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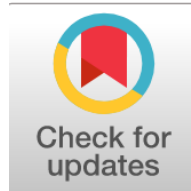
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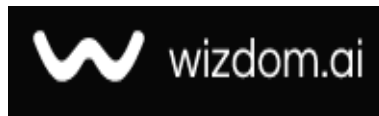Complete list of indexing services for this journal (link)

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Students'Perceptions on Program Learning Outcomes: A Secondary Data Analysis of An Exit Survey

Nik Nadhilah Nik Mohd Yusoff, nadhilah@uum.edu.my, (0)

, Malaysia

(1) Corresponding author

Abstract

Outcome based education (OBE) emphasized on designing, constructing, delivering and documenting the teaching and learning to be in line with the established program learning outcomes (PLO) by the Malaysian Qualification Framework (MQF) to improve the quality of learning. The study focuses on students' perceptions on the PLO at the School of Quantitative Sciences (SQS), Universiti Utara Malaysia.A secondary data from an exit survey among graduating students of SQS has been analysed for this purpose. Study finding shows that on average, all respondents perceived that they were fairly strongly to strongly for all PLOs. The information obtained from the exit survey data is able to rank the PLO by its corresponding mean value in decreasing order.The purpose of this study is to obtain information on the extent to which the students have mastered the skills (PLO) from their own view.This study has been done by secondary data collection. The secondary data was from a 2017 Exit Survey with 46 respondents among graduating students of SQS, UUM. All of these students were enrolled in Bachelor of Science with Honors (Business Mathematics) program.All respondents perceived that they were at fairly strong to strong level for all PLO. The information obtained from the exit survey data is able to rank the PLO by its corresponding mean value in decreasing order.This study will be beneficial to curriculum providers as a reference for improvement by understanding the needs and current states of the students. Moreover, this research will provide recommendations on how to evaluate program learning outcomes.

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Introduction

Education plays a very important role in the development of human capital and knowledgeable workers. Many countries are focusing on their tertiary education in view of the country's need for graduates who are not only knowledgeable but also creative and innovative especially in the era we are living right now, the industrial revolution 4.0. In line with this purpose, Ministry of Higher Education Malaysia (MoHE Malaysia) has developed a national education outline known as the Malaysian Qualification Framework (MQF) (MQF, 2011).

The Malaysian Qualification Framework (MQF) is a system which describes and classifies qualifications in the national higher education system based on a set of criteria that is benchmarked with international practices. It is developed by the Malaysian Qualification Agency (MQA), a statutory body governed by the Ministry of Higher Education. In fulfillment of this requirement, all academic programs at the tertiary level in Malaysia need to apply the process of Outcome-Based Education (OBE). According to Harden (2007), OBE has two requirements that are often ignored. The two requirements are to ensure that learning outcome is clear and to apply specific learning outcome as a basic determinant in curriculum development. OBE implementation requires each academic program to have a statement which describes student achievements at the start of their career as a result of the education they had undergone throughout their three to five years study period. This statement is known as the Program Educational Objectives (PEO). To ensure that PEO is achieved, it must be preceded by the preparation of Program Learning Outcomes (PLO).

Learning outcomes are statements that describe the knowledge or skills that a student should acquire upon completion of study. Learning outcomes as being something that student can do now that they could not do previously are changes in people as a result of a learning experience (Allan, 1996; Watson, 2002). A study by Dodrige (1999) produced a number of best practice principles to evaluate student learning of a program by having clear objectives. Meanwhile, PLO refers to a statement which describes what a student should know and be able to do upon graduation (Lockhoff et. al., 2011). This refers to the hard and soft skills, knowledge as well as the behavior that the student possessed after successful completion of the program (Sidek et. al., 2012). MQF highlights the following eight domains of learning outcomes as shown in Table 1:

Table 1 Malaysian Qualification Framework (MQF)

MQF	DESCRIPTION
MQF 1	Knowledge
MQF 2	Psychomotor, Practical and Technical Skills
MQF 3	Social Skills and Responsibilities
MQF 4	Values, Attitudes and Professionalism
MQF 5	Communication, Leadership and Teamwork Skills
MQF 6	Problem Solving and Scientific Skills
MQF 7	Information Management and Lifelong Learning Skills
MQF 8	Managerial and Entrepreneurial Skills

Table 1.

In the Bachelor of Science with Honours (Business Mathematics) (B.Sc. (Bus. Math.) (Hons)) program offered by the School of Quantitative Science (SQS), Universiti Utara Malaysia (UUM), nine PLOs have been formulated to full-fill the eight domains outline by MQF in Table 1.0. Each PLO is numbered from PLO1 to PLO9 as shown in Table 2:

Table 2 Program Learning Outcomes (PLO)

PLO	DESCRIPTION
PLO 1	Acquire knowledge of mathematical concepts and theory.
PLO 2	Apply problem solving skills using mathematical methods and concepts in related fields.
PLO 3	Analyse mathematical problems critically and systematically, as well as selecting precise and comprehensive solution.
PLO 4	Communicate effectively with peers, clients, superiors and society.
PLO 5	Practice social skills through consultations, interviews and counselling and also be willing to accept guidance and responsibility.
PLO 6	Apply information management and engage in the pursuit of lifelong learning.
PLO7	Able to manage and acquire entrepreneurial skills.
PLO 8	Solve mathematical problems systematically, analytically,

	transparently, and ethically.
PLO9	Demonstrate leadership and accountability in the aspects of management and mathematical skills.

Table 2.

The list of PLO can serve as a benchmark to measure a success of a student in a program. PLO can be used in a way that meets the needs of all stakeholders of a program (i.e. the student, the lecturer and external parties). Students undertaking B.Sc. (Bus. Math.) (Hons) are expected to be equipped with all the PLO as in Table 2.0 in preparing them to enter the industry. If the program achieves this, acquiring a B.Sc. (Bus. Math.) (Hons) will add value to the students.

This study was conducted to obtain information on the extent to which the students have mastered the skills from their own view. The results of this study can be used as one of the benchmarks in the improvement of the existing curriculum.

Methodology

The vision of SQS is to become an excellence reference point in the field of quantitative sciences. In line with SQS vision, an exit survey was conducted and the information will be used to improve the Program, its related courses and academics experiences while completing the Program. A descriptive online questionnaire was applied and distributed to 46 completing students of B. Sc. with Honors (Bus. Math) Program. Data were collected between Jun 2017 and November 2017 while these students were undergoing their industrial attachment. The questionnaire was designed to obtain data on skill evaluation, evaluation of core courses, evaluation of elective courses, services provided by the school and additional query of the program. However, this study will be focusing and analyzing only on skill evaluation where all items of this section were measured on a Likert scale from 1 (very weak) to 5 (very strong). In this section, there were 17 items which attribute to its corresponding PLO.

Two main ingredients in this study are calculating mean values and ranking analysis. Both were applied to achieve the objective of this study. First, we computed the mean, and then we rank the information. The former is often used as a measurement of central tendency. The mean is given by the formula and for sample and population respectively. While for the latter, we applied built-in Excel function to rank the PLO according to its mean values. Ranking analysis is able to provide facts needed for setting priorities by organizing and displaying information to show relative importance of aspects that are under consideration.

Table 3 **Two-way pivot table of student's ration and PLO**

PLO	Skills	Number of student's rating on skills				
		Very weak (1)	Weak (2)	Average (3)	Strong (4)	Very strong (5)
PLO 1	Knowledge/skills that are relevant to the industry's need	2(4.3%)	4(8.7%)	14(30.4%)	20(43.5%)	6(13.0%)
PLO 2	Applying knowledge/skills to real world	2(4.3%)	4(8.7%)	17(37.0%)	18(39.1%)	5(10.9%)
	Working with numbers	0(0.0%)	8(17.4%)	7(15.2%)	19(41.3%)	12(26.1%)
	PLO 3	Analyzing/solving complex problems	0(0.0%)	5(10.9%)	11(23.9%)	21(45.7%)
		Critical/analytical thinking	0(0.0%)	6(13.0%)	9(19.6%)	23(50.0%)
		PLO 4	Verbal communication	0(0.0%)	0(0.0%)	9(19.6%)
			Written communication	0(0.0%)	0(0.0%)	12(26.1%)
			Proficient in other languages	0(0.0%)	7(15.2%)	16(34.8%)

			PLO 5	Working with people from different backgrounds	0(0.0%)	0(0.0%)
				Awareness/experience of diverse cultures in Malaysia	0(0.0%)	1(2.2%)
				Awareness/experience of diverse cultures outside Malaysia	2(4.3%)	6(13.0%)
			PLO 6	Locating, organizing and evaluating information	0(0.0%)	
				Staying current on technologies	1(2.2%)	
				Staying current on local and global developments	1(2.2%)	
PLO 7	Being innovative /creative	1(2.2%)	5(10.9%)	10(21.7%)	22(47.8%)	8(17.4%)
PLO 8	Ethical judgement and decision making	0(0.0%)	3(6.5%)	11(23.9%)	22(47.8%)	10(21.7%)
PLO 9	Working with others in teams	0(0.0%)	1(2.2%)	9(19.6%)	21(45.7%)	15(32.6%)

Table 3.

Results

Based on Table 3, the mean value for each PLO is computed and ranked. The full results are as in Table 4.

Table 4: **Mean values and rank of the PLO**

Mean	Rank
PLO 1	3.52
PLO 2	3.60
PLO 5	3.73
PLO 6	3.75
PLO 7	3.96

PLO 3	3.79
PLO 4	3.67
PLO 8	3.85
PLO 9	4.09

Table 4.

PLO9 which represents leadership and accountability skills are ranked as highest with a mean value of 4.09 that can be interpreted as having strong attitude for these skills. Meanwhile, students felt that they were at the lowest for knowledge of mathematical concepts and theory (PLO1). However, a mean value of 3.52 shows that the students perceived that they were fairly strong for this skill. For the remaining PLOs, they are ranked in between PLO1 and PLO9. Overall findings are presented in Table 4.

Conclusion

All respondents perceived fairly strongly to strongly for all PLOs. It is interesting to find out that, PLO1 is ranked as lowest, however this is an expected output since when the students entering the real workforce, they will only apply knowledge that is relevant to current situation, as the knowledge they learnt at the university might be more to classical and theoretical rather than to applications wise. The curriculum provider should consider this circumstance when designing courses to be able to fit well with the industrial needs in providing better human resources. This can be made possible by close collaboration between curriculum provider and industries. Thus, further study on employers' perceptions is needed to fill the gap and to discover more information between these parties.

Acknowledgement

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