

The Effect of Education Level and Teaching Experience on Students' Learning Competency and Achievement at SMA Negeri 04 Bombana

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Abstract— This study aims to determine and analyze the effect of education level and teaching experience on students' competence and learning achievement at SMA Negeri 04 Bombana. The sample in this study were all 50 teachers at SMA Negeri 04 Bombana. This study uses PLS analysis.

The results showed that: (1) Education level had a positive and significant effect on teacher competence. (2) The level of education has a positive and significant effect on student achievement. (3) Teaching experience has a positive and significant effect on teacher competence. (4) Teaching experience has a positive and significant effect on student achievement. (5) Competence has a positive and significant effect on student achievement. (6) Competence can mediate the effect of education level on student achievement. (7) Competence can mediate the effect of teaching experience on student achievement.

Index Terms— Education Level, Teaching Experience, Competence, and Student Achievement

1 INTRODUCTION

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious-spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state-Based on Law no. 20 of 2003 article 3, the function of national education is expected to be able to develop capabilities and shape the character and civilization of a dignified nation, while the purpose of holding education is to develop the potential of students to be able to become human beings who believe and fear God Almighty, have a noble character, healthy, knowledgeable, capable, creative, independent, and become a democratic and responsible citizen.

Various factors influence learning in schools, including teachers, students, infrastructure, educational environment, and curriculum. Of all that, the teacher is the most decisive component, because in the hands of the teacher the curriculum, learning resources, facilities and infrastructure, and the learning climate become something meaningful for the lives of students.

Supriadi in Mulyasa (2007:9) reveals that the quality of education assessed from student learning achievement is largely determined by teachers, namely 34% in developing countries, and 36% in industrialized countries. A study conducted (Heyneman and Loxley, 2015) in 29 countries found that

among the various inputs that determine the quality of education, especially those shown in student achievement, one-third is determined by the teacher. The quality of teacher education is very decisive in the preparation of reliable human resources. According to Government Regulation No. 19 of 2005 article 28, that "educators must have academic qualifications and competencies as learning agents, physically and mentally healthy, and can realize national education goals".

The academic qualification referred to is the minimum level of education that must be met by an educator as evidenced by a relevant diploma and/or certificate of expertise by the provisions of the applicable legislation. The educational background of the teacher can be seen from two sides, namely the suitability between the field of science pursued with the field of duty and level of education. For the teaching profession, it should also come from teacher education institutions. Beginner teachers with a teacher education background are easier to adjust to the school environment because they are already equipped with a set of theories to support their service, while teachers who are not teacher training will find many problems in learning.

The success or failure of a learning process is largely determined by the learning achievement achieved by students. Learning achievement can be shown through the value given by a teacher from the number of fields of study that have been

studied by students. In the process of achievement, learning achievement is strongly influenced by various factors.

One of the main factors that are very influential in the success of learning is the presence of teachers. Given the existence of teachers in the process of teaching and learning activities are very influential, then the quality of teachers should be considered.

2. LITERATURE REVIEW

2.1. Human Resource Management Concept

According to Bintoro and Daryanto (2017:15) states that "Human resource management, abbreviated as HRM, is a science or method of how to manage the relationship and role of resources (labor) owned by individuals efficiently and effectively and can be used optimally so that achieve the common goals of the company, employees, and society to be maximized".

According to Sofyandi (2013: 6) states that "HR management is defined as a strategy in implementing management functions, namely planning, organizing, leading and controlling, in every HR operational activity/function starting from the process of withdrawal, selection, training, and a development, placement which includes promotions, demotions and transfers, performance appraisals, compensation, industrial relations, and termination of employment, which are shown to increase the productive contribution of organizational human resources towards achieving organizational goals more effectively and efficiently".

Based on the opinions of the experts above, it can be concluded that human resource management is a science in managing and planning, and processing relationships and the role of an individual or employee in carrying out responsibilities towards the company effectively and efficiently in achieving the goals desired by the company.

2.2. Education Level Concept

The National Education System Law Number 20 of 2003 states that education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual-religious strength, self-control, personality, intelligence, noble character., as well as the skills needed by himself, society, nation, and state (Aqib 2009:16).

According to Sikula in Mangkunegara (2004) education level is a long-term process that uses systematic and organized procedures, in which managerial workers learn conceptual and theoretical knowledge for general purposes. Thus Hariandja (2002) states that the level of education of an employee can increase the company's competitiveness and improve company performance.

According to Langeveld (2004), education is an effort, influence, protection, and assistance provided to children aimed at the maturation of the child, or more precisely helping the child to be sufficiently capable of carrying out his life tasks. According to Dewey (2003), education is a process of forming fundamental skills intellectually, emotionally towards nature and fellow human beings. According to J.J. Rousseau: Education provides us with supplies that were not present in childhood,

but which we need in adulthood.

2.3. Teaching Experience Concept

Teaching experience is one of the factors that determine success in education. Teaching experience in this case is a period of work as a teacher. The length of the work period as a teacher will provide a different experience between one teacher and another. The longer he serves as a teacher, the more experience he has, so a teacher who has a long tenure will not be the same as a new teacher.

Manulang in Rusman (2018), work experience is: "The process of forming knowledge or skills about the method of a job because of its involvement in the implementation of work tasks". Ranupandojo in Wariati (2015), work experience is: "A measure of the length of time or period of work that has been taken by someone who can understand the tasks of a job and have done it well". According to Hasibuan (2016: 55), experienced people are prospective employees who are ready to use. An applicant's work experience should be the main consideration in the selection process.

2.4. Competency Concept

Competence according to Spencer & Spencer in Palan (2007) is a basic characteristic possessed by an individual that is causally related in meeting the criteria needed to occupy a position. Competence consists of 5 types of characteristics, namely motives (consistent will as well as a cause of action), innate factors (consistent character and response), self-concept (self-image), knowledge (information in a particular field), and skills (ability to carry out tasks).

In contrast to Fogg (2004:90) which divides competence into 2 (two) categories, namely basic competence and which distinguishes basic competence (Threshold) and differentiating competence (differentiating) according to the criteria used to predict the performance of a job. Basic competencies (Threshold competencies) are the main characteristics, which are usually in the form of basic knowledge or skills such as the ability to read while differentiating competencies are competencies that make a person different from others.

2.5. Learning Achievement Concept

Learning is a business process that is carried out by a person to obtain a new behavior change as a whole, because of his own experience in interaction with his environment (Slameto, 2003: 2). Based on the opinion of Slameto (2003:2) it can be concluded that learning is a series of stages to achieve changes in the overall behavior of individuals who are relatively fixed because of experience and interaction with the environment involving cognitive and affective processes which are the result of the maturity process, then manifested in learning achievement. Changes that occur in a person are many, both in nature and type, because of that, of course, not every change in a person is a change in the sense of learning.

In Bloom's category, there are three main domains in the learning process, namely the cognitive (mind), affective (emo-

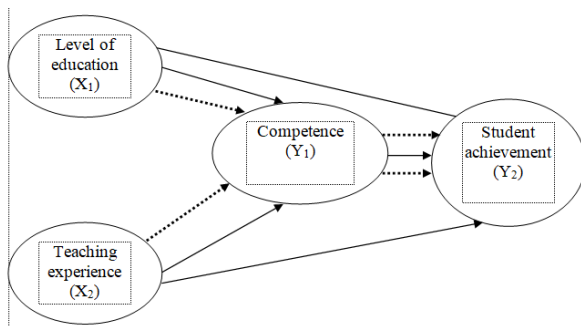
tional), and psychomotor (behavioral) domains. Knowing the progress of students' learning abilities is very important in teaching and learning activities. Success in achieving educational goals depends a lot on the learning process experienced by students. Individual successes and failures in new learning activities can be seen after an assessment is held.

3. CONCEPTUAL FRAMEWORK AND HYPOTHESES

3.1 Conceptual Framework

Based on the previous framework of thinking, the researchers developed a conceptual framework in this study as presented in Figure 1. following:

Figure 1. Conceptual Framework



3.2 Research Hypotheses

Based on the problem formulation and literature review that has been described previously, the hypotheses in this study are as follows:

1. Education level has a positive and significant effect on teacher competence.
2. The level of education has a positive and significant effect on student achievement.
3. Teaching experience has a positive and significant effect on teacher competence.
4. Teaching experience has a positive and significant effect on student achievement.
5. Competence has a positive and significant effect on student achievement.
6. Competence can mediate the effect of education level on student achievement.
7. Competence can mediate the effect of teaching experience on student achievement.

4. RESEARCH METHOD

Types of research

Based on the nature of the problem from the objectives to be achieved, this research is explanatory. Explanatory research generally aims to explain the position of the variables studied and the relationship and influence between one variable and another (Sugiono, 2001). The typology of research that is explanatory in the level of education and teaching experience on competence and learning achievement of SMA Negeri 04 Bombana students explains causality between variables through

hypothesis testing.

Population and Sample

According to Sudjana quoted by Riduwan (2009:118) population is the totality of all possible values, both the results of counting or quantitative and qualitative measurements of certain characteristics regarding a complete and clear set of objects whose properties you want to study. The population in this study were all 50 teachers at SMA Negeri 04 Bombana.

The sample is an element of the population selected to represent the population in the study (Cooper and Schindler, in Sandy, 2015). The method of determining the number of samples in this study uses the census method where the entire population is used as the research sample. Thus, the sample of this study amounted to 50 teachers at SMA Negeri 04 Bombana.

Method of Collecting Data

The methods used in data collection in this study are as follows:

- a. A questionnaire, namely collecting data by distributing a list of questions (questionnaires) to employees at SMA Negeri 04 Bombana.
- b. Documentation, namely data collection by recording or copying various documents relevant to this research.

Data Analysis Technique

This study uses two kinds of analysis, descriptive statistical analysis and inferential statistical analysis of the data obtained in the field. Descriptive analysis is used to describe in more depth each research variable. While quantitative techniques are used to see the strength of the influence between the independent variables and the dependent variable, namely by analyzing the data that has been scored according to the measurement scale that has been determined through multiple linear regression analysis using Microsoft Excel, SPSS, and SmartPLS software.

5. RESEARCH RESULTS AND DISCUSSION

Partial Least Square (PLS) Analysis Results

Discriminant Validity

The discriminant validity test in this study uses the value of cross loading and the square root of average (AVE) to check whether the research instrument is valid in explaining or reflecting latent variables.

Discriminant validity by using the square root of average variance extracted (\sqrt{AVE}). If the value of the square root of average variance extracted (\sqrt{AVE}) for each variable is greater than the AVE value and the correlation between the latent variable and other latent variables, then the instrument variable is said to be a valid discriminant. The results of the calculation of the value of the square root of average variance extracted (\sqrt{AVE}) are presented in Table 1. the following.

Table 1. Value of AVE, $\sqrt{\text{AVE}}$, and Correlation between Latent Variables

Research variable	AVE	$\sqrt{\text{AVE}}$	Correlation			
			Level of education	Teaching experience	Competence	Student achievement
Level of education (X_1)	0,904	0,950	1,000			
Teaching experience (X_2)	0,946	0,972	0,755	1,000		
Competence (Y_1)	0,908	0,952	0,596	0,616	1,000	
Student achievement (Y_2)	0,910	0,953	0,605	0,718	0,813	1,000

Source: Primary Data processed in 2021

The test results are in Table 1. shows the value of the square root of average variance extracted ($\sqrt{\text{AVE}}$) of all research variables is greater than the correlation between latent variables and other latent variables so that the instrument of each variable is said to be a valid discriminant.

Composite Validity

Composite reliability tests the reliability value between the indicators of the constructs that make it up. The results of composite reliability are said to be good if the value is above 0.70. The results of testing the composite reliability of the measurement model in this study can be presented in Table 2.

Table 2. Instrument Measurement Model Reliability Test Results

Variable	Construk Reliability	Result
Level of education (X_1)	0,949	Reliable
Teaching experience (X_2)	0,981	Reliable
Competence (Y_1)	0,975	Reliable
Student achievement (Y_2)	0,968	Reliable

Source: Primary Data processed in 2021

The test results are in Table 2. The composite reliability scores for the variables of education level, teaching experience, competence, and student achievement showed that the four latent variables analyzed had good composite reliability because their values were greater than 0.70. It can be concluded that all instruments used in this study have met the criteria or are suitable for use in measuring the overall latent variables.

Evaluation of Goodness of Fit Model

The structural model is evaluated by considering the Q^2 predictive relevance model which measures how well the observed values are generated by the model. Q^2 is based on the coefficient of determination of all endogenous variables. The magnitude of Q^2 with a range of $0 < Q^2 < 1$, the closer the value to 1 means the better the model. The coefficient of determination (R^2) of the two endogenous variables is presented in Table 3.

Table 3. Goodness of Fit Test Results

Structural Model	Endogenous Variables	R-Square
1	Competence (Y_1)	0,419
2	Student achievement (Y_2)	0,738

Source: Primary Data processed in 2021

Based on the value of the coefficient of determination (R^2) which is presented in table 5.12. above can be seen the value of Q^2 with the following calculations:

$$\begin{aligned}
 Q^2 &= 1 - (1 - R^2_1)(1 - R^2_2) \\
 &= 1 - \{(1 - 0.4192)(1 - 0.7382)\} \\
 &= 1 - \{(0.824)(0.455)\} \\
 &= 0.624
 \end{aligned}$$

Based on the results of the calculation of perception data, it is known that the predictive-relevance value (Q^2) = 0.624 or 62.4%. This means that the accuracy or accuracy of this research model can explain the diversity of variables of education level, teaching experience, competence, and student achievement of

62.4%. The remaining 37.6% is explained by other variables not included in this research model.

Structural Model Testing and Research Hypotheses

Path Coefficient Testing and Hypothesis Testing

Testing the hypothesis and the path coefficient of direct influence between the variables of education level, teaching experience, competence, and student achievement. The results of

testing the influence between variables can be seen from the path coefficient values and critical points (t-statistics) which are presented in the path diagram in Scheme 1.

Scheme 1. Path Coefficient Diagram and Hypothesis Testing

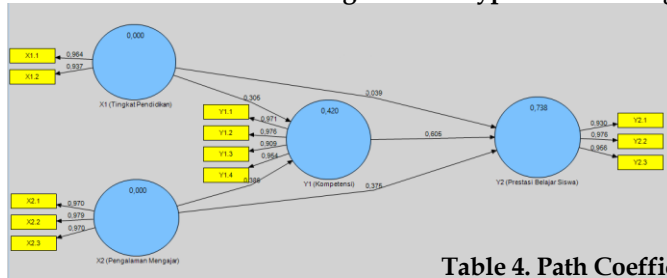


Table 4. Path Coefficient and Hypothesis Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
X1 -> Y1	0,304527	0,313639	0,12895	0,12895	2,36154
X1 -> Y2	-0,03872	0,030730	0,07155	0,07155	2,03381
X2 -> Y1	0,386295	0,377175	0,15847	0,15847	2,43759
X2 -> Y2	0,375077	0,359045	0,10486	0,10486	5,8059
Y1 -> Y2	0,604979	0,613866	0,06883	0,06883	8,78899

Source: Primary Data processed in 2021

Based on the results of data analysis in Table 5.14. above, the test of the direct influence path coefficient and the research hypothesis aims to answer whether the proposed hypothesis can be accepted or rejected.

Competence Can Mediate the Effect of Education Level on Student Achievement

The results of the path diagram analysis show that the level of education has a direct effect on competence with a value of 0.313 in a positive direction. The following is the calculation of the indirect effect using the Sobel test formula (Solimun, 2012) as follows:

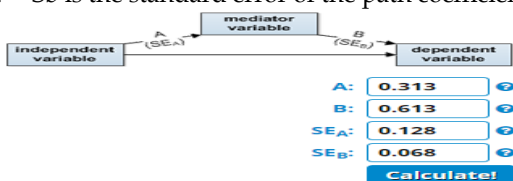
$$Z\text{-Value} = \frac{ab}{\sqrt{b^2Sa^2 + a^2Sb^2}}$$

where:

1. ab is the indirect effect coefficient obtained by multiplying the direct effects a and b.
2. a is the coefficient of exogenous direct effect (X) on the mediator (M).
3. b is the direct effect coefficient of the mediator variable (M) on the endogenous (Y).
4. Sa is the standard error of coefficient a.
5. Sb is the standard error of coefficient b

Based on the Sobel formula, the indirect effect (mediation) test can be carried out using the Sobel Online Test application on the <http://quantpsy.org/sobel> site and then input values based on the Partial Least Square output in the Bootstrapping Inner Weight Appendix. The inputted data are:

1. a is the path coefficient of education level (X1) on student achievement (Y2).
2. B is the path coefficient of the mediator variable (competence) on student achievement (Y2).
3. Sa is the standard error of the path coefficient a.
4. Sb is the standard error of the path coefficient b



Source: Primary Data processed in 2021

Test results in Scheme 1. and table 4. obtained from the five direct effects tested, all of which have a positive and significant effect, namely: (1) the level of education has a positive and significant effect on competence, (2) the level of education has a positive and significant effect on student achievement, (3) teaching experience has a positive and significant effect on competence, (4) teaching experience has a positive and significant effect on student achievement, (5) competence has a positive and significant effect on student achievement. Completely can be presented in Table 4.

Source: <https://www.danielsooper.com>

Based on the results of the online Sobel test calculation, the results of the t-statistic (t-count) with a value of 2.360 > from t-critical 1.96 are obtained. While the probability value (p-value) obtained a value of 0.0091 < (a) 0.05. Based on the results of this analysis, it can be explained that competence can mediate the effect of education level on student achievement at SMA Negeri 04 Bombana.

Competence Can Mediate the Effect of Teaching Experience on Student Achievement

The results of the path diagram analysis show that competence has a direct effect on student achievement with a value of 0.613 in a positive direction. The following is the calculation of the indirect effect using the Sobel test formula (Solimun, 2012) as follows:

$$Z\text{-Value} = \frac{ab}{\sqrt{b^2Sa^2 + a^2Sb^2}}$$

where:

1. ab is the indirect effect coefficient obtained by multiplying the direct effects a and b.
2. a is the coefficient of exogenous direct effect (X) on the mediator (M).
3. b is the direct effect coefficient of the mediator variable (M) on the endogenous (Y).
4. Sa is the standard error of coefficient a.
5. Sb is the standard error of coefficient b

Based on the Sobel formula, the indirect effect (mediation)

test can be carried out using the Sobel Online Test application on the <http://quantpsy.org/sobel> site and then input values based on the Partial Least Square output in the Bootstrapping Inner Weight Appendix. The inputted data are:

1. a is the path coefficient of teaching experience (X2) on student achievement (Y2).
2. B is the path coefficient of the mediator variable (competence) on student achievement (Y2).
3. Sa is the standard error of the path coefficient a.
4. Sb is the standard error of the path coefficient b

Diagram showing the relationship between an independent variable, a mediator variable, and a dependent variable. The path from the independent variable to the mediator variable is labeled A (SEa), and the path from the mediator variable to the dependent variable is labeled B (SEb).

Input values:

- A: 0.359
- B: 0.613
- SEa: 0.104
- SEb: 0.068

Calculate!

Sobel test statistic: 3.22366347
One-tailed probability: 0.00063281
Two-tailed probability: 0.00126562

Source: <https://www.danieloper.com>

Based on the results of the online Sobel test calculation, the results of the t-statistic (t arithmetic) with a value of $3.223 <$ from t-critical 1.96. While the probability value (p-value) obtained a value of $0.000 > (a) 0.05$. Based on the results of this analysis, it can be explained that competence can mediate the effect of teaching experience on student achievement at SMA Negeri 04 Bombana.

Research Limitations

The researcher realizes that the implementation of this research cannot be separated from the limitations experienced, in addition to the limitations of time and cost, namely:

1. This study uses a questionnaire so that sometimes the answers given by respondents do not show the real situation because they are not supported by in-depth interviews.
2. The data obtained are direct answers from research respondents, so that the acquisition of data in this study is strongly influenced by the perception and honesty of respondents in providing answers to the statements given in the questionnaire.
3. In answering, the meaning of the statement may not be clear, so there may be some answers that deviate somewhat from the intended purpose.

6. Conclusions and Suggestions

6.1 Conclusion

Based on the research findings, problem formulation, research objectives, research hypotheses, results of data analysis, and discussion of research results, the conclusions of this study can be stated as follows:

1. Education level has a positive and significant effect on

teacher competence at SMA Negeri 04 Bombana.

2. The level of education has a positive and significant effect on student achievement at SMA Negeri 04 Bombana.
3. Teaching experience has a positive and significant effect on teacher competence at SMA Negeri 04 Bombana.
4. Teaching experience has a positive and significant effect on student achievement at SMA Negeri 04 Bombana.
5. Competence has a positive and significant effect on student achievement at SMA Negeri 04 Bombana.
6. Competence can mediate the effect of education level on student achievement at SMA Negeri 04 Bombana.
7. Competence can mediate the effect of teaching experience on student achievement at SMA Negeri 04 Bombana.

6.2 Suggestions

Based on the results of data analysis, discussion, and conclusions of this study, suggestions that can be put forward are:

1. For leaders at SMA Negeri 04 Bombana, it is recommended that they continue to improve the level of education and teaching experience so that the competence and learning achievement of students at SMA Negeri 04 Bombana increase.
2. To obtain a more comprehensive explanation of the level of education and teaching experience on the competence and learning achievement of students at SMA Negeri 04 Bombana, it is recommended that future research be able to develop another variable dimension, namely the variable of teacher training and professionalism. This is based on this research is part of the variables that affect student achievement.

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