

Identifying the Factors Influencing the Students' Achievement in Semester 3 Electrical Department of Politeknik Kota Bharu

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ABSTRACT

This study aims to identify the relationship between students' achievement, learning methods, attitudes, implementation of online learning and interests in ICT among Semester 3 students of the Department of Electrical Engineering, Politeknik Kota Bharu. The objectives of the study are to obtain the certainty and validity that there is indeed an effect that affects the students' achievement with learning methods, attitudes, implementation of online learning and students' interest in ICT. This study is an exploratory study using secondary data based on semester 2 exam results (HPNM) and distribution of questionnaires through google form. A sample of 192 students consisting of semester 3 students from three diploma programs for the June 2020 session for the Diploma program in the Department of Electrical Engineering was taken for the purpose of this study. Four hypotheses have been constructed. Statistical methods of ANOVA have been used to analyze this hypothesis. The test results prove that there is a significant relationship between students' achievement with learning methods and student attitudes while studying at Politeknik Kota Bharu. However, there is no relationship between students' achievement with online learning implementation and interest in ICT. From the study, there are still many students who are still unable to cope with online learning for TVET education, in fact most students do not mainly use social media for the purpose of learning.

Key Words: Achievement, online learning, learning methods, interest, attitude

1. INTRODUCTION

Education at the Polytechnic was first introduced in Malaysia through the establishment of its first polytechnic, Ungku Omar Polytechnic in Ipoh under the United Nations Development Plan (UN) in 1969. This education was strengthened by the Cabinet Committee on Education in 1979 and the National Industrial Master Plan First (1985-1995).

All planning, including the recommendation of the Cabinet Committee on training (1991), has enabled the establishment of more polytechnics as well as adding study programs to meet the needs of semi-professional workers in the fields of engineering, trade and services.

The Covid-19 infectious disease crisis has opened up a vast online educational space and has been widely discussed by all parties involved. However, the extent of students' acceptance in the technical field and whether it does affect student achievement in terms of their knowledge and skills in Technical and Vocational Education and Training (TVET). TVET academic achievement is an important element and is highly emphasized by developing countries, especially Malaysia. However, there are also problems with the decline in academic achievement of polytechnic students, the success and failure of students in academics not only depends on the teaching factors in the lecture hall but also related to the learning process itself. Therefore, it is the interest of researchers to study the relationship of academic

achievement of TVET students and the factors that learning methods, attitudes, interest in ICT and online learning in influencing the implementation of learning in this technical field.

This study was made based on the study on the Null Hypothesis at a significance level of 0.05.

- Ho1 There is no significant difference in students' achievement in terms of learning methods of students in semester 3 of the Electrical Engineering Department of Politeknik Kota Bharu based on their place of residence.
- Ho2 There is no significant difference in students' achievement in terms of semester 3 Electrical Engineering Department of Politeknik Kota Bharu students' interest in ICT based.
- Ho3 There is no significant difference in students' achievement in terms of online learning of semester 3 students of the Electrical Engineering Department of Politeknik Kota Bharu.
- Ho4 There is no significant difference in students' achievement in terms of attitude of semester 3 students of the Electrical Engineering Department of Politeknik Kota Bharu.

This research aims to study the relationship between students' academic achievement and learning methods in the Electrical Engineering Department, Politeknik Kota Bharu. In this study, researchers want to investigate the factors that influence the achievement of technical students related to attitudes, learning methods, interest in ICT and online learning for TVET students of Politeknik Kota Bharu. This study is expected to provide useful information, especially to the top management of TVET Department of Electrical Engineering, Politeknik Kota Bharu to formulate a business plan. In addition, lecturers who teach in TVET majors can also find out the most appropriate method to implement a teaching system that affects students' excellence. For students, this study is very useful to expose them to their full potential and can change their learning methods and learning strategies can be planned accordingly in polytechnics.

2. LITERATURE REVIEW

Students who excel in exams are often said to be intelligent or talented students and have higher abilities than their peers. The excellent cognitive abilities of these students are often possessed alone, but they still need the guidance of lecturers in the field they follow. The learning environment also affects a student's achievement. Learning and teaching methods are also important factors to make a student excel in TVET lessons at the polytechnic. Students are also able to create integration and harmony among the students of different socio-economic status. In addition, TVET educational institutions are also able to reduce the differences and form a more perfect education for its students. According to Siti Zuraidah, Rozinah Nur Eliza (2014), students' achievement through Outcome Based Education (OBE) is based upon four factors of student engagement: behavioral engagement, agentic engagement, cognitive engagement and emotional engagement. Mohd Effendi, Ahmad Zamri & Nordin (2015) reveal that Adversity Quotient (AQ) have no influence on the academic achievement among Malaysian polytechnic students.

Skills and expertise in the field of Technical and Vocational Education and Training (TVET) is very much needed as the country moves towards a developed country. TVET learning focuses on developing competencies based on mapping the potential of individual learners and then developing that potential into their capacity to enter the working world. TVET learning covers various vocational aspects related to various knowledge, skills, and work attitudes on different types of skills. In fact, TVET education is not only intended to provide skills training to students, but also provide opportunities for them to continue lessons to a higher level. TVET Education is technical and vocational education training to produce skilled students with lifelong learning, independence and sustainable development. TVET learning strategies need to be more flexible and innovative in macro nature. TVET education needs to change and grow according to the current trend to make Malaysia a developed industrial country, on par with other developed countries. According to Salih (2012), using different teaching methods and techniques embedded in the 5E instructional model enables students to remedy some misconceptions about the buoyancy force, but does not completely eliminate them. Teachers' teaching methods and learning

environment which were created when the learning process influenced student's learning achievement in class, Munawaroha (2017). A study by Najme & Majid (2014) demonstrated that there is a significant relationship between teaching method and motivation for academic achievement.

Attitude is one of the most important concepts in social psychology. Many studies have been done to formulate the meaning of attitudes, the process of attitude formation, as well as the process of change, no less also the research that has been done on attitudes to know the effects and roles. Students with the positive attitude usually will appreciate the contribution of the teacher and value his teaching. On the other hand, students with the negative attitude will always feel dissatisfied, get bored easily and lack interest towards their teachers' teaching. Mohd Mahzan and Abdul Razaq (2013) stated that students' attitude will affect their achievement and also affects the classroom learning styles in learning Malaysian studies. However, the research done by Hareesol Khun, Mohd Sofian & Mohamad Khairi (2016) shows that there is no difference between gender attitude and their achievement in Mathematics, both male and female students have almost the same achievement.

The influence of high interest in certain subjects also affects the level of students' achievement. Interest has a positive influence on students' achievement in the subjects that they are learning. Students with high interest will always strive and diligently improve themselves. In other words, their satisfaction will only be achieved when they study the subject and understand it. Undeniably, interest is an important factor as a motivator for students to be active in their learning activities.

The use of ICT in a planned and appropriate manner in learning are able to increase the students' understanding and mastery of the lessons. Providing equal learning opportunities to all the students of various abilities, by using ICT can increase students' creativity and imagination.

In any case, the internet causes students to be less focused on their lessons. In addition, the internet can also prevent a student from focusing on the learning process. Students spend a lot of time browsing websites that are in the form of entertainment just for fun that does not bring any positive effect to their studies at the Polytechnic. The time that should be allocated to review the lessons is wasted just by browsing social sites such as Facebook, twitter and so on. However, if students are exposed to social sites too freely without any control might lead the students astray. As a result, students will lag behind academically and fail to complete their assignments assigned to them by their lecturers. This should be controlled and a positive attitude should be cultivated in every student for the sake of better future generations. Excessive and uncontrollable usage of the internet also makes teenagers become lazy and not being active in co-curricular activities. Students now prefer to spend time in front of their computer or gadget. This has become very worrying because it has many negative effects.

3. RESEARCH METHODOLOGY

This study used a quantitative approach and focused on descriptive survey research method. The selection of a quantitative approach coincides with the use of a number of questionnaire instruments and the involvement of a large number of respondents. Researchers have used purposive sampling to obtain study samples, whereby the researchers purposely selected the students from Politeknik Kota Bharu. The researcher identified 6 research programs in the study sample of Politeknik Kota Bharu. The total population for this study is a total of 192 students consisting of 3 majors in the Diploma in Electrical Engineering Department of Politeknik Kota Bharu, namely Diploma in Electronic Engineering (Communication), Diploma in Electrical Engineering and Diploma in Electrical & Electronics Engineering. The main instrument used in this study was questionnaire. The questionnaire used is based on Likert scale (Strongly Agree/Agree/Uncertain/Disagree/Strongly Disagree). A pilot study was conducted to obtain the reliability index of the questionnaire items. The reliability index value of the alpha value obtained is high, i.e. 0.916. The survey questionnaire was distributed to 201 students and the return of the questionnaire was 192 pieces equivalent to 76.8%. The questionnaire instrument in this study is divided into 5 main parts, namely part A contains 5 items that focus on the demographic information of the respondents, part B contains 5 items of learning method factors, part C contains 5 items of attitude factors, part D contains 5 items of learning factors in online learning and section E contain items of interest factor towards ICT.

A quantitative research approach that is descriptive approach has also been done to achieve the objectives of the study. Examination data of study sample students were also taken as secondary data for this research study. The data studied was the result of the June 2019 session examination. The study sample comprises examination data of 200 students in semester 3 which consists of 3 majors in the Diploma in Electrical Engineering Department of Politeknik Kota Bharu, namely Diploma in Electronic Engineering (Communication), Diploma in Electrical Engineering and Diploma in Electrical & Electronic Engineering. Statistical methods of ANOVA have been used to analyse this hypothesis.

4. RESEARCH FINDINGS

Data analysis: Cronbach’s Alpha

Reliability of the study items conducted (pilot test on 40 respondents)

Table 1 Reliability Statistics

Cronbach’s Alpha	N of Items
.916	22

Based on the results of the analysis of study items that were built, and were tested in the pilot test, a total of 40 respondents. Using the SPSS analysis 20, the reliability analysis of the 22 study instruments was 0.916 (Cronbach’s alpha). This shows that the reliability of the instrument produced is high and it can be used for the purpose of the study to be done.

Ho1: There is no significant difference in students’ achievement in terms of learning methods of students in Semester 3 of the Electrical Engineering Department of Politeknik Kota Bharu

From the study data obtained, there are 192 respondents involved. In terms of place of residence, urban area (35 students), suburbs (72 students), rural (69 students), and interior (16 students).

Table 2 Learning Methods

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	15.696 ^a	13	1.207	1.889	.034
Intercept	234.862	1	234.862	367.364	.000
Kaedah_all	7.829	4	1.957	3.062	.018
place of residence	5.277	3	1.759	2.751	.044
Kaedah_all *	8.675	6	1.446	2.262	.040
place of residence					
Error	113.798	178	.639		
Total	2837.000	192			
Corrected Total	129.495	191			

a. R Squared = .121 (Adjusted R Squared = .057)

There is a significant difference between the achievement of Semester 3 students of the Politeknik Kota Bharu Electrical Engineering Department in terms of learning methods (the significance value of 0.018 is smaller than the value of α which is 0.05). There is a significant difference between the achievement of Semester 3 students of the Politeknik Kota Bharu Electrical Engineering Department in terms of place of residence (its significant value 0.044 is smaller than the value of α which is 0.05). There is a significant difference between the achievement of Semester 3 students of the Politeknik Kota Bharu Electrical Engineering Department in terms of learning methods and also the place of residence (the significance value of 0.040 is smaller than the value of α which is 0.05).

Ho2: There is no significant difference in students’ achievement in terms of Semester 3 Electrical Engineering Department of Politeknik Kota Bharu students’ interest in ICT based

Table 3 Interest in ICT Based

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2.900 ^a	4	.725	1.071	.372
Intercept	282.929	1	282.929	417.932	.000
interest	2.900	4	.725	1.071	.372
Error	126.594	187	.677		
Total	2837.000	192			
Corrected Total	129.495	191			

a. R Squared = .022 (Adjusted R Squared = .001)

There is no significant difference between the mean of students' achievement in Semester 3 of the Electrical Engineering Department of Politeknik Kota Bharu in terms of students' interest in ICT (its significance value 0.372 is greater than the α value of 0.05). Therefore, it can be concluded that the students' interest in ICT technology, skills in using social media and frequent usage of social media do not affect the achievement in their studies. In conclusion, students do not mainly use social media in their lessons.

Ho3: There is no significant difference in students' achievement in terms of online learning of Semester 3 students of the Electrical Engineering Department of Politeknik Kota Bharu

Table 4 Online Learning

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	17.577 ^a	18	.977	1.509	.091
Intercept	1113.155	1	1113.155	1720.694	.000
Online_all	17.577	18	.977	1.509	.091
Error	111.918	173	.647		
Total	2837.000	192			
Corrected Total	129.495	191			

a. R Squared = .136 (Adjusted R Squared = .046)

There is no significant difference between the mean achievement of Semester 3 students of the Electrical Engineering Department of Politeknik Kota Bharu for online learning (the significance value of 0.091 is greater than the value of α which is 0.05). Therefore, it can be said that the use of online learning for electrical engineering students does not affect the achievement in their studies. In conclusion, most engineering students still cannot cope with online learning. And practical skills still cannot not be mastered by students through online learning even though there are online facilities provided.

Ho4: There is no significant difference in students' achievement in terms of attitude of Semester 3 students of the Electrical Engineering Department of Politeknik Kota Bharu.

Table 5 Attitude

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5.428 ^a	3	1.809	15.322	.000
Intercept	729.006	1	729.006	6173.566	.000
attitude	5.428	3	1.809	15.322	.000
Error	22.200	188	.118		
Total	1912.767	192			
Corrected Total	27.628	191			

a. R Squared = .196 (Adjusted R Squared = .184)

There is a significant difference between the mean achievement of Semester 3 students in the Electrical Engineering Department of Politeknik Kota Bharu in terms of students' attitudes throughout

their learning at the Polytechnic (its significant value of 0.000 is smaller than the α value of 0.05). Therefore, it can be said that commitment, punctuality and completion of assignments are the key to students' achievement.

5. CONCLUSION

From the results of the study conducted, we can conclude that the academic achievement of students in the Department of Electrical Engineering, Politeknik Kota Bharu depends on the attitude and learning methods of the students. However, the findings of the study show no effect of students' achievement related to ICT interest and online learning among the students. This coincides with the study conducted by Hadjerrouit (2015) that Online Material method did not consider it as important and not very appropriate for the teacher to put a lot of theoretical material on the internet because it does not have effect on the students' learning. Therefore as lecturers we need to emphasize on the students' learning methods and attitudes while studying at the Polytechnic in general and specifically the Electrical Engineering Department. According to Valentine & Ibrahim (2019) students' attitudes have a significant effect on their performance in Mathematics. The poor performance of students have a negative attitude towards Mathematics. This study can provide solutions to some questions related to online learning in TVET education. It can also help technical lecturers to plan their teaching methods, so that it coincides with technical education and online learning. With this, TVET learning can be improved even if it is not done through face-to-face during this difficult time of Covid pandemic.

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