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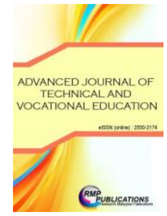

Students' Achievement in Technical and Vocational Education and Training (TVET) Learning Outcomes for DPB5023 Introduction to Research Methodology Course

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Abstract: The Technical and Vocational Education and Training (TVET) education system in the Malaysian Polytechnic includes course goals and objectives as key components in all of their syllabus. In each individual courses in its syllabus comes with their specific course learning outcomes (CLOs) that must be achieved by the students. This study aims to report whether the students who attends the DPB5023 Introduction to Research Methodology attains the aspects of general objectives and course learning outcomes (CLOs) The study uses the entry-exit survey which consist of 58 students as samples. The study finds that the students are able to achieve the goals and general objectives of the course.

Key words: *TVET, entry-exit, goals, outcomes*

INTRODUCTION

In 1969, Polytechnic education was introduced in Malaysia with funding from the World Bank and in collaboration with the Colombo Plan. According to the Polytechnic Education Department director-general, Prof Datuk Dr Mohd Ismail Abd Aziz, "*the TVET system was now seen as one of the most important education fields to drive the country's future and meet the needs of the Fourth Industrial Revolution (Industry 4.0)"* [1]. As Malaysia's premier Technical and Vocational Education and Training (TVET) institution, polytechnics under the Higher Education Ministry should play a big role in that field of education.

In order to meet the growing demand for skilled human capital today, the Ministry of Higher Education is constantly upgrading the country's polytechnic system. The ministry has plans to transform polytechnic education to be more attractive to students with its vision to becoming an institution of excellence which is in line with the needs of the industry. These polytechnics provide skilled semi-professionals in the fields of engineering, commerce and hospitality at diploma and advanced diploma levels. The existence of skilled semi-professionals from the nation's youth will be able to meet the demand for both the public and private sectors.

The education system in the Malaysian Polytechnic includes course goals and objectives as key components in all of their syllabus. In each individual courses in its syllabus comes with their specific course learning outcomes (CLOs) that must be achieved by the students to meet the course goals. According to the Danni Song, Anne Loyle-Langholz, Jeanne-L. Higbee & Zhou Zhou [2], many institutions have identified institution-wide course learning outcomes (CLOs) that *"clearly state the expected knowledge, skills, attitudes, competencies, and habits of mind that students are expected to acquire at an institution of higher education"*.

This study choses one of the courses that the Malaysian Polytechnic had offered for the programme of Diploma in Accountancy which is DPB5023 Introduction to Research Methodology. This course was designed to introduce to students on the skills for doing research specifically to produce a research proposal. However few studies have evaluate
the student's achievement on the course's goals and learning outcomes. Thus, this study is conducted to report the student's ability to achieve the aspects of

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general objectives and course learning outcomes (CLOs) for the course of DPB5023 Introduction to Research Methodology.

2. LITERATURE REVIEW

Learning Outcomes

According to Harden [3], learning outcomes are broad statements of what is achieved and assessed at the end of a course of study. Harden [3] states that there are five (5) importance of learning outcomes which are namely;

"(i) Learning outcomes are very intuitive and user friendly (if it is set appropriately according to the syllabus), (ii) Learning outcomes are usually designed round a framework of 8-12 higher order outcomes, (iii) the outcomes recognize the authentic interaction and integration in clinical practice of knowledge, skills and attitudes and the artificiality of separating these, (iv) Learning outcomes represent what is achieved and assessed at the end of a course of study and not only the aspirations or what is intended to be achieved, and (v) Learning outcome are design-down approach encourages ownership of the outcomes by teachers and students."

In general, DPB5023 Introduction to Research Methodology provides an opportunity to develop working knowledge of research method, create student's understanding in the technique of conducting research work and enable students to use knowledge gained from other disciplines for planning of research efforts. Expose students to a basic understanding of a scientific research process.

This course emphasizes on selecting an appropriate research title, writing the proposal, preparing and presenting the research proposal [4]. At the end of the course, students should be able to use the knowledge and skill to carry out a scientific research. Table 2.1 shows course learning outcome and general objectives that students are expected to attain.

Table 2.1: Course Learning Outcome (CLO)

CLO1	Explain the concept of a scientific research process in the business field.
CLO2	Construct research proposal in the related business area.
CLO3	Present research proposal in the related business area.

Source:
Syllabus DPB5023 Introduction to Research Methodology, Curriculum Development Division, Department of Polytechnic Studies (2014).

3. RESEARCH METHODOLOGY

Normally, the evaluation on a certain course will be done using the course-end evaluation. It is a traditional method of assessment to clarify the students' ability to understand the objectives of the learnt course [5]. However, this study uses a quantitative data analysis design employing entry-exit survey by Andy Ka-Leung Ng, Kai-Ming Kiang & Derek Hang-Cheong Cheung [5]. According to Andy Ka-Leung Ng, Kai-Ming Kiang & Derek Hang-Cheong Cheung [5], the entry-exit survey provides a more truthful presentation of the student's attainment of the CLOs.

The survey can provide more evidence for the development of course assessment strategies in general. According to Zekeri [6], the data collection method by the entry-exit survey is thought to be the best way to get the information from numerous students at one time. The survey of two (2) accounting classes (DAT5B and DAT6D) of the Commerce Department, Politeknik Sultan Abdul Halim Mu'adzam Shah (POLIMAS) for December 2017 session, was used as the site.

The population surveyed was composed of students that were already assigned to the classes, therefore, the population was randomly selected. The class consist of 58 students as samples. The survey instrument was developed based on the demography of the students and the syllabus of the course. The method of delivery required the students to complete the survey in the class. The survey was administered twice, the first day of class and on the last day of class prior to the final examination. The students were asked to complete an in-class, anonymous survey and to provide an assessment of the questions during and prior to the class.

These questions were listed in accordance to CLO's and chapters according to the syllabus on the survey, wherein respondents rated each question on a 5-point Likert type scale (1=strongly disagree, 2=disagree, 3=undecided, 4=agree, 5=strongly agree) relative to the variables tested in the study. The data was analyzed using Microsoft Excel.

The statistical method used for reporting the study is limited to frequency and descriptive analysis which includes mean and comparison of means using paired sampled test. The limitation is due the small amount of samples taken in order to increase the amount of significance of the result.

4. ANALYSIS OF DATA

For the purpose of analysis of data, the analysis was divided in to two parts which are the demographic profile of respondents & measure the level of student's achievement on the learning outcomes. Table 4.1 and 4.2 shows the Demographic Analysis of the student' gender and ethnic of the samples.

Table 4.1 shows that nearly half of the samples are female students which consists of 49 (84.5%) out of 58 students. Table 4.3 shows that majority of the samples are Malay with 53 (91.4%) out of 58 students.

Table 4.1: Student's Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	L	9	15.5	15.5	15.5
	P	49	84.5	84.5	100.0
	Total	58	100.0	100.0	

Table 4.2: Student's Ethnic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	C	1	1.7	1.7	1.7
	I	4	6.9	6.9	8.6
	M	53	91.4	91.4	100.0
	Total	58	100.0	100.0	

To determine the level of student's achievement on course learning outcomes and general objectives, the means are computed. All of the items on achieving the learning outcomes was analyzed using the Mean Score Interpretation Level referring to Table 4.3.

Table 4.3: Mean Score Interpertation Level

Mean Score	Level
1.00 - 2.33	Low
2.34 - 3.66	Medium
3.67 - 5.00	High

Source: Jamil, 1993

Table 4.4 – 4.6 shows the means value for each item before and after the learning process takes place. The results shows that there is a positive difference in the score which represent the student's achievement towards the learning outcome.

Course Learning Objective 1(CLO1): Explaining the Concept of a Scientific Research process in the Business Field

This learning objective was tested by five (5) survey questions. The result in Table 4.4 shows that for CLO 1, the average score on the entrance survey is smaller (2.03) than the score for exit survey (4.22). This shows that at the end of the course, the students are able to explain the concept of a scientific research process in the business field.

The Entrance Survey results indicate that the level of student's achievement to explain the importance and scope of business research is low at 1.90. However the Exit Survey shows a reverse level of 4.20 where the students are able to achieve a higher level of understanding of the learning outcome.

Table 4.4: Course Learning Outcome (CLO 1)

CLO 1	EXPLAIN THE CONCEPT OF A SCIENTIFIC RESEARCH PROCESS IN THE BUSINESS FIELD. (C2)	Entrance Survey (Mean)	Exit Survey (Mean)
1.	I can describe the meaning of research	2.20	4.46
2.	I can describe the importance and scope of business research	1.94	4.20
3.	I can explain the business research process	2.00	4.14

4.	I can explain the data processing and basic data analysis	2.03	4.11
5.	I can describe the characteristics of a well written research report	1.97	4.20
	AVERAGE	2.03	4.22

Course Learning Objective 2(CLO2): Construct Research Proposal in the Related Business Area

This learning objective was tested by four (4) survey questions. Table 4.5 shows that CLO 2 has increase in average score from the entrance survey (2.14) to the exit survey (4.29). The result shows that the students are able to construct research proposal in the related business area at the end of the course.

In Table 4.4, results indicate that at the early stage of the course, the student could not construct the research instrument which is the questionnaire with average level of achievement of 2.09. By the end of the course, the exit survey posits that the student manage to construct the research instrument with a high mean level of 4.46.

Table 4.45 Course Learning Outcome (CLO 2)

CLO 2	CONSTRUCT RESEARCH PROPOSAL IN THE RELATED BUSINESS AREA. (C4)	Entrance Survey (Mean)	Exit Survey (Mean)
6.	I can identify the sampling methods for analyzing data	2.29	4.23
7.	I can construct data collection independently	2.09	4.20
8.	I can construct the research instrument (questionnaire)	2.06	4.46
9.	I am able to construct a research proposal	2.14	4.29
	AVERAGE	2.14	4.29

Course Learning Objective 3(CLO3): Present Research Proposal in the Related Business Area

The learning objective was tested with only one survey question. Table 4.6 shows a similar result for CLO 3 where the exit survey (4.34) has a bigger average score compared to the entrance survey (2.09). The result indicates that the students are able to present research proposal in the related business area. The students were able to present their research using the Microsoft 'Power Point' by explaining all the criteria in a Research Proposal.

Table 4.6: Course Learning Outcome (CLO 3)

CLO 3	PRESENT RESEARCH PROPOSAL IN THE RELATED BUSINESS AREA. (A2)	Entrance Survey (Mean)	Exit Survey (Mean)
10.	I can present the complete research report	2.09	4.34

The increasing amount based on the mean of survey shows there is an improvement in the student's achievement on the outcomes at end of the course also known as the exit survey. The students in these classes are able to construct a research from developing a research proposal to a complete research. Thus, the learning outcomes has successfully achieved towards the end of the learning process.

5. CONCLUSION

In this study, TVET's student learning was assessed in through an entrance survey and an exit survey of the selected course. Through this study's results, it shows that the student's achievements were positive over the perceptual items measured.

In the entrance survey response, students seems to show that they have little knowledge of the course taken. However, at end of the course (exit survey), students now perceived to understand the course and were able to produce and present a conclusive research report. The finding in this study shows that students are fully aware of the course learning outcomes for DPB 5023 Introduction to Research Methodology.

To expand on the findings of greater learning outcomes achievement prior to this study, further research is needed to investigate what specific knowledge and skills are gained to affect most strongly students' achievement on the course's objectives and learning outcomes. The identification of new knowledge and skills can attain an academic development and educational success.

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