

The Effect of Information Technology Mastering on The Results of Elementary School Teacher Competency Test in Ambon City

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ABSTRACT

The development of information technology supports teachers in increasing their competence. Teachers can access information and knowledge via the internet. However, teacher competence in eastern Indonesia, particularly in Ambon City, is very low. This study aims to determine the effect of mastery of information technology on the competence of elementary school teachers in Ambon City. This research is a quantitative study with 224 elementary school teachers as respondents who have taken the teacher competency test. This study uses two types of data, namely primary data and secondary data. Primary data regarding teachers' mastery of information technology was obtained directly from respondents using a questionnaire. Secondary data on teacher competency test results were obtained from LPMP Maluku Province. Data analysis used simple linear regression with the help of SPSS. The results of the study found that mastery of information technology had a positive effect on the competence of elementary school teachers (Y) in Ambon City. This effect is very. Therefore, it is recommended for teachers to be able to improve their skills in using information technology.

Keywords: Information technology, elementary competency, school teachers;

INTRODUCTION

Education is a process that is designed and structured systematically by stimulating growth, development, improving abilities, skills, intelligence and character building, as well as positive values and attitudes for citizens in order to achieve educational goals (Arhas, Suprianto, Saleh, Niswaty, & Jamaluddin, 2022; Rohman, 2013; Suprianto, Niswaty, Arhas, Rahman, & Salam, 2022). This is in line with the objectives of the National Education of the Republic of Indonesia as stated in (Undang-Undang Republik Indonesia No. 20 Tahun 2003. Tentang Sistem Pendidikan Nasional, Bab 2, pasal 3, 2003), namely "a human being who believes in and fears God Almighty, has noble character, is healthy, knowledgeable, capable, creative, independent, and becomes a citizen of the Republic of Indonesia, a democratic and responsible country.

Efforts to achieve the mandate of the Law require a standardized education system in the form of content, process and evaluation with the support of all elements of society. The education system is largely determined by the interaction of three important pillars, namely teaching, learning and curriculum. If any one of the three is weakened, then the entire education system will be vulnerable to collapse (Kavita, 2017). Teachers have a key role in supporting the educational process. Therefore, teacher competence is the demand of all parties. Teachers can carry out their duties properly, teachers must have pedagogical competence, professional competence, personal competence, and social competence (Andriana, Tambe, & Saleh, 2015; Mulyasa, 2007; Wulandari & Hendriani, 2021).

(Undang-Undang Republik Indonesia Nomor 14 Tahun 2005 tentang Guru dan Dosen Pasal 1, 2005) states that teachers are professional educators with the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students in early childhood education through formal education, basic education, and secondary education.

Article 4 states that the profession functions to increase the dignity and the role of the teacher as a learning agent functions to improve the quality of national education. Whereas in Article 20 describes professional duties, teachers include: a) planning learning, carrying out quality learning processes, as well as assessing and evaluating learning outcomes; b) improve and develop academic qualifications and competencies on an ongoing basis in line with developments in science, technology and art.

Until now the implementation of education in Indonesia is still experiencing various technical obstacles, as said (Munirah, 2015) that the education system in Indonesia appears to have a gap between desire and reality. This gap is caused by political, economic, socio-cultural factors and so on (Amir & Saifuddin, 2017), found that the ineffectiveness of the teaching and learning process in schools was caused by limited teacher abilities, resources to support the learning process, and the absence of tools to measure the effectiveness of the teaching and learning process.

Teacher competence in Indonesia also raises many problems, especially regarding pedagogic standards. In response to this, the government has conducted a measurement of teacher competency known as the Teacher Competency Test. (Peraturan Menteri Pendidikan Dan Kebudayaan Nomor 57 Tahun 2012 Pasal 1, 2012) explained that the Teacher Competency Test is a test of professional and pedagogic competency mastery in the cognitive domain as a basis for determining continuous professional development activities and part of teacher performance assessment (Amir & Saifuddin, 2017) the Teacher Competency Test is the basis for effective teacher professional development and development.

In 2015, the Directorate General of Teachers and Education Personnel held a national online the Teacher Competency Test which was attended by 34 provinces. The Teacher Competency Test results for Maluku Province are very concerning because they are ranked 33rd. Out of a total of 32,786 teachers in Maluku Province recorded in the 2015 Quality of Education database, only 26,939 teachers took part in the Teacher Competency Test with an average score of 47.38. This value is below the minimum competency standards set by the Ministry of Education and Culture, namely; 55.00. Most of the teachers participating in the Teacher Competency Test in 2015 were elementary school teachers, namely 14,037 people or 52.10% with an average the Teacher Competency Test score of 45.40.

The low the Teacher Competency Test results in Maluku Province are influenced by many variables such as educational background (Wulandari & Hendriani, 2021). Teacher competence has a causal aspect with various variables including information technology mastery variables (Tambunan, 2014) explains that teacher competence in the field of information technology is influenced by the use of information technology devices, teacher perceptions of information technology and teacher self-development both directly and indirectly. In this case, (Khvilon & Patru, 2002) revealed “the most important aspect in embedding technology in the curriculum is pedagogy. When applying pedagogical competences to embed technology, the local context and the teacher’s individual approach related to their subject discipline must be paramount. Teachers move through the stages as they adopt ICT. That the most important aspect for teachers can move by adopting technology in improving their

competence. This is reinforced by the results of research (Aeni, A N, & Sunaengsih, 2019) that information technology including the internet has an impact on teacher competence. Thus, researchers are interested in proving the effect of mastery of information technology on the results of competency exams for elementary school teachers in Ambon City.

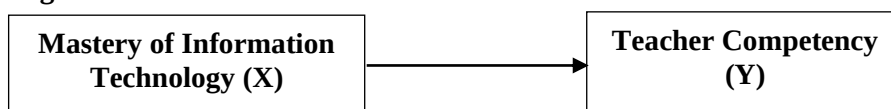
METHODS

This research is included in the type of quantitative descriptive research. This research was conducted in 2021 in Ambon City. The sample of this study was 224 elementary school teachers in Ambon city who had taken the Teacher Competency Test. Primary data collection used a questionnaire and secondary data collection used the Teacher Competency Test results documentation for elementary school teachers.

This study consisted of two variables, namely mastery of information technology (X) as the independent variable, and teacher competency test results (Y) as the dependent variable. Variables need to be operationally defined in order to explain the meaning of the research variables. The operational definition of the variable is explained as follows: 1). Mastery of information technology (X): is the ability of elementary school teachers in Ambon City to utilize information and communication technology in developing their competencies, doing work and including using computers when taking teacher competency tests which are held online by the Director General of Teachers and Education Personnel of the Ministry of Education and Culture 2015. This variable is measured through the following indicators: a) Ownership of ICT tools/facilities; b) Proficiency in using a computer; c) internet use skills; d) Computer Anxiety. 2). The results of the Teacher Competency Test (Y) are a combination of pedagogic competence and professional competence according to statutory standards. This variable was measured using the results of the Ambon City Public Elementary School Teacher Competency Test in participating in the online competency test organized by the Director General of Teachers and Education Personnel of the Ministry of Education and Culture in 2015. the Teacher Competency Test results are a combination of pedagogical competence and professional competence.

The model and hypothesis of this study are as follows.

Figure 1. Research Model



Research hypothesis:

Mastery of Information Technology has a positive and significant effect on the results of the SD Teacher Competency Test in Ambon City. Testing the hypothesis using simple regression because it is in accordance with the research objectives to prove the effect of mastery of Information Technology (X) on the competency test of elementary school teachers in Ambon City (Y). The multiple regression equation is as follows: $= \alpha + \beta_1 X_1 + \beta_2 X_2 + e$. (projection of the dependent variable (Teacher Competence); X: Independent variable that has a certain value to predict (mastery of information technology); α : Constant price value of Y if X = 0; β : Directional value as a predictor (prediction) which shows an increase in value (+) or decrease in

value (-) variable Y. The data analysis technique in this study used the "SPSS" computational tool.

RESULTS AND DISCUSSION

Cross Tab

Cross tabulation was carried out to see the pattern of correlation between Information Technology Mastery and teacher competency test results. Cross-tabulation results using computational tools are presented in three categories, namely high, medium, and low, as shown in the following table.

Table 1.
Cross-tabulation of Teachers' Information Technology (IT) Mastery Competence

		Teacher Competency Exam			Total
		Results			
		Low	Medium	high	
IT mastery	Low	20	21	2	43
	Medium,	4	103	19	123
	high	4	25	29	58
Total		28	149	47	224

Source: Researcher Process 2022

The table shows that out of 244 respondents there are 43 respondents who have IT mastery in the low category, of which 20 respondents have low competence, 21 respondents have moderate competence, and 2 respondents have high competence. Descriptively, the data shows that teachers who have low IT mastery tend to have low and medium potential.

Then there were 123 respondents who had moderate IT mastery, consisting of 4 respondents who had low competence, 103 respondents who had moderate competence, and 19 respondents who had high competence. The descriptive data shows a linear trend, that respondents who have moderate IT mastery will also tend to have moderate competence. There were 58 respondents who had high IT mastery, of which 3 respondents had low IT mastery, 25 respondents had moderate IT mastery, and 29 respondents had high achievers. The descriptive data provides a concrete picture that respondents who have high IT mastery are also followed by high competence.

Testing the classical assumptions as a condition for testing the hypothesis. First, the normality test which aims to find out whether the confounding variables or residuals are normally distributed in the regression model (Ghozali, 2013). To see the normality of the regression model, it can be done through a graphical test as shown in the following figure.

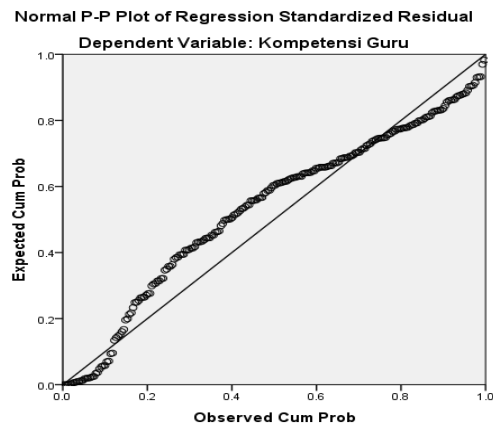


Figure 2. Model Normality Plot Graph

Source: Researcher Processed 2022

The normal P-Plot chart above shows that the data is spread around the diagonal line and its distribution follows the direction of the graph's diagonal line. This number means that the data from the variables in the regression model are normally distributed. Thus, the regression model used in this study meets the assumption of normality. Second, the autocorrelation test aims to test whether the linear regression model has a correlation between the confounding error in period t and the confounding error in period $t-1$ (previous). If there is a correlation, then there is an autocorrelation problem. Autocorrelation arises because successive observations over time are related to one another. This problem arises because the residual (interference error) is not independent from one observation to another, usually found in time series data (Ghozali, 2013). To detect autocorrelation, statistical tests can be carried out through the Durbin-Watson test (DW test). (Ghozali, 2013). The results of the correlation test are presented in the following table.

Table 2.
Autocorrelation Test Results

Model	R	R Square	Adjusted Square	R std. Error of the Estimate	Durbin-Watson
1	0.557a	0.310	0.304	151,911	2.116

Source: Researcher Process 2022

Decision making on the Durbin Watson test is as follows: 1). $DU < DW < 4-DU$ then H_0 is accepted, meaning there is no autocorrelation; 2). $DW < DL$ or $DW > 4-DL$ then H_0 is rejected, meaning that there is autocorrelation; 3). $DL < DW < DU$ or $4-DU < DW < 4-DL$. This

means that there is no certainty or definite conclusion. DU and DL values can be obtained from the Durbin Watson statistics table (Ghozali, 2013).

Known:

DW = 2.116 (Running SPSS Table above)

DL = 1.7483 (Durbin Watson statistical table with $n = 244$, and $k = 2$)

DU = 1.7887 (Table of Durbin Watson statistics with $n = 224$, and $k = 2$)

$4 - DL = 4 - 1.7483 = 2.2517$ (calculation)

Thus, the following equation is obtained:

$DU (1.7887) < DW (2.116) < 4 - DU (2.2517)$, then H_0 is accepted, meaning there is no autocorrelation. This result is also reinforced by the criteria set by (Algifari, 2000) because the value of 2.116 is between 1.55-2.46 which means there is no autocorrelation.

Based on the classical assumption test as a whole, it can be concluded that the regression model used in this study is free from symptoms of normality and autocorrelation, so that it can be continued with hypothesis testing using simple regression

Hypothesis Test

Test the hypothesis using the t test, to prove whether the hypothesis is accepted or rejected by looking at the significance test t test.

Table 3.

T-test results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	std. Error	Betas		
(Constant)	.190	3,229		.042	.667
Information Technology Mastery	.397	.044	.567	9.041	.001

Source: Researcher Process 2021

Table 1 presents the results of the regression equation t-test as follows: 1). The model obtained is: $= 0.190 + 0.397 X + e$; 2). A constant of 0.190 means that if the Information Technology Mastery variable (X) is considered non-existent or zero, then the Teacher Competency variable (Y) is 0.190; 3). The regression coefficient (X) of 0.397 states that each additional score due to IT mastery variable is marked (+) will increase teacher competency by 0.397.

Conclusion of Hypothesis Testing, alternative research hypotheses are as follows: 1). H_0 : Mastery of Information Technology has no significant effect on the Teacher Competency Test of SD teachers in Ambon City; 2). H_a : Mastery of Information Technology has a positive and significant effect on the Teacher Competency Test Elementary School Teachers in Ambon City.

Based on the results of the t test (Table 1) conclusions can be drawn with the following criteria: 1). If the significant value is 0.05 then accept H_0 and reject H_a ; 2). If the significance value is 0.05, then reject H_0 and accept H_a . The results of the hypothesis test obtained a significance value of 0.001 which is less than 0.05, so H_0 is rejected and H_a is accepted, which

means that mastery of information technology has a positive and significant effect on the competence of elementary school teachers in Ambon City.

Discussion

Ambon City Elementary School teachers are encouraged to improve their skills in operationalizing their work by using information and communication technology (ICT) tools. The better the mastery of teachers in using ICT, the more they will support teachers in developing their potential. In this study, the results of the t-test showed that the independent variable ICT mastery had a positive effect on the dependent variable Teacher Competence which was indicated by a value of 0.152. That every increase in teacher skills in using ICT is +1, increasing teacher competence by 0.152. The results of the t test also show a P value <0.005 which means it is significant because the value is less than 0.05. In this case, teachers who master ICT will also have high competence. In line with that, (Khvilon & Patru, 2002) revealed that the most important aspect for teachers can move by adopting technology in improving their competence. This is reinforced by the results of research (Aeni et al., 2019) that information and communication technology including the internet has an impact on teacher competence. Utilization of information technology in education can manage problem solving that covers all aspects of human learning. In this case, the teacher's mastery of information technology can improve the quality of learning.

At this time technological developments cannot be separated from academic activities. Learning resources, administration, and knowledge development almost entirely use technology. If teachers do not have the ability to utilize technology, it will hinder the development of teacher potential. About this thing, (Khvilon & Patru, 2002) revealed that the most important aspect of embedding technology in the curriculum is pedagogy. That the ability of teachers to adopt technology in improving their competence.

CONCLUSION

Mastery of Information Technology has a positive effect on teacher competence. Teachers who master information technology will find it easier to access various scientific and technological developments, thereby supporting the improvement of teacher competence. Thus, the higher the teacher's mastery of information technology, the higher the teacher's competence. Because currently technological devices have become a necessity in the development of science, so mastery of technology becomes access to enter the development of science and technology. Therefore, it is advisable for teachers to continue to develop pedagogical and professional competencies by adopting information technology developments.

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