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INFLUENCE OF INPOWERPOT MEDIA UTILIZATION AND CAMPUS FACILITIES ON STUDENTS' MATHEMATICS LEARNING ACHIEVEMENT

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A B S T R A C T

The object of this study is to explore and discover the influence of PowerPoint media utilization and campus facilities on students' mathematics learning achievement in Universidade Nacional Timor Lorosa'e. Researchers utilized the Quantitative method with the population are 4th-semester students consisting of 120 students of referring universities and samples are 30 students. The data collection techniques are observation, questionnaires, and documentation. The Collected data has been analyzed by instrument testing in the form of validity and reliability testing, classical assumption testing, and hypothesis testing. The result showed that the significance test of the variable utilization of PowerPoint Media is greater than the significance level (0.044 < 0.05), and the calculated t-test > t table or 2.109 < 2.048. The value of the campus facilities shows test results are more than the significance level, t-test> t-table or 2.645 > 2.048. It means both variables are influencing significantly on students' mathematics learning achievement.

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INTRODUCTION

The country of Timor-Leste is a country that has restored its 18th independence, but its resources are not yet optimal. Therefore, it is necessary to exist in the education area to develop this beloved land through various aspects. It is essential to work and collaborate on all components. However, the development process to achieve good progress requires quality human resources through development in the education area (da Costa et al., 2019). According to Sukmanasa et al. (2017), to achieve this goal, it is necessary to first develop the area of education as a state institution that has the task of attending and creating conditions for the progress of development in the country, especially education (Moi et al., 2024).

Education is an effort to prepare new generations to receive and face developments in the global era (Costa, 2016). Therefore, education should be better able to produce quality education and improve the quality of people's resources. The development of technology has an impact on education. The learning process cannot be separated from the media, methods, and learning outcomes (Gusmão et al., 2020; Nurlaili, 2018). Learning media is a crucial element in the learning process. Learning media can help teachers to build students' visions. Using the different learning media can provide knowledge to students (Ramadhany & Koryati, 2015). The utilization of learning media can strengthen students' interest in learning new things in the learning material presented by the teacher so that it is easy to understand (Daryanto, 2017). Therefore, the campus is a place for educational management, and teachers are the pillars of education. Therefore, teachers are expected to be able to change mathematics learning activities by applying learning strategies and various learning resources found in students' living environments and the campus environment.

The technology used in education is an alternative for improving the quality and quantity of learning processes and outcomes. So, this can be a reference for students and teachers to try to learn and utilize educational technology in the learning process, for example, PowerPoint. According to Misbahudin et al. (2018), PowerPoint is a software from Microsoft Office that is easy to prepare, easy to use, and relatively cheap because it does not require other software to store data.

Current technological developments give up opportunities for teachers to develop and utilize media in the learning process. PowerPoint is very effective to implement in the classroom. It is easier for teachers to carry out explanations. On the

other hand, it is also easier for students to understand the learning material better. According to Wahyuni et al. (2020), Microsoft Office PowerPoint is an office slide application program that is very easy for teachers to use to deliver lessons to their students.

Mathematics is a discipline that has a principal role in education. Mathematics cannot be separated from everyday life (Handayani et al., 2018). Therefore, learning mathematics requires a teaching method that uses practice or shows knowledge through experience. In the era of globalization, the majority of students learn through technology because technology can quickly speed up the learning process so that students can obtain and use technology to support learning time and understand rapidly and better. Students can carry out learning activities well, so learning facilities and infrastructure must also be adequate because complete facilities will influence the student's learning process. According to Susanti & Wahyudin (2018), learning facilities such as study places, articles, learning media, and other facilities can facilitate learning activities and make it easier for students to solve problems in learning activities. Based on the contextualization of the problem above, this research aims to determine the effect of using PowerPoint media and campus facilities on mathematics learning achievement, both partially and simultaneously.

METHOD

Researchers utilized quantitative methods (Brito & da Costa, 2023). According to Priadana & Sunarsi, (2021), quantitative research is research that develops and uses mathematical models, theories, or hypotheses related to a phenomenon. This research was carried out at the Departamento Ensino de Matematica Faculdade Educação Arte e Humanidade Universidade Nacional Timor Lorosa'e. The population in this study was 4th-semester students consisting of 120 people. While the research sample was taken from 25% of the total population, the sample in this study was 30 students.

Data collection techniques in this research are observation, questionnaires, and documentation. According to Priadana & Sunarsi (2021), observation is a data collection technique carried out through observation, accompanied by notes on the condition or behavior of the target object. The documentation method is a data collection technique by studying existing data. A questionnaire is a data collection

technique in which respondents will give their answers to a set of questions or written statements.

The data analysis technique used is instrument testing in the form of validity and reliability testing, classical assumption testing, and hypothesis testing. According to Yusup (2018), tests carried out in research are said to be good if they have a high level of validity and reliability. The classical assumption tests used are normality, linearity, multicollinearity, autocorrelation, and heteroscedasticity. This classic assumption test needs to be carried out in research that uses linear regression (Qurnia Sari et al., 2017). Besides that, the hypothesis test used is the F-test to test the effect simultaneously and the t-test to test the effect partially.

RESULT AND DISCUSSIONS

Validity And Reliability Test Results

In this research, researchers first tested the validity and reliability of the instruments. The results of this test are as in the following table:

No	Pearson Correlation			Cronbach's Alpha			r-table	Conclusion
	X1	X2	Y	X1	X2	Y		
1	1	1	1					
2	0.941	1.000	1.000					
3	0.941	0.829	0.580					
4	0.612	0.650	0.579					
5	0.739	0.829	1.000					
6	0.773	0.853	0.580					
7	0,522	0,659	0,656	0.961	0.957	0.959	0.514	valid and reliable
8	0.612	0.650	1.000					
9	0.739	0.564	1.000					
10	0.612	0.612	0.613					
11	0.739	0.659	0.941					
12	0.624	0.650	0.941					

Table 1: Cronbach Alpha

Based on the table, SPSS output results show that the questions on variables X1, X2, and Y is valid. Because of the value of Pearson Correlation > r-table (0.514). On the other hand, the results are also reliable because the Cronbach's Alpha value > r-table (0.514). From these results, the researcher continues to use existing

questions for data collection at the next stage. Surucu & Maslakci (2020) said that for an instrument to be used for research to become an acceptable or standard measuring instrument, the measuring instrument must go through validity and reliability tests.

Classical assumption test results

The classical assumption test is used to determine whether there is normality, linearity, multicollinearity, auto-correlation, and heteroscedasticity in the regression model. This model can be said to be a good model if the model meets the requirements of classical problems as mentioned above (Qurnia Sari et al., 2017). The test results are as follows.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Utilization of PowerPoint Media	.105	30	.200*	.955	30	.233
Campus Facilities	.173	30	.022	.954	30	.216
Mathematics learning achievement	.141	30	.134	.947	30	.139

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

Table 2: Test of Normality

Table Tests of Normality in the Shapiro-Wilk shows the results of the normality test analysis as follows:

1) The variable for PowerPoint media shows a significance value of 0.233 > 0.05, so the data from this variable is normal.

2) The variable for campus facilities shows a signification value of 0.216 > 0.05, so the data from this variable is normal.

3) The variable for mathematics learning achievement shows a signification value of 0.139 > 0.05, so the data from this variable has a normal distribution.

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
mathematics learning achievement * use of Powerpoint Media	Between Groups	(Combined)	152.033	10	15.203	1.314	.291
		Linearity	41.582	1	41.582	3.594	.073
		Deviation from Linearity	110.452	9	12.272	1.061	.432
	Within Groups		219.833	19	11.570		
	Total		371.867	29			

Table 3: Linearity test of mathematics learning achievement and utilization of PowerPoint media

Based on the results in the table, it can be concluded that the variable for mathematics learning achievement and the utilization of PowerPoint Media are linear because the sig. > 0.05 (0.432 > 0.05).

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Mathematics learning achievement * Campus facilities	Between Groups	(Combined)	163.486	10	16.349	1.491	.218
		Linearity	66.315	1	66.315	6.047	.024
		Deviation from Linearity	97.170	9	10.797	.984	.483
	Within Groups		208.381	19	10.967		
	Total		371.867	29			

Table 4: Linearity test of mathematics learning achievement and campus facilities

Based on the results in the table, it can be concluded that the variable for mathematics learning achievement and campus facilities are linear because the sig. > 0.05 (0. 483 > 0.05). So that the regression test can be carried out.

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2.928	11.457		.256	.800		
Utilization of PowerPoint Media	.411	.195	.341	2.109	.044	1.000	1.000
Campus Facilities	.497	.188	.428	2.645	.013	1.000	1.000

a. Dependent Variable: mathematics learning achievement

Table 5: Multicollinearity test

Based on the table, the results show that the VIF value is 10 or 1,000 < 10 and that the tolerance is greater than 0.1 or 1,000 > 0.1, So it is concluded that there is no multicollinearity between the independent variable (utilization of PowerPoint Media and Campus Facilities) so that the regression test can be carried out.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.543[a]	.295	.242	3.117	2.054

a. Predictors: (Constant), Campus Facilities, Utilization of PowerPoint Media
b. Dependent Variable: Mathematics Learning Achievement

Table 6: Auto-correlation test

The results in the table show that the Durbin-Watson (DW) value is 1.848. The table also shows that at a significance level of 5%, the total sample is 30, and 2 independent variables get a dU value of 1.46, DL 1.18. So, the value of 4-DU = 4 – 1.46 = 2.54 and the value of 4 - DL = 4 – 1.18 = 2.82. These results show that the value of DU < DW < 4-DU. Based on this result, the researchers conclude that there is no autocorrelation. So, the regression test can be carried out.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.080E-013	11.457		.000	1.000
	Utilization of Power Point Media	.000	.195	.000	.000	1.000
	Campus Facilities	.000	.188	.000	.000	1.000

a. Dependent Variable: ABS_RES

Table 7: Heteroscedasticity test

Based on the table, the results of the heteroscedasticity test show that the value for PowerPoint Media and campus facilities is 1,000. The result also shows that the value of sig.

> 0.05. The result shows that there was no heteroscedasticity. So, the regression test could be carried out.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	109.533	2	54.767	5.637	.009[b]
	Residual	262.334	27	9.716		
	Total	371.867	29			

a. Dependent Variable: Mathematics Learning Achievement
b. Predictors: (Constant), Campus Facilities, Utilization of PowerPoint Media

Table 8: Simultaneous and partial test results Simultaneous Test (F-Test)

The results in the table show that the value of the F-test is 5.637, and the significance value is 0.009. These results show that the value of F-test is greater than the

value of F-table or 5.637 > 3.35. On the other hand, the significance value is also more than the 0.05 significance level. Based on these results, researchers concluded that the simultaneous utilization of PowerPoint Media and campus facilities influences mathematics learning achievement.

Fauziah et al. (2020) said the utilization of media, method selection, assessment systems, and the utilization of proper facilities and infrastructure are all critical. On the other hand, according to Anomeisa & Ernaningsih (2020), multimedia is considered interactive if students can interact with it

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.928	11.457		.256	.800
Utilization of PowerPoint Media	.411	.195	.341	2.109	.044
Campus Facilities	.497	.188	.428	2.645	.013

a. Dependent Variable: Mathematics Learning Achievement

Table 9: Partial test (t-test)

The results in the table show that the t-test result on the variable of PowerPoint media use is 2.109 with a significance value of 0.044. On the other hand, the t-test result on the variable of the campus facilities is 2.645 with a significance value of 0.013. Whether or not there is a partial influence of the independent variable on the dependent variable can be determined by comparing the value of the t-test and t-table or between the significance test and the significance level.

The results above show that the significance test of the variable utilization of PowerPoint Media is greater than the significance level or 0.044 < 0.05, and the calculated t-test > t table or 2.109 < 2.048. On the other hand, the value of the campus facilities variable also shows that the significance test results are more than the significance level, and t-test > t-table or 2.645 > 2.048. So, researchers concluded that partial utilization of PowerPoint media and campus facilities influences mathematics learning achievement.

Learning media are tools used in learning activities, for example, PowerPoint. The results of this study show that the utilization of PowerPoint media has a positive influence. This result is also shown in the research conducted by Nurhayati et al. (2020), that PowerPoint media influences mathematics learning achievement. Apart from

PowerPoint media, campus learning facilities also have an influence. According to Arrixavier & Wulanyani (2020), the best learning outcomes will attained, and the individual teaching and learning process will supported by a suitable learning facility.

CONCLUSIONS

Based on the results of the analysis in this research, the writer made the following conclusions:

1) The Utilization of PowerPoint Media is influencing significantly on mathematic learning achievement in the Department of Mathematics Faculty of Education Art and Humanity of UNTL (0.044 < 0.05), and calculated t-test > t table or 2.109 < 2.048.

2) The campus facilities influence significantly on mathematic learning achievement in the Department of Mathematics Faculty of Education Art and Humanity of UNTL showed that, t-test > t-table or 2.645 > 2.048.

3) The Utilization of PowerPoint media and campus facilities has simultaneously influenced the students' mathematics achievement of the 4th-semester students in the mathematics department of the Faculty of Education Art and Humanity is F- table or 5.637 > 3.35.

Based on the findings of this research, the writer recommended that students make the best of their time to study by taking advantage of technology media facilities on the campus to facilitate the learning process and also need high student creativity. The other researchers can further develop into other variables so that the utilization of PowerPoint media in the learning process can meet the quality of students' studies for the future. Good relationships and communication between lecturers and institutions are needed to prepare sufficient electronic media to meet the needs of students to study to achieve better study opportunities.

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