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THE ROLE OF EDUCATIONAL TECHNOLOGY ON LECTURER PERFORMANCE AND LEARNING COMMITMENT TO IMPROVE STUDENT LEARNING OUTCOMES IN BUILDING ENGINEERING

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Abstract

Lecturer performance and student learning commitment are important factors influencing student learning outcomes in this field. This study aims to examine the effect of educational technology on lecturer performance and student learning commitment and its impact on student learning outcomes in the Department of Building Engineering. The research was conducted using quantitative methods and the research sample consisted of Building Engineering students. Data were collected through questionnaires and analyzed using simple linear regression analysis techniques and path analysis to evaluate the relationship between the variables of lecturer performance, student learning commitment, and student learning outcomes. The results showed that educational technology had a positive effect on lecturer performance and student learning commitment, and lecturer performance and student learning commitment also had a positive effect on student learning outcomes. In addition, the research results also show that student learning commitment has a mediating role between lecturer performance and student learning outcomes. Therefore, the use of educational technology can improve lecturer performance, student learning commitment, and student learning outcomes in the Department of Building Engineering.

Keywords: building engineering, educational technology, lecturer performance, learning commitment, learning outcomes

Introduction

Education is an important factor in the formation of quality human resources. Universities have an important role in providing quality education for students, and lecturers are key in the learning process in tertiary institutions (Anggraeni, 2017). On the other hand, students also play an important role in the learning process, namely by showing a high commitment to learning to achieve better learning outcomes. Currently, technological developments have a major impact on the world of education. Educational technology allows students and educators to access and share information and knowledge online. This allows students and lecturers to carry out the learning process online, which in turn can improve learning outcomes.

In education, lecturer performance and student learning commitment are important factors that affect learning outcomes. Lecturer performance and student learning commitment are interrelated factors and affect student learning outcomes (Azizah & Fauziati, 2017). Therefore, the

role of educational technology in improving lecturer performance and student learning commitment is very important. In addition, in the field of Building Engineering, student learning outcomes are very important because they involve technical skills that require deep understanding and practical skills. However, there are still problems in achieving the expected learning outcomes in this field, where some students still have difficulty understanding the material and applying it in practice (Hidayat & Setiawan, 2018). Several problems can be identified in achieving the expected learning outcomes in the field of Building Engineering such as poor lecturer performance (Budiono & Utami, 2017). This can be explained that poor lecturer performance can affect student learning outcomes. Several factors affecting lecturer performance include teaching skills, the ability to explain material clearly and systematically, and the ability to motivate students (Darmawan & Sari, 2018). In addition, another problem is the low student learning commitment. Low student learning commitment is also a problem in achieving the expected learning outcomes in the field of Building Engineering. Students who lack the motivation to study and are not serious about attending lectures and doing the assignments given can affect their learning outcomes. The next problem is students' difficulties in understanding the material and applying it in practice. The field of Building Engineering requires a deep understanding and practical skills (Fitria & Rustam, 2018). However, some students have difficulty understanding the material and applying it in practice. This can affect student learning outcomes in this field.

Several previous studies have offered solutions to overcome problems related to lecturer performance, student learning commitment, and student learning outcomes in the field of Building Engineering such as training and developing teaching skills for lecturers. Previous researchers suggested that lecturers be given training and development of teaching skills to improve teaching skills and the ability to explain material clearly and systematically (Iriani, 2019). Lecturers also need to be rewarded and recognized for their good teaching performance to motivate them to continue to improve their performance (Nugraha & Rahman, 2020). The next solution is to increase student learning motivation. To increase student learning commitment, several researchers suggest increasing learning motivation through interesting and innovative learning methods, giving awards and recognition for student learning outcomes, and using technology in learning. In addition, the solution can be in the form of increasing students' practical skills. To overcome student difficulties in applying the material in practice, several researchers suggest increasing students' practical skills through learning that is more focused on practice, using simulations and practical projects, and using technology in learning. The next solution is to increase cooperation between lecturers and students. Good cooperation between lecturers and students can also help improve student learning outcomes in the field of Building Engineering. Lecturers can provide guidance and encouragement to students, while students can provide input and feedback on learning. These solutions can provide guidance for lecturers and students to improve their learning performance and commitment as well as improve student learning outcomes in the field of Building Engineering. However, the right solution for problems related to lecturer performance, student learning commitment, and student learning outcomes in the field of Building

Engineering may vary depending on the situation and conditions in each higher education institution.

But this has not been able to overcome all the problems that arise, especially in learning contexts where there are lecturers, there are still gaps that must be completely resolved. This is because there are still research limitations in examining the relationship between lecturer performance and student learning commitment. Most of the previous research only focused on lecturer performance or student learning commitment separately, without examining the relationship between the two. Therefore, it is necessary to conduct research that examines the relationship between lecturer performance and student learning commitment in a more comprehensive manner. In addition, the limitations of previous research in measuring student learning outcomes comprehensively. Previous research tended to only measure student learning outcomes through academic grades or exams, without paying attention to students' ability to apply the concepts they had learned in practice. Therefore, it is necessary to conduct research that measures student learning outcomes in a more comprehensive manner, including their ability to apply these concepts in practice. Limitations of previous research in examining the relationship between lecturer performance, student learning commitment, and student learning outcomes. Previous research has not fully examined the complex relationship between lecturer performance, student learning commitment, and student learning outcomes in a comprehensive manner. Therefore, it is necessary to conduct more holistic research and examine the relationship between these three variables together. By filling this research gap, it is hoped that this research can make a significant contribution to developing a model of the relationship between lecturer performance and student learning commitment to improving student learning outcomes in the field of Building Engineering.

This study aims to determine the role of educational technology in lecturer performance and student learning commitment to improving student learning outcomes in the Department of Building Engineering. With the existence of educational technology, it is hoped that lecturer performance and student learning commitment can increase so that student learning outcomes can also increase. In addition, this study will also evaluate the relationship between lecturer performance and student learning commitment to student learning outcomes in the field of Building Engineering. In this study, lecturer performance was measured in terms of teaching ability and ability to explain material clearly and systematically. Meanwhile, student learning commitment is measured in terms of learning motivation and seriousness in attending lectures and carrying out the assignments given. Therefore, this research is very important to evaluate the relationship between lecturer performance and student learning commitment to student learning outcomes in the field of Building Engineering. This research is expected to provide solutions to improving student learning outcomes in this field by improving lecturer performance and increasing student learning commitment. By evaluating the relationship between lecturer performance and student learning commitment and student learning outcomes, this research is expected to provide an important contribution to the development of education in Building

Engineering. This research is expected to provide a deeper understanding of the role of educational technology in lecturer performance and student learning commitment in improving student learning outcomes in the Department of Building Engineering. In addition, the results of this study are also expected to provide recommendations for tertiary institutions in the development of educational technology to improve student learning outcomes. Another thing is that the results of this study are expected to provide guidance for lecturers and students in improving learning outcomes in this field. In addition, this research can also provide new insights for further research on lecturer performance and student learning commitment in the field of Building Engineering.

Method

The research method to be used is the survey method, with causal techniques (Sugiyono, 2017). In conducting data analysis, is there or is not the influence of one variable on other variables using path analysis, with the following structural model:

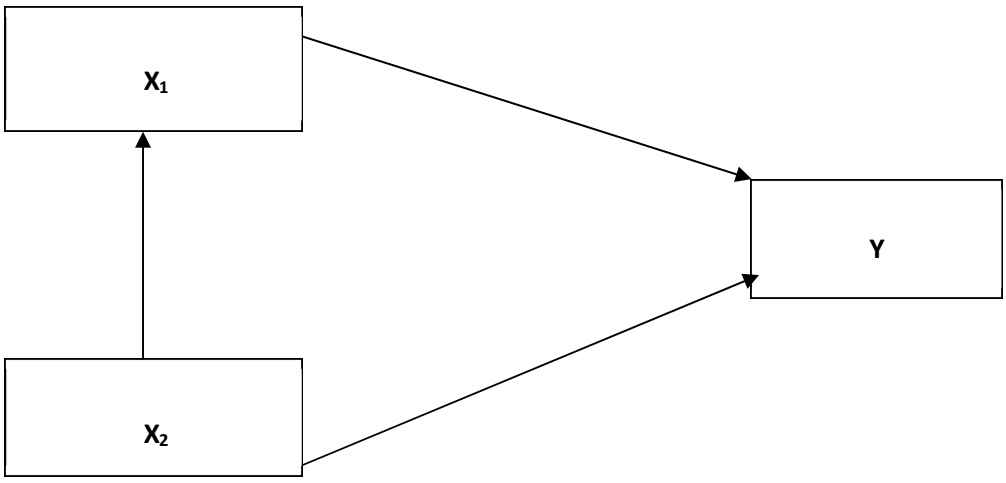

Figure 1. Structural Model of the Effect of Exogenous Variables on Endogenous Variables

Information:

Y : Student learning outcomes.

X1 : Lecturer Performance

X2 : Learning commitment.

In the study, it consisted of two exogenous variables as independent variables (causes), namely lecturer performance (X1) and learning commitment (X2), while endogenous variables were the dependent variable (caused variable), namely student learning outcomes (Y).

Research Place

This research was conducted on Building Engineering Education students, Faculty of Engineering, Manado State University (UNIMA). Basic considerations chosen as a place of research; First, having a large enough number of students so that research can be carried out in one place. Second, students are relatively homogeneous so they have the same characteristics. Third, students are on campus so that they can support the ease of conducting research. Fourth, the researcher is one of the lecturers who teaches engineering at the Manado State Faculty of Engineering.

Research time

The research was carried out for approximately 4 months starting from March 2022 to June 2022. Prior to data collection, several preparatory activities related to research were carried out, such as compiling a theoretical framework and conducting seminars on theoretical studies to be used, then the preparation of instruments and instrument trials.

Population and Sample

The population in this study consisted of the target population, namely all students who sat in the even semester of 2021/2022 and the reachable population were students of the Building Engineering Education Study Program, Manado State University, who sat in semester VI of 304 students.

Withdrawal or making samples from the population to represent the population is due to raise research conclusions as something that applies to the population. This study took samples using a purposive sampling technique. In this study, the number of samples used was 100 (one hundred) or 33% of the total affordable population of 304 students of the Faculty of Engineering, Unima, Building Engineering Study Program, at the same time to meet the requirements of path analysis.

Data collection technique

Data collection techniques in this study for the three variables, namely: lecturer performance variables, learning commitment using a questionnaire with a Likert scale model. Meanwhile, student learning outcomes are taken based on the results of combining the learning outcomes of 3 engineering courses

Lecturer Performance Validity Testing

Performance instrument validation was carried out by analyzing the relationship between the score of each item and the total score using the Pearson's Product Moment formula, from this calculation it produced valid and invalid items, invalid instrument items were not used in the study. The performance instrument is a questionnaire consisting of 30 statement items. The validity of the instrument items is determined by comparing the magnitude of the rxy obtained with the critical value of r Pearson Product Moment at n = 30, if r count r table, then the instrument items are

valid and will then be used for data collection. conversely, if r count <r table, then the item is not valid and will not be used in further research. In the table, the critical value of r table Pearson's Product Moment is known to be 0.36 for n = 30 with α = 0.05. Test the validity of the performance instrument is done with the help of Microsoft Excel.

In order to test the validity of the items that have been prepared, the instrument trials are first conducted, then item analysis is carried out, namely by correlating the item scores with the total score of the instrument. For the purposes of measuring the validity of the instrument items, the Pearson Product Moment correlation formula is used as follows:

$$r_{tt} = \frac{\Sigma y_i y_t}{\sqrt{\{(\Sigma y_i^2)(\Sigma Y_t^2)\}}} \qquad (1)$$

Based on the calculation results obtained 27 valid items and 3 invalids (drop), namely; items 3,5, and 7.

Calculation of Lecturer Performance Reliability

Reliability testing is carried out to find out to what extent the results of a measurement can be trusted or reliably. The reliability of valid performance instrument items was analyzed using the Alpha Cronbach technique. The calculation of the instrument reliability coefficient was carried out after the invalid items were not used in the study so that they were not taken into account in this calculation. The reliability calculation was carried out using the SPSS For Windows program. Reliability is indicated by the number of instrument reliability coefficients with the Alpha Crombach formula as follows:

$$r_{11} = \left[\frac{k}{(k-1)}\right]\left[1 - \frac{\Sigma \sigma_b^2}{\sigma_t^2}\right] \qquad (2)$$

description:

r_{11} = instrument reliability

K = the number of questions or the number of questions

$\sum \sigma_b^2$ = number of item variants

Based on the results of calculating the reliability of performance instruments, the magnitude of α = 0.948 is obtained. This means that performance instruments have fairly high reliability.

Learning Commitment Validity Test

Validation of the learning commitment instrument was carried out by analyzing the relationship between the score of each item and the total score using the Pearson's Product Moment

formula, from this calculation it produced valid and invalid items, invalid instrument items were not used in the study.

The learning commitment facility instrument is a questionnaire consisting of 30 statement items. The validity of the instrument items is determined by comparing the magnitude of the rxy obtained with the critical value of r Pearson Product Moment at n = 30, if r count □ r table, then the instrument items are valid and will then be used for data collection. Conversely, if r count <r table, then the item is not valid and will not be used in further research. In the table, the critical value of r table Pearson's Product Moment is known to be 0.36 for n = 30 with α = 0.05. The validity test of the learning facility instrument was carried out with the help of Microsoft Excel. In order to test the validity of the items that have been prepared, the instrument trials are first conducted, then item analysis is carried out, namely by correlating the item scores with the total score of the instrument. For the purposes of measuring the validity of the instrument items, the Pearson Product Moment correlation formula is used as follows:

$$r_{tt} = \frac{\Sigma y_i y_t}{\sqrt{\{(\Sigma y_i^2)(\Sigma Y_t^2)\}}} \qquad (3)$$

Based on the calculation results obtained 28 valid items and 2 invalid (drop), namely; points 7 and 15.

Learning Commitment Reliability Calculation

Reliability testing is carried out to find out to what extent the results of a measurement can be trusted or reliably. The reliability of valid learning commitment instrument items was analyzed using the Alpha Cronbach technique. The calculation of the instrument reliability coefficient was carried out after the invalid items were not used in the study so that they were not taken into account in this calculation. The reliability calculation was carried out using the SPSS For Windows program. Reliability is indicated by the number of instrument reliability coefficients with the Alpha Crombach formula as follows:

$$r_{11} = \left[\frac{k}{(k-1)}\right]\left[1 - \frac{\Sigma \sigma_b^2}{\sigma_t^2}\right] \qquad (4)$$

description:

r_{11} = instrument reliability

K = the number of questions or the number of questions

$\sum \sigma_b^2$ = number of item variants

Based on the results of the calculation of the reliability of the learning commitment instrument, the magnitude of $\alpha = 0.966$ is obtained. This means that the commitment instrument has fairly high reliability.

Data analysis technique

Data analysis techniques in this research use path analysis to reveal whether there is a direct effect of each variable as previously hypothesized. The stages in data analysis techniques with path analysis techniques will be explained as follows:

1. In the early stages of conducting descriptive statistical analysis, by describing the data for each variable, through the average score, mode, median, standard deviation, variance, and frequency and histogram.
2. In this second stage, test the analysis requirements through the normality test of estimated error data with the Liliefors formula, significance test and simple linearity regression as a continuation for hypothesis testing.
3. This third stage is the stage of disclosing the hypothesis using the "t" significance test analysis

Results and Discussion

Data on student learning outcomes

Data on student learning outcomes collected through student documents based on the odd semester final grades with score ranges between 58 – 84.

The results of data analysis showed that the average score was 70.81, the standard deviation or standard deviation was 6.758, the median was 71, and the mode was 66. The number of class 7 and length of class 4. The results of data processing are shown in the following frequency distribution table. See table 1.

Table 1. Frequency Distribution of Student Learning Outcomes Scores

Number	Class Intervals	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
1	58 - 61	8	8.00	8.00
2	62 - 65	11	11.00	19.00
3	66 - 69	20	20.00	39.00
4	70 - 73	29	29.00	68.00

5	74 - 77	13	13.00	81.00
6	78 - 81	11	11.00	92.00
7	82 - 85	8	8.00	100.00
Amount		100	100	

Based on the mean value of 70.81 which is located in class intervals 70 – 71 it can be seen that 29 respondents (29.00%) score student learning outcomes the same as the average, 39 respondents (39%) below the average, and 32 respondents (32 %) above average.

Lecturer performance

Based on lecturer performance data collected through a questionnaire containing 27 statement items with a value scale of 1-5, indicating the theoretical range is between 27-135. The answers given range from 101-135 with a range of 34.

The results of data analysis showed that the average score was 119.13, the standard deviation or standard deviation was 7.132, the median was 120, and the mode was 114. The number of class 7 and the length of class 5. The data processing results are shown in table 2 of the frequency distribution.

Table 2. Frequency Distribution of Lecturer Performance Scores

Number	Class Intervals	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
1	101 - 105	5	5.00	5.00
2	106 - 110	6	6.00	11.00
3	111 - 115	19	19.00	30.00
4	116 - 120	26	26.00	56.00
5	121 - 125	28	28.00	84.00
6	126 - 130	10	10.00	94.00
7	131 135	6	6.00	100.00
Amount		100	100	

Based on the mean value of 119.13 which is located in class intervals 116 – 120 it can be seen that 26 respondents (26%) the lecturer's performance score is the same as the average, 30 respondents (30%) are below the average, and 44 respondents (44%) above average.

Study commitment

Based on data on commitment to learning collected through a questionnaire containing 28 statement items with a value scale of 1-5, indicating a theoretical range between 28-140. The answers given ranged from 102-135 with a range of 33.

The results of data analysis showed that the average score was 120.09, the standard deviation or standard deviation was 8.627, the median was 121, and the mode was 121. The number of class 7 and the length of class 5. The data processing results are shown in table 3 of the frequency distribution.

Table 3. Frequency Distribution of Learning Commitment Scores

Number	Class Intervals	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
1	102 - 106	9	9.00	9.00
2	107 - 111	11	11.00	20.00
3	112 - 116	17	17.00	37.00
4	117 - 121	18	18.00	55.00
5	122 - 126	21	21.00	76.00
6	127 - 131	15	15.00	91.00
7	132 - 136	9	9.00	100.00
Amount		100	100	

Based on the mean value of 120.09 which is located in class intervals 117 – 121 it can be seen that 18 respondents (18%) score commitment to learning is the same as the average, 37 respondents (37%) are below the average, and 45 respondents (45%) above average.

Data Normality Test

Testing the normality of each variable is carried out with the intention of knowing whether the distribution of data from each variable does not deviate from the characteristics of normally

distributed data. The normality test was performed on the estimated error of the regression Y over X_1, Y over X_2, using the Lilliefors test statistic.

Testing the error estimate of the regression Y on X1 produces a maximum value of L_{count} of 0.070 while Ltable at an alpha significance level of 0.05 obtains a value of 0.089. It turns out that $L_{count} < L_{table}$ or 0.070 < 0.089. Thus, it can be concluded that the error estimate of Y over X_1 is normally distributed.

For testing the error estimate of the regression Y over X_2, it produces a maximum value of L_{count} of 0.020, while L_{table} at a significant alpha level of 0.05 obtains a value of 0.089. It turns out that $L_{count} < L_{table}$ or 0.020 < 0.089. Thus, it can be concluded that the error estimate of Y over X_2 is also normally distributed.

Testing the error estimate of the regression X_2 over X_1 produces a maximum value of L_{count} of 0.067, while L_{table} at an alpha significance level of 0.05 obtains a value of 0.089. It turns out that $L_{count} < L_{table}$ or 0.067 < 0.089. Thus, it can be concluded that the error estimate of X_2 over X_1 is normally distributed.

Therefore, the estimated errors of Y over X_1, Y over X_2, and X_2 over X_1, are normally distributed. Thus, testing the hypothesis using correlation and regression analysis can be done. The results of the normality test as a whole can be seen in Appendix 6. Meanwhile, a summary of the results of the normality test as a whole can be seen in Table 4.

Table 4. Summary of Estimated Error Normality Test

No	Estimate Error	L_0	$L_{tabel(0.05)}$	$L_{tabel(0.01)}$	Information
1.	Y atas X_1	0,074	0,089	0,104	Normal
2.	Y atas X_2	0,020	0,089	0,104	Normal
3.	X_2 atas X_1	0,076	0,089	0,104	Normal

Information:

Y = Student learning outcomes

X1 = lecturer performance

X2 = Learning commitment

Table 4 explains that data on lecturer performance, learning commitment, learning outcomes, and student learning outcomes come from populations with normal distribution. Due to the fulfillment of the standard error standard error normality requirements, the use of path analysis can be done.

Linearity Test and Significance of Regression and Correlation

One of the prerequisites for path analysis is that the relationship between the independent variable and the dependent variable is linear. To test the linearity, a simple regression analysis was performed.

Test the Linearity and Significance of the Regression Equation between X1 and Y

The calculation of the regression test on student learning outcomes variable data on lecturer performance produces a regression direction b of 0.537 and a constant of 6.801. Thus, the form of the relationship between the two variables can be described by the regression equation $\hat{Y} = 6.801 +0.537X1$. See table 5

Tabel 5. Results of Analysis of the Significance of the Regression Equation Test

$$\hat{Y} = 6,801 +0,537\, X_1$$

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1453.648	1	1453.648	46.437	.000[a]
	Residual	3067.742	98	31.303		
	Total	4521.390	99			

a. Predictors: (Constant), X_1

b. Dependent Variable: Y

Based on the results of the regression significance test through calculations using the SPSS program presented in Table 5, it can be seen that the calculated F-value is = 46.437, while the F-table price with dk 1 and denominator 98 at a significance level of 0.01 is = 6.96. This shows that the calculated F value is greater than the F-table value, thus it can be concluded that the coefficient of the Y regression direction over X_1 is "very significant" at the 0.01 significance level.

Furthermore, for the regression linearity test through calculations using the SPSS program presented in Table 6, the linearity Fcount price = 0.898, while the Ftable price with dk 25 and denominator dk 73 at a significance level of 0.05 = 2.07, thus it can Bajwa concluded, the regression equation between lecturer performance and student learning outcomes Y = 6.801 + $0.537X_1$ is linear. See table 6.

Table 6. Results of Regression Equation Linearity Test Analysis

$$\hat{Y} = 6{,}801 + 0{,}537\, X_1$$

ANOVA Table

			Sum of Squares	df	ean Squar	F	Sig.
Y * X1	Between Groups	(Combined)	2175.307	26	83.666	2.603	.001
		Linearity	1453.648	1	1453.648	45.231	.000
		Deviation from Linearity	721.659	25	28.866	.898	.606
	Within Groups		2346.083	73	32.138		
	Total		4521.390	99			

Test the Linearity and Significance of the Regression Equation between X_2 and Y

The calculation of the regression test on student learning outcomes variable data on student learning commitment produces a regression direction b 0.445 and a constant of 17.335. Thus, the form of the relationship between the two variables can be described by the regression equation $\hat{Y}$ = 17.335 +0.445X3, see table 7.

Table 7. Results of the Regression Equation Significance Test Analysis

$$\hat{Y} = 17{,}335 + 0{,}445\, X_3$$

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1393.191	1	1393.191	43.646	.000[a]
	Residual	3128.199	98	31.920		
	Total	4521.390	99			

a. Predictors: (Constant), X_2

b. Dependent Variable: Y

Based on the results of the significance and linearity tests presented in Table 7, it shows that the F-count value is = 43.646, while the F-table price with dk 1 and denominator dk is 98 at a significance level of 0.01 = 6.96, the F-count value is greater than the value of the F-table, it can be concluded that the coefficient of the Y regression direction on X_2 is "very significant" at a significance level of 0.01, as shown in Table 7.

Furthermore, the results of the linearity test shown in Table 8 obtained the value of F_{count} linearity = 0.92 <from F_{table} which is equal to 1.62). This means that the regression equation between learning commitment and student learning outcomes (Y = 17.335 +0.445X3) is linear.

Table 8. Results of Regression Equation Linearity Test Analysis

$$\hat{Y} = 17{,}335 + 0{,}445\, X_3$$

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Y * X3	Between Groups	(Combined)	2299.009	31	74.1	2.2	.003
		Linearity	1393.191	1	1393.1	42.6	.000
		Deviation from Linearity	905.818	30	30.1	.9	.584
	Within Groups		2222.381	68	32.6		
	Total		4521.390	99			

Test the Linearity and Significance of the Regression Equation between X_1 and X_2

The calculation of the regression analysis on the lecturer performance variable data on learning commitment produces a regression direction b of 0.479 and a constant of 63.052. Thus, the form of the relationship between the two variables can be described by the regression equation = $63.052 + 0.479X_1$.

Table 9. Results of the Regression Equation Significance Test Analysis

$$X_3 = 63{,}052 + 0{,}479X_1$$

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1154.269	1	1154.269	19.264	.000[a]
	Residual	5871.921	98	59.918		
	Total	7026.190	99			

a. Predictors: (Constant), X_1

b. Dependent Variable: X_2

Based on the results of the significance test of the regression equation presented in Table 9, the F-count value is = 19.264 while the F-table price with dk 1 and denominator 98 at a significance level of 0.01 is 6.96, this shows that the F-count value is greater than the value of the F-table, it can be concluded that the coefficient of the regression direction on X1 is "very significant" at the 0.01 significance level.

Furthermore, from the results of the linearity test presented in Table 10, it is obtained that the value of Fcount linearity = 1.140 < from the price of Ftable which is equal to = 2.07). This means that the direction of regression between learning facilities and student learning independence ($X_3 = 63.052 + 0.479X_1$) is linear.

Table 10. Results of Linearity Equation Regression Test Analysis

$$X_3 = 63{,}052 + 0{,}479X_1$$

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
X3 * X1	Between Groups	(Combined)	2802.752	26	107.798	1.863	.020
		Linearity	1154.269	1	1154.269	19.951	.000
		Deviation from Linearity	1648.483	25	65.939	1.140	.325
	Within Groups		4223.438	73	57.855		
	Total		7026.190	99			

Hypothesis test

Testing the prerequisite analysis, it can be seen that the relationship between the independent variable and the dependent variable is linear, the data are normally distributed, and the variance of the dependent variable based on the independent variable is homogeneous. By fulfilling the prerequisites for analysis, one of the most important requirements that must be met is the existence of a significant correlation between variables related to each other. The correlation coefficient is a coefficient that expresses the magnitude of the contribution level of the relationship obtained based on field data, after going through the correction test carried out using the SPSS 22 program with the results arranged in the following matrix form:

Table 11. Simple Correlation Matrix Between Variables

	X_1	X_2	Y
X_1	1	.405**	.567**
X_2	.405**	1	.555**
Y	.567**	.555**	1

Description = The correlation coefficient is very significant at an alpha of 0.00

In the table above it is known that all the correlation coefficients between the research variables are positive and based on calculations that the correlation coefficients are stated to be very significant at the significant level □ = 0.01, this shows that there is a positive relationship between the research variables. Furthermore, the calculation of path analysis using SPSS Version 22 in table 12.

Table 12. Calculation results of the path coefficient and t-count of the dependent variable Y

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-52.439	8.659		-6.056	.000
	X1	.251	.062	.265	4.076	.000
	X2	.115	.056	.143	2.039	.044

a. Dependent Variable: Y

Table 13. Summary of Path Coefficient Values Between Variables

Path	Path coefficient	Path Coefficient Value
X_1Y	β_{y1}	0,265
X_2Y	β_{y1}	0,143

The correlation matrix and path coefficients between variables as presented in table 13, can be presented in a structural model as shown in Figure 2.

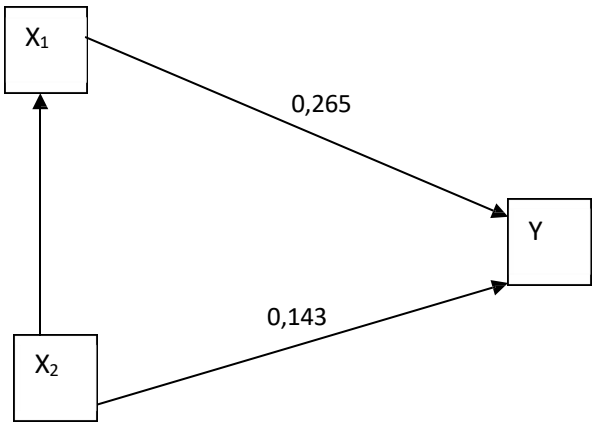

Figure 2. Model structural

In Figure 2, it can be seen that the path tcount is not significant if the tcount is smaller than the ttable, namely 1.66 for an alpha of 0.05. From the hypothesized model it can be stated that all paths are significant to student learning outcomes. Table 14 presents the details of the path coefficient calculation results.

Table 14. Summary of Structural Model Path Coefficient Calculation and Testing Results

Variable	KoefIsien β		t_{table} (α)	
		t_{count}	0,05	0,01
$X_1 - Y$	0.265	4,076**	1,66	2,36
$X_2 - Y$	0.143	2,039*	1,66	2,36
$X_2 - X_1$	0.335	4,037**	1,66	2,36

From table 14 it can be concluded that the hypothesized structural model meets the path analysis requirements.

Hypothesis test

First Hypothesis Test

The first hypothesis states that "lecturer performance (X_1) has a direct positive effect on learning outcomes (Y).

$H_0 : \beta_{y1} = 0$

$H_1 : \beta_{y1} > 0$

The results of calculating the path coefficient for the hypothesized causal model obtained the path coefficient value $\rho y_1 = 0.265$ with tcount = 4.076 and $t_{table} = 1.66$ at $\alpha = 0.05$. Because $t_{count} > t_{table}$ so that the path coefficient is significant, then H0 is rejected. That is, the first hypothesis is proven, that the lecturer performance variable has a direct positive effect on learning outcomes.

Second Hypothesis Test

The third hypothesis states that "learning commitment (X_2) has a direct positive effect on student learning outcomes (Y).

$H_0 : \beta_{y2} = 0$

$H_1 : \beta_{y2} > 0$

The results of calculating the path coefficient for the hypothesized causal model obtained the path coefficient value $\rho y_2 = 0.143$ with $t_{count} = 2.039$ and ttable = 1.66 at $\alpha = 0.05$. Because $t_{count} > t_{table}$ so that the path coefficient is significant, then H_0 is rejected. That is, the third hypothesis is proven, that the learning commitment variable has a positive direct effect on student learning outcomes.

Third Hypothesis Test

The eighth hypothesis states that lecturer performance (X_1) has a direct positive effect on learning commitment (X_2).

$H_0 : \beta_{x21} = 0$

$H_1 : \beta_{x21} > 0$

The results of calculating the path coefficient for the hypothesized causal model obtained the path coefficient value $\rho X_{21} = 0.289$ with tcount = 3.197 and $t_{table} = 1.66$ at $\alpha = 0.05$. Because $t_{count} > t_{table}$ so that the path coefficient is significant, then H_0 is rejected. That is, the eighth hypothesis is proven, that the lecturer performance variable has a positive direct effect on learning commitment.

Discussion of Research Results

Lecturer performance has a direct effect on student learning outcomes

The results of testing the hypothesis support the positive direct influence of lecturer performance on learning outcomes. This means that high or low lecturer performance has a direct effect on high or low learning outcomes. The higher the lecturer's performance, the higher the student learning outcomes. Conversely, the lower the performance of the lecturer, the lower the student learning outcomes.

The calculation results obtained path coefficient $\rho y_1 = 0.265$. Testing the hypothesis is carried out using the "t" test statistic with the provision that if the value of tcount > ttable then Ho is rejected, accept H_1. From the calculation results it is known that the value of tcount = 4.076 at the significant level $\alpha = 0.01$ with dk = 99. This finding implies that student learning outcomes can be improved directly through lecturer performance. 1. The results of this study indicate that there is a positive and significant direct effect between lecturer performance on student learning outcomes. Improved lecturer performance can result in increased student learning outcomes. The implication, if you want to improve student learning outcomes, can be done by improving lecturer performance. The results of this study also show that the use of educational technology can improve lecturer performance and positively influence student learning outcomes. The use of educational technology can assist lecturers in presenting learning material in a more interesting and interactive manner, so as to increase student interest and motivation in learning (Prasetyo & Nugroho, 2019). In addition, educational technology also allows lecturers to provide real-time

feedback on student learning progress, so that it can assist students in correcting weaknesses and improving learning outcomes.

However, the use of educational technology also has its challenges. Lecturers need to ensure that the technology used is accessible to all students and ensure that the use of technology does not reduce the interaction between lecturers and students. Therefore, it is important to properly consider the use of educational technology and ensure that its use can provide maximum benefits for lecturer performance and student learning outcomes (Sulistyowati & Sumarni, 2021).

Improving the performance of lecturers is in line with Law Number 14 of 2005 concerning Teachers and Lecturers, and Government Regulation of the Republic of Indonesia Number 37 of 2009 concerning Lecturers, it is stated that lecturers are professional educators and scientists with the main task of transforming, developing and disseminating science, technology, and art through education, research and community service (Higher Education Tridarma). In essence, the lecturer's performance is the ability to carry out the work or tasks that the lecturer has in completing a job.

Lecturers have the main task of carrying out and carrying out various main tasks of higher education, and students have the task of carrying out learning activities. In all these activities, lecturers will always be in reciprocal contact with students. This relationship will occur in all educational and learning activities, development through activities to help solve human problems through community service activities. A very intensive relationship occurs in educational and learning activities. Implementation of education and teaching will be carried out for students in science, technology, or art. In the process of education and teaching students to develop student competencies in the field of science, teaching responsibilities and competencies are needed as an effort to support the success of carrying out learning activities. However, the performance of lecturers is inseparable from the quality of the lecturers themselves. So, it can be said that the performance of the lecturer is the quality of the work done by the lecturer in the teaching or teaching and learning process.

Learning commitment has a direct effect on student learning outcomes.

The results of testing the hypothesis support the positive direct effect of learning commitment on student learning outcomes. This means that high or low learning commitment has a direct effect on high or low student learning outcomes. The higher the learning commitment, the higher the student learning outcomes. Conversely, the lower the learning commitment, the lower the student learning outcomes.

The calculation results obtained path coefficient $\rho y_2 = 0.265$. Testing the hypothesis is carried out using the "t" test statistic with the provision that if the value of $t_{count} > t_{table}$ then H_0 is rejected, accept H_1. From the calculation results it is known that the value of $t_{count} = 2.039$ at the significant level $\alpha = 0.01$ with dk = 99. This finding implies that student learning outcomes can be improved directly through learning facilities.

The results of this study also found that there was a positive and significant direct effect between learning commitment on student learning outcomes. Increasing learning commitment can lead to increased student learning outcomes. The implication, if you want to improve student learning outcomes, can be done by increasing learning commitment. The results of this study also show that the use of educational technology can increase student learning commitment and positively influence student learning outcomes. The use of educational technology can help students access information and learning materials more easily and efficiently. Apart from that, educational technology also allows students to study independently and practice problem-solving skills and creativity. In the long term, this ability can help students achieve career goals and increase their self-confidence (Pratiwi & Pertiwi, 2019).

However, the use of educational technology also has its challenges. Students need to ensure that the use of educational technology does not reduce interaction with lecturers and other students and does not reduce direct learning time in class. In addition, it should be noted that the use of educational technology can affect the quality of student learning outcomes if the technology used is ineffective or does not suit student learning needs.

In the context of using educational technology to increase student learning commitment, it is important to ensure that the technology used can provide maximum benefits for students and minimize negative impacts. In addition, it is also important to ensure that lecturers facilitate students in using educational technology and provide feedback on the use of this technology in achieving learning goals (Triyono & Widyastuti, 2018).

Efforts needed to increase learning commitment in an effort to improve learning outcomes are; (1) plan and clarify learning objectives. If students do not know the real direction, it is impossible for them to be able to learn and understand what is happening during the teaching and learning process. Write everything down and consider whether things are as expected. (2) measure the commitment that is in yourself. By taking a few hours to calculate how to spend time and what books are prioritized. How much time is planned to study at school, the library, at home and for yourself. (3) building trust in lecturers and friends to show an ability, that they are able to complete and carry out assignments given by lecturers (Rachmawati & Wibowo, 2020).

Lecturer performance has a direct effect on learning commitment.

The results of testing the hypothesis support the positive direct effect of student learning commitment to learning commitment. This means that the high or low performance of lecturers directly affects the high or low student learning commitment. The higher the lecturer's performance, the higher the student's learning commitment. Conversely, the lower the lecturer's performance, the lower the student's learning commitment.

The calculation results obtained path coefficient $\rho X_{21} = 0.289$. Testing the hypothesis is carried out using the "t" test statistic with the provision that if the value of $t_{count} > t_{table}$ then H_0 is rejected, accept H_1. From the calculation results it is known that the value of $t_{count} = 3.197$ at the

significant level α = 0.01 with dk = 99. This finding implies that learning commitment can be increased directly through lecturer performance.

The results of this study also found that there was a positive and significant direct effect between lecturer performance and student learning commitment. Improved lecturer performance can result in increased student learning commitment. The implication, if you want to increase student learning commitment, can be done by increasing lecturer performance. Increasing commitment to learning through improving lecturer performance is very much required, where lecturers are professionals, usually critical of innovation. Lecturers are important information catchers for designers of new products and systems, controllers of organizational productivity, so that their performance assessment becomes an important variable for improving student learning outcomes. On the other hand, the implications for increasing student learning commitment are deemed necessary to evaluate the performance of lecturers through students. Evaluation of lecturer performance in this case is intended to ensure that lecturer performance in learning each semester has been carried out properly in accordance with their main tasks and functions. This evaluation is also aimed at identifying good practices in order to improve the quality of the learning process (Saragih & Napitupulu, 2021).

The results of this study also show that the use of educational technology can help improve lecturer performance and in turn can affect student learning commitment. The use of educational technology can assist lecturers in presenting learning materials in a more interesting and interactive way, as well as facilitating communication and interaction between lecturers and students outside the classroom. Educational technology also allows lecturers to provide faster and more accurate feedback on student learning outcomes, as well as assist them in evaluating the effectiveness of the learning methods used (Sari & Setiawan, 2020).

Thus, the use of educational technology can help improve the performance of lecturers and enable them to be more effective in teaching. This can help increase student learning commitment because students can feel more involved and motivated in learning if the material is presented in an interesting and interactive way, and if the lecturer provides effective feedback. However, keep in mind that the use of educational technology cannot replace the actual role of the lecturer in learning. Lecturers still play an important role in guiding students in learning, and the use of educational technology should only be a tool to assist lecturers in achieving learning goals.

Conclusion

This study concludes that Based on the results of this study, it can be concluded that the use of educational technology can significantly improve lecturer performance and student learning commitment, which will ultimately have a positive impact on student learning outcomes in the field of engineering. Lecturers' good performance in using educational technology will bring a better learning experience for students, increase their active participation in the teaching-learning process, and help them to acquire the necessary knowledge and skills in the field of building

engineering. Meanwhile, learning commitment enhanced by the use of educational technology can encourage students to be more enthusiastic about learning, to be more disciplined in fulfilling their duties and responsibilities, and to more easily understand the material taught by lecturers. In addition, it can be concluded that there is a significant positive influence on lecturer performance on student learning commitment in the field of Building Engineering. This shows that good lecturer performance can increase student motivation to learn. In addition, there is a significant positive effect of student learning commitment on student learning outcomes in the field of Building Engineering. This shows that the higher the level of student learning commitment, the better student learning outcomes. There is a significant positive influence on the performance of lecturers and student learning commitment simultaneously on student learning outcomes in the field of Building Engineering. This shows that lecturer performance and student learning commitment can improve student learning outcomes together. So it can be concluded that lecturer performance and student learning commitment have an important role in improving student learning outcomes in the field of Building Engineering. Therefore, it is necessary to make efforts to improve lecturer performance and student learning commitment in the field of Building Engineering in order to improve the quality of education and student learning outcomes. Therefore, educational technology can be an effective tool to improve the quality of education in the field of building engineering. However, its use must be done wisely and according to the needs and characteristics of students and lecturers. In this case, it is necessary to make efforts to improve the skills of lecturers in using educational technology and choosing learning methods that suit the needs of students. In addition, it is also necessary to increase student awareness and motivation in using educational technology as an effective and efficient learning tool.

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