



A Comparative Analysis of the Use of Educational Media Applications to Support Teaching and Learning Activities by Faculty and Cadets Post-COVID-19 Pandemic at the Jakarta College of Maritime Studies and the Bali Land Transportation Polytechnic

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Abstract

STIP Jakarta is an educational institution under the Ministry of Transportation that has used a Learning Management System (LMS) in the form of an online learning application, namely Ed-link, during the Covid-19 pandemic and is still used today, with the aim of increasing access to learning for lecturers and cadets in the process. Teaching and learning activities at STIP Jakarta, apart from following the government's advice on implementing Social Distancing during the pandemic, however, there are still many obstacles faced in the implementation process. Similar use is also carried out at the Bali Land Transportation Polytechnic (Poltrada) which also has a similar Learning Management System (LMS), namely the use of the Smart Campus application to support learning media during the Covid 19 pandemic and the application is still used today for lecturers and cadets. The purpose of this research is to determine a comparative analysis of the two educational institutions, namely STIP and Poltrada Bali, regarding the influence of the use of the Ed-link and Smart Campus learning media applications in supporting the process of teaching and learning activities for lecturers and cadets involved in them. The research method used was quantitative descriptive by creating a questionnaire instrument which was distributed to 131 STIP lecturer and cadet respondents and 140 Bali Police lecturer and cadet respondents. Data analysis processing uses the IBM SPSS version 27.0.1 application and interpretation of the results is used as evaluation material and input to STIP institutions.

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1. INTRODUCTION

E-learning, or *electronic learning*, is a learning concept conducted through electronic media networks. Rapid technological advancements in the modern era and globalization have made it possible to carry out various activities quickly and efficiently. Technological developments have significantly influenced our way of life, particularly in the field of education, where *e-learning* is now being used in learning activities at schools, universities, training centers,

and even online communities. Along with the development of information technology and the demands of globalization in education and distance learning, various concepts have been developed to replace traditional learning methods, one of which is the concept of *e-learning*. *E-learning* can be used as an alternative to address challenges in the field of education—whether as a supplement, complement, or replacement for existing learning activities.

In the *e-learning* model, we need software to support the teaching and learning process, known

as a *Learning Management System* (LMS). Generally, a *Learning Management System* (LMS) is software designed to create, distribute, and manage the delivery of learning materials.

During the COVID-19 pandemic, all educational activities—particularly teaching and learning—were forced to be conducted online. This situation compelled all faculty members and cadets to quickly adapt to the concept of *e-learning*.

To ensure the smooth operation of *e-learning*, the role of educational institutions as gateways to all students' academic activities is crucial. Currently, several educational institutions have implemented this learning system; among them are STIP Jakarta and Poltrada Bali. As the largest maritime education institution in Indonesia, STIP Jakarta has begun using this *e-learning* system in the learning process for its faculty and cadets; the *e-learning* system itself takes the form of the *Ed-link* application. The *Ed-link* application was already in use by faculty and cadets at STIP as a means of accessing academic activities before the COVID-19 pandemic began to spread in Indonesia, which forced us to conduct all activities online. A similar initiative has also been implemented at the Bali Land Transportation Polytechnic (Poltrada), which has adopted the *Smart Campus* application as a learning platform to support the teaching and learning process for faculty and cadets.

There are numerous previous research studies that discuss the use of learning media applications during the COVID-19 pandemic, which can serve as references for this paper. The following is a relevant study: D. Yuliana and Z. Munawwir (2021) in the *National Journal of Holistic Science*, Vol. 1, No. 1, in their study titled "Analysis of the Use of *Ed-link* to Facilitate Online Learning Activities During the COVID-19 Pandemic." This study is a qualitative study using the case study method. Based on this study, it can be concluded that online learning using the *Ed-link* platform is highly effective and beneficial. The next study is by Ni Komang Suni Astini (2020) in **Cetta: Journal of Education**, Vol. 3, No. 2, titled "Challenges and Opportunities in the Use of Information Technology for Online Learning During the COVID-19 Pandemic." This study employed literature review and survey methods. Based on the findings, it was concluded that 61.5% of the cases were ineffective because students had never used online learning platforms before the COVID-19 pandemic; however, the use of these

platforms has actually accelerated the digital transformation of Indonesia's education system.

Based on the two studies mentioned above, the author is interested in conducting research to determine whether the use of learning media applications has an impact on the teaching and learning activities of faculty and cadets post-COVID-19 pandemic at two educational institutions under the Ministry of Transportation, namely STIP Jakarta and Poltrada Bali. Here, the author will compare the impacts observed at these two educational institutions. This is what distinguishes this study from previous research. The objectives of this study are as follows:

- To identify and analyze the impact of the use of educational media applications by faculty and cadets following the COVID-19 pandemic at STIP and Poltrada Bali.
- To identify and analyze the extent of the impact of the use of learning media applications by faculty and cadets following the COVID-19 pandemic at STIP and Poltrada Bali.

The benefits of this study are to provide feedback from the evaluation of the research findings to policymakers at the Indonesian Maritime Academy () to further optimize the use of online learning materials by faculty and cadets in the *e-learning* teaching and learning process at STIP.

2. METHOD

This study employs a quantitative descriptive method. The independent variable (X) in this study is the utilization of learning media applications, while the dependent variable (Y) is the teaching and learning activities of faculty members and cadets following the COVID-19 pandemic.

The data source for this study consists of primary data obtained from questionnaires. Questionnaires were administered in person to 131 respondents at STIP, comprising 22 faculty members and 109 cadets. Additionally, questionnaires were administered in person to 140 respondents at Poltrada Bali, comprising 8 faculty members and 132 cadets who were actively engaged in learning during the current semester.

The questionnaire outline is presented in Table 1.

Table 1. Questionnaire Outline

Variable	Indicator	Sub-Indicator	Question Items	
			+	-
Impact of the use of educational media	Use of learning applications	1. Availability of adequate access to training and development of educational media applications	1, 2, 3, 4, 5, 6, 7	8, 9, 10

applications (X)		2. The implementation of faculty and students utilizing educational media applications in the teaching process	
		3. Proficiency in using the internet and e-learning	
Supporting the teaching and learning activities of faculty and students (Y)	Supporting the teaching and learning activities of faculty and cadets	1. Faculty and cadet engagement 2. Faculty and cadet attendance 3. Time spent accessing e-learning 4. Motivation to use e-learning	11, 12, 13, 14, 15, 16 17, 18, 19, 20

From all the collected respondent answers, the author tabulated and processed the data using IBM SPSS version 27.0.1. According to the guidelines and requirements for simple linear regression statistical data processing using SPSS, several data testing processes must be carried out, ranging from data validity and reliability tests, normality tests, linearity and heteroscedasticity tests, as well as classical assumption tests. After generating the output for both groups of respondents—STIP respondents and Poltrada Bali respondents—the next step is to compare the results of these outputs and interpret them through analysis.

2.1. Validity Test

Validity testing is used to determine the validity or suitability of the questionnaire used by the researcher to measure and obtain research data from the respondents.

2.2. Reliability Test

The reliability test aims to determine whether the questionnaire is consistent when measurements are taken repeatedly using it. The method section may include subsections if necessary.

2.3. Normality Test

The normality test aims to determine whether the residual values are normally distributed or not. A good regression model has normally distributed residual values.

2.4. Linearity Test

The linearity test aims to determine the nature of the relationship between the independent and dependent variables.

2.5. Heteroscedasticity Test

The heteroscedasticity test aims to determine whether there is unequal variance in the residuals from one observation to another in the regression.

2.6. Simple Linear Regression Analysis

Simple regression analysis is used to determine whether there is a linear relationship between the independent variable and the dependent variable.

2.7. Coefficient of Determination Analysis

This test is conducted to determine the strength of the relationship or influence between the two variables used in the coefficient of determination analysis.

3. RESULTS AND DISCUSSION

3.1. Validity Test

In the STIP educational institution, the formula for calculating the table *r* value is: *degrees of freedom* = $n - 2$; $df = 131 - 2 = 129$. Referring to the table *r* value of 129 with a significance level of 0.05, the corresponding value is 0.1716. Meanwhile, at the Poltrada Bali training center, $df = 140 - 2 = 138$. Referring to the table, the *r* value for $df = 138$ at a significance level of 0.05 is 0.1660.

Table 2. Validity Test of Variable (X)
Use of Learning Media Applications

Statement	Calculated <i>r</i> for STIP	Table <i>r</i> $df = 129$	Note	Calculated <i>r</i> for Poltrada	Table <i>r</i> , $df = 138$	Note
Statement 1	0.839	0.1716	Valid	0.510	0.1660	Valid
Statement 2	0.863	0.1716	Valid	0.565	0.1660	Valid
Statement 3	0.823	0.1716	Valid	0.435	0.1660	Valid
Statement 4	0.851	0.1716	Valid	0.479	0.1660	Valid
Statement 5	0.836	0.1716	Valid	0.462	0.1660	Valid
Statement 6	0.836	0.1716	Valid	0.416	0.1660	Valid
Statement 7	0.725	0.1716	Valid	0.313	0.1660	Valid
Statement 8	0.557	0.1716	Valid	0.837	0.1660	Valid
Statement 9	0.558	0.1716	Valid	0.837	0.1660	Valid

Question 10	0.549	0.1716	Valid	0.758	0.1660	Valid
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Table 3. Validity test of variable (Y)
Faculty-Student Interactions Post-COVID-19 Pandemic

Statement	Calculated <i>r</i> for STIP	Table <i>r</i> df = 129	Note	Calculated <i>r</i> for Poltrada	Table <i>r</i> , df = 138	Note
Statement 1	0.632	0.1716	Valid	0.551	0.1660	Valid
Statement 2	0.795	0.1716	Valid	0.669	0.1660	Valid
Statement 3	0.793	0.1716	Valid	0.637	0.1660	Valid
Statement 4	0.768	0.1716	Valid	0.586	0.1660	Valid
Statement 5	0.760	0.1716	Valid	0.624	0.1660	Valid
Statement 6	0.573	0.1716	Valid	0.431	0.1660	Valid
Statement 7	0.757	0.1716	Valid	0.632	0.1660	Valid
Statement 8	0.785	0.1716	Valid	0.826	0.1660	Valid
Statement 9	0.747	0.1716	Valid	0.836	0.1660	Valid
Question 10	0.637	0.1716	Valid	0.715	0.1660	Valid

Tables 2 and 3 show that the calculated *r* values for each statement item—for both variable X and variable Y across both educational institutions—are greater than the table *r* values. This means that the data can be considered valid.

3.2. Reliability Test

From the reliability test results in Table 4, the *Cronbach's Alpha* values for the STIP Education and Training Center were 0.909 for the independent variable (X)—use of educational

media applications—and 0.900 for the dependent variable (Y)—instructional activities between faculty and cadets post-COVID-19 pandemic. For the Poltrada Bali training center, the *Cronbach's Alpha* value for variable (X)—the use of learning media applications—was 0.780, while for variable (Y)—lecturer and cadet classroom activities post-COVID-19 pandemic—it was 0.838. In this test the minimum acceptable value was set at greater than 0.60. Based on these results, it can be concluded that all variables in this test—X and Y—from both training institutions are reliable.

Table 4. *Cronbach's Alpha* Results

Reliability Statistics for STIP	
Cronbach's Alpha	N of Items
.909	10
Variable X	

Reliability Statistics STIP	
Cronbach's Alpha	Number of Items
.900	10
Variable Y	

Reliability Statistics for Bali	
Cronbach's Alpha	Number of Items
.780	10
Variable X	

Reliability Statistics for Bali	
Cronbach's Alpha	Number of Items
.838	10
Variable Y	

3.3. Normality Test

The results of the normality test using *standardized residuals* in Table 5 for both training institutions showed a *Kolmogorov-Smirnov* significance value of 0.089 for the STIP training institution and 0.063 for the Poltrada Bali training institution. These *Kolmogorov-Smirnov*

significance values are greater than the 5% significance level (0.05), or sig. > 0.05. This

indicates that the data for both training institutions across both variables are similarly normally distributed.

Table 5. One-Sample Kolmogorov-Smirnov Test**One-Sample Kolmogorov-Smirnov Test STIP**

			Unstandardized Residual
N			131
Normal Parameters ^{a, b}	Mean		.0000000
	Standard Deviation		9.91878071
Most Extreme Differences	Absolute		.072
	Positive		.062
	Negative		-.072
Test Statistic			.072
Asymptotic Significance (2-tailed) ^c			.089
Monte Carlo Sig. (2-tailed) ^d	Sig.		.093
	99% Confidence Interval	Lower Bound	.086
		Upper Bound	.101

a. The test distribution is normal.

b. Calculated from the data.

c. Lilliefors significance correction.

d. Lilliefors' method based on 10,000 Monte Carlo samples with a starting seed of 299883525.

One-Sample Kolmogorov-Smirnov Test, Poltrada Bali

			Unstandardized Residual
N			140
Normal Parameters ^{a, b}	Mean		.0000000
	Standard Deviation		.15713690
Most Extreme Differences	Absolute		.073
	Positive		.073
	Negative		-.059
Test Statistic			.073
Asymptotic Significance (2-tailed) ^c			.063
Monte Carlo Sig. (2-tailed) ^d	Sig.		.063
	99% Confidence Interval	Lower Bound	.057
		Upper Bound	.069

a. The test distribution is normal.

b. Calculated from the data.

c. Lilliefors significance correction.

d. Lilliefors' method based on 10,000 Monte Carlo samples with a starting seed of 299883525.

3.4. Linearity Test

Based on the Significance (Sig.) values from Table 6, the *Deviation from Linearity* Sig. value for STIP is 0.310, which is greater than 0.05. For Poltrada Bali, the *Deviation from Linearity* Sig. value is 0.154, which is also greater than 0.05.

Therefore, it can be concluded that for both educational institutions, there is a significant linear relationship between the independent variable (X)—the use of learning media applications—and the dependent variable (Y)—instructional activities between faculty and cadets—post-COVID-19 pandemic.

Table 6. ANOVA Table

ANOVA Table for STIP							
			Sum of Squares	df	Mean Square	F	Sig.
Classroom Activities	Between Groups	(Combined)	4,034.774	35	115,279	1,204	.238
Between Faculty and		Linearity	340,450	1	340,450	3,556	.062
Cadets Post-COVID-19		Deviation from	3,694.324	34	108,657	1,135	.310
Pandemic * Use of		Linearity					
Educational Media	Within Groups		9,095.363	95	95,741		
Applications	Total		13,130.137	130			
ANOVA Table for Poltrada Bali							
			Sum of Squares	df	Mean Square	F	Sig.
Classroom Activities	Between Groups	(Combined)	2,479	20	.124	5,239	.000
Between Faculty and		Linearity	1,862	1	1,862	78,693	.000

Cadets Post-COVID-19 Pandemic at Poltrada Bali *	Deviation from Linearity	.617	19	.032	1.373	.154
Utilization of Educational Media Applications	Within Groups	2,815	119	.024		
	Total	5,294	139			

3.5. Heteroscedasticity Test

From the results of the Glejser test in Table 7, it can be seen that the significance value for STIP is $0.178 > 0.05$, and the significance value for

Poltrada Bali is $0.077 > 0.05$; therefore, it can be concluded that there is no evidence of heteroscedasticity for the data from these two institutions.

Table 7. Glejser Test

Coefficients ^a STIP					
Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	10.498	1.925		5,454	.000
Use of educational media applications	-.072	.053	-.119	-1,356	.178

a. Dependent Variable: Abs_Res

Coefficients ^a Bali Police Academy					
Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	-.217	.192		-1.128	.261
Use of educational media applications	.093	.052	.150	1,784	.077

a. Dependent Variable: Abs_Res

3.6. Simple Linear Regression Analysis

Table 8. Simple Linear Regression Test

Coefficients ^a STIP					
Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	42.435	2.838		14,953	.000
Use of educational media applications	-.290	.078	-.311	-3,716	.000

a. Dependent Variable: Faculty-Student Interactions Post-COVID-19 Pandemic

Coefficients ^a Poltrada Bali					
Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	.719	.328		2.190	.030
Use of educational media applications	.773	.089	.593	8,652	.000

a. Dependent Variable: Faculty-Student Interactions at Poltrada Bali Following the COVID-19 Pandemic

Based on Table 8, the simple linear regression equations for each educational institution are as follows:

$$Y = 42.435 - 0.290 X \quad (1)$$

$$Y = 0.719 + 0.773 X \quad (2)$$

where X represents the use of learning media applications, and Y represents faculty and cadet classroom activities following the COVID-19 pandemic.

Regression equation (1) for the STIP educational institution has the following meaning: the constant a has a value of 42.435. This means that when the independent variable is 0 ($X = 0$), the

value of the dependent variable (Y) remains 42.435. The regression coefficient for variable X is -0.290, indicating a negative (opposite) relationship. This means that if the use of educational media applications increases by one unit, it will result in a decrease in the post-pandemic teaching and learning activities between faculty and cadets by 0.290 units.

Regression equation (2) for the Poltrada Bali Education and Training Center has the following interpretation: the constant a has a value of 0.719. This means that when the independent variable is 0 ($X = 0$), the value of the dependent variable (Y) will

remain at 0.719. The regression coefficient for variable X is 0.773, which is positive, indicating a direct relationship. This means that if the variable for the use of educational media applications is increased by one unit, it will result in an increase in the variable for Faculty-Student Interaction (KBM) post-pandemic by 0.773 units.

The results of the simple linear regression analysis are shown in Table 8. As seen in both cases, the (Sig.) value = $0.000 < 0.05$; therefore, it is concluded that for both sets of data, variable (X) has an effect on variable (Y).

3.7. Correlation Coefficient Analysis

Table 9. Interpretation of Correlation Coefficients

Coefficient Interval	Level of Relationship
0.000–0.199	Very Low
0.200–0.399	Low
0.400–0.599	Moderate
0.600–0.799	Strong
0.800–1.000	Very Strong

Table 10. Correlation Coefficients

Correlations STIP			
		Use of Educational Media Applications	Instructor-Student Interactions Post-COVID-19 Pandemic
Use of Educational Media Applications	Pearson Correlation	1	-.311**
	Sig. (2-tailed)		.000
	N	131	131
Classroom Interactions Between Faculty and Cadets After the COVID-19 Pandemic	Pearson Correlation	-.311**	1
	Sig. (2-tailed)	.000	
	N	131	131

** . The correlation is significant at the 0.01 level (two-tailed).

Correlations at Poltrada Bali			
		Use of Educational Media Applications	Instructor-Student Interactions at Poltrada Bali Post-COVID-19 Pandemic
Use of Educational Media Applications	Pearson Correlation	1	.593**
	Sig. (2-tailed)		.000
	N	140	140
Classroom Activities Between Faculty and Cadets Post-COVID-19 Pandemic at Poltrada Bali	Pearson Correlation	.593**	1
	Sig. (2-tailed)	.000	
	N	140	140

** . The correlation is significant at the 0.01 level (two-tailed).

This analysis uses the *Pearson* correlation approach. Table 10 shows a correlation coefficient of 0.311 for the STIP Lemdik data, which falls within the 0.200–0.399 interval, indicating a low level of relationship. Thus, it can be concluded that the strength of the relationship between variable (X) and variable (Y) is low and negative.

Conversely, the *Pearson* correlation coefficient for Poltrada Bali, at 0.593, falls within

the 0.400–0.599 range, indicating a moderate level of association. Thus, it can be concluded that the strength of the relationship between variable (X) and variable (Y) is moderate and positive.

3.8. Analysis of the Coefficient of Determination

Table 11. Model Summary

Model Summary STIP				
Model	R	R-Square	Adjusted R-Square	Standard Error of the Estimate
1	.311 ^a	.097	.090	9.589

a. Predictors: (Constant), Use of educational media applications

Model Summary Poltrada Bali				
Model	R	R-Square	Adjusted R-Square	Standard Error of the Estimate

1	.593 ^a	.352	.347	.15771
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a. Predictors: (Constant), Use of educational media applications

Table 11 shows an *R-squared* value for STIP's educational institution of 0.097 (9.7%). This means that variable (X) explains only 9.7% of the variation in variable (Y), while the remaining 90.3% is explained by other variables not included in this study.

In contrast, the *R-squared* value for the Poltrada Bali educational institution was 0.352 (35.2%). This means that variable (X) explains 35.2% of the variation in variable (Y), while the remaining 60.8% is explained by other variables not included in this study.

It is clear that variable (X) has a significantly greater influence on variable (Y) at the Poltrada Bali Educational Institution compared to STIP.

4. CONCLUSION

Based on the comparative analysis conducted on the two educational institutions—STIP and Poltrada Bali—the following conclusions can be drawn: both share a commonality, namely that there is an influence between the independent variable (X)—the use of the “ ” learning media application—and the dependent variable (Y)—teaching and learning activities of faculty and cadets—post-COVID-19 pandemic.

However, the difference lies in the level of correlation: for STIP, the correlation is lower and negative (opposite direction) compared to Poltrada Bali, which has a moderate correlation and a positive value (same direction).

The highest percentage of influence was found at Poltrada Bali, at 35.2%, compared to STIP, which had a smaller influence of 9.7% of the value of variable X affecting variable Y. Based on our field observations, this difference in percentage is quite significant and is influenced by several factors. Among these is the fact that STIP has resumed 100% in-person classes post-pandemic; consequently, the learning management system is used primarily for recording faculty and cadet attendance, as well as for uploading course materials and assignments when faculty members are on official business or ill. This is why its influence remains below 10%.

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