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Correlation of Digital Literacy and Teacher Productivity at SMP Negeri 1 Serang City

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Abstract: This study aims to investigate the correlation between teachers' digital literacy and their productivity at SMP Negeri 1 Serang City. The research method used is a quantitative approach with a case study design. The research sample is teachers who teach at SMP Negeri 1 Serang City. Data processing using SPSS IBM Version 26 software. The results of the research are expected to provide a better understanding of the relationship between teachers' digital literacy and their productivity. In addition, this research can also provide important input for the development of digital literacy training programs for teachers and planning more effective education policies. It is hoped that the findings from this research can provide practical guidance for decision makers in the field of education to improve teachers' digital literacy and their productivity. In addition, this research can also help teachers understand the importance of developing digital literacy as a means to increase the effectiveness of learning in the digital era.

Keywords: Digital Literacy, SMP Negeri 1 Serang City, Teacher's Productivity.

A. Introduction

Education is one of the main pillars in the development of a country. In the digital era that continues to grow, Information and Communication Technology has become an integral part of everyday life in the educational process. ICT has changed the way we communicate, access information and do work (Yang et al., 2021) . In the educational context, the use of ICT has great potential to improve the quality of learning and teacher productivity (Alam, 2022). Teachers as the main agents in the learning process have a central role in integrating ICT into their teaching. However, to be able to use technology effectively, teachers need to have adequate digital literacy. Digital literacy refers to an individual's ability to use ICT critically, creatively and effectively in a variety of contexts (Pangrazio et al., 2020).

In Indonesia, especially at SMP Negeri 1 Serang City, the presence of ICT in the learning process is increasingly being expanded. Various government and school initiatives have been carried out to increase the use of ICT in learning. However, there are still challenges in optimizing the use of ICT by teachers. One of the factors

that can affect teacher productivity is their digital literacy (Li & Yu, 2022). The development of information and communication technology has brought significant changes in the world of education. The use of ICT in learning provides the potential to increase the effectiveness and efficiency of the teaching-learning process (Nikolić et al., 2019).

However, challenges arise when teachers do not have an adequate level of digital literacy. Digital literacy is an individual's ability to use ICT well, including accessing, evaluating and utilizing digital content (McDougall et al., 2018). Teachers' low digital literacy can hinder the optimal use of ICT in the learning process. SMPN 1 Serang City is one of the junior high schools that is committed to integrating ICT in learning. However, no research has specifically explored the relationship between teachers' digital literacy and their productivity in this school. Therefore, this study aims to fill this knowledge gap. By understanding the relationship between teachers' digital literacy and their productivity, this research can provide valuable insights for the development of education policy at SMP Negeri 1 Serang City.

Bawden (2012) compiled the concept of digital literacy which concerns several aspects as follows:

1. Compile knowledge with the ability to build information from various trusted sources.
2. The ability to provide information includes critical thinking in understanding information with concerns about verification and completeness of information sources from the internet.
3. The ability to read and understand information material that is random and full of enthusiasm (dynamic).
4. Awareness of the importance of the meaning of conventional media and connecting it to other media using the internet network.
5. Awareness of network channels that can be used as a source of referrals and help.
6. Use of the network for incoming information.
7. Feel comfortable and have channels to communicate and share information.

The importance of teachers' digital literacy skills was felt when the unprecedented Covid-19 pandemic was able to paralyze various aspects of human life, especially health problems which had a broad impact on economic, social, cultural, educational, and other fields. In the field of education, the learning process must continue, only the problem is the prohibition of face-to-face meetings in areas that are still considered prone to the spread of Covid-19 which can cause transmission to students and teachers with bad consequences which are feared to cause many deaths. Learning strategies are no longer offline, but online in order to prevent transmission

of Covid 19 among teachers and students. Many teachers are surprised and unfamiliar with online methods, because so far, they are quite comfortable with conventional learning in the form of face-to-face teachers and students in classes. Digital literacy is more associated with technical skills in accessing, assembling, understanding and disseminating information (Leaning, 2019).

In a situation of change that is difficult to predict, such as the Covid-19 pandemic or other changes ahead, the educational process still demands high teacher work productivity in the form of educational outputs or outcomes that are highly efficient as well. Productivity can be quantified by dividing output by input. Increasing productivity can be done by improving the productivity ratio, by producing more output or better output with a certain level of input of resources (Wibowo, 2016). Furthermore, Subandowo (2022), argued that work productivity is a mental attitude. A mental attitude that is always looking for improvements to what already exists. Work productivity is the comparison between the results of the work of employees with the sacrifices that have been made (Ampofo, 2020). The results in question are in the form of goods and services.

The results of this study can provide a better understanding of the importance of increasing teacher digital literacy in facing the challenges and opportunities presented by technological developments. In addition, this research can also provide practical recommendations for the development of digital literacy training programs for teachers to increase their productivity in teaching. With this research, it is hoped that a more effective and innovative learning environment will be created at SMP Negeri 1 Serang City, so that students can develop skills relevant to the digital era and be ready to face future challenges. Although many studies have been conducted to explore the relationship between digital literacy and teacher productivity, specific research at SMP Negeri 1 Serang City is still limited. Therefore, this research will focus on a case study at SMP Negeri 1 Serang City to investigate the correlation between teachers' digital literacy and their productivity.

In the context of this research, teacher productivity refers to their ability to produce quality work, including conveying subject matter effectively, managing classes well, and making proper use of ICT in the learning process. By understanding the correlation between digital literacy and teacher productivity, this research can provide important insights for developing digital literacy training programs for teachers and planning more effective education policies. Thus, this research will make a valuable contribution in identifying the factors that influence teacher productivity in the digital era, especially in the context of SMPN 1 Serang City. Through a better understanding of the correlation between digital literacy and teacher productivity, it is hoped that effective solutions and strategies can be found

to increase teacher productivity and strengthen the quality of education in these schools.

B. Methods

The research method used is a quantitative approach with a case study design. The research sample consisted of teachers who taught at SMP Negeri 1 Serang City. Data regarding teachers' digital literacy is measured using a specially designed questionnaire, while teacher productivity is measured based on their performance in delivering subject matter, managing classes, and utilizing ICT in the learning process. The population of this study were all teachers at SMP Negeri 1 Serang City, consisting of 34 people. The sample in this study used a saturated sample, that is, all populations were sampled.

C. Results and Discussion

Descriptive Statistical Analysis

Descriptive statistical tests are statistics used in analyzing data by describing or describing the data that has been collected.

Table 1. Results of Descriptive Statistical Analysis

Descriptive Statistics					
	N	Min	Max	Mean	Std. Deviation
Digital Literacy	34	100	163	134.88	14.966
Teacher's Performance	34	90	155	130.06	15.772
Student's Involvement	34	100	149	126.03	15.209
Institutional Support	34	95	158	131.42	15.801

Source: Data processed from SPSS, 2023.

Data Normality Test

This study conducted a data normality test using the results of the probability plot as follows:

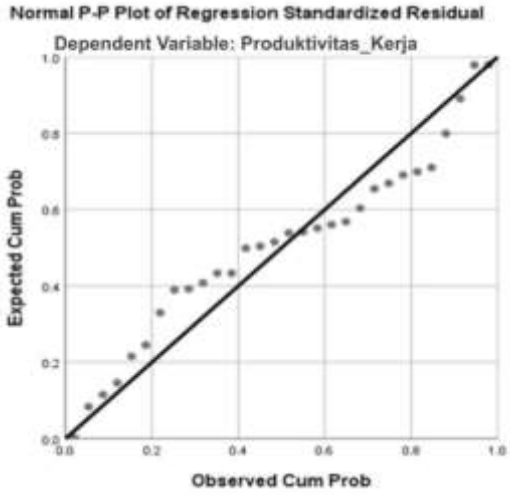

Figure 1. Probability Plot Normality Test Results

Based on the figure above, the results of the normality test show that the plotting data (dots) follow a diagonal line, so the conclusion of the normality test is that the data used in this study is normally distributed.

The multicollinearity test is used to determine whether the independent variables in the selected regression model are correlated.

Table 2. Multicollinearity Test Results

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	3.096	3.674		.843	.40		
Digital Literacy	.287	.129	.304	2.21	.03	.368	2.7
Teacher's Performance	.304	.140	.306	2.17	.03	.350	2.8
Student's Involvement	.293	.138	.305	2.16	.03	.346	2.7
Institutional Support	.296	.132	.203	2.20	.03	.358	2.7

Source: Data processed from SPSS, 2023.

Based on the table above it can be concluded that there is no multicollinearity between variables. Therefore, it can be concluded that the regression model used in this study does not show any signs of multicollinearity between the independent variables.

Heteroscedasticity Test

The heteroscedasticity test is used to test for differences in the residual variance from one observation period to another.

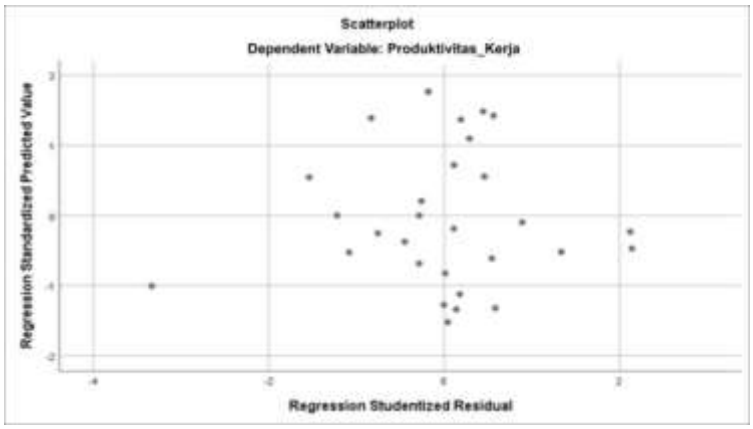

Figure 2. Heteroscedasticity Test Results

Based on the figure above, it can be seen that these dots do not form a certain regular pattern, and these dots spread above and below number 1, so it can be concluded that the data used in this study fulfilled the heteroscedasticity test requirements.

The autocorrelation test aims to test whether in the linear regression model there is a correlation between the confounding errors in the t period and the confounding errors in the t-1 method.

Table 3. Autocorrelation Test Results

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin- Watson
1	.905[a]	.820	.7992.175		1.860

a. Predictors: (Constant), Digital Literacy
b. Dependent Variable: Teacher's Performance

Source: Data processed from SPSS, 2023.

Based on the table above, it can be seen that the Durbin Watson value is 1.860, then this value will be compared with the dl and du values. Thus, after being compared and calculated with the table above the results do not occur autocorrelation.

Validity Test

Validity test is used to measure the validity or validity of a questionnaire. A questionnaire is said to be valid if it is able to reveal something that is measured by

the questionnaire. From the results of the SPSS test, all variables (items) indicate that all items are valid. This can be seen from the Corrected Item-Total Correlation (r-count) value which is greater than the r-Table value. The following are the results of testing the validity of the variables:

Table 4. Validity Test Results

No	Variable	r-Table	r-count	Note
		0,3610	0,714	Valid
		0,3610	0,747	Valid
		0,3610	0,728	Valid
		0,3610	0,746	Valid
		0,3610	0,765	Valid
1	Digital Literacy	0,3610	0,702	Valid
		0,3610	0,642	Valid
		0,3610	0,662	Valid
		0,3610	0,702	Valid
		0,3610	0,742	Valid
		0,3610	0,689	Valid
		0,3610	0,722	Valid
		0,3610	0,505	Valid
		0,3610	0,596	Valid
		0,3610	0,843	Valid
2	Teacher's Performance	0,3610	0,735	Valid
		0,3610	0,609	Valid
		0,3610	0,627	Valid
		0,3610	0,640	Valid
		0,3610	0,604	Valid
		0,3610	0,625	Valid
		0,3610	0,683	Valid
		0,3610	0,841	Valid
		0,3610	0,747	Valid
3	Student's Involvement	0,3610	0,769	Valid
		0,3610	0,875	Valid
		0,3610	0,667	Valid
		0,3610	0,798	Valid
		0,3610	0,736	Valid
		0,3610	0,591	Valid
		0,3610	0,736	Valid
		0,3610	0,973	Valid

4	Institutional Support	0,3610	0,728	Valid
		0,3610	0,853	Valid
		0,3610	0,752	Valid
		0,3610	0,748	Valid
		0,3610	0,854	Valid
		0,3610	0,692	Valid
		0,3610	0,678	Valid
		0,3610	0,634	Valid
		0,3610	0,765	Valid
		0,3610	0,728	Valid
		0,3610	0,788	Valid
		0,3610	0,712	Valid

Source: Data processed from SPSS, 2023.

Based on the table above, the statement items of each indicator are declared valid because it is seen from the value of r-count> r table.

Reliability Test

Reliability is a tool for measuring a questionnaire which is an indicator of a variable or construct. The following are the results of variable reliability testing:

Table 5. Reliability Test Results

No	Variable	Cronbach Alpha Value	Cut Value	Note
1	Digital Literacy	0,874	0,60	Reliable
2	Teacher's Performance	0,805	0,60	Reliable
3	Student's Involvement	0,900	0,60	Reliable
4	Institutional Support	0,852	0,60	Reliable

Source: Data processed from SPSS, 2023

Based on the table above, it can be seen that each indicator is declared reliable because it has an alpha value > 0.60 so that it can be used to process further data.

Correlation Test

The results of the correlation test in this study can be seen in the table below:

Table 6. Results of Teacher Digital Literacy Correlation Test on Teacher Productivity

Correlations

		Digital Literacy	Teacher's Performance
Digital Literacy	Pearson Correlation	1	.817**
	Sig. (2-tailed)		.000
	N	30	30
Teacher's Performance	Pearson Correlation	.817**	1
	Sig. (2-tailed)	.000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Data processed from SPSS, 2023.

Based on the table above, it can be seen that the Pearson Correlation value for teacher productivity is 0.817, meaning that the correlation or relationship between digital literacy variables on teacher productivity is 0.817 or very strong because it is close to number 1.

Test the Coefficient of Determination (R-Square)

This test aims to see how much influence the independent variable has on the dependent variable.

Table 7. Determination Coefficient Test Results

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.817[a]	.667	.655	2.850

a. Predictors: (Constant), Digital Literacy

b. Dependent Variable: Teacher's Performance

Source: Data processed from SPSS, 2023.

From the results of the calculation of the coefficient test above in the table above, it can be seen that the R-Square value obtained is 0.667. This means that 66.7% of the dependent variable in the form of teacher productivity can be influenced by digital literacy while the remaining 33.3% is influenced by other variables. which were not included in this study.

Hypothesis Test
t test (partial)

The t test is a test to show the significance of the individual effect of the independent variables in the model on the dependent variable. This is intended to determine how far the influence of one independent variable explains the variation of the dependent variable. If the significance value is less than 0.05 (sig <0.05), it can be concluded that the independent variable partially has a significant effect on the dependent variable.

Table 8. Partial t-test Results

Model		Coefficients[a] Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.096	3.674		.843	.407
	Digital Literacy	.287	.129	.304	2.219	.035
Dependent Variable: Teacher's Performance						

Source: Data processed from SPSS, 2023.

Based on the table above, the t count value is 2.219 and compared to the t table is 2.055. This shows that t count > t table is 2.219 > 2.055 with a significance value of 0.000, which is less than 0.05 (0.035 <0.05) so the hypothesis accepted.

D. Conclusion

From the data obtained and the analysis that has been carried out in this study, it can be concluded that digital literacy has a positive and significant influence on teacher productivity at SMP Negeri 1 Serang City. The results of data testing obtained a t- count value of 2.219 > t-Table 2.055 and a significance value of 0.035 <0.05. This means that if digital literacy increases, the productivity of SMP Negeri 1 Serang City teachers will also increase.

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