

# Relationship between Student Activity Unit Involvement and Cumulative Achievement Index of Students at the Departement of Mechanical Engineering Education, State University of Medan

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**Abstract**—Students of the Faculty of Engineering are an integral part of Indonesian students, as engineering science principles can be used as an educational social control of development, contribute to the government to build the nation state, and provide solutions to problems in the country. Movement of organizational dynamics within the campus led to the birth of Student Activity Unit (UKM) as a forum for student activities to develop interests, talents, and expertise of its members. Activities undertaken in the Student Activity Unit (UKM) always use the lecture schedule to reduce the burden in lecturing activities. Students who choose between activities in the student activity unit or college. Students who engage in inactive learning activities. The purpose of this research is to know the relation of the students to Student Activity Unit (UKM) and learning activity with Cumulative Achievement Index. This research is a descriptive research with correlational study type to explain the formulation of the raised problem. Respondents were all students (31 people) majoring in mechanical engineering involved in a student activity unit (UKM). The method used in this research is total sampling. The results showed a positive and meaningful linear relationship between the Student Unit program (SME) and Grade Point Average (GPA) students of Mechanical Engineering University of Medan.

**Keywords**— *student unit activities (ukm)1; active learning 2; grade point average (gpa) 3*

## I. INTRODUCTION

Student Activity Unit (UKM) is one of the Extracurricular activities that exist in the Engineering Education Department of State University of Medan. All universities generally have a Student Activity Unit (UKM) as a place for students to develop their talents beyond academic talent. The student activity unit (UKM) is located at the college level and is a non-structural entity at the university. Student activity units (SMEs) have basic tasks and extracurricular activities at the university level in a particular field.

As members of the academic community that are an integral part of society, nation, and state, engineering students need to prepare and nurture

themselves to become national cadres. Cadres of the nation must have the academic ability of the profession so that they can apply, develop, create, and integrate both science and technology to improve students' standards of living. Engineering faculty students are required to be independent and skilled. In its application in the industrial world or educators, students must have the ability to interact and communicate, because communication skills are very important for students to support their expertise in the industrial world. Following the activities in the Student Activity Unit (UKM), students are expected to benefit especially from establishing relationships with others, because in every activity undertaken, every manager is required to interact and cooperate with each other.

Students who actively participate in the Student Activity Unit (UKM) at Medan State University are expected to grow a more critical, realistic way of thinking in themselves and the environment and more mature in responding and bringing all the negative effects of globalization, so there will be no deviation that can damage the image carried by students. Basically, the activities undertaken in the Student Activity Unit (UKM) always interfere with the class schedule, and affect student learning activities in keeping up with the lecture activities. Students are forced to choose between activities in UKM and lectures. In the end, the students who are active in the activities of the student activity unit tend to be inactive in the lecture, resulting in a cumulative achievement index that is below expectations.

Learning participation can affect learning achievement or GPA obtained by the students. Generally, every student has a different ability, whether in thinking or in communicating. Differences in ability, among others, can be seen from the value of

cumulative Achievement Index (GPA). The cumulative Achievement Index (GPA) is one of the achievement tools in the academic/educational field obtained by combining all the courses that have been taken up to a certain semester.

However, sometimes the activities undertaken in the student activity unit often disrupt the schedule of the lecture and affect the activity of the students in following the lecture activities. Students are forced to choose between following activities in student activities units and lectures. In the end, students involved in activities in the student activity unit tend to not actively learn. This can affect student learning outcomes based on GPA obtained at the end of the semester.

## II. LITERATURE REVIEW

### A. Student Activity Units (UKM)

Student Activity Unit (abbreviated as SME) is a forum for student activities to develop interests, talents, and expertise for its members. The unit is part of other intra-campus student organizations such as student senate and student executive body, and exists at the study program, department, or university level [1]. Students' union leaders are now typically members of many high-level institutional committees, and often have a close relationship with the vice-chancellor and/or other senior institutional leaders [2]. The characteristics of those who take on leadership positions within the students' union are significant: it seems important, from an equality perspective, that such positions of relative power are opened up to all students, and that the wider student body views their union leaders as broadly representative. Student leadership roles are also significant for society in general as they often constitute. Furthermore, research from the USA, UK, and Australia has argued that smaller student societies, often facilitated by the students' union, are important loci for young people to develop their political habitus, providing space for the development and performance of the political self [3]. Student Unionism is the system of practice or principle and theory of labor Union in an educational setting to pursue students' interest. A Student Union Leader is a person appointed in a Care-Taker Committee or who emerges through an election to rule or guide and inspire the student body or student community in a representative capacity. Usually, a student Union leader holds a position in the Executive Council for a stipulated period of time defined by the Union's constitution [4].

### B. Learning Activity

Learning activity in the learning process becomes one of the basic elements that are important for the success of the learning process [5]. The learning activity is all the knowledge gained by self-observation or working alone, through self-created facilities both spiritually and technically [6]. Learner's activities in the teaching and learning

process that involve emotional ability and focus more on the creativity of learners may improve the minimum ability, as well as the realization of creative learners and allow learners to master the concepts of learning. Learning activity requires learners to always participate actively in every activity when the learning process takes place [7]. Students in Math education who experienced active engagement in the classroom reported their satisfaction in understanding content and maintaining interest and attention [8]. Learner-centered education, as opposed to teacher-centered education, has previously characterized as a perspective on learning where the main focus is on the learner and learning process instead of the teacher, where students take responsibility, and finally, where formative assessment is implemented for learning and not as means for teaching for tests [9-10].

### C. Grade-Point Average (IPK)

Grade-point average (GPA) is a measure of student ability up to a certain period calculated based on the number of credits that have been taken [11]. Cumulative Achievement Index (GPA) is a number that shows student achievement or cumulative progress from the first semester to the last semester, while GPA is calculated at the end of each semester [12]. The cumulative grade point average (CGPA) is a measure of a student's academic achievement that can be earned in a required ISLLC-based educational leadership program of studies. It is calculated by dividing the total number of grade points received by the number of credits attempted [13]. GPA has consistently been shown to be the single best predictor of future academic success [14].

## III. MATERIALS AND METHODS

Grade-point average (GPA) is a measure of student ability up to a certain period calculated based on the number of credits that have been taken [11]. Cumulative Achievement Index (GPA) is a number that shows student achievement or cumulative progress from the first semester to the last semester that has been taken, GPA is calculated at the end of each semester [12]. *The cumulative grade point average (CGPA) is a measure of a student's academic achievement that can be earned in a required ISLLC-based educational leadership program of studies. It is calculated by dividing the total number of grade points received by the number of credits attempted [13]. GPA has consistently been shown to be the single best predictor of future academic success [14]*

## IV. RESULTS AND DISCUSSION

### A. Results

Based on the data processing that has been done, this study found the successive description of the data, identification of the level of the tendency of each research variable, as well as testing requirements analysis and hypothesis testing.

*Level of Variable Trend of Student Activity Unit Involvement (X<sub>1</sub>)*

To identify the level of inclination of Student Activity Unit Activity Variables, first the ideal average (Mi) and ideal Deviation Standards (SDi) were calculated, in which the results were 65 and 13, respectively. Summary of calculation results can be seen in Table 1, as follows :

TABLE I. LEVEL OF VARIABLE TREND OF STUDENT ACTIVITY UNIT INVOLVEMENT (X<sub>1</sub>)

Class Interval	F <sub>Absolute</sub>	F <sub>relative</sub>	Category
84.5÷ To the top	14	45.16%	High
65÷ 84,5	17	54.83%	Fair
45.5 ÷ 65	0	0.00 %	Poor
45.5÷ Down	0	0.00 %	Low
Total	31	100.00 %	

Based on the above calculation, it is found that the students' level of Student Activity Unit Involvement (X<sub>1</sub>) tends to be Fair. The level of variable inclination of Student Activity Unit Units (X<sub>1</sub>) can be seen in Figure 1.

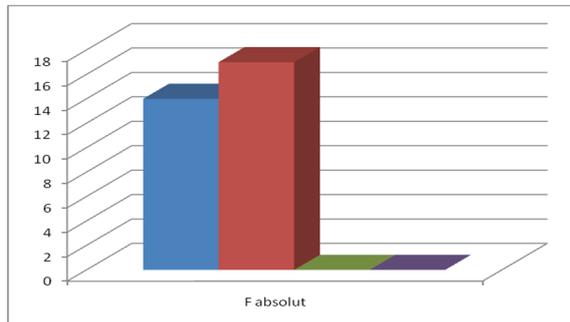


Fig. 1. Histogram of the Variable Tendency Level of Student Activity Unit Involvement (X<sub>1</sub>)

*Level of Trend of Learning Activity (X<sub>2</sub>)*

To identify the likelihood level of Learning Activity Variables, first calculated the ideal average (Mi) obtained = 67.5 and the ideal Deviation Standards (SDi) obtained = 13.5. Summary of the calculation results can be seen in table 2 as follows:

TABLE II. LEVEL OF LEARNING ACTIVITY TENDENCY VARIABILITY (X<sub>2</sub>)

Class Interval	F <sub>Absolut</sub>	F <sub>Relatif</sub>	Category
87.75÷ To the top	0	0.00%	High
67.5÷ 87.75	31	100.00 %	Fair
47.25 ÷ 67.5	0	0.00 %	Poor
47.5÷ Down	0	0.00 %	Low
Amount	31	100.00 %	

Based on the above calculation, it is found that the students' level of Learning activity (X<sub>2</sub>) tends to be

Fair. The likelihood level of the Learning Activity (X<sub>2</sub>) variable can be seen in Figure 2.

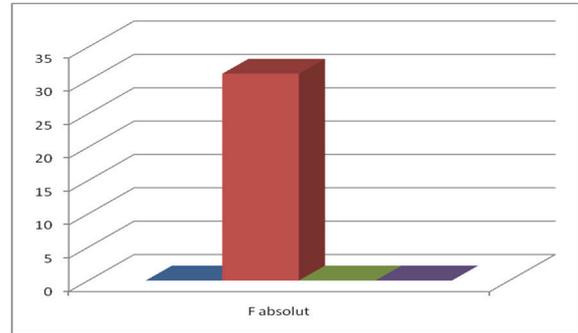


Fig. 2. Histogram of Variable Trend Level of Learning Activity (X<sub>2</sub>)

*Level of Variable Trend of Cumulative Achievement Index (Y)*

To identify the level of the tendency of Variables of Cumulative Achievement Index, first calculated the ideal average (Mi) obtained = 2 and the ideal Deviation Standards (SDi) obtained = 0.6. Summary of calculation results can be seen in Table 3, as follows:

TABLE III. THE VARIABLE TREND RATE OF CUMULATIVE ACHIEVEMENT INDEX (Y)

Class Interval	F <sub>Absolute</sub>	F <sub>Relative</sub>	Category
2,9 ÷ To the top	12	38.71 %	High
2 ÷ 2,9	19	61.29 %	Fair
1.1 ÷ 2	0	0.00 %	Poor
1.1 ÷ Down	0	0.00 %	Low
Total	31	100.00 %	

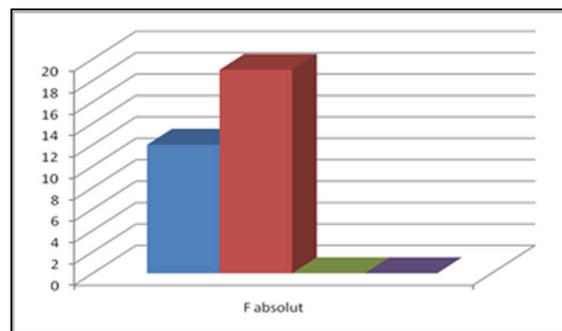


Fig. 3. Histogram of Variable Trend Level of Cumulative Achievement Index (Y)

*B. Discussion*

Based on the results of the description analysis, in general, the involvement of the Student Activity Unit (UKM), student learning activity, and the Cumulative Grade Student Index of Mechanical Engineering students of State University of Medan can all be categorized as Fair. Furthermore, based on the results

of correlation coefficient analysis, there is a positive and meaningful linear relationship between the variables involvement of Student Activity Unit (UKM) with grade point average (GPA) of Engineering Department of Mechanical Engineering of State University of Medan. This can be seen from the large correlation coefficient between X1 and Y, with a value  $r_{x_1y}$  of 0.38. These results are consulted with  $r_{table}$  with  $n=31$  at the significance level of  $5\% = 0.355$ , meaning that there is a positive and meaningful linear relationship between the variables of Student Activity Unit (UKM) involvement with the Grade Point Average (GPA) of Mechanical Engineering Education students of State University of Medan. Next, the value of variables X2 with Y is  $r_{x_2y}$  0.727. These results are consulted with  $r_{table}$  with  $n=31$  at a significance level of  $5\% = 0.355$ . Based on the significance analysis of the correlation coefficient of the two independent variables, obtained  $F_{hitung}$  amount 10.65 which is consulted with price  $F_{table}$  at a significance level of  $5\%$  with  $k_{reg} = 2$  and  $k_s = 28$  amount 3.34. Thus it can be concluded that the higher involvement of Student Activity Unit (UKM) and Learning activity suggests a positive influence on the Grade Point Average (SME) Student Engineering Department of Mechanical Engineering State University of Medan.

#### V. CONCLUSION

This research examines a positive and meaningful linear relationship between Student Activity Unit Student Activity Unit and Study Activity with Cumulative Achievement Index (GPA) of Department of Mechanical Engineering State University of Medan. Apparently, this study does not deviate from the reference of the theoretical foundation as it found that there is a positive and meaningful linear relationship between the involvement of the Student Activity Unit (UKM) with the grade point average (GPA) of the students of Mechanical Engineering Department of the State University of Medan between the high involvement of the Student Activity Unit (UKM) and the Student Achievement Index (GPA). Furthermore, the study found that there is a positive linear relationship between the Learning activity with the GPA of Student Engineering Department of Mechanical Engineering State University of Medan, as the higher the student learning activity, the higher the Student's Gross Grade Average (GPA) will be. Based on the results of this study, the proposed hypothesis can be accepted. Further research may be done to know more about factors related to the Involvement of Student Activity Unit (UKM) and Learning activity With Cumulative Achievement Index (GPA) Student Department of Mechanical Engineering Education State University of Medan.

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