

The Effect of Entry Requirement for Civil Engineering Student Performance

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Received 30 September 2017; accepted 30 November 2017; available online 26 December 2017

Abstract: This study presents the performance analysis of Civil Engineering student for Civil Engineering subject and its relation to the entry requirement before admission to Politeknik Port Dickson, Negeri Sembilan. The objective of this research is to analyse the effect of entry requirements toward student performance for subject Mechanic Structure. The minimum entry requirement to polytechnic is compulsory to pass English language, Malay Language and History subject. Also, Mathematic and another one subject must be credit. In this research, only four subjects are involved which is English, Bahasa Malaysia, History and Mathematic subject. The research sample is 39 students that randomly choose among the first year second semester diploma student that already taken this subject. In this research, questionnaire is used as tool to collect the assessment result of Mechanic Structure subject. The student assessment can be divided into two methods, theory and practical which is 50% and 50% of the total assessment for theory and practical, respectively. The implementation of teaching and learning in former secondary school is different approach with teaching and learning in polytechnic. In polytechnic the teaching method is more to student-centered approach. This approach needs more effort from student comparing lecturer. Therefore, independent study is required to meet the purpose in polytechnic. The students results of Mechanic Structure course have been analyse. The results indicate moderate correlation between students' performance and entry admission before admission to Politeknik Port Dickson.

Keyword: Assessment; Student background; Student altitude; Engineering student.

1. Introduction

Polytechnic is one of the high educations institutions that prominent for diploma candidate especially *Sijil Pelajaran Malaysia* holders know as SPM holder. There are a lot of programmes offered by polytechnic entire Malaysia in diploma and degree level. The programme offers including engineering programme, information technology programme, and commerce programme. Polytechnic were located in each country in Malaysia. Not all programme offers in all polytechnic. For instance, Polytechnic Port Dickson located in Negeri Sembilan consists of four main departments which are Civil Engineering department, Electric Engineering Department, Mechanical Engineering Department, and Commerce department. Each department offered several programmes which are the number of offered programmes are different between departments. For instances, Civil Engineering department

offered three programmes; Diploma of Civil Engineering, Diploma of Architecture and Degree in Housing Science, Building, and Planning.

The numbers of course need to complete by the student for their registered programmes. Also, the student needs to achieve Cumulative Grade Point Average known as CGPA at least 2.0 and above in order to obtain the Diploma certificate [1]. It means the student needs to obtain the Grade Point Average or GPA more than 2.0 for each course. For that reason, Ministry of High Education (MOHE) provide the entry requirement guideline to Polytechnic in order to select the qualified student which satisfy this entry requirement. The minimum entry requirement for polytechnic is compulsory to pass English language, Malay Language, and History subject. Also, Mathematics and another one subject must be credit [1].

However, not all the student succeeds to get the minimum GPA in their course

including Mechanic Structure. Meanwhile, Mechanic Structure core course for Civil Engineering programme.

Therefore, the main objective of this study is to analyze the students' perform during SPM also perform in the study at Polytechnic. In order achieve this objective, we analyze the effect of entry requirement to polytechnic for Mechanic Structure course from Civil Engineering program in Polytechnic Port Dickson. This study is a pilot and ongoing research.

The rest of this paper is organized to provide a brief explanation of work the other scholar in Literature Review section. The following section will discuss Research Methodology. While in the next section will present the Result and Discussion. This paper concludes with Discussion in the last section

In this study, we stress on two areas relating to educational data analysis which is the academic performance in high education and evaluation method for human judgment

1.1 Related works on predicting students' academic performance at high education

Thomas et al. [2] have explored factors that contribute to undergraduate student's academic performance by taking into consideration the potential exert facilities and debilitating. From the experiment, the results indicate the nature of the influence these student factors have on long-term academic outcomes and highlight the importance of developing a multifaceted intervention model that supports emotion regulation and self-regulation skill development to buffer the impact of cognitive test anxiety on achievement. In another research, Wisneski et al. [3] was interrogated the effect of prerequisite course learning environment on student performance in post-requisite coursework. This research has collected the data from Schools of Business at six campuses of a large public university in the Midwestern United States.

Eksioglu [4] in their study have investigated the significant risk factor that associations between individual and computer-use-related risk among undergraduate university students with musculoskeletal symptoms (MS) and visual discomfort (VD). Meanwhile, Usman et al. [5], investigate the

relationship between Internet Addiction (IA) and academic performance among foreign undergraduate students in Universiti Teknologi Malaysia (UTM). The risk factor that taking into consideration in this study is the gender of internet addiction and original country which are China, Yamen, Somalia, and Indonesia.

1.2 Related works on evaluation method for human judgment

Asif et al. [6] was employed data mining methods to evaluate the 4th year Information Technology bachelor degree of public sector engineering university in Pakistan. Several classification algorithms were used in this research. In another research, Keyes and Dworak [7] have done their surveys on the use of undergraduate library assistants specifically to staff chat reference services at an academic library. In their research, observable answerer behaviors method was employed in order to obtain the information chat reference services.

Brown et al. [8] in their research was studying on the appropriate instruments to measure the engagement between the course and academic performance. They used instrument Student Course Engagement Questionnaire (SCEQ) to quantify engagement in introductory Human anatomy and physiology course, in nursing, midwifery, and paramedicine undergraduate student.

Abdullah et al. [9] has studied the effectiveness of youtube application in teaching and learning. The research site is Politeknik Seberang Perai. The questionnaire was used for data collection among mechanical and electrical students.

Thus, research site of this study to evaluate the 2nd semester Civil Engineering diploma of Civil Engineering Department in Politeknik Port Dickson, Negeri Sembilan. And also, the questionnaire has been chosen as research evaluation method.

2. Research Methodology

The aim of this study is to analyze the correlation between students' performance for Mechanic Structure course and entry admission before admission to Politeknik Port Dickson. The entry requirement is referred to SPM results. The method of this research consists of three main stage; Data Collection, Data Processing, and Data Analysis are shown

in Fig. 1, in the first stage, Data Collection we randomly distribute questionnaires among second semester Civil Engineering students. There five main items should be filled up by the student which are the grade of English, Bahasa Malaysia, History, and Mathematics from SPM result. These subjects are an entry requirement. The fifth item is a grade of Mechanic Structure course. All these data are collected for all despondency. Then, these data will be analyzed in the next stage.

During the Data Processing stage, we group the entry requirement result and Mechanic Structure into 5 five categories as shown in Table 1. For instance, if the student gets A- for English and Mechanic Structure C-, we categories these results into a Very Good category and fair category, respectively.

Data Analysis is the last stage of our methodology. In this stage, we come out with assumptions according to finding during the previous stage. For instance correlation result for English and Mechanic Structure will be analyzed. The resulting finds will discuss more in the next section.

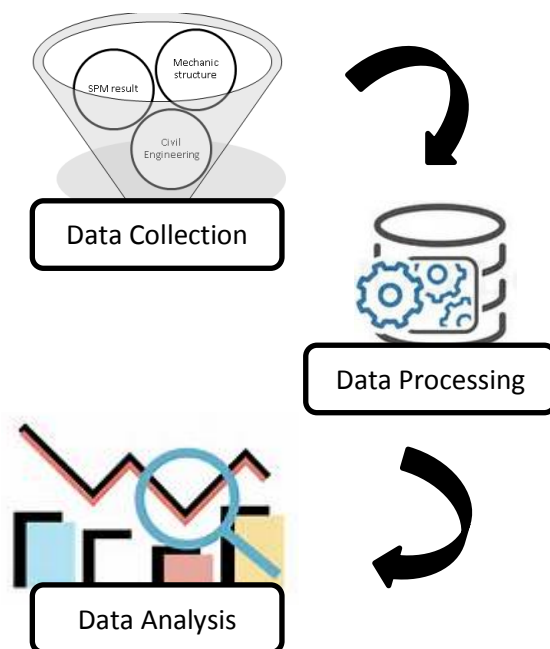


Fig. 1 Research methodology

Table 1 Grade and category

Grade	Category
A+	Excellent
A	Very Good
A-,B+,B	Good
B-,C+,C,C-,D+,D	Fair
E	Poor

3. Results and Discussion

In this section, we present the results obtain from the methodology that mentioned above which are; 1) classify the performance at the end of Mechanic Structure course according to their mark in four categories (excellent, very good, good and fair); 2) Analyse and linking the student performance with their entry result to polytechnic; The entry results is the SPM results that also categories into five categories which are excellent, very good, good, fair and poor. In this section, we will observe that student obtain an excellent result in Mechanic Structure course in Polytechnic Port Dickson also have an excellent entry result during their SPM.

3.1. Classify the performance in category

As written in the methodology section, student performance will be classified into four categories by taking into account their total marks of Mechanic Structure course. The results presented in this section are considered all the marks from all assessment have been made in course. The assessment items are shown in Table 2. Table 3 shows the total number of students in each group for Mechanic Structure course in one semester. The set of group gained represent the same pattern of the data which is a group of students with an excellent mark in Mechanic Structure course, very good mark in Mechanic Structure course, good mark in Mechanic Structure course and fair mark in Mechanic Structure course. From Table 1, the performance trend is most of the student belong to “Good” group and least belong to “Excellent” group where 46.2% and 7.7%, respectively.

3.2 Analyse and linking the performance

In this section, we took into consideration the polytechnic entry requirement subject have correlation or not with Mechanic Structure course. Most important to know the entry requirement gives the impacts to obtain the excellent result have been identified. Fig. 1,2,3 and 4 demonstrate the entry requirement result are group according to performance level; excellent, very good, good and fair, respectively. For each performance level, we identify the performance level of entry requirement result or SPM result which is English, Bahasa Malaysia, History, and Mathematics. We would like to analyze the correlation between the entry requirement results with performance level for Mechanic Structure course.

Fig. 2 shows the student result of Mechanic Structure course belongs to performance group excellent. There are three students in this category. No students classify in excellent category for all entry requirement subjects. All students in this category obtain the very good result in Mathematics. However, only one student obtains the good result in English. For Bahasa Malaysia shows the balanced result where one student for each category very good, good and fair.

Fig. 3 shows the student result of Mechanic Structure course belongs to performance group very good. There are seven students in this category. For English, most of the student obtains the fair result. Meanwhile, most of the student obtain the good result in Bahasa Malaysia and History In contrast with mathematics, most of the student obtains the very good results and one student obtains the excellent results as well as history. Same with the excellent group, the Mathematics subject leading the other entry requirement subjects.

Fig. 4 indicates the student result of Mechanic Structure course belongs to performance group good. There have eighteen students in this category. No students classify in excellent category except history subjects. Thirteen out of thirty-nine students in this category obtain the good result in Bahasa Malaysia and History subjects. Most of the student obtain the good result in all subjects except English. Majority of student mark is in the fair category for English subject. Thus, most of the student obtains a good category for Mechanic Structure course get the good results

during SPM for subjects Bahasa Malaysia, History and Mathematics. Dissimilarity with English subject, most of the students get fair results.

Lastly, Fig. 5 indications the student result of Mechanic Structure course belong to performance group fair. The eleven students are categories in this category. No students classify in excellent category for all entry requirement subjects. For English subjects, most of the students get the fair results. For Bahasa Malaysia subjects, most of the students get the good results. For History and Mathematics subjects shows the balanced result three or four students get the very good, good and fair results.

Table 2 Assessment items and marks for Mechanics Structure course

Assessment items	Marks (%)
Quiz	10
Assignment	20
Test	20
Final	50
Total Marks	100

Table 3 Statistics of batches June 2016 and categories for Mechanic Structure

Total Number of students	Total of number in category			
	Excellent	Very Good	Good	Fair
39	3	7	18	11

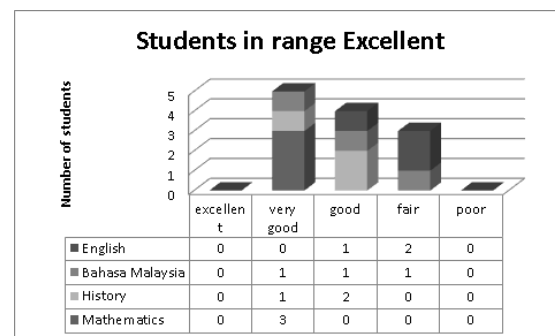


Fig. 2 The number of student in the excellent category.

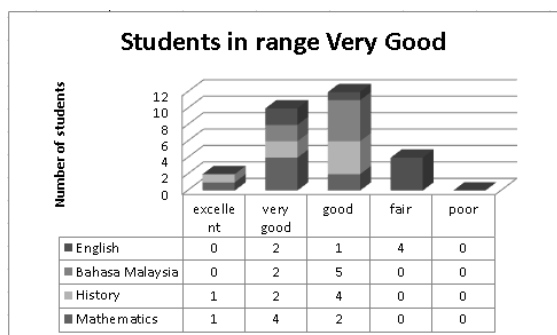


Fig. 3 The number of student in the very good category.

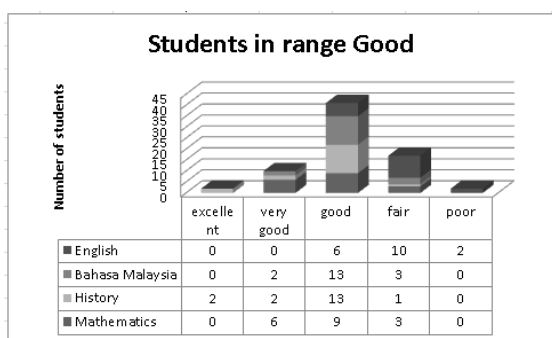


Fig. 4 The number of student in the good category.

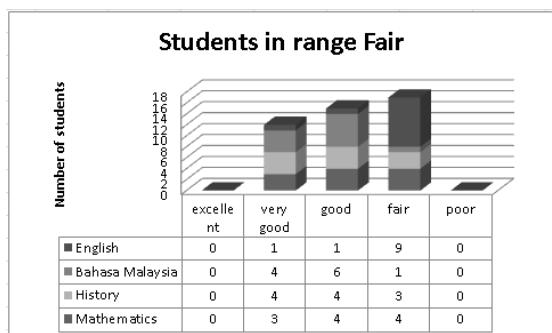


Fig. 5 The number of student in the fair category.

4. Conclusion

In conclusion, the finding of this study shows that to be excellent in Mechanic Structure course the student must master in Mathematics subject. However, the language subject not major factors the give the effect to Mechanic Structure course. In other words, the civil engineering students more interested in the calculation rather linguistic.

In a second finding, we observe that the student get excellent result during SPM not guarantee to get excellent result during the

study in polytechnic. The implementation of teaching and learning in former secondary school is a different approach to teaching and learning in polytechnic. In polytechnic, the teaching method is more of a student-centered approach. This approach needs more effort from student comparing lecturer. Therefore, independent study is required to meet the purpose in polytechnic.

Therefore, we conclude that results indicate a moderate correlation between students' performance and entry admission before admission to Politeknik Port Dickson. From our observation, lecture and notes are provided in dual language which is English and Malay. So, a student who is not fluent in English has a chance to understand the lesson. Also, the student has a chance to improve the English due to lecture and notes in English. In addition, the student altitude is another factor that contributes to student performance.

In future, the large-scale of-of respond and involve more than one cohort. This study should be replicated across another core course for Civil Engineering Programme to validate the findings in wide research scope.

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