

The Effects of Development Program in ITERA Dormitory for Student Learning Achievements in First Year Stage Course

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Abstract. The development of student character starts from education process in campus life and residence. The environment is less comfortable and effective in the learning process will affect student achievement. To overcome this, the Institute of Technology of Sumatra (ITERA) provides a new student dormitory which one of the place that can provide an effective learning environment because the coaching programs provided such as peer tutors aim to develop learning achievement in TPB Program. The relationship of coaching program in the dormitory to student achievement on First Year Stage Course (TPB) can be analyzed using simple regression method. The data that used in this method are questionnaire, mid test score and final test, especially in Basic Mathematics. The results of the analysis stated that the coaching program at the Dormitory resulted in higher learning achievement than those outside the dormitory.

1. Introduction

Character development of a nation becomes very important to build the character of the nation itself. In Indonesia, the development of national character is carried out by means of intervention and habitation, which is formed through formal education (academic, co-curricular, and extra-curricular), family, and society. The Sumatra Institute of Technology (ITERA) is a campus in South Lampung, Sumatra. ITERA aims to promote, develop and disseminate science, technology, art, humanity, to improve the welfare of the people of Sumatra in particular, and the Indonesian people are in line with the dynamics of the Indonesian people and the world community, while upholding social, humanitarian and environmental values through the Tridharma college vehicle. For the purpose of creating this goal, ITERA has a program called the Joint Preparation Stage (TPB). TPB provides a foundation for science, art and technology for new students. In addition, TPB serves as a vehicle for early development of scientific attitudes and adaptation of the procedures for studying in universities. A strong foundation of science is given through the Basic Mathematics course. Initial coaching to support TPB is provided through the ITERA Dormitory by requiring students at TPB to stay in the Dormitory for 1 year. ITERA dormitories have development programs such as peer tutors who are able to improve the quality of student learning. Peer tutors are a group of students who have completed learning materials, giving assistance to students who have difficulty understanding the material they learned [1]. Peer-tutoring is defined as involving students learning from and with each other in ways which are mutually beneficial and involve sharing knowledge, ideas, and experiences among participants [2]. Peer-tutoring is systematic, peer-mediated teaching strategies [3]. Peer tutoring has been demonstrated to be successful in promoting the academic and social skills of general education students as well as special education students, including students who were identified as at-risk [4].

A student is said to have achieved its development optimally if students can get education and learning achievements that are in accordance with their talents, abilities, and interests. One of the results that can be used as a reference is learning achievement, in this case learning achievement when at TPB. Learning achievement is a value that reflects the levels of students to what extent they have achieved the goals set in each field of study [5]. The intellectual ability of students determines the success of students in obtaining achievements. To find out whether or not someone is successful in learning, it is necessary to do an evaluation, the goal is to find out the achievements of students after the teaching and learning process takes place. Based on previous research, there are factors that can affect student achievement including coaching programs. This factor is important to be re-examined because in previous studies, it was proven that peer-tutoring has a positive impact on academic outcomes such as agricultural science [6], reading [7], mathematics [8], and spelling and other subjects [9] so learning achievement students increase significantly.

Based on various problems identified in TPB ITERA, researchers were interested in conducting research to compare the learning outcomes of students living in dormitories and outside dormitories in the 2017/2018 FY TPB and analyzing how effective the relationship between the boarding process in the dormitory and the students who lived in the dormitory FY 2017/2018.

2. Methodology

This research was carried out at Institut Teknologi Sumatera (ITERA), South Lampung, Sumatera. The population in this study were all TPB students for the 2017/2018 school year consisting of 20 TPB classes totaling 1.514 students. In this study the sample was 320 students. The form of this research is a comparative research which is intended to determine the effect of the ITERA dormitory development program on TPB student achievement. The variables in this study include the dependent variable that is Learning Achievement (Y) and the independent variable is the Development Program (X). The first step is to measure the learning achievement of students living in dormitories and outside the dormitory of ITERA. Researchers use the documentation of the Middle Semester Examination (UTS) and Odd End Semester (UAS) Examinations on basic mathematics.

Questionnaire method (questionnaire) was used to obtain data regarding the training program in the ITERA dormitory. Questionnaires are prepared based on research variables and research indicators with an instrument measurement scale using a Likert scale. Instrument testing includes validity and reliability. Validity is a measurement that shows the levels of validity and error of an instrument. Reliability shows the understanding that the instrument can be trusted enough to be used as a data collection tool for instruments that are good enough [7]. Prerequisite testing uses linearity test, normality test, and multicollinearity test. While testing the hypothesis using regression analysis and F test. All testing is done with the help of SPSS 23 for Windows.

3. Experimental Result and Discussion

3.1 Comparison of Learning Achievements

Data of student learning achievement is taken from the documentation of the UTS and UAS in the basic mathematics courses. In Figure 1, it can be seen that the average value of basic mathematics learning achievement of students living in the dormitory is 71.57 and outside the dormitory is 60.76. This means that the learning achievement of students living in dormitories is 15.10% higher than the learning achievement of students living outside the dormitory at TPB.

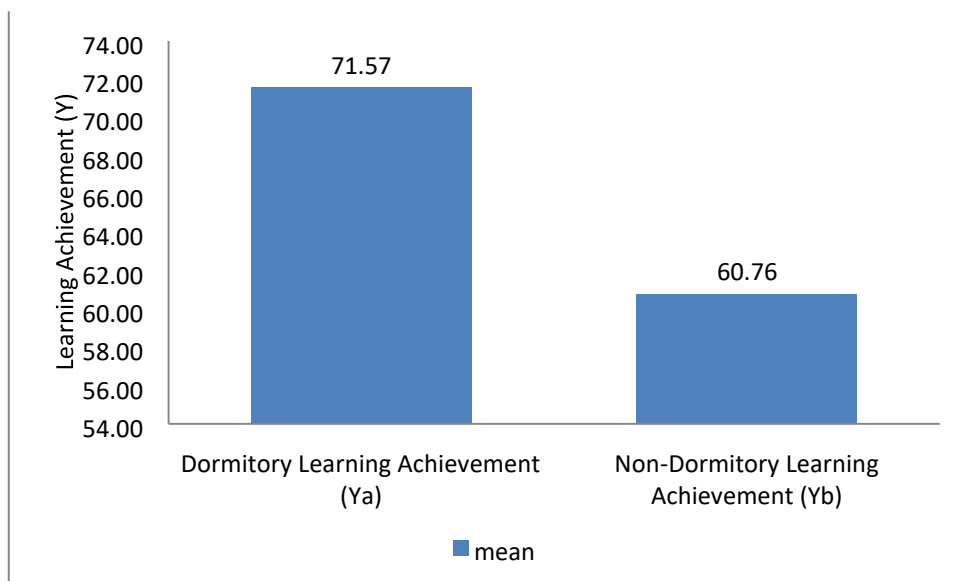


Figure 1. Comparison of learning achievement in basic mathematics

3.2 Relationship of the Development Program to Learning Achievement

3.2.1 Instrument Test

Instrument testing is done by testing the validity and reliability. In testing the validity of the questionnaire can be done by analyzing the factors and analysis of the items. In this study using the analysis of items to test the validity of each item, the scores on each item were correlated with the total score. The decision-making item is based on probability, if the probability is greater than 0.1097 then the items in the research can be used. Based on these probabilities, items that can be used in this study amount to 19 questions out of 20 questions. Reliability testing in this study uses Cronbach's Alpha more than 0.6 with the results in table 1, namely the value of Cronbach's Alpha coaching program shows the coefficient value of 0.925 is greater than 0.6, the instrument of the program is reliable. **Tabel 1.** Reliability Statistics

Cronbach's Alpha	N of Items
.925	19

3.2.2 Linearity Test

Linearity test can be seen from the value of F (Deviation from linearity) as in Table 2. The value of F which produces X against Y is 1.363 and F_{table} is 1.32 with a significant value of more than 5% that is equal to 0.064. Because the significant level produced exceeds 5% and F value is more than F_{table} , the relationship between coaching program (X) and learning achievement (Y) is linear. **Tabel 2.** Anova

	Sum of Squares	df	Mean Square	F	Sig.
Y * X	41027.230	51	804.455	7.558	.000
Between Groups	33771.817	1	33771.817	317.303	.000
Deviation from Linearity	7255.414	50	145.108	1.363	.064
Within Groups	28524.320	268	106.434		
Total	69551.550	319			

3.2.3 Normality Test

Normality test using Kolmogorov Smirnov Test can be seen in Table 3 with the results of the Sig. that is equal to 0.53 for Y and 0.2 for X. The significance level generated by Y is 0.53 and X is 0.2 more than 5%, thus the assumption of data normality is fulfilled. In Figure 2 and Figure 3, it can be seen that the curves at Y and X are shaped like bells which means that the data on Y and X are normally distributed.

Tabel 3. Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Y	.050	320	.053	.991	320	.057
X	.040	320	.200*	.989	320	.016

*. This is a lower bound of the true significance. a. Lilliefors Significance Correction

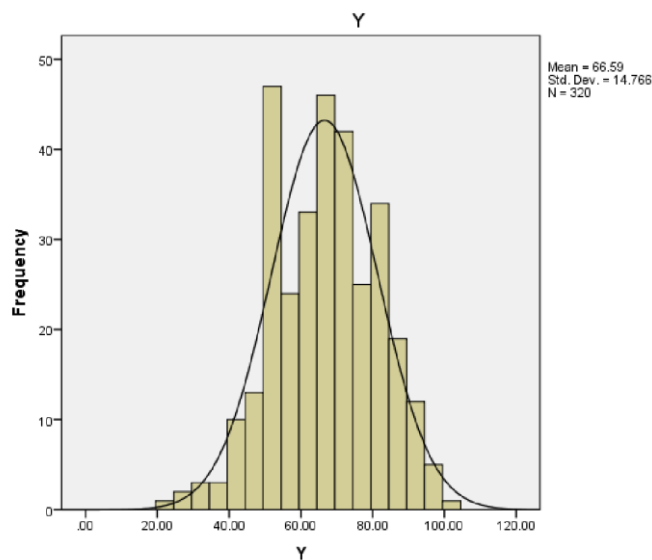


Figure 2. Learning achievement (Y) curve

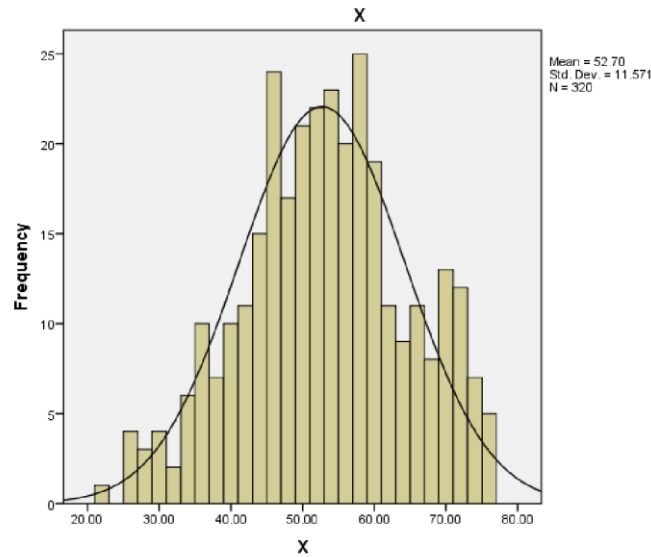


Figure 3. Development program (X) curve

3.2.4 Multicollinearity Test

Multicollinearity test is shown by table 4 coefficients by observing Collinearity Statistics in the tolerance column and VIF column. Obtained tolerance values of both variables is more than 0.1, which is 1.0 and the VIF value of both variables is less than 10, which is 1.0. Thus there is no multicollinearity between independent variables in the regression model.

Regression models obtained based on the results of the research in table 4 in the Unstandardized coefficients column, can be written in the form of regression equations are as follows:

$$Y = 19.726 + 2.769 X \quad (1)$$

with

X = development program

Y = student learning achievement in basic mathematics

From the above equation, the independent variable X has a regression coefficient with a positive direction of 2.769. This means that every additional point in the dormitory program, the learning achievement of TPB students in basic mathematics courses will increase by 2.769.

The hypothesis in this study is the influence of coaching programs at ITERA dormitory on student learning achievement at TPB. F test results based on Table 5 Anovaa or F statistical test, the model shows the Fcount value of 300.154 is greater than Ftable of 3.84 with a significance value of 0.000. smaller than 5%. Based on the decision criteria H_0 is accepted, so that the conclusion obtained is the influence of the training program significantly on the achievement of learning achievement.

The magnitude of the effect of coaching programs simultaneously on learning achievement can be seen from the coefficient of determination (R-Square) in Table 6. The results of the correlation coefficient is 0.486, which means 48.6% learning achievement is influenced by the coaching program and 51.4% is influenced by other variables.

Tabel 4. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	19.726	2.769		7.124	.000		
	X	.889	.051	.697	17.325	.000	1.000	1.000

a. Dependent Variable: Y

Tabel 5. Anova^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33771.817	1	33771.817	300.154	.000 ^b
	Residual	35779.733	318	112.515		
	Total	69551.550	319			

a. Dependent Variable: Y

b. Predictors: (Constant), X1

Tabel 6. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.697 ^a	.486	.484	10.60730

a. Predictors: (Constant), X1

4. Conclusion

Based on the results of the study it can be concluded that the differences in basic mathematics learning achievement of students living in dormitories and outside dormitories at TPB 2017/2018 are as much as 15.10%. So that TPB students are advised to stay in the dormitory and participate in coaching programs in the dormitory so that learning achievement can be further improved. There is a simultaneous influence between variables of boarding coaching programs on learning achievement. This means that coaching program variables together have a very significant influence on student achievement. In other words, the better the dormitory development program, the better student learning achievement will be. Determination coefficient (R-square) of 0.486 means that 48.6% variation in changes in learning achievement is explained by variations in changes in boarding coaching programs. While the rest of 51.4% is another factor that cannot be explained in this study. Dormitory building lecturers pay more attention to giving guidance programs to TPB students so that student learning achievements can be improved.

5. References

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