Empowering Higher Education Study through Excellence Teaching and Learning

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ABSTRACT

Higher education prepares students for higher order thinking with ability to resolve complex problems in their field of studies at the intended level. The curriculum forms the fundamental platform that combined and meshed the various learning domains set aside by the regulating bodies such as knowledge, psychomotor skills, and generic skills including ethics, communications, leadership skills, life-long learning, finances, and technopreneurship skill among others. Institutions of higher learning are facing challenges in providing excellence learning experience for the ever-demanded students especially with stiff competition among the various institutions over best prospective candidates. In fact, the issue of excellence in higher education has become a significant topic of interest among many education strategies around the world. Teaching is engagement with learners to enable their understanding and application of knowledge, concepts and processes and this includes design, content, delivery, assessment, evaluation and reflection. The aim of teaching is not only to transmit information, but also to transform students from passive recipients of other people's knowledge into active constructors of their own and others' knowledge. This paper explores excellence in teaching and learning through the perspective of the students, academics, and the learning environment to build competency of highest standard. Four main areas of discussion are the teaching quality, excellence attributes, teaching strategies, and tools for excellence measurement.

Keywords: Teaching and learning, outcome-based-education, curriculum, higher education.

INTRODUCTION

Education plays critical role in all aspect of lives in today's society (Vali, 2013; and Prasad, et a., 2020). With rapid advancement in technology especially relating to the field of computing, artificial intelligence, and engineering, there exist a dire need for graduates to not only be competent in their respective field but possess attributes of other multi-disciplinary elements. Institutions of higher learning have to embrace these challenges in order to fulfill the demands and requirements of future-ready graduates (Chatterton and Godard, 2000). Various factors are at hand in modelling and structuring an academic program that is capable of embracing current global and local needs of the graduates. In perspective of the institutions of higher learning, certain factors are within their control and obligations. Excellence graduates are the product of excellence institutions through excellence teaching and learning as experienced by the students.

Teaching is an engagement process with learners to enable their understanding and application of knowledge, concepts and processes and this includes design, content, delivery, assessment, evaluation and reflection. Teaching offers the chance to change other people's lives permanently for the better. A teacher helps to develop somebody's subject knowledge and maybe even their mind and personality. Teachers must engage students in learning; thus, teaching consists of getting students involved in the active construction of knowledge. Importantly, a teacher requires not only knowledge of the subject matter, but knowledge on students' ability to learn and means to transform them into excellent learners. The aim of teaching is not only to transmit information, but also to transform students from passive recipients of other people's knowledge into active

constructors of their own and others' knowledge.

Factors that any institutions could focus on are in the areas of teaching and learning (Chinta, et al., 2016). Teaching excellence can be viewed as; (i) an academic process by which students are motivated to learn in ways that make a sustained, substantial, and positive influence on how they think, act, and feel, and (ii) a process that elevates students to a level where they learn deeply and remarkably because of the teacher attributes. However, there exists multiple challenges to teachings such as; (i) understanding the different learning issues amongst different types and different students' backgrounds, both academically and socially and this include students family backgrounds and personal problems, (ii) lack of funding limits the resources available for effective teaching to be realized, (iii) lack of effective communication among all parties involved in the teaching and learning activities, (iv) a balancing act between being encouraging and motivating under challenging times while at the same moment   disciplining students, and (v) endless paperwork and extended working hours putting a toll on teachers wellness and motivations. Some of the basic questions that have been asked are concerned with attributes that make a teacher highly effective, qualities that a teacher should have and finally the true meaning of who an ideal teacher is. Traditionally, the very best of teachers have certain qualities that set them apart from the average individual. It is also good to note that teaching might not be for everybody as a teacher need certain qualities to survive life in the classroom, let alone to excel.

The other side of teaching is learning. Learning can be defined as the activity or process of gaining knowledge or skill by studying, practicing, being taught, or experiencing something. Learning is generally concerns with what students do as opposite to what teachers do. Bradley et al. (2015) have observed that excellence in learning as recognized by the students in their study map can be summarized as follows:

• Enthusiasm for subject and desire to share with students

• Modifying teaching to suit the students, subject matter, and environment

• Encourage learning for understanding and concern about the development of students critical thinking

• Ability to transform and extend knowledge

• Show respect for their students, interest in professional and personal growth with sustained high expectations.

Teaching And Learning Excellence

Teaching Strategies

Teaching quality is an integral requirement or pre-requisite for excellence in teaching (Ghory and Ghafory, 2021). Excellent teachers have the following attributes (not limited to); respectful and professional, challenging and supportive, patience, authority, humor, compassion, flexibility, ambition, courage and intrigue (Nisbet and Shucksmith, 2017). Excellent teachers are highly committed and enthusiasm; possessing appropriate and ethical behavior. The teachers consistently create learning objectives and produced experiences that are challenging but attainable by the students thus fostering critical, analytical, and creative thinking on the part of the students while demonstrating the willingness to work closely and patiently with students at their own pace (Yıldırım, 2019). Demonstrating authority from time to time is also necessary to instill respect by the students. A teacher must be well versed and authoritative in the subjects being taught and on the subject of teaching in general. It is also critical for the teachers to achieve a deeper level of knowledge and understanding that allow the teacher to go off-script once in a while as a mean to impart wisdom, and sharing of appropriate anecdotes, or offering a suggestion borne of their life experience. Another attribute is for the teacher to be emotionally available to the students by expressing willingness to reach out to those in need of support, to those in need of advocacy, to those just in need of a kind word including showing compassion to those who struggle academically or socially and to those who succeed and deserve your praise.

An excellent teacher must show intellectual flexibility by remaining open-minded and adaptable as each student is unique, which means that at any point, any one of them could catch you completely off guard, whether it's with a thought-provoking question, a challenging learning barrier, or a brilliant accomplishment. It is important

that a teacher aspire to move the students, making an impact and to leave a lasting impression (Gherghel, et al. 2023). In fact, the classroom is the forum to be brilliant. Also, take some risks in the teaching style - fun, appropriate, and administratively-approved risks (Chen and Liu, 2017). It is always better to be intrigue as students mostly equate classes with boredom. Be the antidote to this. Engagement should be kept lively, unpredictable, and create means and ways to help students associate lessons with personal experiences as this can makes a difference for the students in their learning experience. Finally, it is of utmost important that a teacher remains confidence even though the convictions will be occasionally challenged, patience will be often tested, and teachers themselves will be constantly evaluated. A teacher must be firm in their even as their convictions are challenged but show the willingness to learn more, to become better, to evolve better in the role as educator.

Excellence Attributes

An excellent educator is viewed as one who contributes positively to the learning environment by providing exceptional energy, interest in students, and extraordinary strengths (Karwanto, et al., 20205). The followings are attributes of excellence of an outstanding educator:

Subject matter expert – Being an expert in the subject matter is a critical necessity for an educator. An educator must possess thorough knowledge of the subject matter and continuously demonstrates a contagious enthusiasm for it, going further than the standard textbook materials. It is important for the educator to conduct research and develops important and original thoughts on the subject specialty, analyzing its nature and evaluating its quality. This can be achieved partly by adapting to regular intellectual developments in the discipline and related fields while taking strong interest in other broader issues.

Pedagogical expert – Knowledge alone without the right and best ability in conversing them to the students will not be sufficient. An excellent educator sets appropriate learning goals, outcomes or objectives and communicates them clearly to the students at earliest possible time. Students work is evaluated and graded fairly and promptly while encouraging students to think and empowers them to find their own creativity. It is essential to promote a wide range of ideas leaving open expression of diverse opinions while maintaining an atmosphere of integrity, civility and respect. Students need to be guided successfully through exploration of the creative, critical thinking, and problem-solving processes and that helps students grapple with the ideas and information in order to develop their own understanding. An educator must promote student self-discovery; pursues teaching and learning as scholarly activities and provides on a regular basis, constructive and objective feedback to students. Students must be connected to each other in unique and creative ways. Finally, an educator must understand students' learning-related needs and challenges, as well as supports and respects their individual development.

Excellent communicator - Engagement is a two-way street where students must choose to engage, but instructors can foster cognitive, behavioral, and emotional engagement through clear communication and well-planned activities. Engaging students as active participants in their own learning promotes deeper learning and is positively related to student motivation, persistence, retention, and success (Pike & Kuh, 2005). Demonstrates effective oral and written communication; demonstrates good organizational abilities and planning skills; helps students learn to use effective communication skills; listens attentively, be available and approachable; utilizes teaching tools appropriately and effectively; simplifies and clarifies complex subjects; bridges language and cultural barriers. Communicate regularly, openly, and transparently; design and assign activities that promote engagement with content, peers, and the instructor; also, varying instructional methods (e.g., interactive lectures, discussion, small group work, etc.).

Student-centered mentor - Makes student learning the highest priority; strives to stimulate each student to learn through a variety of methods and encourages and invites active student participation; helps students connect learning experiences and facilitates development of self-knowledge; instills a desire in students for life-long learning; inspires them to higher intellectual levels and does not give up on students; connects with students easily and is understanding and personable.

Systematic and continual assessor - Develops and uses appropriate student outcome assessments to continuously improve student learning experiences in keeping with stated course objectives; employs a systematic approach to assess teaching, keeps the class material fresh and new, makes appropriate changes where indicated and sets clear objectives that indicate the kind of thinking and acting expected of students; creates an environment that invites constructive student feedback to the instructor; adapts teaching style to accomplish the objectives of successful student learning; recognizes own limitations and shortcomings, confronts and learns from them.

Content creator - Able to use and develop own learning and assessment materials; development of up-to-date, research-based learning material and utilizing material produced and distributed by others and develops it further together with colleagues and students. Learning material aligns systematically and constructively with the outcomes, contents and methods of teaching as well as with assessment. Learning materials are shared with colleagues and the academic community. The material is widely known in the field and used also internationally.

Collaborative development of teaching -   Teacher's visible role in the teaching and research environment. Systematically promotes collegiality within the department as well as collaboration and interaction between teachers, researchers and students. Sustained and active effort teaching planning in cooperation with colleagues, students and representatives of alumni and the labour market / industry. Develops research-based teaching in a target-oriented manner and in collaboration with national and international partners.

Excellence In Academic System

Aside from strategies on teaching and learning which focusses mainly on delivery and learning activities, other elements of the academic system have critical impact on the overall quality of education provided to the students. The other elements of the academic system refer academic design (curriculum), assessment, and evaluation. The following sections consider these elements in further details in relation to attain overall excellence experience for the students.

Outcome Based Education

For the last ten years, Outcome Based Education (OBE) has been the forefront in governing the course delivery, assessment, and evaluation at various level of learnings in most academic institutions of various levels. Its strength lies in its focus on ensuring achievement of the predefined learning outcomes whether it is at the course level or study program level. The overall concept is commonly summarized as in Figure 1 below:
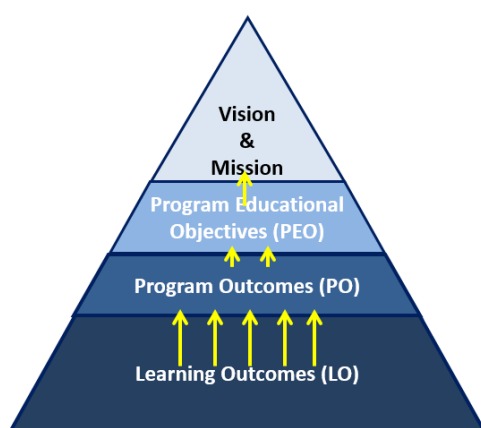

Figure 1. Philosophy of OBE

The pillar of OBE is the achievement of outcomes assigned at the course level of the curriculum. This is then reflected as outcomes at the program level, achieved at the end of the academic program. In order to ensure relevancy of the program, surveys were made to the alumni of the program normally at a period of 3-5 years upon graduation with the main aims of fulfilling the institution vision and mission statements. Therefore, to ensure excellence throughout the students learning experiences, all these elements must be accurately designed, developed and implemented. Figure 2 shows the basic activities of the OBE framework.
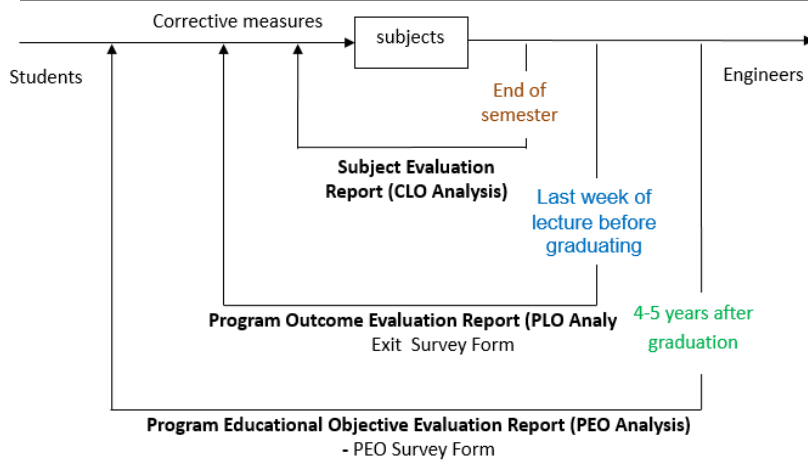
Figure 2: OBE academic structure and main processes

Constructive Alignment

Figure 3 illustrates a more detail process of the OBE framework. In order to ensure complete attainment of the program outcomes and the program educational outcomes, all activities within the framework of OBE must be aligned accordingly. This is illustrated in Figure 4 whereby all learning outcomes from each course is strategically aligned to respective program outcomes (POs) thus ensuring the attainment of those program outcomes. This in turn would ensure and addressed the fulfillment of the program educational outcomes (PEOs).
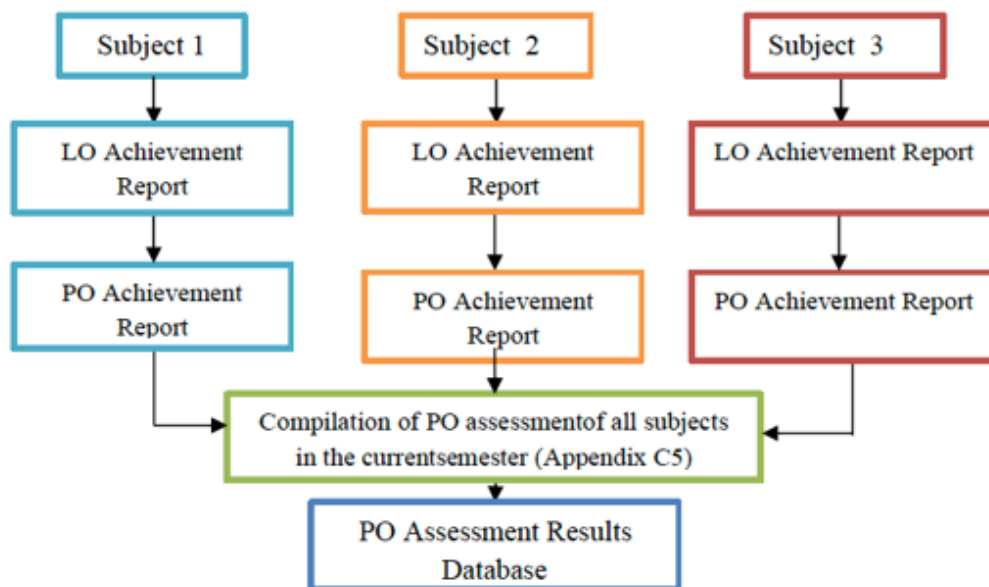

Figure 3: Detail processes in OBE implementation

A more detail alignment of the work process at the course level is commonly stated in the course teaching plan document as an example shown in Figure 5. Figure 6 shows an example of mapping between courses to stated program outcomes. This constructive alignment ensures that all the academic activities of any academic program are meticulously designed, planned, implemented and recorded to ensure fulfillment of the program outcomes resulting in academic excellence as outlined by the various stakeholders. Assessment activities must be constructively designed such that they met the outcomes outlined in the course planning. Assess learning and facilitate transparent and meaningful tasks to provide students with timely feedback, and to measure achievement of learning outcomes. Effective assessment supports student learning by providing opportunities to self-assess, see progress, and receive feedback that helps students adjust their use of information and skills learned (Hortigüela Alcalá et al., 2019). Variations in assessment techniques allow students to demonstrate their mastery of the material in different ways, avoiding assessment methods that encourage students to memorize. It recognizes the power of feedback to motivate more effort to learn.
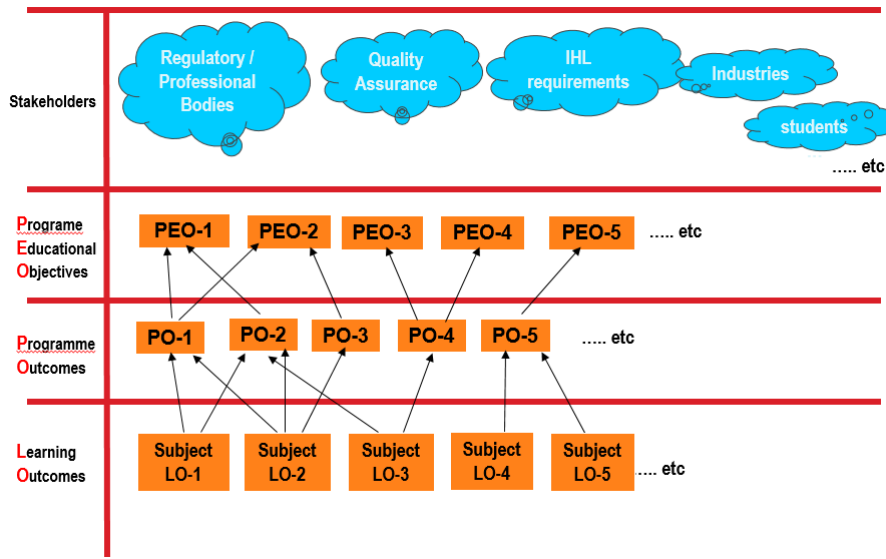
Figure 4: Constructive alignment of elements in OBE

LO	PO	Taxonomy Blooms	CEPA	Assessment Methods	Assessment Details
LO1	1	C3	WK3	UG	**UG (Q1 & Q2)** – Assess student's ability to represent a system in transfer function and block diagram. **UG (Q2)** – Assess student's ability to construct mathematical model.
LO2	2	C4	WK3	PA	**PA (Q1)** – Assess student's ability to analyze transient response and stability of system. **PA (Q2)** – Assess students' ability to analyze stability and steady state error of a system.
LO3	3	C6	WK3, WP1, EA1	TG1 PA	**TG1** – Assess students' ability to construct a control system. **PA (Q3)** – Assess students' ability to design a controller using root locus. **PA (Q4)** – Assess students' ability to design a controller using frequency response method.
LO4	5	C6	WK3, WP1, EA1	LR1 LR2 LR3	**LR1, LR2 & LR3** – Assess student's ability to construct and numerically validate a control system.

*TG – Assignment, LR – Laboratory, UG – Test, PA – Final examination

Figure 5: Alignment of LO to PO and class assessment with reference to Bloom Taxonomy

YEAR	SEMESTER	CODE	SUBJECT	PROGRAM OUTCOMES											
				1	2	3	4	5	6	7	8	9	10	11	12
1	Sem. 1	BLHW 1702	TITAS		X							X		X	
		BKK* ***1	Co-Curriculum I												
		BMFM 1223	Differential Equation	X											
		BMFG 1833	Mechanics of Machine	X	X										
		BMFR 1122	Engineering Graphics & CADD	X	X			X							
		BMFS 1312	Manufacturing Practices				X	X		X		X	X		
	Sem. 2	BLHC 4032	Critical & Creative Thinking		X	X	X					X	X		
		BKK* ***1	Co-Curriculum II												
		BMFM 2213	Statistics & Probabilities	X	X			X							
		BMFR 2113	Product Design & Development	X		X	X	X			X	X	X		
		BMFG 2123	Heat Transfer	X	X										
		BMFG 2331	Manufacturing Laboratory 2				X	X		X		X	X		

Figure 6: A sample mapping of subjects to Program Outcomes

Measurement Of Excellence

Excellence must be measured as a mean to ensure that the good planning and practice brings intended benefits to the students at the highest possible level satisfying the demands and requirements of each stakeholder. In academics, teaching and learning activities are commonly evaluated and rated. However, good teaching is difficult to define due to the individualized, context-dependent nature of the profession. Most often, checklist-based instruments are appealing as tool to demonstrate, discuss, or evaluate teaching effectiveness efficiently (Erman et al., 2020). Excellence in teaching and learning can be evaluated based on the followings criteria:

- Knowledge and Teaching Skills

- Teaching Preparation

- Teaching Methods

- Learning Assesment Method

- Guidance and Supervision

Knowledge and Teaching Skills

Knowledge and teaching skill of the educator can be evaluated based on:

i.   In-depth knowledge of the subject matter

ii.   Ability of teach according to the syllabus of the course

iii. Clarity of teaching that often results in difficult topics being easy to understand

iv.   Teaching activities are conducted in structured manner, systematic, and efficient

v.   Ability to relate theoretical aspect of the teaching to practical applications.

Teaching Preparation

 Teaching preparation can be assessed and evaluated based on the following criteria:

i.   Punctuality in class attendance

ii.   Preparedness level for every class

iii. Ability to consistently attract students' attention and interest

iv.   Ability to efficiently structure the teaching activities from simpler to complex level

Teaching Methods

Several aspects of teaching techniques can be considered as a mean of evaluation, such as:

i.   Class delivery is conducted using formal language in clear and effective manner

ii.   Effective teaching techniques are applied intelligently and wisely considering the complexity of the topics

iii. Applied effective tone, intonation, and sound volume maintaining high level interest of the students.

iv.   Interactive approach that results in active student participations in class activities

Learning Assessment Method

Assessment method selected and applied by the teacher must be evaluated and assessed. The followings are some items of assessment that can be considered:

i.   Course assessment follows that stated in the course teaching plan

ii.   Feedback on the outcomes of the assessment activities are relayed to the students within reasonable time

iii. Assessment methods fulfilled the learning outcome specified in the course teaching plan

Guidance and Supervision

Finally, as teaching and learning involved supervision activities through project-related tasks, the ability of the educator to effectively conduct supervision and guidance to the students has to be measured. The followings are several assessment items that can be considered:

i.   Able to provide effective guidance to the students on class tasks

ii.   Able to stimulate students' creativity and critical thinking through effective guidance

iii. Consistent in displaying values such as caring, attentive, patient, and responsible throughout the course duration

Teaching performances must be measured and reported consistently at appropriate level and interval. Most often the Likert scale of 1-5 is used for the rubrics assessments. The institution normally would identify the minimum level of achievement deemed appropriate as a measure of excellence. An example of a report on academic staff teaching and learning performance measures is displayed in Table 1 below. Results are shown according to academic sessions and semesters. Here, the minimum measurement average was 4.5 out of maximum 5 in the Likert scale. The results are normally traced over a certain period of time to check for consistency and to identify any abnormality that could be due to some unforeseen events. An example of such analysis is observed in Table 2.

Table 1: Excellence measurement of five teaching and learning criteria

Knowledge and Skill	Teaching Preparation	Teaching Technique	Assessment Technique	Guidance and Supervision	Average Score
4.49	4.46	4.46	4.47	4.47	4.47
4.49	4.47	4.46	4.48	4.47	4.47
4.46	4.44	4.42	4.44	4.43	4.44
4.48	4.45	4.44	4.46	4.46	4.46
4.52	4.50	4.49	4.49	4.50	4.50
4.54	4.51	4.51	4.52	4.51	4.52
4.50	4.48	4.48	4.49	4.48	4.49
4.46	4.44	4.44	4.44	4.44	4.44
4.46	4.42	4.42	4.44	4.43	4.43
4.48	4.45	4.46	4.45	4.45	4.46
4.50	4.46	4.44	4.47	4.47	4.47

Table 2: An example of averaged teaching and learning evaluation results of academic staffs over a period of time

2017/2018	2018/2019		2019/2020		2020/2021	Purata
1	1	2*	1	2	1	
4.30	4.40	4.44	4.47	4.46	4.47	4.42
4.23	4.36	4.49	4.58	4.52	4.47	4.44
4.37	4.45	4.47	4.55	4.50	4.44	4.46
4.29	4.43	4.48	4.47	4.49	4.46	4.44
4.39	4.41	4.50	4.57	4.50	4.50	4.48
4.27	4.39	4.44	4.56	4.55	4.52	4.46
4.19	4.40	4.53	4.53	4.48	4.49	4.44
4.46	4.36	4.50	4.55	4.47	4.44	4.46
4.38	4.65	4.35	4.36	4.37	4.43	4.42
-	-	-	-	4.36	4.47	4.42
-	-	-	-	4.49	4.46	4.48

In further analysis, a break-down in measurement scores according to selected score-band (e.g <4.00; 4~4.9, and <4.5) are tabulated. An example of such analysis in given in Table 3. Table 4 explores the excellence measurement results based on the positions of the academics, and these include Professor, Associate Professor, Senior Lecturer, and Lecturer.

Table 3: Academic staff teaching and learning scores according to Likert Band Scale (>4.5 being the desired key performance index)

≥ 4.50		4.00 ~ 4.49		< 4.00	
Bil	%	Bil	%	Bil	%
45	55.56%	33	40.74%	3	3.70%
34	42.50%	42	52.50%	4	5.00%
42	46.67%	42	46.67%	6	6.67%
37	52.86%	32	45.71%	1	1.43%
30	78.95%	7	18.42%	1	2.63%
65	53.28%	53	43.44%	4	3.28%
40	35.71%	67	59.82%	5	4.46%
50	45.87%	55	50.46%	4	3.67%
21	75.00%	7	25.00%	0	0.00%
26	70.27%	10	27.03%	1	2.70%
390	50.85%	348	45.37%	29	3.78%

Table 4: Excellence measurement score according to academic staff grades and positions

DS45	4.28	4.41	4.43	4.50	4.57	4.44	4.43	4.30	4.57	4.41	4.43
DS51	4.53	4.43	4.12	4.43	4.44	4.49	4.51	4.49		4.36	4.42
DS52	4.53	4.44	4.46	4.52	4.47	4.48	4.51	4.44	4.59	4.51	4.50
DS53	-	4.30	4.61	-	-	4.31	-	-	-	4.68	4.48
DS54	4.41	4.40	4.45	4.57	4.58	4.65	4.66	4.54	-	4.42	4.52
VK7	-	4.53	4.69	4.43	-	-	4.36	4.43	-	-	4.49
VK6	-	-	-	-	-	-	-	-	-	-	-
VK5	-	-	-	-	-	-	-	-	-	-	-
VU7	-	4.49	-	-	-	-	-	-	-	-	4.49

It is always important for an institution to have rewarding system as encouragement to excellent educators who have gone above and beyond in realizing excellent education experience to the students. There are many ways to recognize their contributions and dedications. This can be done through any of these actions:

- praise through social platform or a formal platform of the institution

- recognize their efforts and dedication

- make time for them so that they feel recognized

- have a reward system as a mean of encouragement

- engage them for their opinion so as to improve others too

- create a forum for easy exchange between them as these could elevate their performance even more

Excellent educator will be remembered even after so many years by the students and most often will be complemented and honoured by the students for their success in life.

CONCLUSIONS

Education is a process critical for a nation building. A society that arises from the backgrounds of excellent education system will cherish towards becoming a nation that is advanced both technologically and socially. Educators at every level of education must prepare themselves for the difficult tasks in ensuring knowledge and skills whether fundamental or advanced in nature, are disseminated to the students in the best possible and effective manner. Adapting the right and most appropriate teaching strategies and attributes would ensure excellent teaching and learning experience that are best for all. Finally, a best methodology must be adapted to measure the level of academic delivery deemed excellence and fulfilled the desired requirements of all the stakeholders be that the parents, government, industries, or the society at large.

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