THE EFFECT OF STUDENT ENGAGEMENT TO STUDENT ACADEMIC ACHIEVEMENT AT FACULTY OF INDUSTRIAL ENGINEERING TELKOM UNIVERSITY

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Abstract

To get a superior quality, human resources is certainly not in spite of the achievements, accomplishments in educational institutions can certainly be measured by the value of academic and one of the factors that may affect the achievement of learning is student engagement because when learners are able to give all his efforts to understand the material provided they are likely to have a good record. This research was conducted at the Faculty of Industrial Engineering Telkom University with student engagement as independent variables and academic achievement as the dependent variable. The purpose of this study was to determine how high student engagement, academic achievement of students as well as, to examine how high the influence of student engagement to academic achievement in students of Industrial Engineering Telkom. The respondents are 310 active students at the Faculty of Industrial Engineering Telkom University. The analysis technique used is descriptive analysis and simple linear regression. Based on the results of the study showed that student engagement at the high category and learning achievement in honors. While the statistical test results obtained that student, engagement has no effect on academic achievement in students of Industrial Engineering Telkom University.

Keywords: student engagement, student achievement, students

1. Introduction

College industry competition is very tight because it is driven higher quality given (Susilawati et al., 2019). Thus, as to give rise to competition between higher education institutions with each other with the aim to survive and compete. According to Nursyabila (2019), education in Indonesia is predicted to continue to rise in the middle of the current era of digitalization. A college education continues to adapt the curriculum and programs that fit the needs of the millennial generation today. Altbach (2010) said that universities around the world concerned with their quality, their place in the national and international markets and their image at home and abroad to seek a competitive advantage. Competition can contribute to the quality.

The main purpose of college is capable of creating human resources who have the knowledge as improving the competitiveness of the nation. Soesatyo (2018) said that the creation of human resources (HR) function sustains a superior and much-needed development of the Indonesian nation. Superior human resources in higher education can be seen from obtaining academic achievement, good performance will improve the quality of human resources. According Coal
achievement of best sons and daughters should be a major contribution to make this nation equal with other nations.

Factors that affect the learning achievement, among others, gender (Sanchez et al., 2019). According to Sa’adah and Arianti (2018) emotional, behavioral, and learning difficulties hinder the learning process so that the risk can reduce study achievement. For that student needs to increase engagement in learning (student engagement) on the emotional aspects, as well as cognitive behavior in order to achieve academic achievement. Demir and Cennet (2009), revealed that the factors affecting achievement are factors related to home and school. Sugaya et al. (2019) say that the willingness to read and write is an important determinant of learning achievement.

Through the above explanation that explains the factors that affect student achievement, it can be seen that student engagement becomes one of the factors that affect the learning achievement. Therefore, it is important for the Industrial Engineering study program to improve learning achievement through increased student engagement will increase learning achievement that will affect the success of the Industrial Engineering Program Telkom University. Student engagement can be a factor in improving learning achievement. Students who have high student engagement will have high achievement willingness to be able to complete their study with good grades. Study achievement levels can be measured with a table of average GPA student of Industrial Engineering University of Telkom can be seen as at Table 1.

Table 1. Data average GPA of Industrial Engineering Program

<table>
<thead>
<tr>
<th>No.</th>
<th>Faculty</th>
<th>Study program</th>
<th>Force</th>
<th>Average GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Faculty of Industrial Engineering</td>
<td>S1 Industrial Engineering</td>
<td>2016</td>
<td>3.00</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>2017</td>
<td>3.20</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>2018</td>
<td>3.00</td>
</tr>
</tbody>
</table>

Source: The head of academic affairs FRI Telkom University (2019)

Based on the Table 1., the average GPA in Industrial Engineering Program is different every year, the force the average GPA in 2016 it is 3.00. Meanwhile, in 2017 became the highest class with an average GPA of it is 3.20 and the force in 2018 is 3.00. The results of the evaluation of lecturers by students (EDOM) can reflect the level of student engagement in the aspect of affective / emotional liking for learning for that can be seen in Table 2.
**Table 2. Lecturer Evaluation By Student (EDOM) 2016-2020**

<table>
<thead>
<tr>
<th>Year</th>
<th>Top EDOM</th>
<th>EDOM lowest</th>
<th>EDOM average</th>
</tr>
</thead>
<tbody>
<tr>
<td>odd 2016/2017</td>
<td>99.24</td>
<td>79.52</td>
<td>90.74</td>
</tr>
<tr>
<td>even 2016/2017</td>
<td>100</td>
<td>80.74</td>
<td>92.86</td>
</tr>
<tr>
<td>odd 2017/2018</td>
<td>92.79</td>
<td>72.92</td>
<td>83.45</td>
</tr>
<tr>
<td>even 2017/2018</td>
<td>93.1</td>
<td>72.06</td>
<td>84.49</td>
</tr>
<tr>
<td>odd 2018/2019</td>
<td>94.41</td>
<td>70.16</td>
<td>85.56</td>
</tr>
<tr>
<td>even 2018/2019</td>
<td>95.06</td>
<td>75.57</td>
<td>86.70</td>
</tr>
<tr>
<td>odd 2019/2020</td>
<td>94.41</td>
<td>70.16</td>
<td>87.58</td>
</tr>
<tr>
<td>even 2019/2020</td>
<td>95.01</td>
<td>76.09</td>
<td>86.70</td>
</tr>
</tbody>
</table>

Source: Study Program Industrial Engineering, 2020

Based on that data, the value of EDOM highest in the first semester of 2016/2017 period with a value of 100. While EDOM value was lowest in the two-year period, which is odd semester 2018/2019 and 2019/2020 semester with a value of 70.16. The table is based on the value of EDOM has experienced fluctuating value each year, declining trend. Based on the above data it means students feel there are some lecturers who have not been able to convey the material with interesting, so that students find it difficult to understand the material presented. But there is also a lecturer who presents the material to attract and provide new challenges related to a given subject. It shows the level of student engagement in student interest aspects of the lecturers and course materials.

Student Engagement and learning achievement are related because basically when the engagement of high student achievement of the student will be high as well. When one has a high engagement he will carry out the task of college as quickly as possible and in accordance with applicable regulations. As the research conducted by (Utami and Kusdiyati 2015) discusses the direct link between student engagement and learning achievement. Results from this study is that student engagement has a positive effect on learning achievement.

### 2. Literature review

#### 2.1 Student Engagement

Student engagement according to Trowler (2010) attachment of students related to the interaction between time, effort and other relevant resources invested by the students and their institutions that aims to optimize the experience of students and improve learning outcomes, student development and performance, as well as the reputation of the institution. Student engagement are wide phenomenon which includes the experience of students in the classroom and outside the classroom (Susilawati et al., 2019). The phenomenon of the extensive involvement of students who make as if every activity is not an easy thing to be managed, causing certain perspective, the breadth of it will make the character of students to study and institution (Coates & Hamish 2006).
2.2 Achievement
Learning achievement is the ideal learning outcomes disclosures covering the domain of copyright (cognitive), shutter flavor (affective), and the realm of intention (psychometric) as a result of students' learning experience (Syah 2014). Another opinion expressed by Sukmadinata (2011) that academic learning outcomes achievement is the realization or the expansion of the skills potential or capacity of a person. Mastery learning outcomes of a good-behavior seen in the form of acquisition of knowledge, skills of thinking or motor skills. Lesson mastery level is denoted by numbers or letters, such as numbers 0-10 on primary and secondary education, while the letters A, B, C, D, E in higher education.

2.3 Research Framework and Hypotheses
The framework used in this study can be seen in Figure 1.

![Figure 1. The Research Framework](image)

Based on the theories that have been described previously, the provisional estimates or hypotheses of this study are as follows:

H0: Student engagement has no effect on student achievement study program Industrial Engineering Telkom University
H1: Student engagement has an influence on student achievement study program Industrial Engineering Telkom University

3. Research Methodology

3.1 Data Analysis
Data analysis techniques used in this research is descriptive analysis techniques. According to Sugiyono (2016); Ramdhani et al. (2017), descriptive analysis of statistics used to analyze data in ways that describe or depict the data that has been collected as without meaning make conclusions or generalizations apply to the public. This study will use descriptive statistics to determine the size frequency distribution and central tendency like average, maximum value and minimum value.

3.2 Measurement
Questionnaire to measure student engagement variables in this study consist of 30 questions. The scale in this study consisted of 4 Likert scale, Strongly Disagree (STS), Disagree (TS), Agree
(S), Strongly Agree (SS). Cronbach’s Alpha value of 0.906 while the variable learning achievement using secondary data, student GPA. In the process of using IBM SPSS data processing. This study examined student engagement as the independent variable and learning achievement as the dependent variable.

Table 3. Questionnaire Design

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td><strong>Affective: Liking for learning</strong></td>
</tr>
<tr>
<td>1.</td>
<td>I am very interested in what I learned in college</td>
</tr>
<tr>
<td>2.</td>
<td>I think what I learned in college draw</td>
</tr>
<tr>
<td>3.</td>
<td>I liked what I learned in college</td>
</tr>
<tr>
<td>4.</td>
<td>I enjoy new lessons given in class</td>
</tr>
<tr>
<td>B</td>
<td><strong>Affective: Liking for school</strong></td>
</tr>
<tr>
<td>5.</td>
<td>I love my campus</td>
</tr>
<tr>
<td>6.</td>
<td>I am proud to college here</td>
</tr>
<tr>
<td>7.</td>
<td>I’m always excited to come to campus</td>
</tr>
<tr>
<td>8.</td>
<td>I am happy to be on campus</td>
</tr>
<tr>
<td>C</td>
<td><strong>Behav: Effort and persistence</strong></td>
</tr>
<tr>
<td>9.</td>
<td>I’m trying to do the best campus</td>
</tr>
<tr>
<td>10.</td>
<td>In class I did my best</td>
</tr>
<tr>
<td>11.</td>
<td>When in the classroom, I participated actively in class activities</td>
</tr>
<tr>
<td>12.</td>
<td>I pay attention in class</td>
</tr>
<tr>
<td>13.</td>
<td>When in the classroom I just pretend to be busy doing something</td>
</tr>
<tr>
<td>14.</td>
<td>In college, I had enough with what I got today</td>
</tr>
<tr>
<td>15.</td>
<td>If I get the problem I do not understand, I’ll keep trying until I understood</td>
</tr>
<tr>
<td>16.</td>
<td>When I get a difficult task, I will try to complete the task</td>
</tr>
<tr>
<td>D</td>
<td><strong>Behav: Extracurricular activities</strong></td>
</tr>
<tr>
<td>17.</td>
<td>I was active in the activities held on campus such as, seminars, sporting events, performing arts, etc.</td>
</tr>
<tr>
<td>No.</td>
<td>Statement</td>
</tr>
<tr>
<td>-----</td>
<td>-----------</td>
</tr>
<tr>
<td>18.</td>
<td>I volunteered to help the activities organized by the campus such as seminars, pertandingan sports, performing arts, etc.</td>
</tr>
<tr>
<td>19</td>
<td>I am actively involved in campus organizations such as, HIMA, BEM, DPM, SMEs etc.</td>
</tr>
<tr>
<td>E</td>
<td>Cognitive.</td>
</tr>
<tr>
<td>20</td>
<td>When studying, I try to understand the course materials related to the things that I've known before</td>
</tr>
<tr>
<td>21</td>
<td>When studying, I am looking for information that might be useful real life</td>
</tr>
<tr>
<td>22</td>
<td>When learning new things, I try to look for ideas using phrases and words that I understand</td>
</tr>
<tr>
<td>23</td>
<td>When studying, I try to connect what I have learned by experience that I had</td>
</tr>
<tr>
<td>24</td>
<td>I make an example to help me understand the key concepts learned in college</td>
</tr>
<tr>
<td>25</td>
<td>When learning something on campus, I tried to see how the course can be related to real conditions before I know</td>
</tr>
<tr>
<td>26</td>
<td>I'm trying to think of a topic and decide what will I learn, as opposed to just reading a book</td>
</tr>
<tr>
<td>27</td>
<td>When learning something on campus, I often try to associate the lecture material with other materials that have been studied a different class</td>
</tr>
<tr>
<td>28</td>
<td>I tried to look at the similarities and differences between what I have learned diperkuliahan</td>
</tr>
<tr>
<td>29</td>
<td>I'm trying to understand how a material can match and complement one another</td>
</tr>
<tr>
<td>30</td>
<td>I'm trying to match what I already know what I learned diperkuliahan</td>
</tr>
</tbody>
</table>

Source: Hart et. al (2011)

4. Results and Discussion

4.1 Results
Research was conducted on students of Industrial Engineering Telkom. With a population of 1,365 students, the sample in this study amounted to 310 students who are expected to represent the population. Data obtained through questionnaires distributed through the method of sampling using probability sampling while sampling technique using incidental sampling techniques. Demographic details are exposed in Table 4.
Table 4. Respondents’ Profile

<table>
<thead>
<tr>
<th>Demographic Factors</th>
<th>Classification</th>
<th>Number of Respondents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>161</td>
<td>51.9</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>149</td>
<td>48.1</td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤20 Years</td>
<td>175</td>
<td>56.4</td>
<td></td>
</tr>
<tr>
<td>&gt; 20 Years</td>
<td>135</td>
<td>43.6</td>
<td></td>
</tr>
<tr>
<td><strong>Force</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>111</td>
<td>35.8</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>88</td>
<td>28.4</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>111</td>
<td>35.8</td>
<td></td>
</tr>
</tbody>
</table>

Source: Processed by Authors, 2020

Results of the questionnaire regarding student engagement variable which has been filled by the respondent and had been treated previously, will be briefly described at Table 5.

Table 5. Results Summary of Variable Student Engagement

<table>
<thead>
<tr>
<th>No.</th>
<th>Dimension</th>
<th>Percentage (%)</th>
<th>Criteria for Judging</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Affective / emotional (Liking for learning)</td>
<td>72.09</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Affective / emotional (liking for school)</td>
<td>69.61</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Behavioral (Effort &amp; Persistence)</td>
<td>79.27</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>Behavioral (Extracurricular)</td>
<td>69.62</td>
<td>High</td>
</tr>
<tr>
<td>5</td>
<td>Cognitive</td>
<td>75.74</td>
<td>High</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>73.26</strong></td>
<td><strong>High</strong></td>
</tr>
</tbody>
</table>

Source: Processed by Authors, 2020

Overall student engagement variables are in a category higher by 73.26% in the form of a line of continuum can be seen in Figure 2 as follows:
In the picture shows that the average percentage of variable student engagement by 73.26% and included into high category. In the behavioral dimension of research effort and & presistance sub dimension highest percentage with a percentage of 79.27%, which means that the student of Industrial Engineering Telkom has an effort and increased interest in the lecture material and assignments given by the lecturer. Percentage who have the next highest average is in the cognitive dimension with a percentage of 75.74%, followed by the dimensions of affective / emotional sub dimensions liking for learning with a percentage of 72.09% and a behavioral dimension with sub extracurricular activities with an average of 69.62%.

Calculation of classical assumption in this study using a computer program IBM Statistical Product and Service Solution (SPSS). Classic assumption test conducted consists of calculation normality test, heteroskedastic test and linearity test. According to the research done can be seen that the value Asymp. Sig (2-tailed) is equal to 0.340. because the result obtained for 0.340> 0.005, it is considered normal. Based on the test result of heteroskedastic can sig: 0.54 then considered not happen heteroskedastic because sig> 0005. Thus, if the variance of the residuals of the observations to other observations remain, then called homokedastic. Therefore, this research can be continued.

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.692</td>
<td>7.882</td>
<td>0000</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>-0001</td>
<td>-1.499</td>
<td>0697</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Achievement

Source: Processed using SPSS, 2020

From the equation above can be described as follows:
1) A constant value of 0.692 which states that if the variable student engagement (X) is zero, then the variable learning achievement (Y) worth 0,692;
2) Regression coefficient of -0.01 which means student engagement variable (X) has a contradictory relationship with learning achievement variable (Y) and each one-unit
increase student engagement variables will affect the decline in learning achievement variable (Y) $0.001$.

When viewed from the significant value of $0.135$, which means $>0.05$ means that the independent variable student engagement has no significant effect on the dependent variable learning achievement. Additionally it has the opposite effect between the two variables studied, that which if better student engagement in the study program Industrial Engineering Telkom then learning performance will decrease.

Table 7. t Test

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>0.692</td>
<td>7.882</td>
</tr>
<tr>
<td></td>
<td>Student Engagement</td>
<td>-0.001</td>
<td>-1.499</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Achievement

Source: Processed using SPSS, 2020

Based on the value of t, it can be seen that $0.697 < t_{table} 1.967$ so it can be said that the variables of student engagement (X) has no effect on learning achievement variable (Y). Therefore, we can conclude that $H_0$ and $H_1$ rejected, meaning that student engagement has no effect on student achievement study program Industrial Engineering Telkom.

4.2 Discussion

Based on the responses of respondents who have previously analyzed the variables of student engagement has a percentage of $73.26\%$ based on continuum lines including high category. Based on the three dimensions of student engagement variables are affective/ emotional namely, liking for learning and liking for school, liking for learning earn a percentage of $72.09\%$. While liking for learning earn a percentage of $69.61\%$. The next dimension is behavioral consisting of effort and persistence who obtain extracurricular percentage of $79.27\%$ and $69.62\%$ percentage gain activities. While the cognitive third dimension is to obtain a percentage of $75.74\%$. Based on these results it is known that sub-dimensional effort and persistence highest percentage with the acquisition of a percentage of $79$.

While based on a variable dependent, Obtained based on secondary data from 310 respondents. Student of Industrial Engineering have an average GPA of 3.27. It is located on the honors with the highest GPA in Industrial Engineering study program Telkom amounted to 3.98, while the lowest was 1.31.

Testing the hypothesis that aimed to find out whether the student engagement has an influence on learning achievement in the study program Industrial Engineering Telkom. Based on the value of t, it can be seen that $-1.499 < t_{table} 1.967$ so it can be seen that the variables of student engagement (X) has no effect on learning achievement variable (Y). The significant value gained significant $0.137>0.005$ means $H_0$. While the simple linear regression equation, the value of the variable constants obtained student engagement means that the coefficient is negative. Because $H_0$ is accepted, it is known that student engagement has no effect on learning achievement in the study program Industrial Engineering Telkom University.
5. Conclusion

5.1 Conclusion

Student engagement of Industrial Engineering Telkom University included into high category with a percentage of 73.71%. Student engagement, student of Industrial Engineering Telkom included into high category with a percentage of 73.71%. It shows that the student of Industrial Engineering in the classroom when trying to understand the lecture material according to ability.

Achievement of students of Industrial Engineering study program into the honors with an average GPA of 3.27. These results indicate that students at Industrial Engineering Study Program have a good record. The results show that student engagement has no effect on student achievement study program Industrial Engineering Telkom.

5.2 Suggestions

Although student engagement, student of Industrial Engineering Telkom has been very good, study program, the faculty and the university must consider several things should be improved as a quiz game, share the results of the test to the students as an evaluation, because there are still some students thought that the lesson in space classes still seem unattractive so that students feel excited to come to campus.

Based on the behavioral dimension extracurricular sub activities obtained the lowest percentage is 69.98% as there are students who lack interest in extracurricular activities. In this case the parties should Telkom University can make interesting extracurricular programs for students so that students feel honed with extra-campus organizations such as the set, BEM or SMEs. Besides community service program which is one of the missions of the study program and the University of Telkom is able to work well because the students feel the program has enormous benefits for the wider community.

Sub dimensional liking for school had the lowest percentage with the acquisition of a percentage of 69.61% and the lowest item included a question on the item number seven questions with the statement I am always excited to come to college, earned a percentage of 65.08% indicates that the student of Industrial Engineering We are still lacking the spirit to come to campus. In this case can be considered to change the early hours of lecture is at 06.30 for most classes early because during these hours the students still do not fully have the mood to learn to relieve their eagerness to come to campus.

References


Coates, and Hamish. 2006. Student Engagement in Campus-Based on Online Education. New York: Routledge Taylor an Francis Group.

