

# RELATIONSHIP BETWEEN ENROLMENT SESSIONS WITH STUDENTS' ACHIEVEMENT IN ENGINEERING MATHEMATICS 1

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**Abstract:** *Polytechnic is one of the institutions chosen by students to continue their studies. Because of that, almost all states in Malaysia established Polytechnic branches because of the high demand for these institutions. However, the achievement of students at the Polytechnic is not encouraging. This situation raises the question of whether this is due to the large number of students in one class. Therefore, this study aims to know the relationship between students' enrolment sessions and students' achievement in Engineering Mathematics 1. This research used a quantitative method. The samples were taken from engineering students taking Engineering Mathematics 1 course. The data collected from the result of Engineering Mathematics 1 is based on session 1 and session 2 enrolment. The data were analysed using the Linear Regression test, and the result is  $p > 0.05$ . A  $p$ -value is more than 0.05, meaning no significant relationship existed between the student's enrolment session and Engineering Mathematics 1 achievement. The findings of this study are important to the administration in determining the ideal admission rate.*

**Keywords:** *Enrolment Session, Relationship, Achievement, Engineering Mathematics*

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## Introduction

Education develops human personality, thought and skills. The awareness among parents on how important education is increasing and with government programs in education, all generations have an opportunity to get knowledge and expand potential. Education helps an individual get a job or create a job. The scope of education is widely open in all areas. Through the government's planning and desire to provide education for all, schools, colleges and universities have provided various programs and skills.

Malaysian Polytechnic is one of the public educational institutions in Malaysia that focuses on the field of training and skills (Mustapha, 2017). The transformation of the polytechnic from producing a semi-professional workforce in the fields of engineering, commerce, and services to a leading institution in the field of TVET and programs that are relevant with the needs of the industry has made the polytechnic one of the preferred institutions. One of the directions of

the Polytechnic transformation that had been launched on 25 February 2010 is the development of a study program and research in the field of propulsion, which is based on the strengths of each polytechnic. Polytechnic transformation is in line with the national agenda and supports the national higher education strategic plan.

Admission of students to the polytechnic is divided into two phases, which is phase 1 and phase 2. For phase 1, student admission is based on applications through the UPU system after students have completed SPM while Phase 2 admission is a second intake that opens opportunities for students who did not get a place or missed the application in phase 1. Phase 2 admission also gives opportunities to students who have completed a skills certificate from a community college to continue their studies. Based on the data source from MyMoheS Analytic System, MOHE, the number of Malaysian Polytechnic student admissions in 2020 is 85936 and in 2021 is 84556 students (Statistik Pendidikan Tinggi 2021: Kementerian Pengajian Tinggi).

This scenario shows that Polytechnic is one of the institutions where many students choose to continue their studies. This is because learning at the Polytechnic is more focused on the technical field and is very suitable for students who are weak in the reading subject. Even so, the focus of this study is to see if the enrolment will affect students' academic performance. This is because when the number of student registrations increases, the number of students in one class also increases, likely affecting the learning focus. Based on this situation, the objective of this study is to determine the relationship between student enrolment sessions and student achievement in Engineering Mathematics 1. This study is very important and needs to be done so that the academic management and lecturers can plan and determine a more effective education delivery mechanism for students.

### **Literature Review**

Education develops human personality, thought and skills. The awareness among parents on how important education is increasing and with government programs in education, all generations have an opportunity to get knowledge and expand potential. Education helps an individual get a job or create a job. The scope of education is widely open in all areas. Through the government's planning and desire to provide education for all, schools, colleges, and universities have provided various programs and skills. The study of increasing in enrolment student in education sector had done by the researcher and its impact on students or teachers. Based on research done (Hafeez et al, 2020) at four primary school Pakistan the relationship between school enrolment size and student's achievement the findings revealed that the results show that when the new student's enrolment is increased then student's academic achievements is reduced. It concludes that the enrolment students have a directly effect on the student's achievement. However, another study that had been done at University of KwaZulu-Natal (UKZN), City, South Africa (Ramchander & Naude, 2018), it reveals that the rise in enrolment in already large courses had no effect on students' academic performance.

The data from the national secondary survey in Bangladesh found out that the reduction in class size in secondary grades is not deficient. (Asadullah, 2005). The effect on class size on student achievement in higher education also been done at Binghamton University State University of New York (Dillon et al, 2002) they used an earning function to model how class size affects the grade student earn. The observation on 363,023 undergraduate students and it find that the class size had a negatively affect grades. Class size is typically correlated with the number of pupils per teacher, and it is generally accepted that smaller classes foster greater teaching and learning. Many nations, including the USA, Europe, China, Japan, and many others, share this viewpoint and have implemented laws to minimize class sizes (Blatchford & Lai, 2012). A

similar study had been done at Turkey (Koc & Celik, 2015) where the effect of student-teacher ratio on student achievement reveals that there was a significant correlation within these two variables. The cities with more students per teacher likely to have worse achievement on Turkey's Transition to Higher Education Examination. Another study the impact number of student show that teachers have more time to spend with each student, check on each one's progress, and provide more individualized instruction that is better suited to each kid at schools with lower student-teacher ratios (Johnson, 2011).

Based on survey among lectures semester 1 Engineering Mathematics, average 100% of them agreed that the enrolment students which is Session 1 and 2 affects students' achievements. So, this study is conducted to look and get an empirical data whether the enrolment have a significant relation with students' achievement in Engineering Mathematics 1.

### Methodology

The study sample is both 88 engineering students in semester 1 session 1 2022 2023 and session 2 2021 2022. The data is collected from the statistical document of the achievement scores of Engineering Mathematics 1 semester 1 students for session 1 2022 2023 and session 2 2021 2022. This student result was then analysed using Linear Regression and  $P < 0.05$  was considered a significant result where the enrolment influenced students' achievements.

### Findings and Discussion

Regression test had been done and the result as shown on Table 1, where  $P = 0.21$  ( $P > 0.05$ ). This result tells that there was no significant relationship between the students' enrolment sessions with the achievement of Engineering Mathematics 1.

**Table 1: Regression**

	<i>B</i>	<i>SD</i>	<i>t-value</i>	<i>P-value</i>
Student enrolment – academic performance	-0.123	0.098	-1.260	<b>0.211</b>

This is contrary to findings or surveys at Kota Kinabalu Polytechnic, which is the admission session of students with slightly lower achievement compared to the admission session of many students. A general survey to lecturers of Engineering Mathematics 1 at the Polytechnic of Kota Kinabalu regarding student performance in academics based on session 1 and session 2 enrolment show that 100% of them agreed that the enrolment affect the student's performance. Analysis on the Likert scale shows that 33.33% select Likert Scale 3 (Agree) and 66.67% select Likert Scale 4 (Strongly Agree) for item that the enrolment student had affect on student academic achievement. They agree that the session 1 students have a better achievement in final examination rather than the session 2. Various studies have been done abroad and the results of the study show that the admission of many students, i.e., large class sizes, affects student achievement. The large number of students causes a lack of facilities or teaching staff which affects student achievement. However, other studies have found that the number of students does not affect student achievement in the classroom.

### Conclusion

The study findings show that there was no significant difference between the enrolment sessions with the achievement of Engineering Mathematics 1. This finding is aligned with the finding from another researcher that have been discuss on the literature review and contradict with the

data of survey among lecturers Engineering Mathematics 1. Further studies need to do to narrow down and look the factor that affect the student's achievements in academic. A short courses or workshop to sharpen and enhance the basic skill among student so that it can help them to perform. Other aspect that may affect student achievements is students' emotions in new atmosphere. Such as the study conducted by Cheryan et al. (2014) and Asvio (2022) conclude that the environment affects in students learning and achievement. The learning environment is a crucial element in affecting pupils' academic success. In fact, there are other factors that influence students' academic success in addition to IQ. This confirms the idea that a variety of elements of the learning environment are always linked to students' academic progress.

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