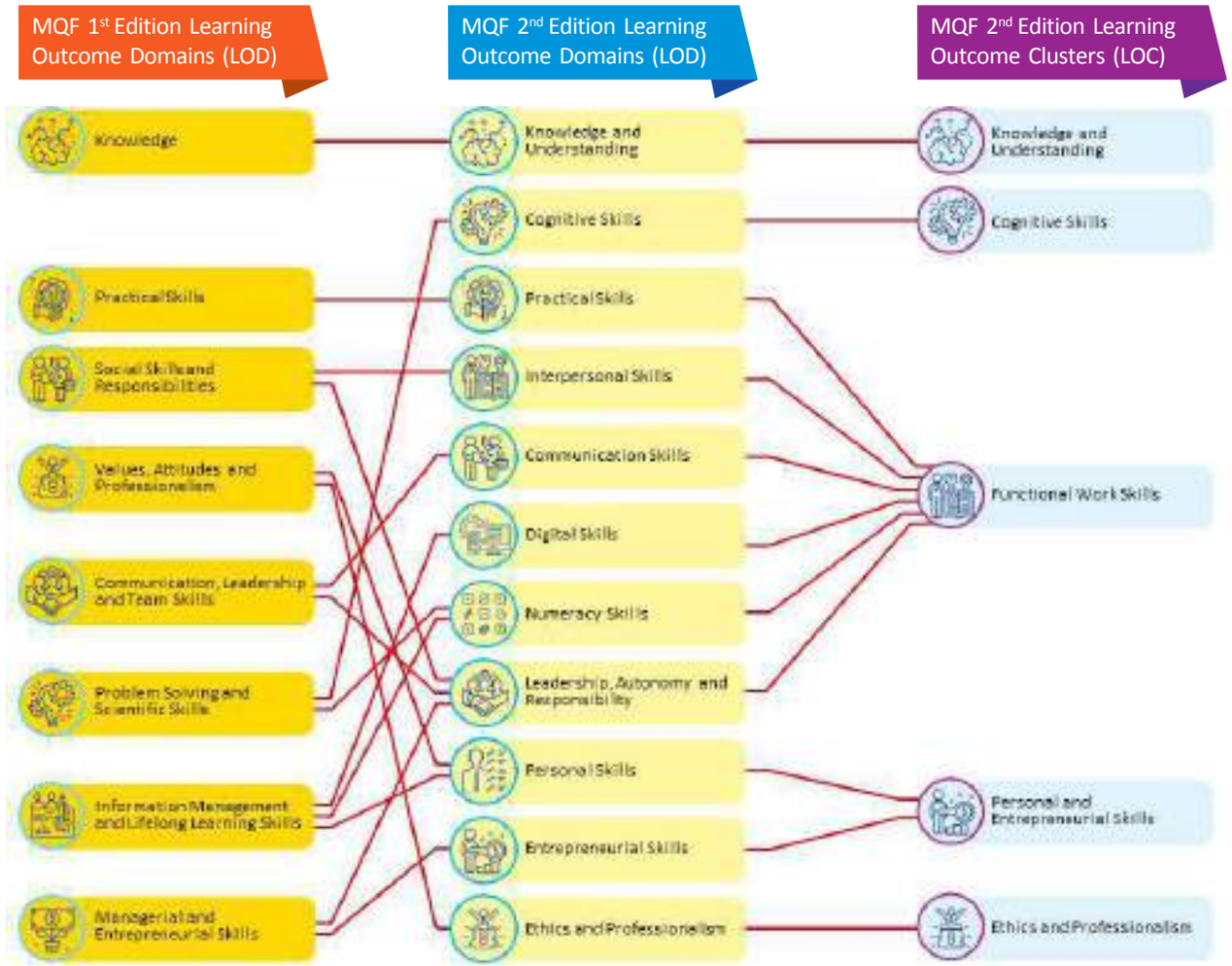


Figure 1.5. Relationship between learning outcomes in MQF 1st edition and MQF 2nd edition (MQA, 2018)

MAPPING OF LEARNING OUTCOME CLUSTER, LEARNING OUTCOME DOMAIN AND DOMINANT LEARNING DOMAIN

Each cluster in this guidebook provides examples of attributes pertaining to the LOD. Nevertheless, each programme should be able to suggest other attributes relevant to its discipline of study. Table 1.1 suggests dominant learning domain for each learning outcome.

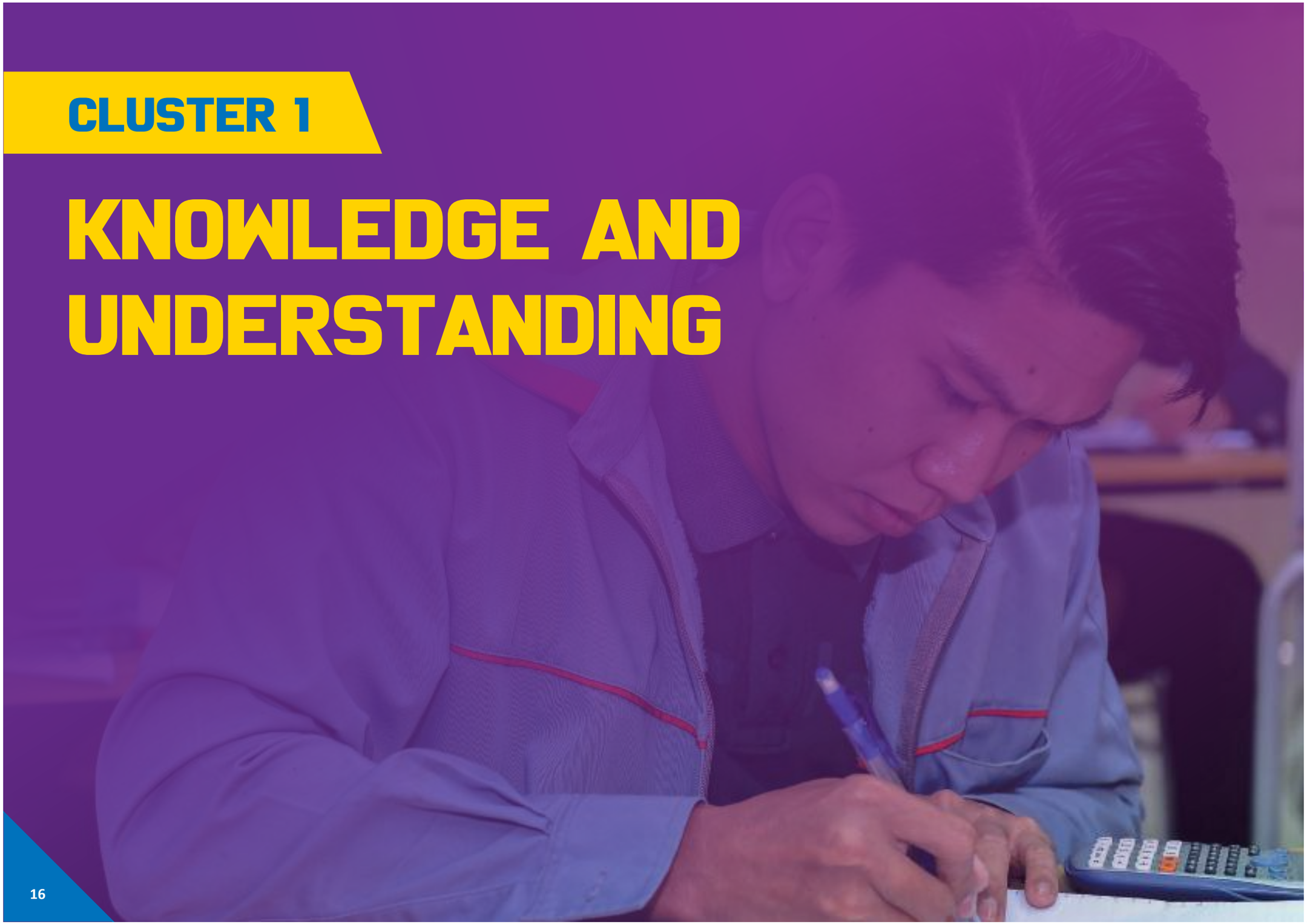
Table 1.1. Mapping of LOC, LOD and Dominant Learning Domain (DLD)

	LEARNING OUTCOME CLUSTERS	LEARNING OUTCOME DOMAIN	*DOMINANT LEARNING DOMAIN
1	Knowledge and Understanding	Knowledge and Understanding	Cognitive
2	Cognitive Skills	Cognitive Skills	Cognitive
3	Functional Work Skills	Practical Skills	Psychomotor
		Interpersonal Skills	Affective
		Communication Skills	Affective
		Digital Skills	Cognitive / Psychomotor / Affective
		Numeracy Skills	Cognitive
		Leadership, Autonomy and Responsibility	Affective
4	Personal and Entrepreneurial Skills	Personal Skills	Affective
		Entrepreneurial Skills	Affective
5	Ethics and Professionalism	Ethics and Professionalism	Affective

*Dominant learning domain may be expanded to other learning domain depending on the discipline of study.

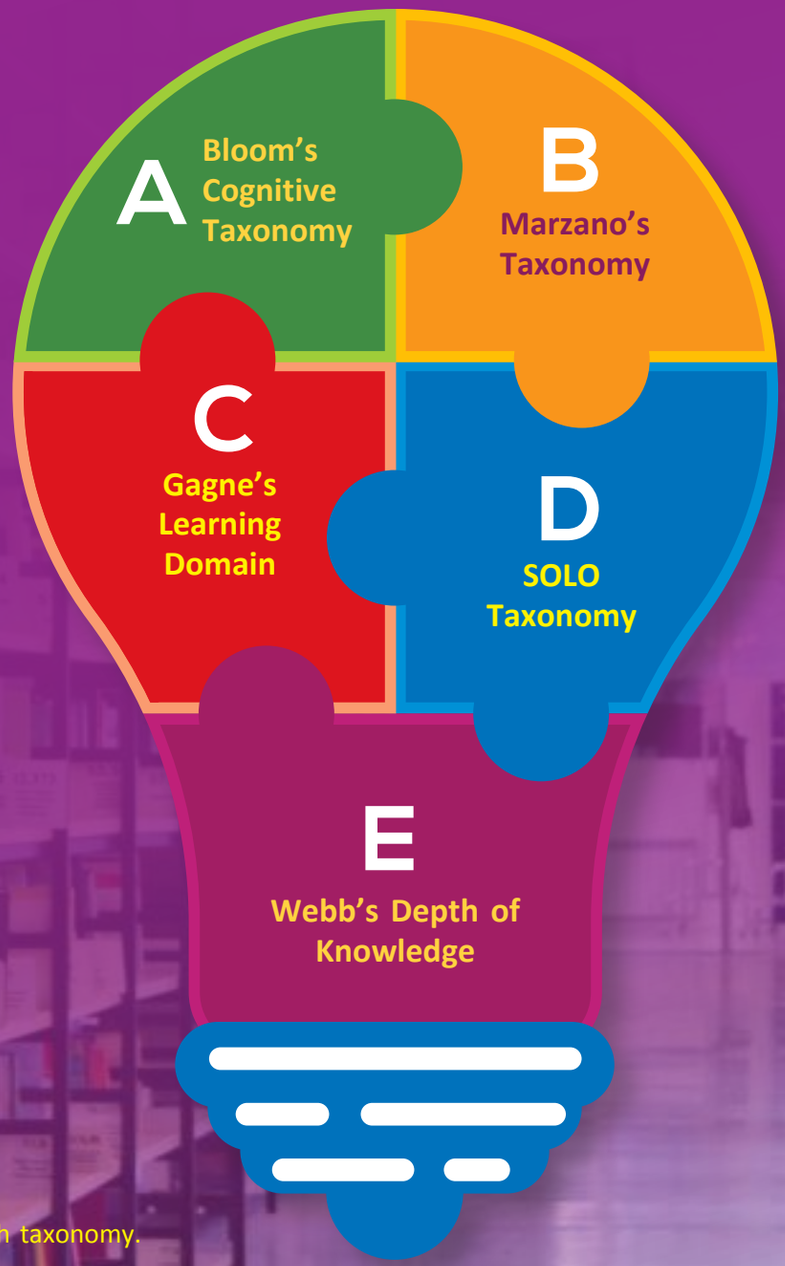
CLUSTER 1

KNOWLEDGE AND UNDERSTANDING



COGNITIVE DOMAIN TAXONOMIES

COGNITIVE is a word that originates from a Latin word *cognoscere*, which means *to know* (Oakley, 2004). Therefore, cognitive activities include all the psychological processes and activities involved in thinking and knowing. Similarly, Bloom (1956) defined cognitive as the recall or recognition of knowledge and the development of intellectual abilities and skills.



Appendices A to E provide further explanation for each taxonomy.

KNOWLEDGE AND UNDERSTANDING

In Bloom's Cognitive Taxonomy, Remembering, Understanding, Applying, Analysing, Evaluating and Creating are placed in one classification. However, others have classified 'knowledge' and 'understanding' as different domain / category / level.

For example, Gagne (1992) has introduced 'Verbal Information' domain which involves the ability to state or declare something (Knowledge and Comprehension) while 'Intellectual Skills' domain involves Procedural Knowledge: Discrimination, Concept, Rule Using and Problem Solving.

Webb (1997) - who introduced the Depth of Knowledge or DOK – has categorized recalling and reproduce (knowledge and understanding) as DOK Level 1. Others are DOK Level 2 (skills & concepts), DOK Level 3 (strategic thinking) and DOK Level 4 (extended thinking).

In sum, the above taxonomies conceptualized different perspectives pertaining to knowledge and understanding.

TYPES OF KNOWLEDGE

FACTUAL	CONCEPTUAL	PROCEDURAL	METACOGNITIVE
The basic elements that learners must know to be acquainted with a discipline or solve problems in it	The interrelationships among the basic elements within a larger structure that enable them to function together	How to do something; methods of inquiry, and criteria for using skills, algorithms, techniques and methods	Knowledge of cognition in general as well as awareness and knowledge of one's own cognition
Knowledge of terminology Knowledge of specific details and elements	Knowledge of classifications and categories Knowledge of principles and generalizations Knowledge of theories, models and structures	Knowledge of subject-specific skills and algorithms Knowledge of subject-specific techniques and methods Knowledge of criteria for determining when to use appropriate procedures	Strategic knowledge Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge Self-knowledge

(Krathwohl's,2002)

DESCRIPTION

Knowledge and understanding refers to a systematic comprehension of theories, concepts, principles, facts, ideas, information, technical knowledge, regulations, numeracy, practical skills, usage of tools, processes and system (MQA,2017)

This cluster enables the learners to relate their prior knowledge during their learning process as well as to expand to related fields. It provides the basis for applications of all other learning outcomes

Although this cluster involves 'Knowledge and Understanding' (which addresses C1 and C2 in Bloom's Taxonomy), programme owner has the option to use higher cognitive levels (C3 – C6). However, the owner should be able to differentiate the cognitive level used between Cluster 1 and Cluster 2

DESCRIPTOR

“ **Describe** advanced and comprehensive, theoretical and technical knowledge and **demonstrate relevant skills** in a specialized field, or of a multidisciplinary nature related to the field of study, work and / or practice ”

(MQA,2017)

ATTRIBUTES

Knowledge

Exhibit memory of previously learned material by recalling facts, terms and basic concepts

Attributes

RECOGNIZE: Locating knowledge in long term memory that is consistent with presented material (sample verb: identify)

RECALL: Retrieving relevant knowledge from long term memory (sample verbs: name, list)

Understanding

Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas

Attributes

INTERPRET: Changing from one form of representation to another (sample verbs: clarify, paraphrase, represent, translate)

EXEMPLIFY: Finding a specific example or illustration of a concept or principle (sample verbs: illustrate, instantiate)

CLASSIFY: Determining that something belongs to a category (sample verbs: categorize, subsume)

SUMMARIZE: Abstracting a general theme or major point(s) (sample verbs: abstract, generalize)

INFER: Drawing a logical conclusion from presenting information (sample verbs: conclude, extrapolate, interpolate, predict)

COMPARE: Detecting correspondences between two ideas, objects, and the like (sample verbs: contrast, map, match)

EXPLAIN: Making clear of an idea or situation by describing it in more detail or revealing relevant facts (sample verbs: describe, explain)

(Krathwohl,2002 & Mayer,2002)

EXAMPLES IN COURSES

Field of Studies		Knowledge and Understanding
Science and Technology	**Programme:** Software Engineering **Course:** Ethical Hacking	Explain the theory and principles of information security, element of security, hacking cycle, hacktivism and ethical hacking
Social Science	**Programme:** Tourism **Course:** Innovation Product in Tourism and Hospitality	Identify the concepts and practice on product innovation in tourism and hospitality industry

EXAMPLE OF COURSE ASSESSMENT PLAN (SCIENCE AND TECHNOLOGY)
COURSE: ETHICAL HACKING (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task	Student Learning Time (SLT)**
Explain the theory and principles of information security, element of security, hacking cycle, hacktivism and ethical hacking (C2)*	Cluster 1	Case Analysis	Quiz : 5% Final Exam : 10%	Discuss the theory and principles related to hacking and security in the given cases	18 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level C2 (Understanding) according to Bloom's Taxonomy for Cognitive Domain (Appendix A)

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN (SOCIAL SCIENCE)
COURSE: INNOVATION PRODUCT IN TOURISM & HOSPITALITY (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task	Student Learning Time (SLT)**
Identify the concepts and practice on product innovation in tourism and hospitality industry (C1)*	Cluster 1	Direct Instruction Case Study	Quiz : 5% Final Exam : 10%	Students will be given a case on tourism and hospitality industry to identify the concepts and practice on product innovation	18 hours

Notes:

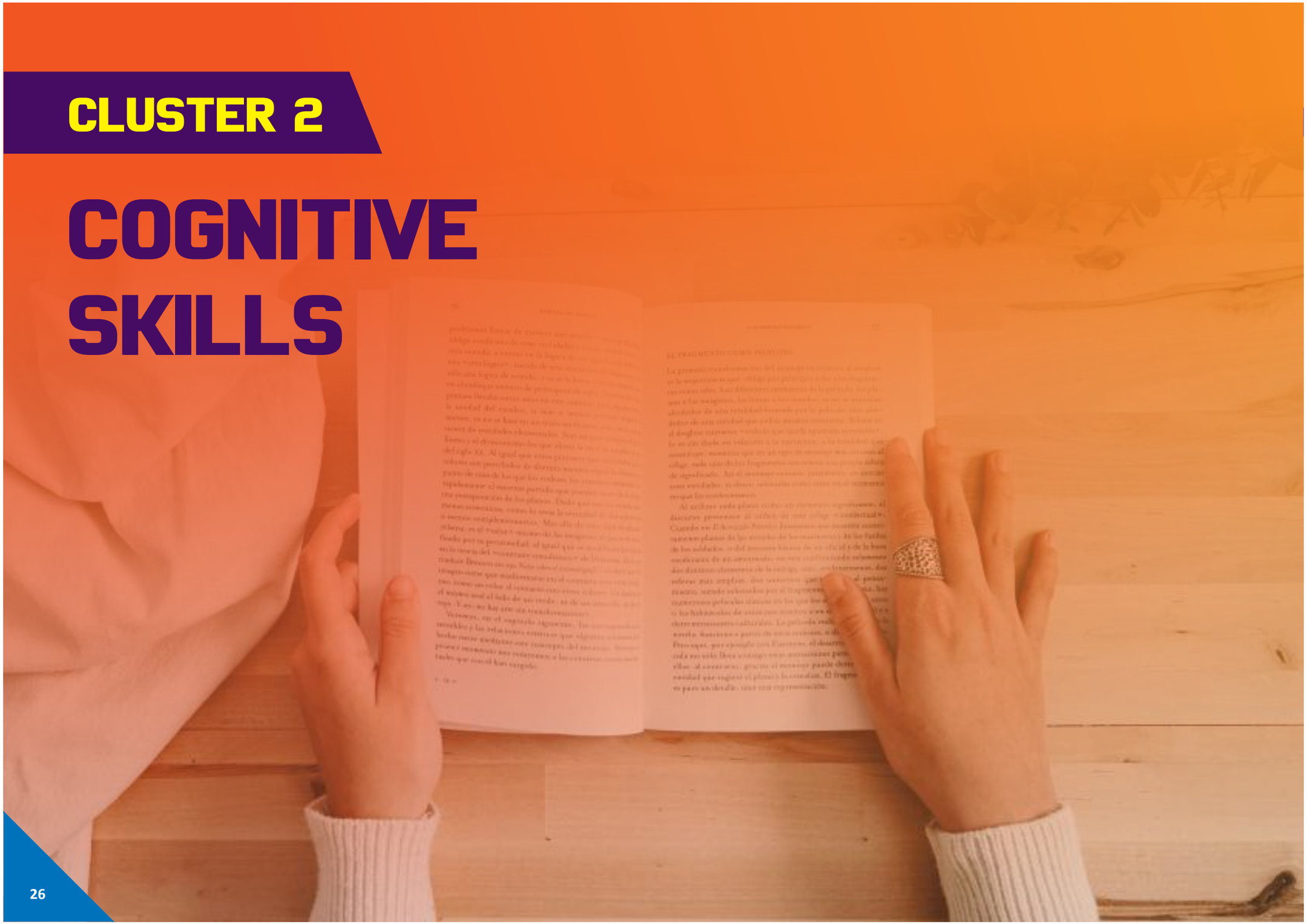
This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level C1 (Knowledge) according to Bloom's Taxonomy for Cognitive Domain (Appendix A)

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

CLUSTER 2

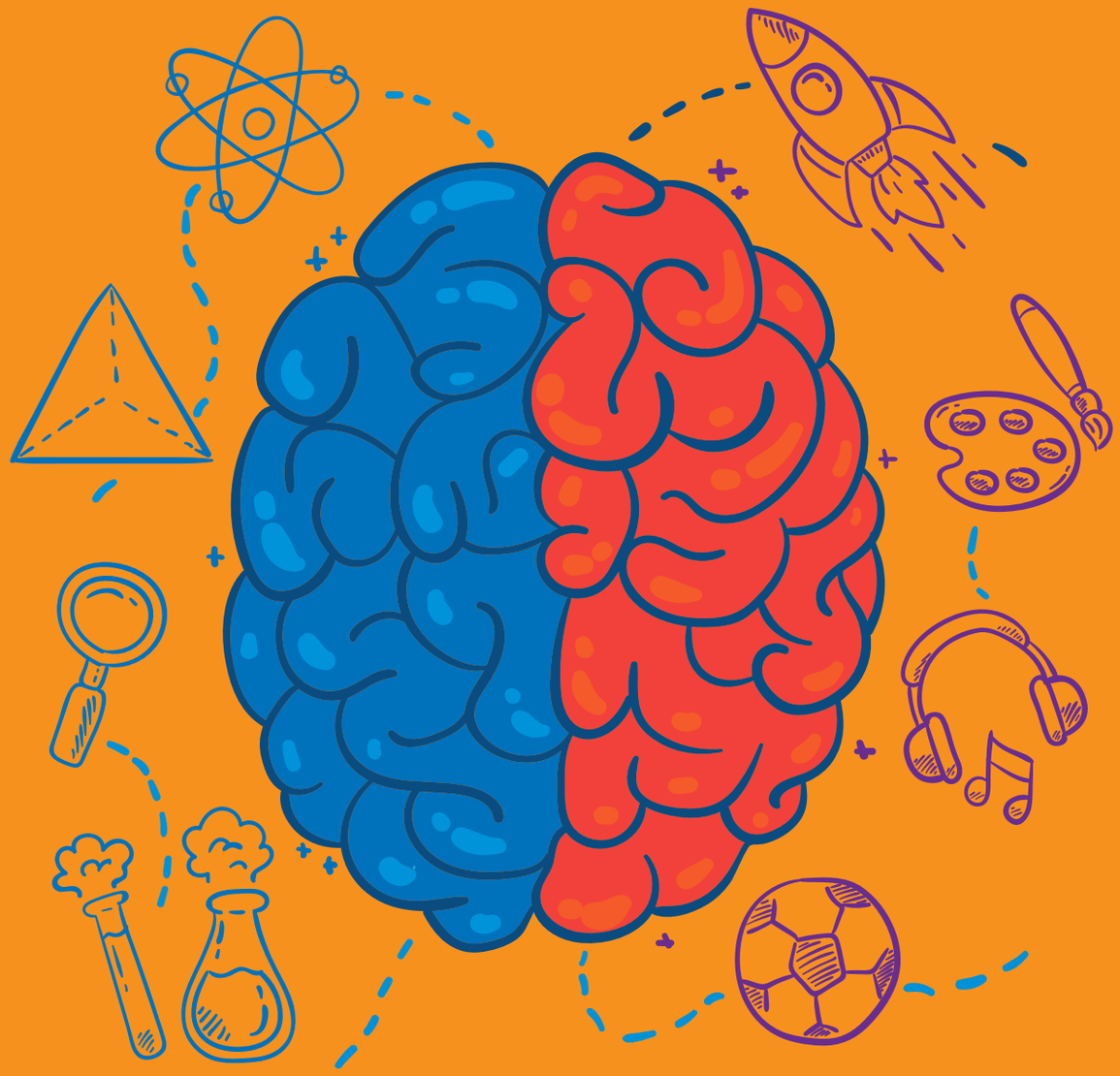
COGNITIVE SKILLS



DESCRIPTION

Malaysian Qualifications Framework 2nd edition (MQA, 2017) has outlined cognitive skills as one of the clusters of learning outcomes for post-secondary education in Malaysia.

Cognitive skills involve thinking or intellectual capabilities and the ability to apply knowledge and skills. The capacity to develop levels of intellectual skills progressively begins from understanding, critical/ creative thinking, assessment, and applying, analysing, problem solving as well as synthesizing to create new ideas, solutions, strategies or new practices (see also Figure 1.5 and Appendix A). These skills enable learners to search and comprehend new information from various fields of knowledge and practices.



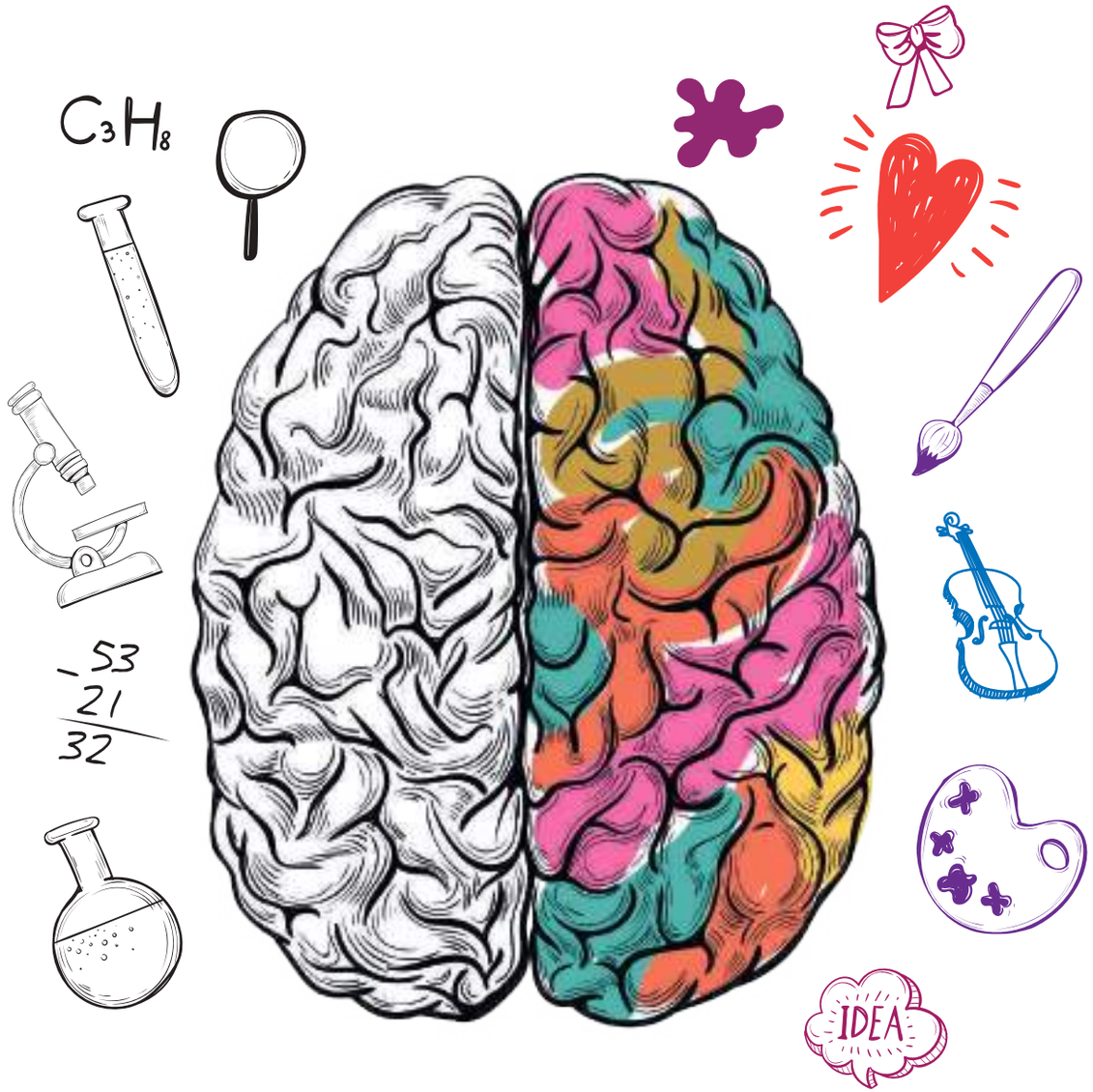
DESCRIPTOR

Demonstrate intellectual independence in the application of knowledge within specific field(s) by applying critical, analytical and evaluation skills in the field of study / work / practice.

Manage, resolve complex applications and handle unpredictable issues with creative and innovative solution(s).

Apply skills / knowledge to a range of approaches in the field of study / work / practice.

(MQA,2017)



ATTRIBUTES

ATTRIBUTE		DEFINITION
Problem Solving Define or identify problem, generate alternative solutions, evaluate and select alternatives, making decisions and implementing solutions	Problem Identification	The process of recognising and identifying an issue that may cause a problem or conflict (sample verb: identify, classify, explain)
	Analysis	The process of separating or detailed examination of gathered, measured or collected data, into smaller elements for decision-making or interpretation (sample verb: organise, analyse, describe, explain)
	Application	The action of putting ideas or solutions into operation to solve problems (sample verb: apply, solve, propose)
	Synthesis and Evaluation	The combination or composition of small parts to form a whole idea, new solution or system (sample verb: evaluate, interprete, provide evidence)
	Decision-Making	The thought process of selecting a solution from several alternatives (sample verbs: evaluate, make decision, compare, identify problems and solutions)
Scientific Skills Intellectual ability to process actively and skillfully conceptualise, apply, analyse, synthesise, and/or evaluate information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action	Conceptualisation	Formation of new ideas or solutions (sample verb: generate idea)
	Generation of Solutions	The process of producing alternative or new solutions (sample verbs: solve problems, provide alternative solutions)
	Evaluation and Selection	The process of weighing the significance, worth or value of a decision made and to choose a solution or alternative solution (sample verbs: evaluate several solutions, select solutions)
	Implementation	The process of putting or executing a solution or idea into effect (sample verbs: compare variety of strategies / ideas / solutions, evaluate)
	Integration	The act or process of bringing together elements, ideas, solutions, people, systems etc. to function as one (sample verbs: integrate ideas, provide solution)
	Development	The process of growth, addition, improvement or a significant consequence or event (sample verbs: think independently, produce ideas)
	Creation	The act of making, produce or invent something into existence (sample verbs: create new ideas / product)

(MoHE,2016)

ATTRIBUTES

ATTRIBUTE	DEFINITION
Problem Identification	The process of recognising and identifying an issue that may cause a problem or conflict (sample verb: identify, classify, explain)
Analysis	The process of separating or detailed examination of gathered, measured or collected data, into smaller elements for decision-making or interpretation (sample verb: organise, analyse, describe, explain)
Application	The action of putting ideas or solutions into operation to solve problems (sample verb: apply, solve, propose)
Synthesis and Evaluation	The combination or composition of small parts to form a whole idea, new solution or system (sample verb: evaluate, interprete, provide evidence)
Decision-Making	The thought process of selecting a solution from several alternatives (sample verbs: evaluate, make decision, compare, identify problems and solutions)
Conceptualisation	Formation of new ideas or solutions (sample verb: generate idea)
Generation of Solutions	The process of producing alternative or new solutions (sample verb: solve problems, provide alternative solutions)
Evaluation and Selection	The process of weighing the significance, worth or value of a decision made and to choose a solution or alternative solution (sample verbs: evaluate several solutions, select solutions)
Implementation	The process of putting or executing a solution or idea into effect (sample verbs: compare variety of strategies / ideas / solutions, evaluate)
Integration	The act or process of bringing together elements, ideas, solutions, people, systems etc. to function as one (sample verbs: integrate ideas, provide solution)
Development	The process of growth, addition, improvement or a significant consequence or event (sample verbs: think independently, produce ideas)
Creation	The act of making, produce or invent something into existence (sample verbs: create new ideas / product)

(MoHE,2016)

EXAMPLE OF COURSE ASSESSMENT PLAN (SCIENCE AND TECHNOLOGY)
COURSE: FOOD SERVICE INFORMATION SYSTEM (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and Related MQF LOD Attribute	Student Learning Time (SLT)**
Apply information technology in food service management (C3)*	Cluster 2	Lecture, Practical, Case Study	Assignment : 5% Quiz : 5% Final Assessment : 5% Project : 10%	Students need to apply information technology such as e-commerce, intranet / internet, web-technology and telecommunication in food service management	30 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level C3 (Applying) according to Bloom's taxonomy for Cognitive domain (Appendix A).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN (SCIENCE AND TECHNOLOGY)
COURSE: HYDRAULICS (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and Related MQF LOD Attribute	Student Learning Time (SLT)**
Analyse uniform and non-uniform flows in open channel (C4)*	Cluster 2	Lecture, Tutorial, PoPBL	Assignment : 5% Quiz : 5% Test : 15% Project : 5% Written Exam : 30%	Students need to analyse characteristics and behavior of open channel flow for applications in civil engineering	72 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level C4 (Analyzing) according to Bloom's taxonomy for Cognitive domain (Appendix A).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN (SCIENCE AND TECHNOLOGY)
COURSE: MEASUREMENT AND EVALUATION IN EDUCATION (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and Related MQF LOD Attribute	Student Learning Time (SLT)**
Develop items and marking rules for student assessment (C6)*	Cluster 2	Lecture, PBL	Assignment : 5% Quiz : 5% Test : 15% Project : 5% Final Assessment : 30%	Students are required to conduct measurement and evaluation of vocational academic programme in classroom, workshop and laboratory	72 hours

Notes:

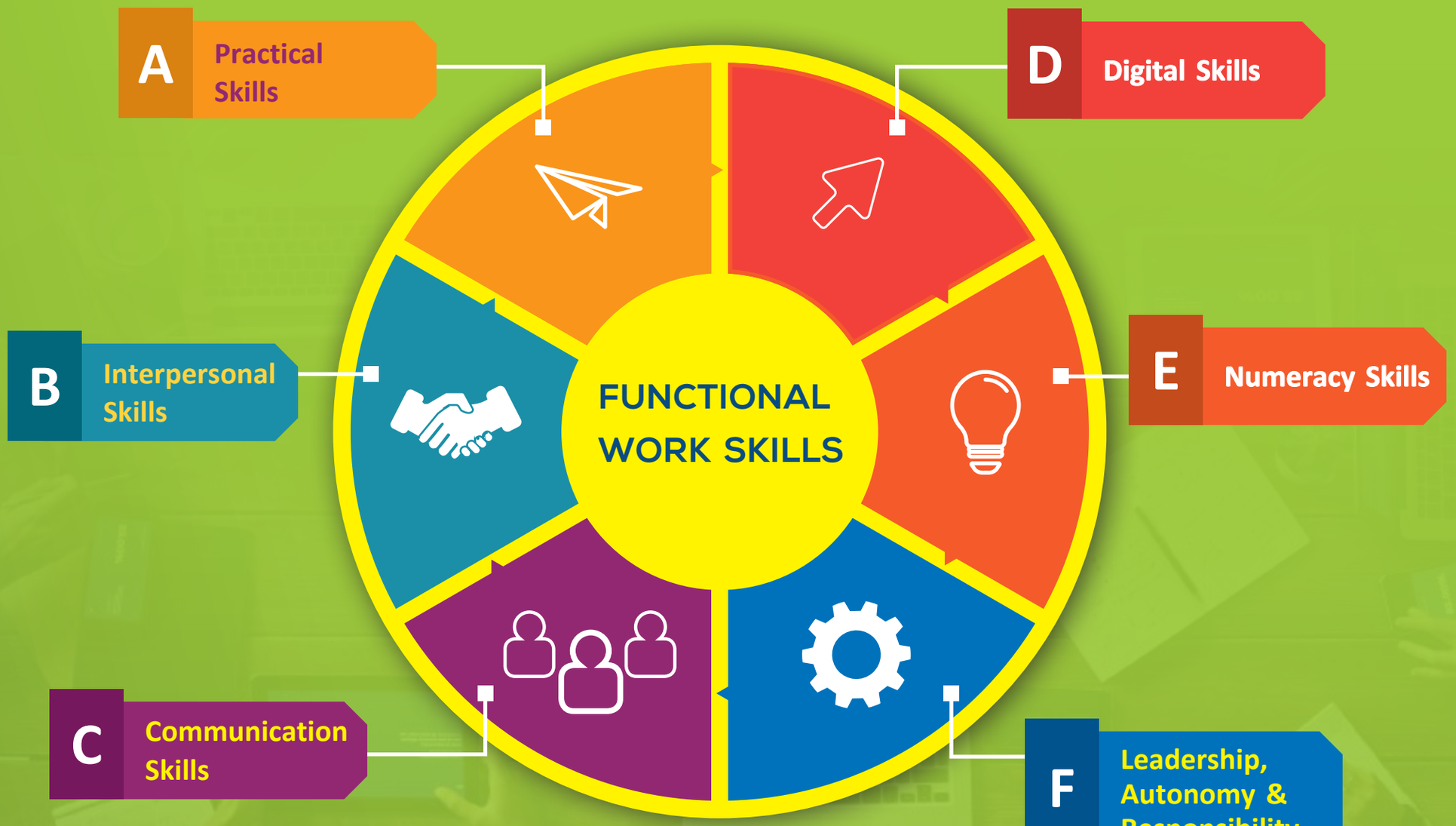
This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level C6 (Creating) according to Bloom's taxonomy for Cognitive domain (Appendix A).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

CLUSTER 3

FUNCTIONAL WORK SKILLS


A
Practical Skills
D
Digital Skills
B
Interpersonal Skills
FUNCTIONAL WORK SKILLS
E
Numeracy Skills
C
Communication Skills
F
Leadership, Autonomy & Responsibility

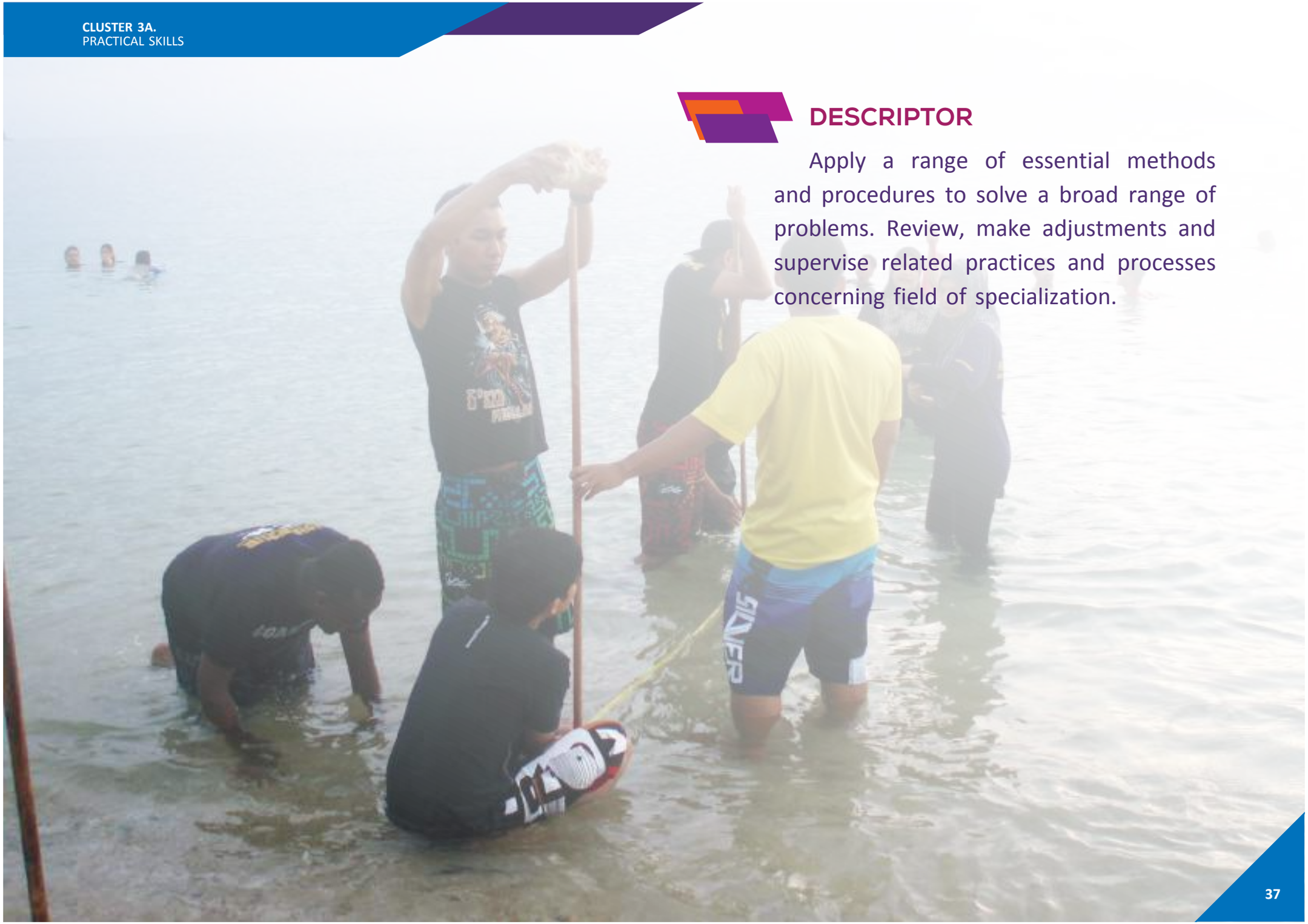
3A. PRACTICAL SKILLS

DESCRIPTION

These are generally work skills and operational skills applicable in common employment environment such as planning; organisational skills; selection of tools, material, technology methods and procedures, while in study context, it may include study skills and preparations, undertaking procedures, scientific skills, designs, research and so forth

It also includes specialised skills which are set by specific subject, discipline, technical or occupation-related work skills and professional practice which enhance professional competence. It should include safe and sustainable practices

(MQA, 2017)



DESCRIPTOR

Apply a range of essential methods and procedures to solve a broad range of problems. Review, make adjustments and supervise related practices and processes concerning field of specialization.

DESCRIPTION

Psychomotor-related practical / technical skill is the relationship between cognitive functions and physical movement, ranging from manual tasks to more complex tasks. Different abilities that can be considered as psychomotor-related practical / technical skills include Perceptual abilities, Physical abilities, Skilled-movements and Non-discursive communication. The level of competencies can be measured based on Bloom's Taxonomy or Dave's Taxonomy (Appendix F and G).

Reflect Movements

Reactions that are not learned, such as an involuntary reaction.

Fundamental Movements

Basic movements such as walking, or grasping.

Perceptual Abilities

Response to stimuli such as visual, auditory, kinesthetic (bodily movements), or tactile (touch) discrimination; or coordination abilities as they are related to the ability to take in information from the environment and react.

Non-discursive Communication

Use effective body language, such as gestures and facial expressions; expressive movements through posture, and/or creative movements like those in mime or ballet. These movements refer to interpretative movements that communicate meaning without the aid of verbal commands or help.

Skilled Movements

Advanced learned movements or skills as one would find in sports, acting, dances, or for the arts.

Physical Abilities (Fitness)

Stamina that must be developed for further development such as endurance, flexibility, strength, agility, reaction-response time or dexterity.

(Harrow,1972)

ATTRIBUTES OF PRACTICAL SKILLS

SCIENCE AND TECHNOLOGY

Build / Construct
Calibrate
Organize tools
Operational or Processing ability (speed, distance, strength, stamina)

Note: Instead of measuring psychomotor domain, some of the attributes can measure cognitive or affective domain if the attributes reflect the occupational workplace and professional practice criteria.

SOCIAL SCIENCE

Organize (event)
Creativity
Technical / Creative writing
Technical or multimedia production
Techniques (computer drawing /musical instruments)
Newsgathering
Visual storytelling / editing
Advocacy skill
Legal research skill
Musical performance
Flexibility / Mobility
Balance / Posture / Alignment

GENERIC

Ability to Control
Brings people together (coordination of people)
Exert extra effort
Troubleshooting
Ability to handle pressure/ stays calm
Coordination
Competent
Procedures
Attention to accuracy / Quality
Designing skill
Precision
Sets attainable objectives
Dependability
Technical skills
Attention to detail
Confidence
Technique in execution
Ability to inquires / learns new skills
Risk-Taking
Observant
Performance review

EXAMPLE OF COURSE ASSESSMENT PLAN (SCIENCE AND TECHNOLOGY)
COURSE: MANUFACTURING PROCESS (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and Related MQF LOD Attribute	Student Learning Time (SLT)**
Measure torque-speed characteristics of rotating machines accurately (P4)*	Cluster 3A	Laboratory work	Practical Test : 10%	Student will operate rotating machines during practical test	12 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level P4 (Mechanism) according to Bloom's Taxonomy for Psychomotor domain (Appendix F).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN (SOCIAL SCIENCE / ART AND HUMANITIES
COURSE: KEYBOARD HARMONY (2 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and Related MQF LOD Attribute	Student Learning Time (SLT)**
Demonstrate over a lead sheet while comping chords with their appropriate voicings (P5)*	Cluster 3A	Demonstration in class	Practical Test : 30%	Students will need to play chord accompaniment on keyboard/piano to support the given melodies of existing popular songs by applying their own chord voicings	24 hours

Notes:

This table represents one (1) of the CLOs of the entire course

*This CLO addresses Level P5 (Complex Overt Response) according to Bloom's Taxonomy for Psychomotor domain (Appendix F).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

3B. INTERPERSONAL SKILLS

DESCRIPTION

Interpersonal skills refer to a range of skills which, amongst others, include interactive communications; relationships and collaborative skills in managing relationships in teams and within the organisations; networking with people of different cultures; as well as social skill / etiquette.

(MoHE, 2016)

DESCRIPTOR

Work together with different people in diverse learning and working communities as well as other groups locally and internationally.

ATTRIBUTES OF INTERPERSONAL SKILLS

SCIENCE & TECHNOLOGY AND SOCIAL SCIENCES

- Collaborate
- Network
- Negotiation
- Non-verbal communication
- Decision making
- Assertiveness
- Respect
- Tolerance
- Listening skill
- Social responsibility
- Acting responsibly and with maturity
- Teamwork
- Socialize with skills and etiquette
- Convey information / ideas
- Deal calmly and efficiently with conflicting priorities

ATTRIBUTES OF INTERPERSONAL SKILLS

ATTRIBUTE	DEFINITION
Self-Confidence	• The ability to build good relationship, interact with others and work effectively with them to achieve common objectives
Social Communication	• The ability to converse and maintain interactions with others and interchange roles between team leader and team members
Self-Awareness	• The ability to control emotions while socializing and be ethical in carrying out responsibilities to society
Respect	• The ability to recognize and respect the attitude, behaviour, belief and the rights of other people
Social Responsibility	• The ability to be responsible and take the initiative/volunteer to be engaged and able to act as an agent of change in the society

(MoHE,2016)

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: STRATEGIC MARKETING (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Synthesize the feedbacks from the stakeholders with regards to social and cultural issues (A4)*	Cluster 3B	Demonstration / simulation / role play	Peer review : 5% Project Proposal Defence : 15%	Students need to synthesise feedback received from stakeholders with regards to their proposal related to university social responsibility (USR) events	24 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level A4 (Organizing) according to Krathwohl's Taxonomy for Affective domain (Appendix H)

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

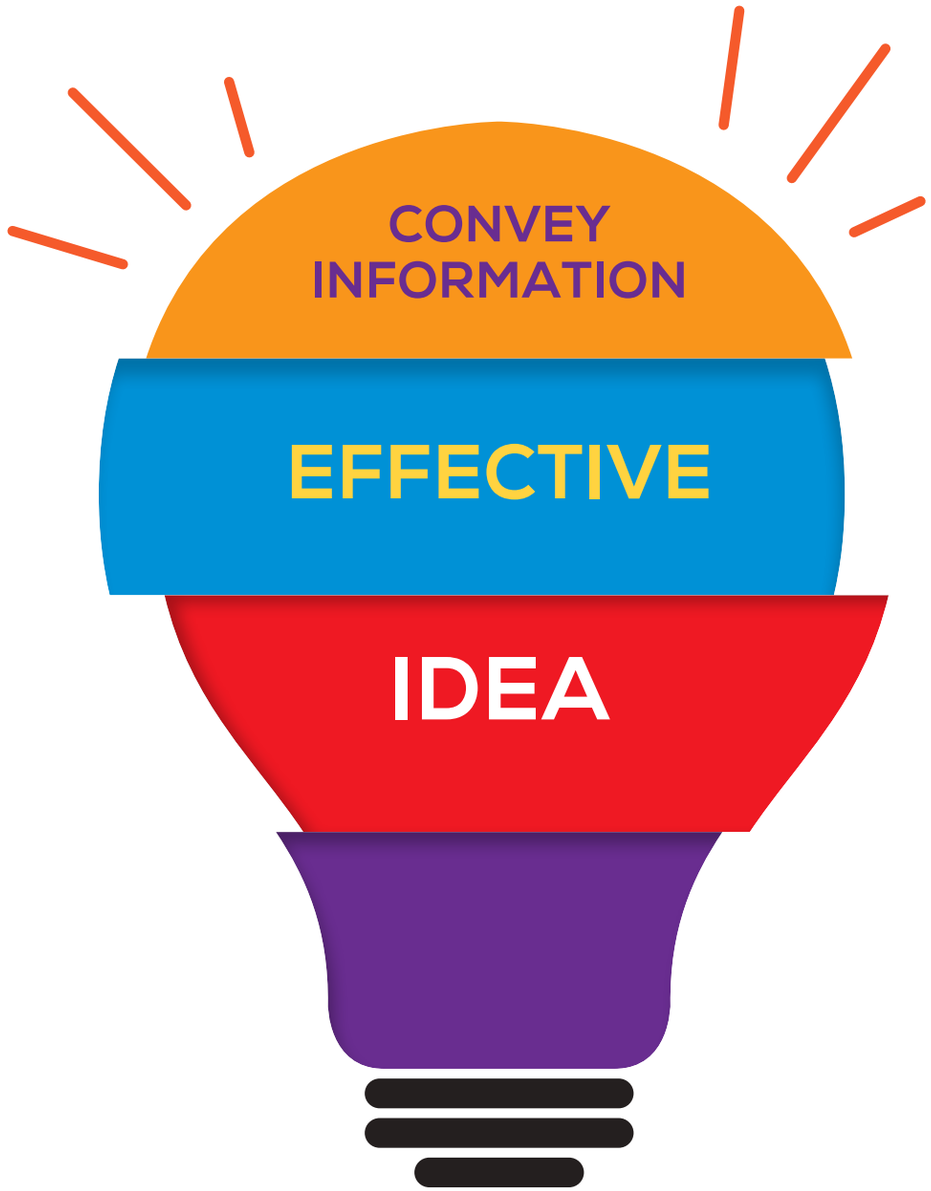
3C. COMMUNICATION SKILLS

DESCRIPTION

Communication skills refer generally to the ability to communicate / convey information / ideas / reports cogently and professionally in appropriate language

The communication must be effective and in appropriate forms, in various medium, to a range of audience and different situations. The ability to communicate in more than one language is encouraged

(MQA,2017)



DESCRIPTOR

Convey ideas both in written or oral forms using appropriate and different forms of presentation, confidently, accurately and coherently in appropriate context in a well-structured manner to a diversity of audiences.

ATTRIBUTES OF COMMUNICATION SKILLS

SCIENCE & TECHNOLOGY AND SOCIAL SCIENCES

- Communicate effectively, speak confidently, converse clearly
- Ability to communicate / convey information ideas and reports cogently and professionally in appropriate language
- Critic, debate and argue, visual literacy
- Written, verbal and graphical communication
- Expression, interpretation
- Advocacy communication
- Articulate / Convince Persuade / Negotiate / Influence
- Communicate in different language
- Promote amicable atmosphere to achieve mutual benefits (verbal and in written)
- Express attitude and feelings through body language and facial expressions
- Convey characters, thoughts and emotions through music and painting

ATTRIBUTES OF COMMUNICATION SKILLS

ATTRIBUTES	DEFINITION
Oral Communication	The ability to deliver ideas clearly and effectively
Written Communication	The ability to write an academic discourse which has a coherent flow that is clear and easy to comprehend
Responding to Question	The ability to understand and respond to questions using appropriate language
Expression	• The ability to read nonverbal cues such as facial expressions, eye contact, spatial distance and tone of voice • The ability to make sense of artistic expressions through music and painting by exploring various rhythm, tempo, structure, colours etc

(MoHE,2016)

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: INDUSTRIAL LAW AND RELATIONS (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Defend effectively in both objective and persuasive styles appropriate to the circumstances (A3)*	Cluster 3C	Case Study	Moot Court : 40%	Students need to speak in a clear, well-reasoned, and professional manner in both objective and persuasive styles in a series of moot court sessions	48 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level A3 (Valuing) according to Krathwohl's Taxonomy for Affective domain (Appendix H).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

3D. DIGITAL SKILLS

DESCRIPTION

Digital skills refer to the ability to use information / digital technologies to support work and studies. The skills include sourcing and storing information, processing data, using applications for problem solving and communication, as well as ethics in applying digital skills

(MQA,2017)

Digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital devices and networked technologies for participation in career and social life. It includes competencies that are variously referred to as computer literacy, ICT literacy, information literacy, and media literacy

(UNESCO,2018)

DIGITAL SKILLS

Digital skills can be measured as generic skill or discipline-based skill. Information literacy and digital communication are the two ability or skills generally needed by future graduates.

Both can be measured as a generic or discipline-based skill, ranging from basic knowledge skills to more complex engagement and creation through a cognitive, affective and psychomotor domain.

INFORMATION LITERACY

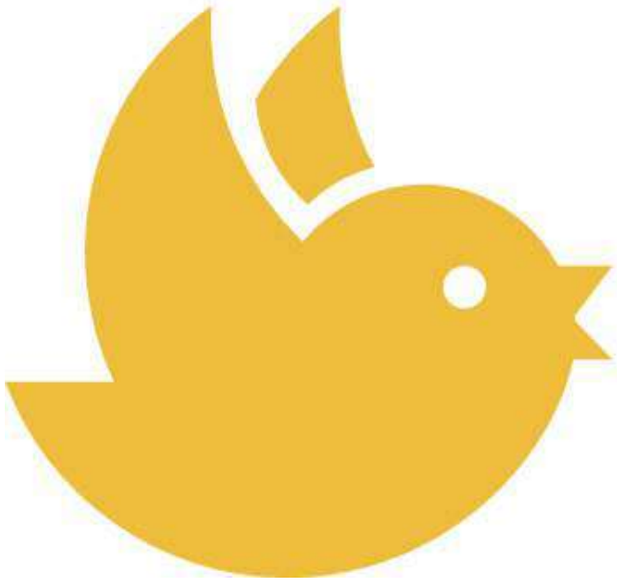
The ability to store, use and share information, and process using applications for problem solving and to reproduce and process data into more understandable form

DIGITAL COMMUNICATION SKILL

The ability to generate clear text and content, present idea or information using digital programmes, software or internet tools as well as to engage with others on digital platform

DESCRIPTOR

Use a broad range of information, media and technology applications to support study and / or work.



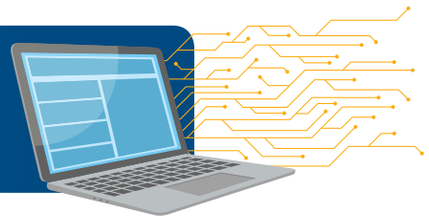
FIVE COMPONENTS OF DIGITAL SKILLS

1 DIGITAL DESIGN

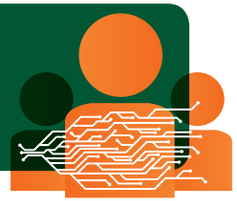
2 SOCIAL MEDIA

3 DEVICE AND APPS

4 DIGITAL COLLABORATION



5 DIGITAL ETHICS AND NETIQUETTE



DIGITAL DESIGN

GRAPHIC DESIGN

Digital design is the method by which graphic designs are created using computers, tablets, digital drawing tools for print, web, television, electronic devices, multimedia presentations, social media collateral, email and web ads, digital billboards and signage, pitch decks, 3D modelling, 2D animation, and other media of innumerable nature and varieties

DIGITAL DESIGNER SKILL SET

Generating visual ideas, graphic design, 2D and 3D animation, web design, video game design, special effects, advertising, computer applications, mark-up languages, scripting languages, typography, colour, project management, communication and social media

APPLICATION

E-magazines, e-books, e-newspapers, television, web, advertising, marketing and sales displays and promotions, aviation, astronomy, remote sensing, architecture, photography, 3D development, modelling, anthropology, archaeology, product design, animation, mapping etc

SOCIAL MEDIA SKILL

CREATIVITY

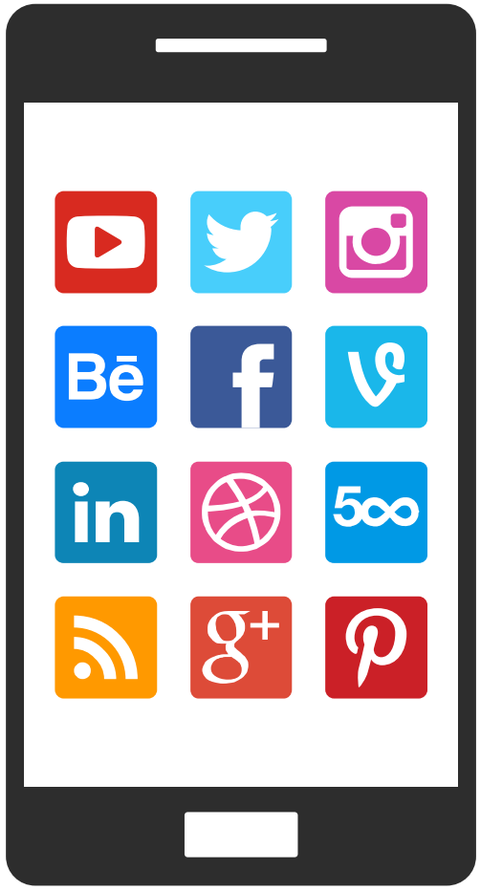
Consistently come up with new and engaging ideas, creative initiatives and campaigns.

CONTENT CURATION

Able to tailor the content and know when to share, what to share and where to share.

WRITING

Keep headlines magnetic and captivating to attract audience.



ORGANIZATION

Create publishing schedules, track the content flow, and maintain social media profile.

APTITUDE

Learn where audience is migrating to and when is the right time to switch social media platform.

RELATIONSHIP BUILDING

Reach out to influencers and make crucial relationships in order to grow credibility.

COMMUNITY MANAGEMENT

Communicate with audience and spread reach organically.

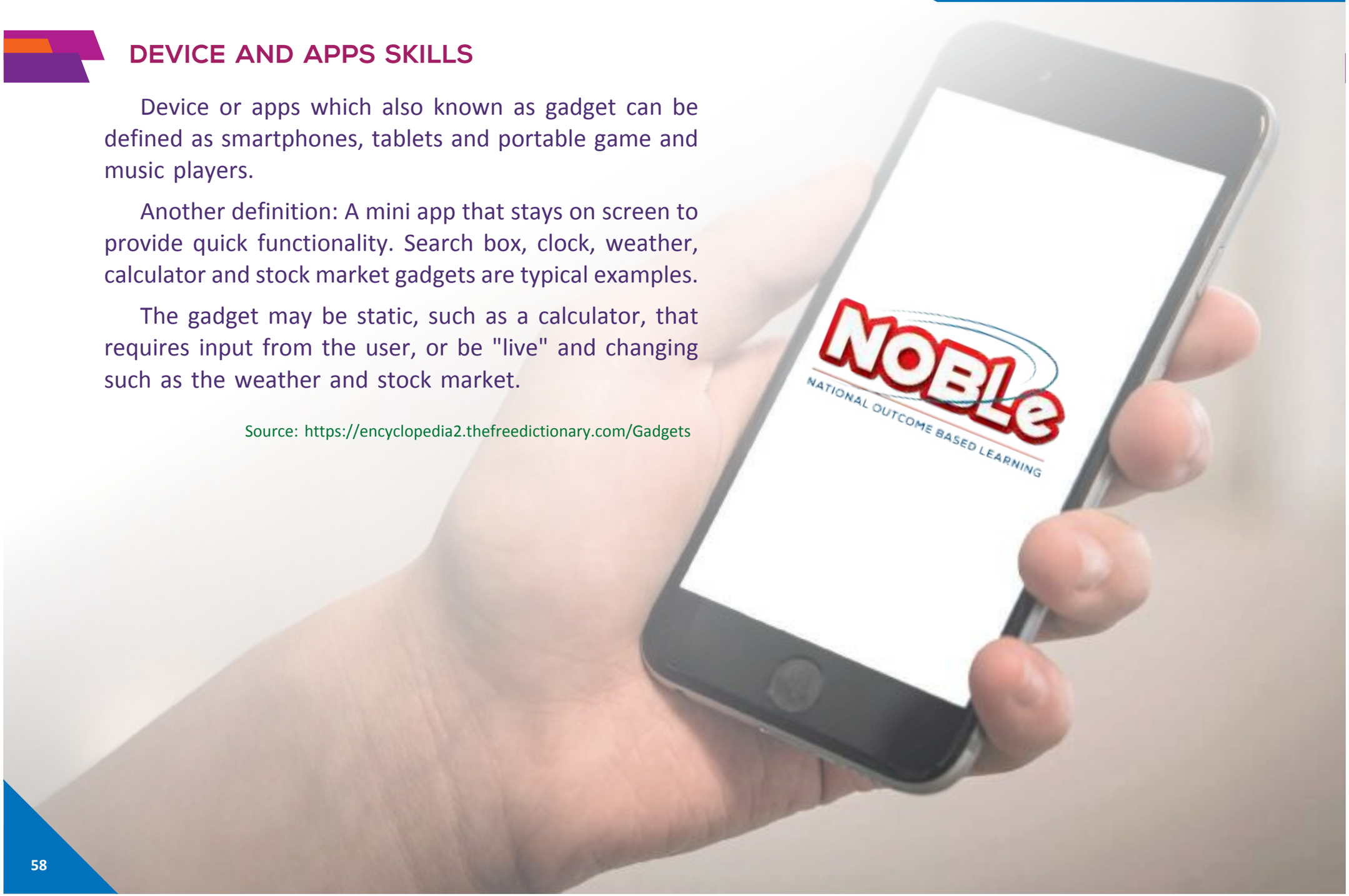
DEVICE AND APPS SKILLS

Device or apps which also known as gadget can be defined as smartphones, tablets and portable game and music players.

Another definition: A mini app that stays on screen to provide quick functionality. Search box, clock, weather, calculator and stock market gadgets are typical examples.

The gadget may be static, such as a calculator, that requires input from the user, or be "live" and changing such as the weather and stock market.

Source: https://encyclopedia2.thefreedictionary.com/Gadgets



DIGITAL COLLABORATION SKILL

Using digital technologies for collaboration, which connect broader network of participants

THROUGH.....

- Online meetings
- Online team chat rooms
- Co-authoring
- Social media
- Shared task

SITUATION / CONDITION

Fluid movement through different modes of working, from real-time group work to asynchronous group work

DIGITAL ETHICS AND NETIQUETTE

Both digital ethics and netiquette **are frequently used** interchangeably.

Digital Ethics is how to manage oneself ethically, professionally and in a clinically sound manner via online and digital media

Digital ethics refer to the study of the implication of technology on the social, political, and moral space of society

Netiquette: hybrid word, combination of network or **etiquette**, defined as a set of rules for acceptable online behavior such as how to communicate, treat others, portray ourselves, and protect ourselves online. Online ethic focuses on the acceptable use of online resources in an online social environment

SEVERAL PRINCIPLES OF DIGITAL ETHICS

Ethic of Effective Communication and Conversation

Netiquette: hybrid word, combination of network or **etiquette**, defined as a set of rules for acceptable online behavior such as how to communicate, treat others, portray ourselves, and protect ourselves online. Online ethic focuses on the acceptable use of online resources in an online social environment

Ethic of Images

Images include both photograph and video

Altering and manipulating images in an ethical manner

Privacy and Security

Use of personal information such as financial, biometric, medical, and biographical data with the owner's consent

Copyright Infringement

Not to use of somebody's work as your own work without permission of the person or organization that owns the rights to that specific work

ATTRIBUTES OF DIGITAL SKILLS

SCIENCE & TECHNOLOGY AND SOCIAL SCIENCES

(Information Literacy and Digital Communication)

- Gather
- Articulation
- Refer
- Optimization
- Sourcing
- Argue
- Collaboration
- Convey information
- Curate or create
- Well-reasoned conclusions
- Processing
- Publishing
- Storing
- Design

Digital skills can also be measured through digital communication if the intended learning outcome is to assess student ability in using digital platform to communicate.

ATTRIBUTES OF DIGITAL SKILLS

ATTRIBUTE	DEFINITION
Convey	Present information through the use of digital or internet tools or application
Articulation	Able to express ideas clearly and effectively in writing and easily understood by the reader through digital or internet tools or application
Curate	Creating new or original content in discipline or generic
Gather	Gather appropriate and relevant information
Reproduce and Process Information	Combine different types of information from different sources into something new Type of information may include in a form of images, texts, tables and data
Collaborate	Use technology or platform for collaboration or networking purpose
Design	Use design related tools to produce or create graphic design

(MoHE,2016)

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: ETHICAL, SOCIAL, AND PROFESSIONAL ISSUES IN DIGITAL MEDIA (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Debate on digital ethic principles based on case study/ scenario given	Cluster 3D	Mini lecture, group discussion, simulation	Debate : 30%	From a given case study / scenario, students need to identify and debate on digital ethic principles within the ethical framework	36 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level A3 (Valuing) according to Krathwohl's Taxonomy of Affective domain (Appendix H)

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: TEACHING METHOD (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Create a teaching product by integrating different internet tools or software (C6)*	Cluster 3D	Group work, didactic	Teaching Product : 25%	Students need to create teaching product using different internet platform or internet tools or software by applying pedagogical principles	30 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level A3 (Valuing) according to Krathwohl's Taxonomy for Affective domain (Appendix H).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: GEOMATIC (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Display proficiency in the usage of surveying software in geomatic field (P4)*	Cluster 3D	Collaborative learning	Presentation : 25%	Students need to use surveying software in collecting and analysing spatial information about the land/ the oceans / natural resources or manmade features through presentation	30 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level P4 (Mechanism) according to Bloom's Taxonomy for Psychomotor domain (Appendix F)

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: DIGITAL MUSIC TECHNOLOGY FOR COMPOSER (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Demonstrate autonomous learning in digital multi-track recordings using humanisation techniques (A5)*	Cluster 3D	Demonstration, group discussion	Assignment : 10% Final Project : 40%	Students are required to produce a realistic musical sound using humanisation techniques in digital multi-track recording to emphasize digital skills	60 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level A5 (Characterizing by a Value) according to Krathwohl's Taxonomy for Affective domain (Appendix H).

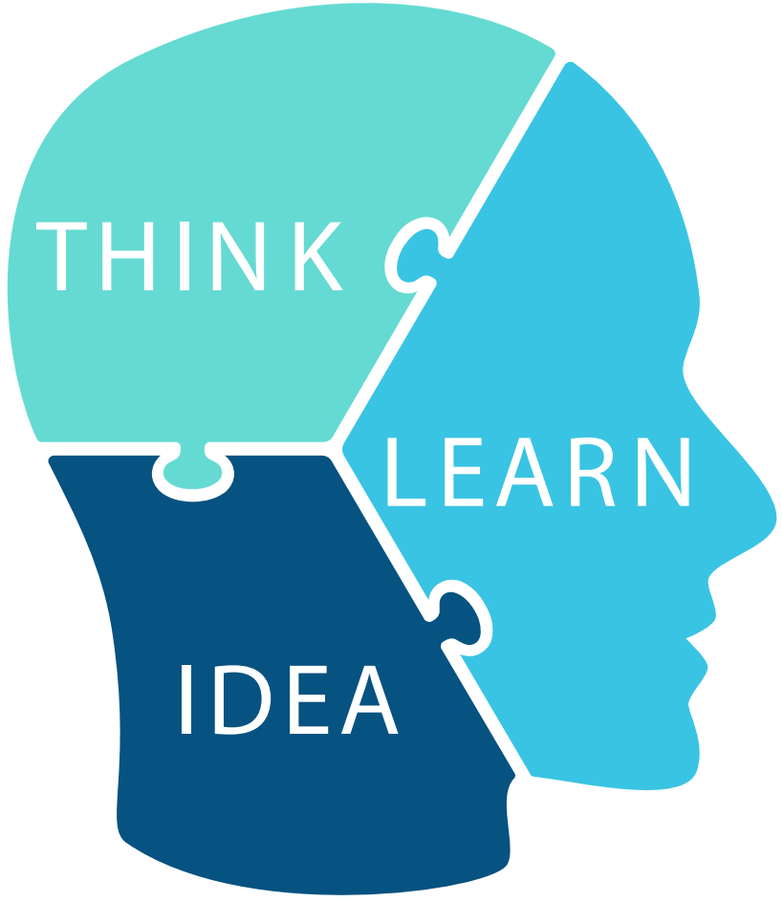
**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

3E. NUMERACY SKILLS

DESCRIPTION

These are the quantitative skills that require learners to acquire increasingly higher levels of numerical abilities. It is acknowledged as an important living skill relevant in study, work and daily life. Within the MQF levels, this learning outcome may not be specifically mentioned for every level but it is expected that numerical skills are required as an outcome ought to be indicated for every specific programme. It may include understanding of basic mathematics, symbols relating to statistical techniques etc.

(MQA,2017)



NUMERACY SKILLS

Numeracy skill is the ability to access, use, interpret, and communicate mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life.

Numerate behavior involves managing a situation or solving a problem in a real context, by responding to mathematical content/information/ideas represented in multiple ways.

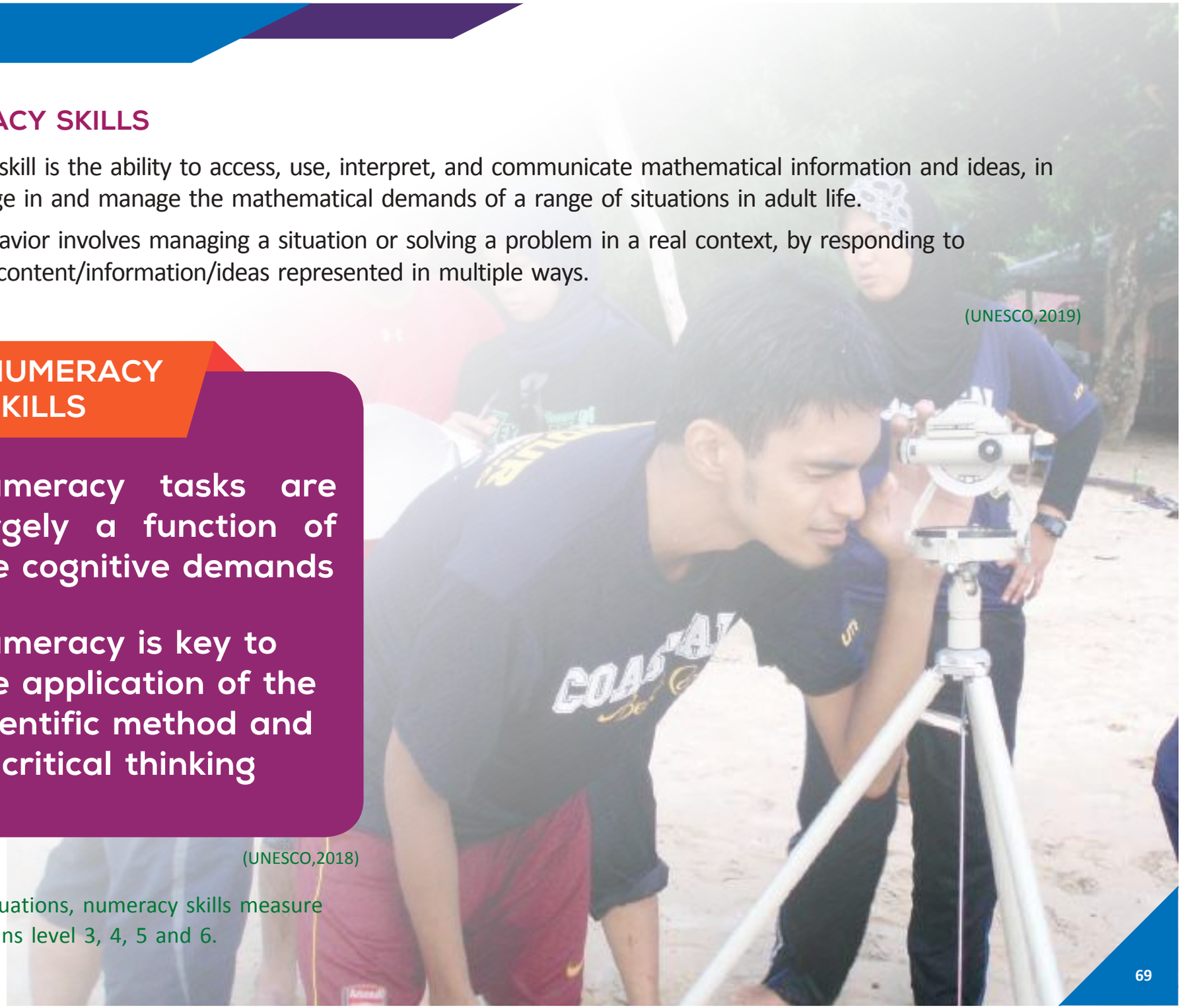
(UNESCO,2019)

NUMERACY SKILLS

- Numeracy tasks are largely a function of the cognitive demands
- Numeracy is key to the application of the scientific method and to critical thinking

(UNESCO,2018)

*Majority of situations, numeracy skills measure cognitive domains level 3, 4, 5 and 6.



DESCRIPTOR

“Descriptor level 6:

Apply mathematical and other quantitative, qualitative tools

to analyse and evaluate numerical and graphical data for study / work”

Knowledge of numbers and figures

Understanding relationships between numbers

Interpreting mathematical information

Visual perception of information

EXAMPLES OF NUMERACY SKILLS

Argumentation and logical thinking

Calculation skills, measurement and data analysis

Scheduling or budgeting

Understanding trends

Working with graphical representation

ESSENTIAL OF NUMERACY SKILLS

1

QUANTITATIVE REASONING & LOGICAL THINKING:

Handling information, identifying mathematical information, understanding numbers, calculating, estimates and solving problems, processing data, statistic and probability, interpreting data, drawing conclusion, reliability and significance of data

2

OPERATION & CALCULATION

Procedural rules underlying manipulations of whole numbers, decimals, and fractions

3

GRAPHICAL REPRESENTATION

Represents and interprets data in graphs, tables and diagrams

4

COMPLEX NUMBER

Calculus and advanced calculus, complex mathematical tasks, including problem solving and mathematical reasoning. Routine and non routine complex numerical

5

SPATIAL VISUALIZATION & GEOMETRIC REASONING

Capacity to think about and applies objects in 2D, 3D, angles and position and to draw conclusion. Mental representation of object configuration, creating and designing object, navigating and way-finding

ATTRIBUTES OF NUMERACY SKILLS

(SOME ATTRIBUTES CAN BE APPLIED FOR BOTH FIELDS)

Science & Technology

- Calculate
- Measure
- Interpret
- Apply
- Analyse
- Recognize

Social Sciences

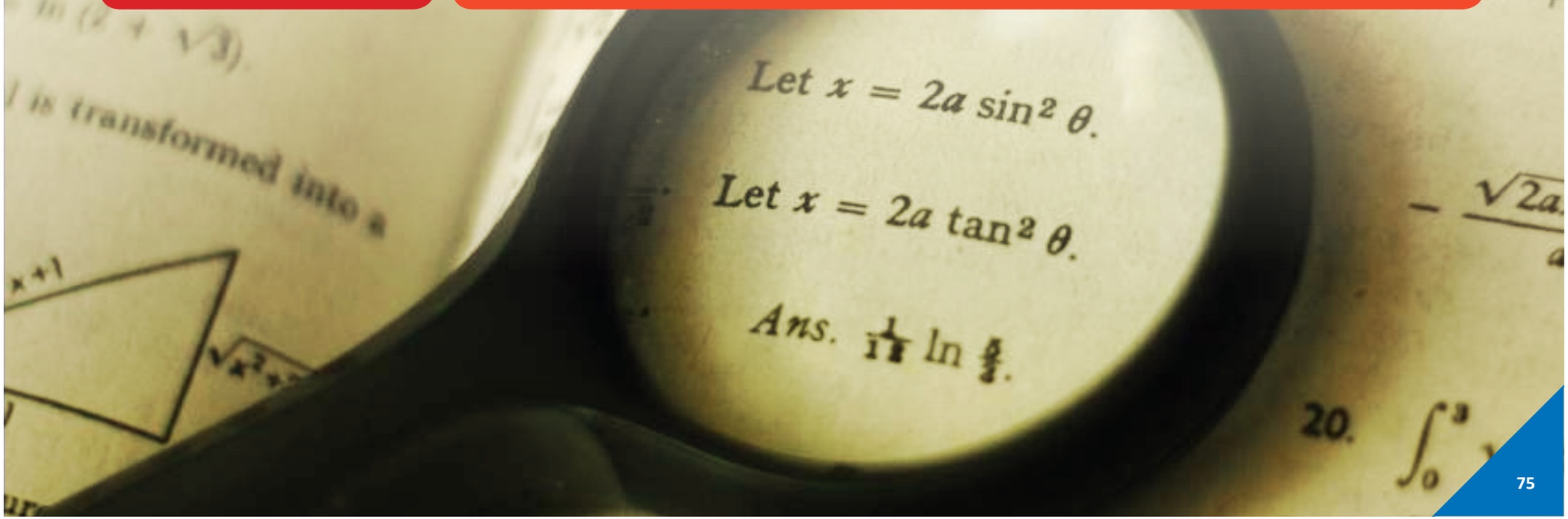
- Obtain relationship
- Estimate
- Recognize
- Make sense
- Respond
- Express
- Transforming
- Solve problems

ATTRIBUTES OF NUMERACY SKILLS

ATTRIBUTE	DEFINITION
Calculate	Calculate using calculators and a range of measuring instruments
Interpret	Interpret statistical information, table, graph, chart or percentage
Analyse	Analyse numerical information and to make the right conclusions and decisions
Estimate	Estimate numerical, mathematical and statistical information
Measure	Measurements count using any device or instruments

ATTRIBUTES OF NUMERACY SKILLS

ATTRIBUTE	DEFINITION
Obtain Relationship	Obtain relationship between number, language skill, visualization of information
Making Sense	Make sense of numbers, time, patterns and shapes for activities like cooking, reading receipts, reading instructions and even playing sport
Respond	Respond to information which is presented in mathematical ways, for example, in graphs, tables, charts, or percentages
Transforming	Transforming subjective into quantitative data
Express	Express ideas and situations using numerical or mathematical information



EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: BUSINESS MATHEMATICS (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Solve basic mathematical problems in the specific area of business, finance, investment and income tax assessment (C3)*	Cluster 3E	Lecture, group discussion	Examination : 20% Case Study Report : 20%	Students apply their mathematical knowledge to meet the demands of business operation	48 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level C3 (Applying) according to Bloom's Taxonomy for Cognitive domain (Appendix A)

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: RESEARCH METHODS (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Analyse a case study using principles, theories and practices in quantitative analysis in written form and orally (C4)*	Cluster 3E	Lecture, group discussion, case study	Case study report : 20% Presentation : 10%	Students will be given a case involving quantitative data in the form of graphs, tables and charts. They need to recognize, understand and analyse the data given, and present a case report	36 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level C4 (Analyzing) according to Bloom's Taxonomy for Cognitive domain (Appendix A)

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

3F. LEADERSHIP, AUTONOMY & RESPONSIBILITY

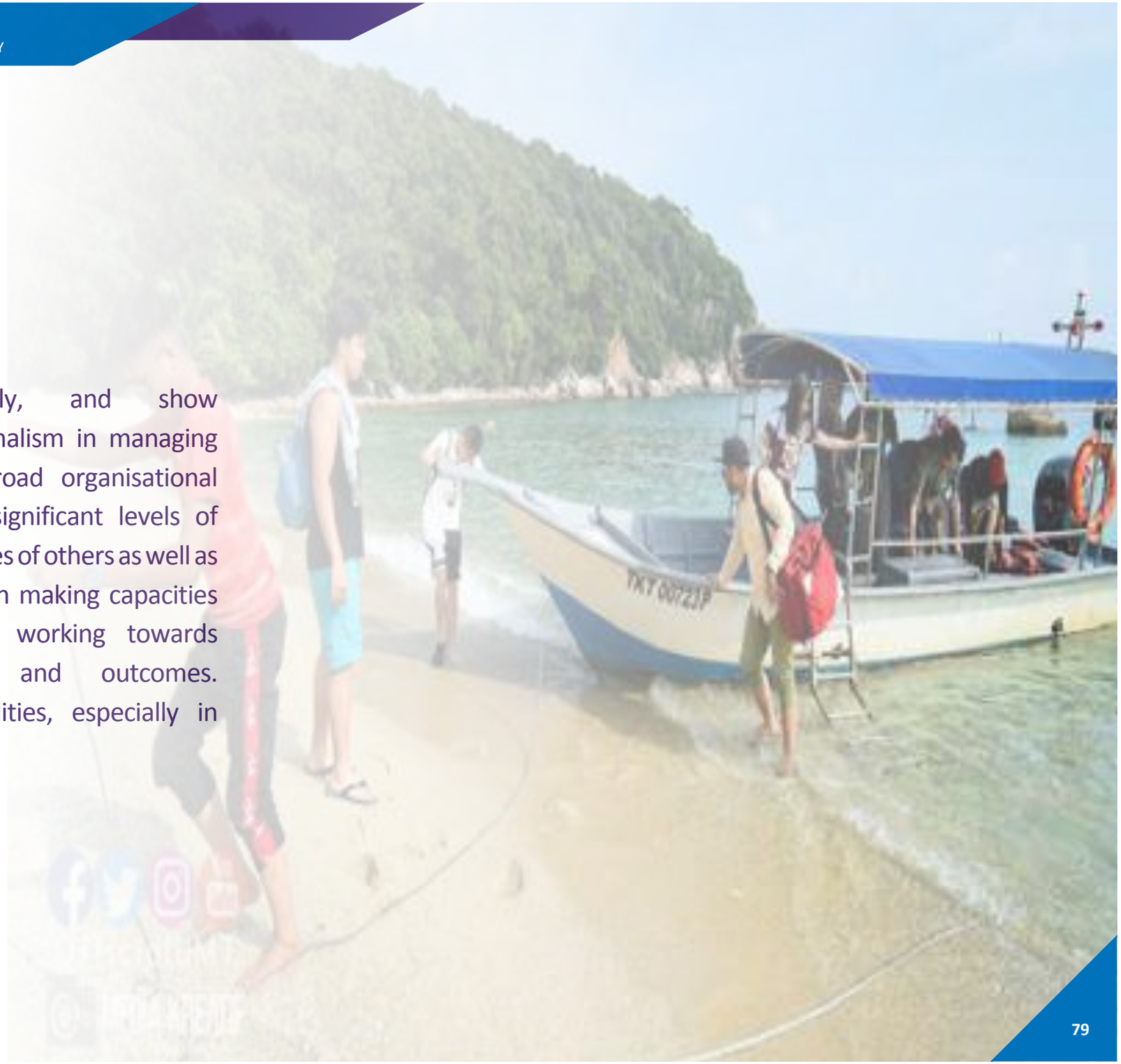
DESCRIPTION

Refers to 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 setting goals at organisational / unit / team levels; to take responsibilities with accountability; to be confident, knowledgeable, articulate, honest, professional, concerned, resilient, a risk taker and possess other intrapersonal skills including working in, and leading teams.

(MQA,2017)

DESCRIPTOR

Work autonomously, and show leadership and professionalism in managing responsibilities within broad organisational parameters. Undertake significant levels of work related responsibilities of others as well as self. Demonstrate decision making capacities and professionalism by working towards pre-determined goals and outcomes. Demonstrate accountabilities, especially in professional fields.



ATTRIBUTES OF LEADERSHIP, AUTONOMY AND RESPONSIBILITY

SCIENCE & TECHNOLOGY AND SOCIAL SCIENCES

- Influence, convince and motivate
- Foster good relationship and teamwork
- Lead with varying degrees of autonomy to make decisions
- Lead within authority and responsibility
- Setting goals at organisational/unit/team levels

- Take responsibilities with accountability
- Can command respect and confidence from team members
- Assess the risk of failures in the internal controls and procedures in area of responsibility
- Persuasive
- Capacity to initiate, delegate, manage, and be visionary

ATTRIBUTES OF LEADERSHIP, AUTONOMY AND RESPONSIBILITY

ATTRIBUTE	DEFINITION
Effective leadership	The ability to lead self and/or others using the fundamental concepts of leadership
Responsibility	The state of acting independently and making decisions or having control over someone with/without authorization
Autonomy	The ability to act independently, free from external control or influence by initiating, delegating and managing responsibly
Work in team	The ability to foster good relationships and play different roles for different situations

(MoHE,2016)

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: EVENT MANAGEMENT (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Evaluate personal strengths and weaknesses through the event management process (A3)*	Cluster 3F	Collaborative learning; project-based learning	Reflection in Logbook : 15% Peer Review : 5%	Students are required to conduct self-reflection and peer-reviewing of their strengths and weaknesses throughout the event/ project	24 hours

Notes:

This table represents one(1) of the CLOs of the entire course.

*The CLO addresses Level A3 (Valuing) according to Krathwohl's Taxonomy for Affective domain (Appendix H).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

CLUSTER 4

PERSONAL AND ENTREPRENEURIAL SKILLS

4A PERSONAL SKILLS

4B ENTREPRENEURIAL SKILLS

4A. PERSONAL SKILLS

DESCRIPTION

Personal skills are life skills that learners are expected to use daily. They are normally portrayed through enthusiasm for independent learning, intellectual and self-development; by demonstrating confidence, self-control; social skills and proper etiquette; and commitment to professionalism in the workplace. It also includes capability to plan for career development or further education. Aspects of character such as honesty, punctuality, time management, keeping to and maintaining deadlines that are important in a work environment are also important personal skills.

(MQA,2017)

4A. PERSONAL SKILLS

DESCRIPTOR

Engage effectively in self-directed lifelong learning and professional pathways

(MQA,2017)

ATTRIBUTES OF PERSONAL SKILLS

ATTRIBUTE	DEFINITION
Intrapersonal skill	Those skills that individual require to posses in order to manage themselves and it is a prerequisite to interpersonal skills (e.g. flexibility, resourcefulness, self-esteem, self-awareness honesty, punctuality, time management, keeping to and maintaining deadlines)
Autonomous	Independent and having the power to make own decisions
Proactiveness	Taking action by causing change and not only reacting to change when it happens
Achievement oriented	Ability to put higher target and has high endurance in facing challenges such as enthusiasm for independent learning, intellectual and self-development and capability to plan for career development or further education

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: VOLUNTEERISM COURSE (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Explain the importance of volunteerism activities towards building responsible citizens (A3)*	Cluster 4A	Group field work	Report : 20% Presentation : 20%	Students are required to write a report from the fieldwork on volunteerism activities. Their presentations should tackle issues on the importance of national identity gained from the fieldwork	48 hours

Notes:

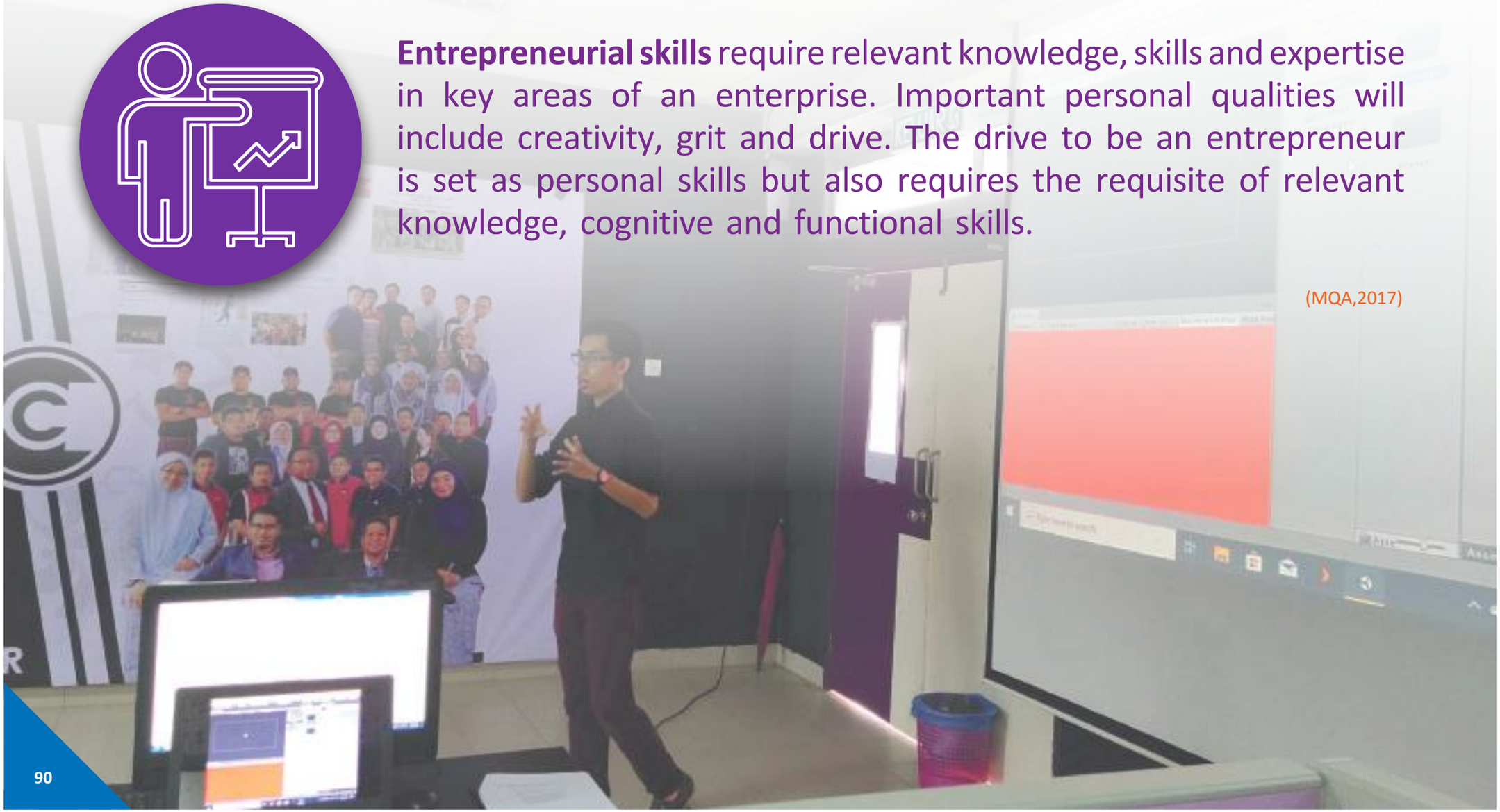
This table represents one(1) of the CLOs of the entire course.

*The CLO addresses Level A3 (Valuing) according to Krathwohl's Taxonomy for Affective Domain (Appendix H).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

4B. ENTREPRENEURIAL SKILLS

DESCRIPTION



Entrepreneurial skills require relevant knowledge, skills and expertise in key areas of an enterprise. Important personal qualities will include creativity, grit and drive. The drive to be an entrepreneur is set as personal skills but also requires the requisite of relevant knowledge, cognitive and functional skills.

(MQA,2017)

4B. ENTREPRENEURIAL SKILLS

DESCRIPTOR

Demonstrate entrepreneurial competency with selected project(s). Demonstrate an appreciation of broader socio-political economic and cultural issues at local / national and regional level

(MQA,2017)

ATTRIBUTES OF ENTREPRENEURIAL SKILLS

ATTRIBUTE	DEFINITION
Self-efficacy	One's beliefs about own capabilities to succeed in achieving an outcome or reaching a goal
Competitive	Wanting very much to win or be more successful than other people
Networking	The ability in a process of meeting and talking to a lot of people, especially in order to get information that can help you
Calculative Risk Taking	Ability to undertake the actual or chance of failure whose degree of probability has been estimated before some undertaking is entered upon
Innovative & Creative	Able to use creative intelligence to improve, create change and disrupts the status quo
Opportunity Recognition	Identifying new business based on the opportunities. Based on prior knowledge, past experiences, current market conditions and potentially profitable new business ventures
Business Acumen	Able to understand, interpret, analyse, and deal with a business situation in a professional and profitable manner

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: FOUNDATION IN ENTREPRENEURSHIP (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Describe a business model canvas/ plan to market a product or service (A1)*	Cluster 4B	Case Analysis	Product / Business Service : 20% Presentation : 20%	Student are able to present a business model canvas/ plan and product/business service related to the entrepreneurial attribute	48 hours

Notes:

This table represents one(1) of the CLOs of the entire course.

*The CLO addresses Level A1 (Receiving) according to Krathwohl's Taxonomy for Affective Domain (Appendix H).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: ENTREPRENEURSHIP APPRENTICESHIP (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Propose business innovation on the service and consumer relation techniques (A3)*	Cluster 4B	Case study	Business Innovation Presentation : 20%	Students are required to propose and present business innovation pertaining to the service and consumer relation techniques	24 hours

Notes:

This table represents two (2) of the CLOs of the entire course

*The CLO addresses Level A3 (Valuing) according to Krathwohl's Taxonomy for Affective Domain (Appendix H).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

ENTREPRENEURSHIP INVENTORY

SEA - STUDENT ENTREPRENEURSHIP ATTRIBUTES*

NOTES:
*Scan QR Code to request the instrument.

CLUSTER 5

ETHICS AND PROFESSIONALISM

DESCRIPTION

Ethics

Ethics and values are important at personal, organisational, societal/community and global settings as they guide personal actions, interactions, at work and within the community at large. Awareness/understanding and respect of ethical, social and cultural differences and issues are important in the exercise of professional skills and responsibilities: integrity, professional conduct (professionalism), and standards of conduct such as upholding regulations, laws and codes of good practices or code of professional conduct. A sensitive approach in dealings with other cultures adds value to this learning domain.

DESCRIPTOR

ETHICS AND PROFESSIONALISM

- Demonstrating adherence, and ability to identify ethical issues, make decision ethically, and act ethically and professionally within the varied social and professional environment and practice.
- Demonstrating a deep familiarity and knowledge of local and global issues relating to science, technology, business, social and environmental issues.

Ethics refers to ways of feeling and state of conduct or actions of an individual or a group of individuals in living their life in a society. It also refers to ways or methods of the individual or the group to practice moral values in cultural, social and religious context based on social norms.

Professionalism refers to attributes of an individual such as his/her ability, skills and implementation methods as expected to be within or to be performed by a professional.

Ethics and professionalism refer to values and code of practices that should be followed by a professional in applying knowledge of his/her discipline and career.

(MoHE,2016)

ATTRIBUTES OF ETHICS AND PROFESSIONALISM

ATTRIBUTE	DEFINITION
Moral	Personality, manners and politeness according to universal good and positive values that are generally acceptable and considered good by the community
Identity	Characteristics of an individual's origin such as customs, language, culture and religion which make up the pillar and portrayal of his personality and bring out the spirit of patriotism and love for the nation-state
Appearance	Character, behaviour as well as tidiness and suitability of the attire based on situations in interacting with other persons and in managing or performing a task
Work Ethics	System of moral rules or principles of behaviour, which are practised in a workplace or a working environment
Integrity	Level of honesty and being upright in keeping or defending his/her stand, principles and accountability in carrying out a task

(MoHE,2016)

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: ETHICAL HACKING (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Demonstrate professional practices in reporting and presenting the given task that related to data and ethical hacking methods and tools (A3)*	Cluster 5	Collaborative learning, Case Study	Project in Group : 5%	Students are required to write, present the data and ethical hacking methods and tools	10 hours

Notes:

This table represents one(1) of the CLOs of the entire course.

*The CLO addresses Level A3 (Valuing) according to Krathwohl's Taxonomy for Affective domain (Appendix H)

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: INTRODUCTION TO EARLY CHILDHOOD EDUCATION (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Follow SOP and professional code of conduct in given task related to Early Childhood Education (A3)*	Cluster 5	Group Discussion, Visit to Chosen Kindergarten and conduct interview with students and teachers	Presentation : 10% of the SOP and Code of Conduct during the visit to the kindergarten	Conduct a fieldwork / visit to a selected preschool. Each group needs to carry out a task in performing the SOP and professional code of conduct in a given task	12 hours

Notes:

This table represents one (1) of the CLOs of the entire course.

*The CLO addresses Level A3 (Valuing) according to Krathwohl's Taxonomy for Affective domain (Appendix H).

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

EXAMPLE OF COURSE ASSESSMENT PLAN
COURSE: DATA STRUCTURE & ALGORITHMS (3 CREDITS)

Course Learning Outcome (CLO)	MQF LOC	Delivery Method	Assessment Method	Specific Task and the Related MQF LOD Attribute	Student Learning Time (SLT)**
Demonstrate presentable character, as well as tidiness and suitability of the attire in performing a presentation of task (A3)*	Cluster 5	Series of Lab Exercise based on a given problem solving tasks	Presentation : 5%	Students are given a specific problem solving task and need to write a programming code to provide the solution of the task. The programming code must apply the several data structure and selected algorithms Students need to present the solution to the lecturer	10 hours

Notes:

This table represents one(1) of the CLOs of the entire course.

*The CLO addresses Level A3 (Valuing) according to Krathwohl's Taxonomy for Affective domain (Appendix H)

**The SLT considers both Face-to-Face (F2F) and Non Face-to-Face (NF2F) learning time, type of assessment and the related discipline. The percentage for assessment should approximate the SLT allocated for the CLO.

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GLOSSARY

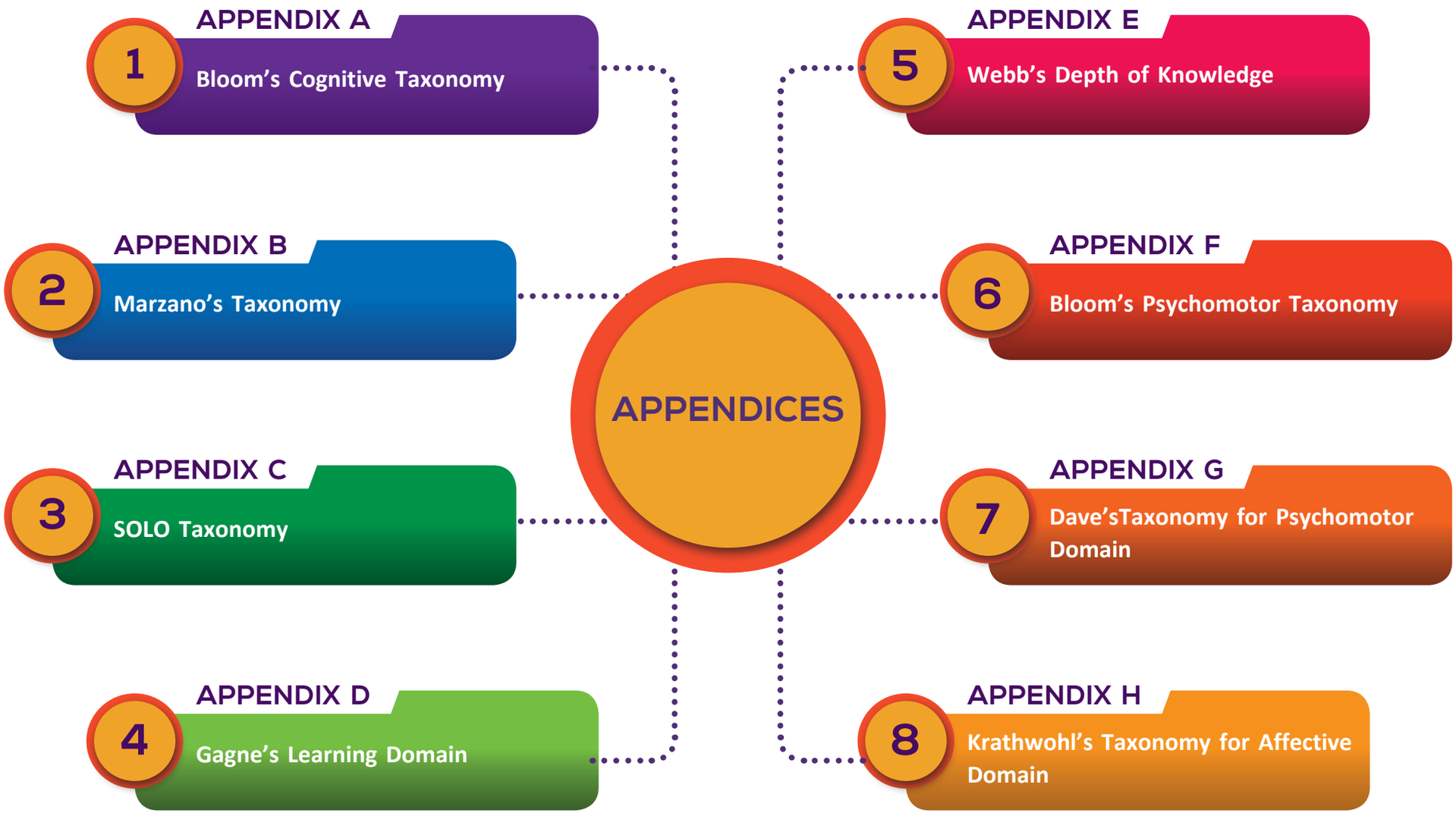
TERMS	DESCRIPTION
Assessment	A systematic mechanism to measure a student's attainment of learning outcomes
Competency	A student's knowledge, skills and abilities which enable the student to successfully and meaningfully complete a given task or role
Courses	Components of a programme. The term courses are used interchangeably with subjects, units or modules
Learning Outcomes	Statements on what a student should know, understand and can do upon the completion of a period of study
Malaysian Qualifications Framework	An instrument that classifies qualifications based on a set of criteria that are approved nationally and benchmarked against international best practices
Programme	An arrangement of courses/subjects/modules that is structured for a specified duration and learning volume to achieve the stated learning outcomes, which usually leads to an award of a qualification
Programme Educational Objectives	Broad statements that describe the career and professional accomplishments that the programme is preparing graduates to archive after the graduated
Programme Learning Outcomes	Statements that describe the specific and general knowledge, skills, attitude and abilities that the programme graduates should demonstrate upon graduation. The graduates are expected to acquire the outcomes upon completion of all the courses in their programme

GLOSSARY

TERMS	DESCRIPTION
Outcome-based Education	OBE is an educational model in which curriculum, delivery, and assessment are developed, structured and implemented to facilitate key student learning outcomes
Constructive Alignment	Constructive alignment is an approach to curriculum design where all aspects of teaching and assessment are tuned to support and encourage higher-order learning processes
Course Assessment Plan	Assessment plans provide an outline to facilitate continuous improvement of student learning include the student learning outcomes, learning opportunities, measures, targets and a process for carrying out the plan

APPENDICES

APPENDICES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8
Krathwohl's Taxonomy for Affective Domain

APPENDIX A

BLOOM'S COGNITIVE TAXONOMY

REMEMBERING	UNDERSTANDING	APPLYING	ANALYSING	EVALUATING	CREATING
Recall previously learned information	Explain ideas or concepts. State a problem in one's own word	Use the info (concept) in a new way	Distinguishes between facts and inferences; separate into parts	Justify a stand or decision; making judgement	Construct a new product, point of view, structure
Examples: Recite a policy. State the safety rules in handling an instrument	**Examples:** Explain in your own words the steps for performing a complex task	**Examples:** Write a learning outcome for each level of Bloom's taxonomy	**Examples:** Compare and contrast between two learning theories	**Examples:** Judge the effectiveness of Dual Language Program in schools	**Examples:** Design a machine to perform a specific task
Keywords: Arrange, define, identify, label, list, match, name, memorize, recall, recite, repeat, state, write	**Keywords:** Classify, explain, summarize, report, select, describe, demonstrate, discuss, illustrate, paraphrase, predict, recognize, translate	**Keywords:** Demonstrate, dramatize, employ, illustrate, write, use	**Keywords:** Compare, contrast, criticize, examine differentiate, discriminate, experiment, test	**Keywords:** Appraise, argue, judge, defend, select, evaluate, value	**Keywords:** Assemble, construct, create, design, develop, formulate

(Iowa State University, 2019, adapted from Anderson & Krathwohl, 2001)

APPENDIX A

BLOOM'S COGNITIVE TAXONOMY

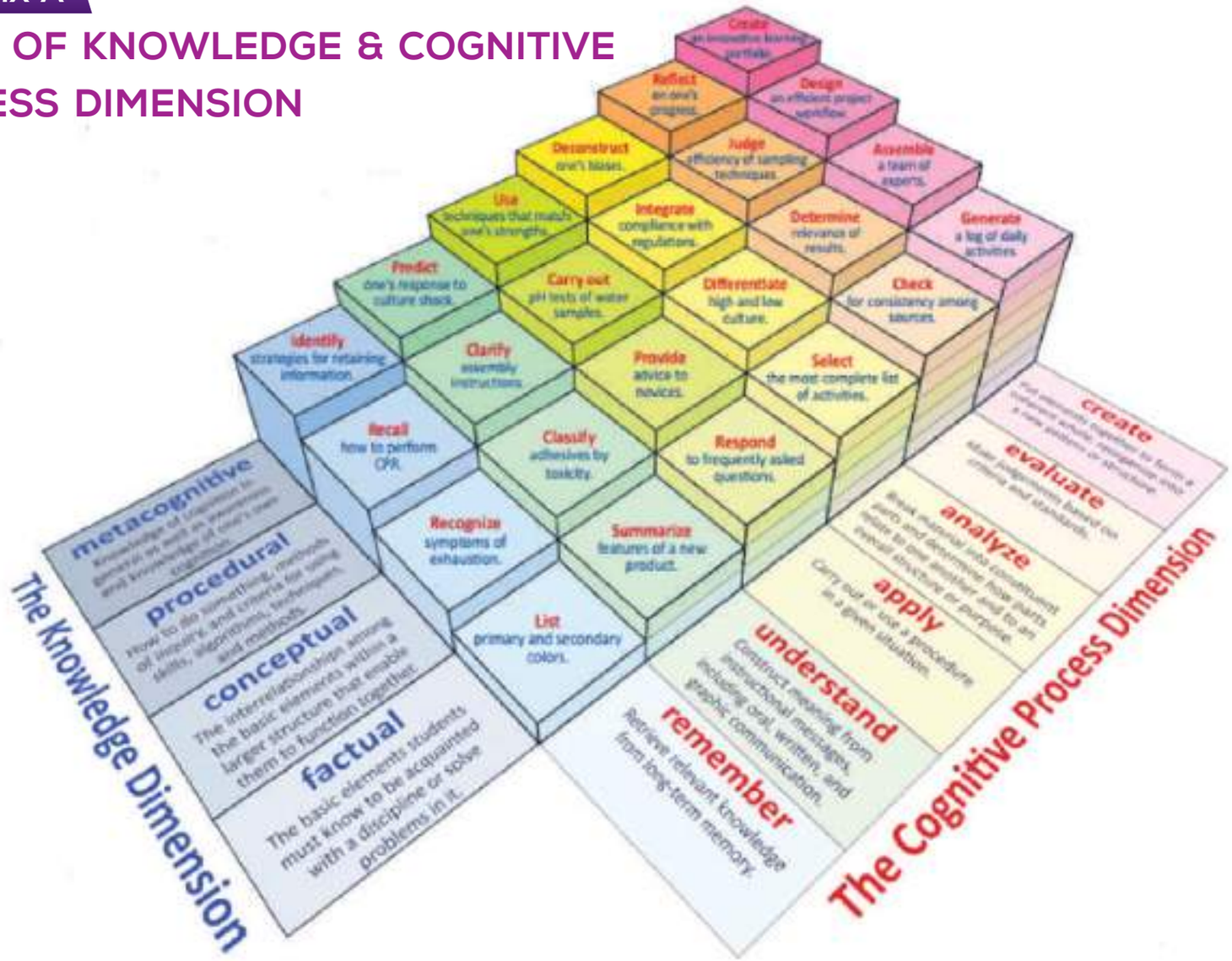
LOWER ORDER THINKING SKILLS → HIGHER ORDER THINKING SKILLS

REMEMBER	UNDERSTAND	APPLY	ANALYSE	EVALUATE	CREATE
Recognizing (identifying)	**Interpreting** (clarifying, paraphrasing, representing, translating)	**Executing** (carrying out)	**Differentiating** (discriminating, distinguishing, focusing, selecting)	**Checking** (coordinating, detecting, monitoring, testing)	**Generating** (hypothesizing)
Recalling (retrieving)	**Exemplifying** (illustrating, instantiating)	**Implementing** (using)	**Organizing** (finding coherence, integrating, outlining, parsing, structuring	**Critiquing** (judging)	**Planning** (designing)
	Classifying (categorizing, subsuming)		**Attributing** (deconstructing)		**Producing** (construct)
	Summarizing (abstracting, generalizing)				
	Inferring (concluding, extrapolating, interpolating, predicting)				
	Comparing (contrasting, mapping, matching)				
	Explaining (constructing models)				

(Iowa State University, 2019, adapted from Anderson & Krathwohl, 2001)

APPENDIX A

TYPES OF KNOWLEDGE & COGNITIVE PROCESS DIMENSION



https://www.teachthought.com/critical-thinking/3-dimensional-model-blooms-taxonomy/

APPENDIX B

MARZANO'S TAXONOMY

1

KNOWLEDGE UTILIZATION

Requires learners to apply or use knowledge in specific situations

Decision Making • Problem Solving • Experimenting • Investigating

2

ANALYSIS

Involves reasoned extensions of knowledge and inferences to go beyond what was directly taught

Matching • Classifying • Analysing Errors • Generalizing • Specifying

3

COMPREHENSION

Identifying what is important and placing that information into category

Integrating • Symbolizing

4

RETRIEVAL

Involves recalling information from permanent memory

Recognizing • Recalling • Executing

APPENDIX C

SOLO TAXONOMY

(STRUCTURE OF THE OBSERVED LEARNING OUTCOME)

SOLO was introduced by Biggs and Collis (1982)

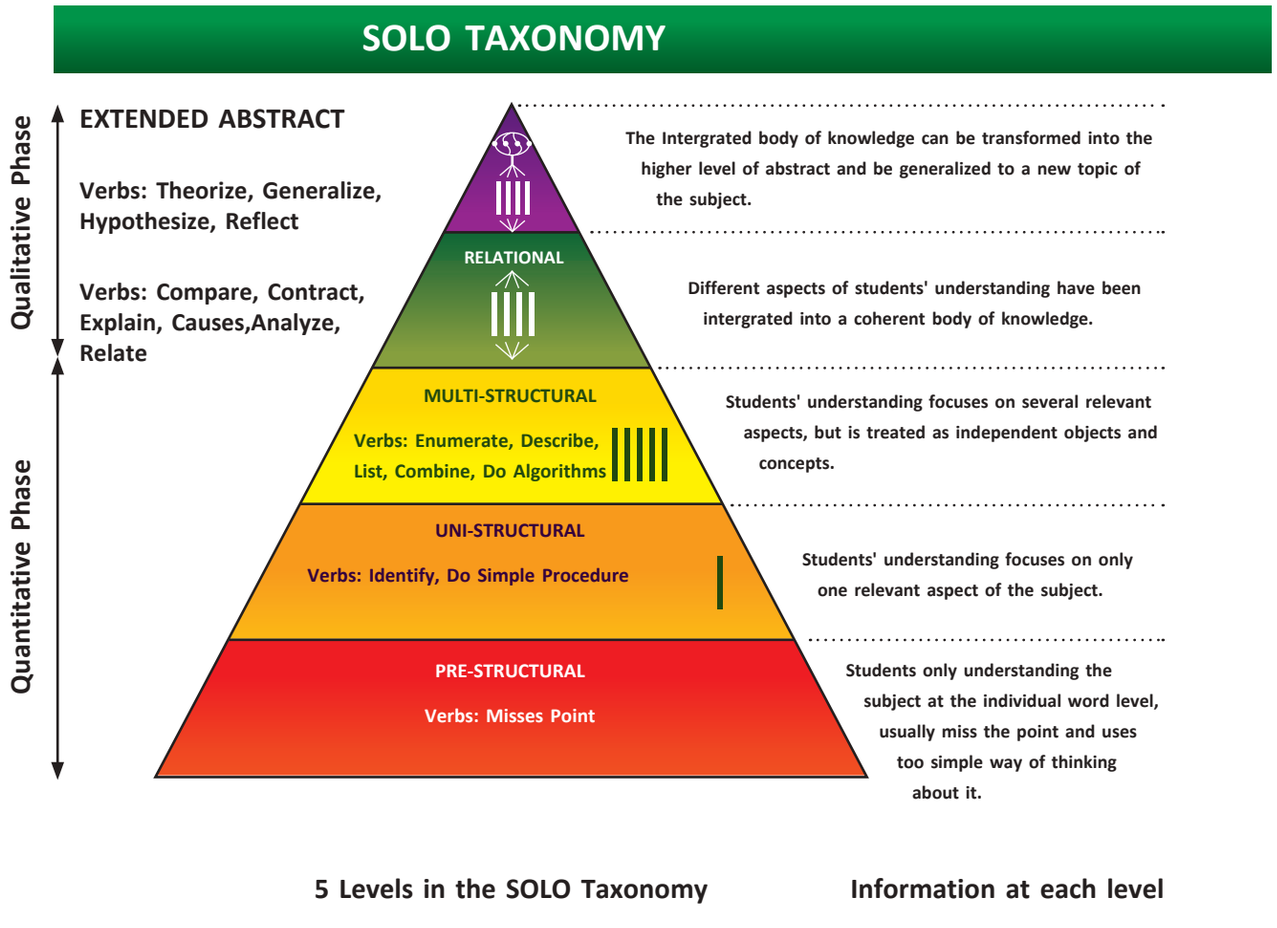
SOLO - a systematic way of describing how a learner's performance develops from simple to complex levels in his / her learning.

Five phases:

- Pre-structural
- Uni-structural
- Multi-structural
- Relational
- Extended Abstract

QUANTITATIVE PHASE

QUALITATIVE PHASE



APPENDIX D

GAGNE'S LEARNING DOMAIN

VERBAL INFORMATION

Also known as Declarative Knowledge Involves the ability to state or declare something, such as a fact or an idea

e.g.: define democracy

ATTITUDE

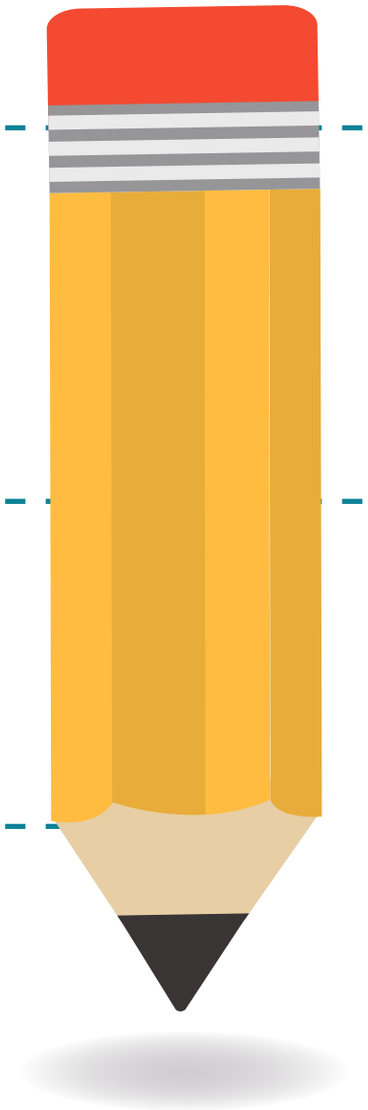
Internal states of mind that can influence which of several behaviors we may choose

e.g.: attitude towards using e-learning

PSYCHOMOTOR SKILLS

Involves using our bodies to manipulate something

Hitting a tennis ball and dancing are examples of motor skills



COGNITIVE STRATEGIES

The skills used to control learning, thinking and remembering

e.g. of learning strategies: rehearsal (verbally repeat materials), elaboration (paraphrasing, summarizing, Q&A), and organizing (outlining, concept mapping). E.g. of thinking strategies: setting goals, tracking learning progress, and modifying strategies to achieve the goals

INTELLECTUAL SKILLS

Sometimes called Procedural Knowledge, are the rules, concepts, and procedures that we follow to accomplish tasks

Intellectual skills may be simple or complex

e.g.: compare and contrast concepts of democracy and communism

- Problem Solving
- Rule Using
- Concept
- Discrimination

APPENDIX D

GAGNE'S LEARNING DOMAIN

VERBAL INFO

Also known as **Declarative Knowledge.** Involves the ability to state or declare something, such as a fact or an idea

INTELLECTUAL SKILLS

DISCRIMINATION

Distinguishing objects, features or symbols

e.g. distinguishing a square and a rectangle

CONCEPT

Concrete Concept:

Identifying classes of concrete objects

Defined Concept:

Classifying new examples of events or ideas by their definition

RULE USING

Learn relationship between concepts and apply this relationship in different situations

PROBLEM SOLVING

Applying a new combination of rules to solve a complex problem

APPENDIX E

WEBB'S DEPTH OF KNOWLEDGE (D.O.K.)

D.O.K. LEVEL 1 (recall & reproduce)

Focus: recall specific facts, definitions, details or procedures

Verbs: arrange, calculate, define, draw, identify, list, label, illustrate, match memorize, recognize, repeat, recite, tabulate, tell

D.O.K. LEVEL 2 (skill / concept)

Focus: applying skills and concepts; explaining how and why

Verbs: apply, categorize, cause / effect, classify, compare, distinguish, estimate, graph, interpret, modify, predict, relate, show, summarize

D.O.K. LEVEL 3 (strategic thinking)

Focus: reasoning and planning in order to respond; complex and abstract thinking required; defending reasoning or conclusions

Verbs: assess, cite evidence, compare, conclude, construct, critique, develop logical argument, differentiate, formulate, hypothesize, investigate, revise

D.O.K. LEVEL 4 (extended thinking)

Focus: complex reasoning, planning and thinking; make real-world application in new situations

Verbs: apply concepts, analyse, connect, create, critique, synthesise, design, prove

APPENDIX F

BLOOM'S TAXONOMY FOR PSYCHOMOTOR

1. PERCEPTION

Awareness. The ability to use sensory cues to guide motor activity. This ranges from sensory stimulation, through cue selection, to translation

2. SET

Readiness to act. It includes mental, physical, and emotional sets. These three sets are dispositions that predetermine a person's response to different situations (sometimes called mindsets). For example: Readiness to execute tasks (early planning and strategies)

3. GUIDED RESPONSE

The early stages in learning a complex skill that includes imitation and trial and error. Adequacy of performance is achieved by practicing. For examples: Ability to execute tasks (appropriate use of tools/ apparatus/ instrument/ steps as per instructions or manuals) Ability to work independently (assistance/ supervision)

4. MECHANISM

The intermediate stage in learning a complex skill. Learned responses have become habitual and the movements can be performed with some confidence and proficiency. For examples: Ability to utilise safety measures (chemical or physical analysis/ safety regulations or instructions or manuals or protocols/ statement of ethics) Ability to produce result / outcome (physical products/ physical skills/ tangible or intangible outcomes)

5. COMPLEX OVERT RESPONSE

The skillful performance of motor acts that involve complex movement patterns. Proficiency is indicated by a quick, accurate, and highly coordinated performance, requiring a minimum of energy. This category includes performing without hesitation, and automatic performance. For example: Ability to complete task efficiently (time / amount of resources / high responsiveness / less manpower / cost / errors)

6. ADAPTATION

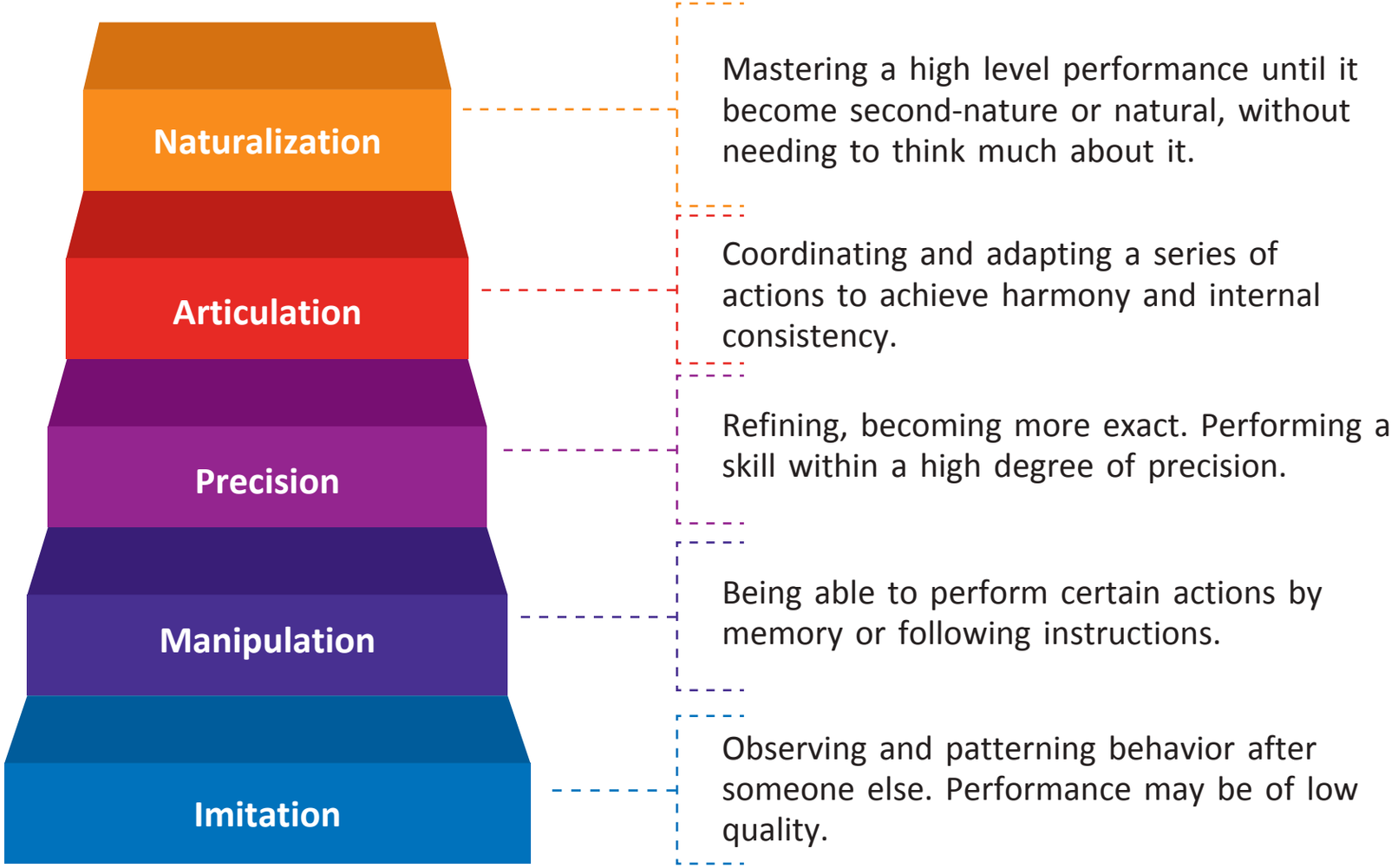
Skills are well developed and the individual can modify movement patterns to fit special requirements. For examples: Ability to respond or react (physical response/ idea) Ability to adapt to changes

7. ORIGINATION

Creating new movement patterns to fit a particular situation or specific problem. Learning outcomes emphasize creativity based upon highly developed skills. For example: Ability to be innovative and creative in executing tasks

APPENDIX G

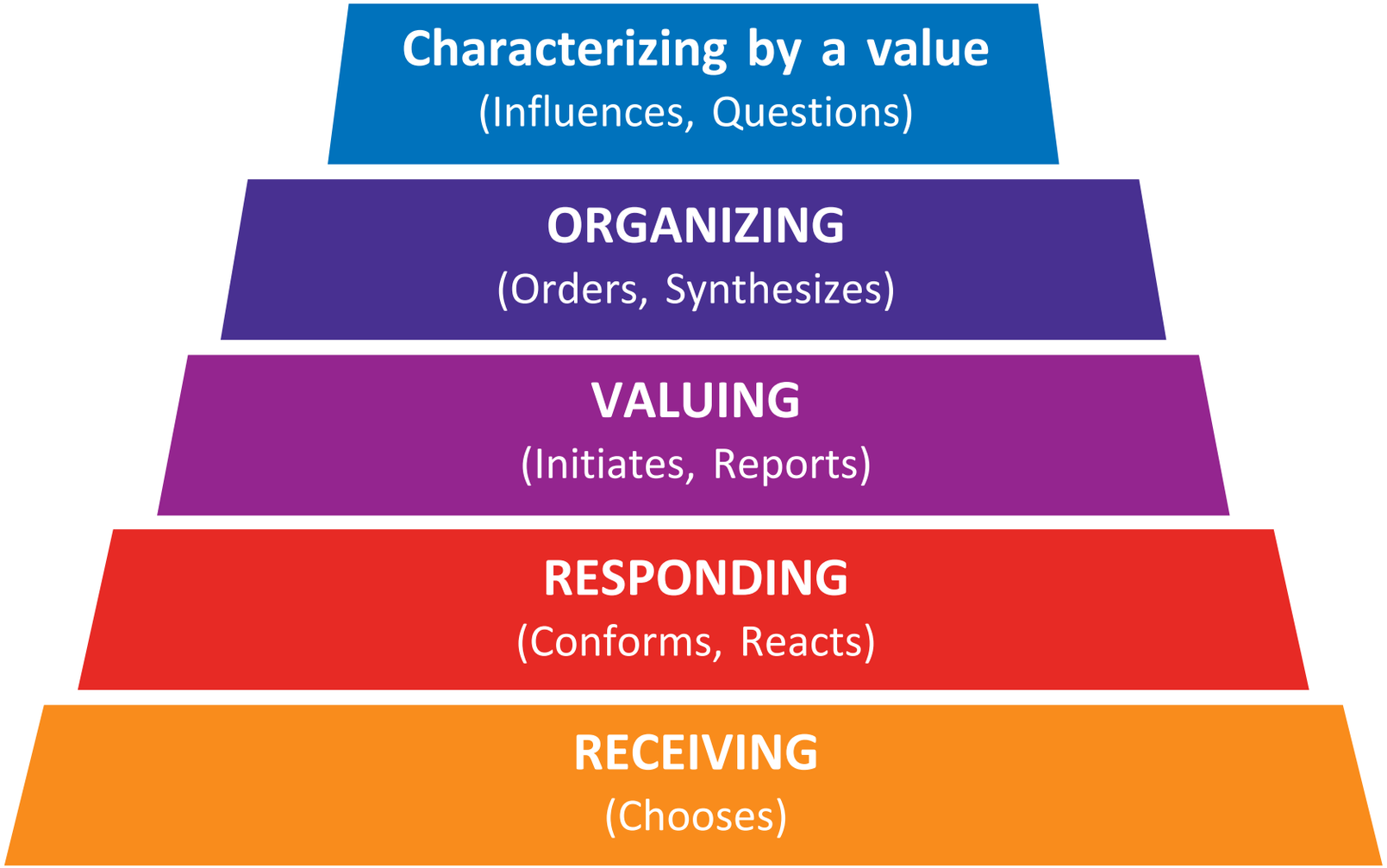
DAVE'S TAXONOMY FOR PRACTICAL SKILLS



(Dave, 1975)

APPENDIX H

KRATHWOHL'S TAXONOMY OF AFFECTIVE LEARNING



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