

The Effect of Teacher's Pedagogical Competence on Students' Learning Achievement

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The Effect of Teacher's Pedagogical Competence on Students' Learning Achievement

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ABSTRACT

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This study aims to determine and explain the effect of teacher pedagogical competence on students achievement in the Office Management Automation Department of YAPIS Biak Vocational High School. This study uses an associative approach with descriptive statistical data analysis techniques with percentage, mean and standard deviation and statistical analysis of inference by using data normality tests, product moment correlations, and simple linear regression. The results of this study state that teacher's pedagogical competence significantly influences the students achievement, therefore it is recommended that school personnel, especially school principals and teachers, should improve the quality of teacher pedagogical competencies, so that student achievement can be better for the achievement of educational goals at school.

Keywords: Teacher's Pedagogical Competence; Students; Students Learning Achievement.

INTRODUCTION

Education is a series of efforts in the process of national development. The development of this nation can be realized significantly by efforts to create national resilience in order to achieve the goal of the nation. Therefore, the education system should be directed towards the realization of harmony, balance and harmony between the development of quantity and the development of quality as well as physical and spiritual aspects. That is why our national education is formulated as a conscious effort to develop Indonesian people as a whole.

The education process is a system consisting of inputs, processes, and outputs. Inputs in the education process are students who will carry out learning activities, the process is a teaching and learning activity and the output is the result of the learning process. In the implementation of the learning process it is expected to create quality and competitive human resources to face competition in the era of globalization, Umami & Roesminingsih (2014:82).

In the Republic of Indonesia Law No. 20 of 2003 emphasizes that national education functions to develop capabilities and shape the character and civilization of a dignified nation in

the context of educating the life of the nation, aiming at developing the potential of learners to become human beings who believe in and devote to God Almighty, moral noble, healthy, knowledgeable, capable, creative, independent, and become citizens who are democratic and responsible.

In order to improve the quality of national education, the government in particular through the Ministry of Education and Culture continuously endeavors to make various changes and updates to the education system. One of the efforts that has been and is being done at this time, namely relating to teachers. The issuance of Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers and Government Regulation of the Republic of Indonesia Number 19 of 2005 concerning National Education Standards, is basically a government policy which includes government efforts to organize and improve the quality of teachers in Indonesia.

Mulyasa (2008:5) states that "Teachers largely determine the success of students, especially in relation to the teaching-learning process, and are the most influential component towards the creation of quality educational processes and outcomes." Professional teachers are qualified, competent teachers, and teachers who are desired to bring learning achievements and are able to influence the learning process of students who will later produce good student learning achievements. Students' intellectual abilities determine the success of students in obtaining achievements. To find out the success or failure of a person in learning it is necessary to do an evaluation, the aim is to determine the achievements obtained by students after the teaching-learning process takes place.

Based on the description above, it can be understood that the importance of the teacher's role in the teaching-learning process. The teacher referred to in this case is a qualified and competent teacher who is desired to bring student achievement. Thus, a teacher must have skills in the teaching-learning interaction process. From this basis pedagogical competence is needed in preparing the stages of teaching and learning activities. The more attractive the teacher is in the learning process and understanding the characteristics of students and mastering learning theories and learning principles well, then it makes students happy in participating in learning. So that it can affect the level of student learning achievement.

In reality, most of the teachers at YAPIS BIAK Vocational High School are professional. Teacher competencies in these schools have met the criteria in accordance with the requirements of professional teachers, namely having recognition from the government in the form of certificates. And this, very influential on the level of student success in learning, where the demands of teacher performance are very urgent in applying all their abilities in carrying out the teaching-learning process in order to realize students who excel and can raise the degree and quality of vocational high schools.

METHOD

This study is a quantitative study with an explanatory purpose, namely to explain the causal relationship (influence) between teacher competency variables (X) on student achievement (Y) in YAPIS Biak vocational high school. The research design can be described as follows:

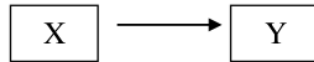


Figure 1. Research Design

Where:

X = teacher's pedagogical competence

Y = students' learning achievement

To measure the variables in this study, the researcher will use a questionnaire. In the questionnaire technique, the questionnaire distributed contained a number of statements that had been classified, in which both variables both the teacher competency variable (X) and student achievement (Y) were measured by using the benchmark interpretation of the value of r. According to Sugiyono (2010:107), argues that: Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena. In research, this social phenomenon has been specifically determined by the researcher, hereinafter referred to as the research variable.

The population in this study were class X and XI students majoring in Office Management Automation in YAPIS Biak Vocational High School, totaling 188 students. In this case the sampling is done by using Stratified Random Sampling, with the formula from Taro Yamane or Slovin in Riduwan (2009:254) as follows:

$$n = \frac{N}{N \cdot d^2 + 1}$$

Where:

n : total sample

N: total population

d²: Precision set (percentage determination)

It is known that the total population of students of YAPIS Biak Vocational High School is (N) = 188 students and the precision level is set at: 15%. Based on these data the number of samples is obtained as follows:

$$\begin{aligned} n &= \frac{N}{N \cdot d^2 + 1} \\ &= \frac{188}{(188)(0.15)^2 + 1} \\ &= 35.9 \text{ or } 36 \text{ students.} \end{aligned}$$

The technique of data collection is using observation techniques, questionnaires, and documentation techniques. The data analysis technique used in this study is a descriptive statistical analysis technique using percentage analysis, mean and standard deviation, and inferential statistical analysis techniques in the form of data normality tests to determine the normality of data about teacher competence in teachers (variable X) and student achievement (variable Y) that has been collected, then a data normality test is performed. This data normality test uses the Chi Square formula by Sugiyono (2010:250) with the formula:

$$\chi^2 = \sum_{i=1}^k \frac{(f_o - f_h)^2}{fn}$$

Where:

- χ^2 = Chi Square
- f_o = Observed frequency
- f_h = Expected frequency

To find out the influence of teacher competency variables on teacher learning achievement in the Office Management Automation Department of YAPIS Biak Vocational High school, a product moment correlation test was conducted as stated by Sugiyono (2010:212) as follows:

$$r_{xy} = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

Next, testing the correlation coefficient by testing the hypothesis, namely $H_0 : \rho = 0$ contra $H_1 : \rho \neq 0$. The testing criteria is provided that if the r count $>$ r table in a particular sample (N) at a significance level of 5%, it means that there is a significant relationship and vice versa. To find out the magnitude of the relationship between the two variables, the benchmark interpretation used by Sugiyono (2010:214) is as follows:

Table 1. Interpretation of Correlation Coefficient

Coefficient interval	Relationship Level
0.00 – 0.199	Very low
0.20 – 0.399	Low
0.40 – 0.599	Fair
0.60 – 0.799	Strong
0.80 – 1.000	Very strong

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The last step carried out to determine the effect of teacher competence on teacher learning achievement in the Department of Office Automation Management at YAPIS Biak Vocational High School is through a simple regression analysis from Sugiyono (2010:188),

$$Y' = a + bX$$

Where:

- Y** = Subject / value in the predicted dependent variable
- a** = Value of **Y** when $X = 0$ (constant value)
- b** = The direction number or regression coefficient, which indicates an increase or decrease in the dependent variable based on the independent variable. If **b (+)** then rises, and if **(-)** there is a decrease.
- X** = Subjects to independent variables that have certain values. For the purposes of simple linear regression, the F-test is used through the Anava table.

The accepted hypothesis is:
 $H_0 : \alpha : \beta = 0$, contra
 $H_1 : \alpha \neq 0$ atau $\beta \neq 0$

The testing criteria are if F_{count} is greater than F_{table} at a significant level of 5%, then H_0 is rejected, which states that the teacher's pedagogical competence influences student

achievement, it needs further testing, and vice versa if F_{count} is smaller than F_{table} at a significant level of 5%, then H_0 is accepted which states that the teacher's pedagogical competence has no effect on student learning achievement.

RESULT AND DISCUSSION

Results

a. Descriptif Statistic Analysis

To obtain an overview of the teacher's pedagogical competencies and student achievement in the Department of Office Automation at SMK YAPIS Biak, then the two variables are made frequency and percentage tables. Where the teacher pedagogical competency variable (variable X) is measured using the categories of very good, good, good enough, not good, and not good while the variable student achievement (Y variable) is measured by the categories very high, high, high enough, low, very low.

1) Teacher's Pedagogical Competence (X)

To find out how much pedagogical competence of the teachers of YAPIS Biak Vocational High School, the quality of respondents' answers is simplified into five categories: very good, good, good enough, not good, and not good. More clearly about the description of the teachers' pedagogical competence of YAPIS Biak Vocational High School, can be seen in Table 2:

Table 2: Frequency Distribution and Percentage of Pedagogical Competence of YAPIS Biak Vocational high school Teachers

No	SCORE INTERVAL	CATEGORY	FREQUENCY	PERCENTAGE
1.	78 – 92	Very good	3	8,33
2.	63 – 77	Good	20	55,55
3.	48 – 62	Fair	12	33,33
4.	33 – 47	Poor	1	2,77
5.	18 – 32	Very poor	0	00,00
Total			36	100,00

Soure: The Result of the Questionnaire Analysis No 1 - 18

From the SPSS 19 calculation results above, it can be seen that the mean value is 65.67 where the mean value after consultation in table 2 is at intervals of 63-76 which means it is classified as good category, with a standard deviation of 9,713. This illustrates that the pedagogical competence of YAPIS Biak School teachers, both in terms of indicators of understanding of students, learning design, implementing learning, evaluating student learning outcomes and student development which all can affect the level of pedagogical competence of teachers in schools.

Based on the results of the above data calculation also shows that the teacher's pedagogical competence has been going well. This can happen thanks to the cooperation, encouragement from the Principal and teacher awareness, carry out the task with full responsibility in educating.

The formation of good teacher pedagogical competencies can have implications on the quality of teachers in managing and delivering lessons to students, so students can understand the lessons to the fullest and can develop their potential and insight because a teacher understands his students during the teaching-learning process.

2) Students' achievement (Y)

Student learning achievements seen from three aspects that support the curriculum in Vocational High School subjects, namely the normative, adaptive and productive aspects. Qualification of the quality scores of students majoring Office Management Automation Department in YAPIS Biak Vocational High School seen from the mean value of 20 subjects covered in normative subjects namely 79.11 in the good category, adaptive that is 77.56 in the good category, and productive namely 79.79 are in the good category. The evaluation categories are based on the report card grades, namely: very good, good, sufficient and lacking.

For more details about the description of student learning achievement majoring in Office Management Automation in YAPIS Biak Vocational High School, can be seen in the following table:

Tabel 3. Descriptive Statistics

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
<i>Independen</i>	36	38	88	65,67	9,713
<i>Dependen</i>	36	68	90	77,17	6,640
<i>Valid N (listwise)</i>	36				

Table 4. Frequency distribution and percentage of student achievement in Office Management Automation Department in YAPIS Biak Vocational High School

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
<i>Independen</i>	36	38	88	65,67	9,713
<i>Dependen</i>	36	68	90	77,17	6,640
<i>Valid N (listwise)</i>	36				

The mean value and standard deviation based on the results of SPSS 19 calculations can be seen in the following table:

Tabel 5. Descriptive Statistics

No	Score Interval	Category	Frequency	Percentage
1.	90 – 100	Very good	3	8,33
2.	75 – 89	Good	26	72,22
3.	60 – 74	Fair	7	19,44
4.	0 – 59	Poor	0	00,00
Total			36	100,00

From the results of data analysis, the mean value (mean) for Y variable (student learning achievement) is 77.17 which is in the range of 75-89 with a good category with a standard deviation of 6.640. Student learning achievement of Office Management Automation Department in YAPIS Biak Vocational High School is relatively high. Judging from the value of normative, adaptive and productive subjects.

b. Inferential Statistic Analysis

1) Data Normality Test

Before further analysis is conducted, it is necessary to know whether the data of this study have met the requirements for using statistics to be used in hypothesis testing. Testing the analysis requirements for statistical use is data obtained at least normally distributed.

The data normality test is intended to determine the normality of data, about the pedagogical competence of the teachers in the Office of Office Automation Automation at SMK YAPIS Biak, so that it can be continued with parametric statistical calculations. The criterion of this test is to compare the calculated Chi Square value with the Chi Square value table. Chi Squared proposed by Sugiyono (2010:172) If the value of Chi squared is smaller or equal to the Chi Squared table ($X^2_{count} \leq X^2_{table}$), then the data distribution is declared normal, and if greater is declared abnormal. The complete normality test results of this data can be seen in the following table:

Tabel 6. The Summary of Normality Test Result

Variable	X^2_{count}	X^2_{table}	Df	Interpretation
X: Teachers' Pedagogical Competence	15.111	30.144	19	Normal
Y: Students' Learning Achievement	9.000	27.587	17	Normal

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Based on the above table, it can be clearly seen that the calculated chi square value of the pedagogical competency variable of teachers is 15.111 smaller than the chi squared table of 30.144 with a df of 19, and the student achievement variable in Office Automation Management Department at YAPIS Biak Vocational High School, with chi square values the count of 9,000 is smaller than the chi square of table 27,587 with a df of 17. From the statistical tests above, it shows that the teachers' pedagogical competency variable and student achievement variable meet the normally distributed data criteria.

2) Product Moment Correlation Test

Product moment correlation test is intended to determine whether there is a relationship between teacher pedagogical competence and student achievement in the Department of Office Management Automation in YAPIS Biak Vocational High school. Based on the calculation results of product moment correlation, it is obtained correlation between teacher pedagogical competence (variable X) and student achievement (variable Y). Coefficient of $r = 0.893$ after consultation in the interpretation table the value of r is at intervals of 0.80 - 1,000 which has a very strong level of influence. This means that there is a positive correlational relationship between the teacher's pedagogical competence and student learning achievement.

To find out whether the correlation calculation results are significant or not, it is necessary to compare with the calculated r value of 0.893 with r table value at a significance level of 5 percent of 0.329. Sugiyono (2010:183) argues that $r_{count} > r_{table}$, then shows that there is a significant relationship between teacher pedagogical competence on student achievement in the Office of Automation Management Office at SMK YAPIS Biak. In line with that the influence of teacher's pedagogical competence on student achievement in the category is very strong (after being consulted on the interpretation table r value).

3) Simple Regression Linear Analysis

To test the hypothesis in this study that "it is suspected that there is an influence between the teacher's pedagogical competence on student achievement of the Office Management Automation Department in YAPIS Biak Vocational High School", a simple linear regression analysis is used.

Table 7. Summary of The Results of a Simple Linear Regression Analysis

Variable	B	F _{count}	S _{ig.}	t _{count}	S _{ig.}
The Constant	37.075			10.595	0.000
Teachers' Pedagogic Competence	0.611	134.065	0.000	11.579	0.000
α: 0.05					
r: 0.893		r ² : 0.798			

Source: SPSS Processing Results Ver. 14 For Windows

Based on the table above, it appears the magnitude of the correlation coefficient (r) is equal to 0.893. To find out the magnitude of the relationship between the independent variable with the dependent variable, it can be seen in the previous interpretation table r value. Based on the above table, it is known that the analysis of the calculation of the regression equation is obtained a value = 37.075 and b = 0.611 so that the regression equation is:

$$Y = 37.075 + 0.611 x$$

From the calculation results of the F Test obtained Fcount of 134.065 and Ftable 0.05: 1: 34) of 4.11 or Fcount value greater than Ftable. Sugiyono (2010:188) states that $F_o > F_i$ then H_o is rejected, which means that there is a dependent nature of the teacher's pedagogical competency variable or other variables with student achievement or it can be said that the hypothesis reads "allegedly there is an influence between teachers' pedagogical competence on students' achievement in the Office Management Automation Department of YAPIS Biak Vocational High School", is accepted. For operations that have proven significant regression equations can be exemplified by calculations, if for example X = 18 then:

$$\begin{aligned} \hat{Y} &= 37.075 + 0.611 \cdot 18 \\ &= 37.075 + 10.998 \\ &= 48.073 \end{aligned}$$

Based on the results of these calculations, then if the teacher's pedagogical competency score is 18, then the student learning achievement score or score can be predicted at 48,073. This means that an increase in the value of X can contribute to an increase in student learning achievement.

Discussion

1. Teachers Pedagogical Competence

The results showed that the pedagogical competency of YAPIS Biak Vocational High School teachers was in the "good" category, it was seen from the aspect of understanding of students, designing learning, implementing learning, evaluating student learning outcomes and developing students who were well implemented.

The teachers' pedagogical competence at YAPIS Biak Vocational High School can be well implemented because the teachers' competency level continues to be improved by the efforts of principals to conduct supervision, guidance, provision of education / training / seminars and certification programs for teachers at YAPIS Biak Vocational High School. Basically, the existence of a teacher is very very important, the more accurate the teachers carry out their functions, the more guaranteed the creation and development of a teacher's readiness and competence is created. In other words, the more qualified a teacher is, the more qualified students will be.

2. Learning Achievement

Students learning achievement at YAPIS Biak Vocational High School is in the good category, this is viewed from the aspect of learning outcomes in groups of normative, adaptive and productive subjects. The students of YAPIS Biak Vocational High School will obtain various kinds of knowledge, skills or attitudes that are very much needed in their lives and lives both now and for the future with various abilities, skills and expertise gained in education. The learning process experienced by students of YAPIS Biak Vocational High School results in changes in the fields of knowledge, skills and attitudes. The change is seen in the learning achievement produced by students from the results of evaluations conducted by the teachers.

3. The Effect of Teacher's Pedagogical Competence on Learning Achievement

¹² The results showed that the influence of teacher pedagogical competence on student achievement in the Office Management Automation Department in YAPIS Biak Vocational High School is in the very strong category. This means that there is a positive correlational relationship between teachers pedagogical competencies and student achievement in the Office Management Automation Department at YAPIS Biak Vocational High School. Thus, the teacher's pedagogical competence can improve student achievement in YAPIS Biak Vocational High School.

The existence of teacher competence in educating and understanding students who are well implemented can affect student achievement which is supported by supervision by the principal. High and low student achievement is influenced by various factors, one of which is a factor of the school environment such as teachers. This is in accordance with the results of research showing a positive influence between the teacher's pedagogical competence on student learning achievement, where the YAPIS Biak Vocational High School teacher is a component in determining the overall education system that must receive first attention in determining the

quantity and quality of teaching carried out in support of improving achievement student learning at YAPIS Biak Vocational High School.

CONCLUSION

Based on the results of research and data analysis about the influence of teacher pedagogical competence on student learning achievement in the Office Management Automation department, it can be concluded that: 1) Pedagogical competence of teachers at YAPIS BIAK Vocational High School is in the good category, in terms of aspects of understanding of students, learning design, implementing learning, evaluating students learning outcomes and developing students who are well implemented. 2) Students achievement in the Office Management Automation Department at YAPIS Biak Vocational High School is in the good category, in terms of normative, adaptive and productive aspects of students. 3) There is a significant effect between the teachers' pedagogical competences and students' achievement in the Office Automation Management Department of YAPIS Biak Vocational High School.

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