Education and Training Technology Increases Teacher Competence

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Abstract. This study aims to analyze the effect of training on teacher competence. This study uses a quantitative approach to survey method with the independent variable x training, and the dependent variable y teacher competence. The research was conducted in public elementary schools in Jati sub-district, Kudus Regency. Teacher competence is a combination of personnel, scientific, technological, social, and spiritual abilities that become the standard of teacher professional competence, which includes material mastery, student understanding, educational learning, self-development and professionalism. Training is the development of skills, skills, dexterity (Skill Building) in carrying out tasks. Supervision is a coaching activity planned to assist teachers and other school staff in carrying out work effectively. This study also uses data collection methods used are questionnaires, observation, and literature study. Meanwhile, data analysis was performed through editing, coding, scoring, and tabulating. The results showed that training can improve teacher competence in SD Negeri Jati, subdistrict Kudus Regency in 2020. The results of testing the training hypothesis can improve teacher competence which shows a t value of 2.134 and uses a significance limit of 0.02. the significance level is less than 0.05, and t table n = 74 is 1.993. Due to the value of t count> t table (2.134> 1.993), training can improve teacher competence.

1. Introduction

Education is a conscious and planned effort to create an atmosphere of learning and the 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, the nation and the state as where contain need in Article 1 paragraph 1, Law Number 20 of 2003 concerning the National education system¹¹. The learning process is held interactively, is fun, challenging, inspiring, motivates students to participate actively, and provides sufficient space for initiative, creativity, and independence according to the talents, interests, abilities, and physical and psychological development of students [1].

Teacher competence is an ability that starting teachers must have from pre-school level, elementary level, and secondary level can be categorized in two categories; general competence and special competence. General competence are abilities and expertise that must be possessed by every teacher at every level of education. Meanwhile, special competencies are abilities and expertise that certain educators must have in accordance with the level and type of education being pursued [2].

Teacher competence is a collection of knowledge, behaviors, and skills that teachers must possess to achieve learning and educational goals [3]. Teacher competence is also the mastery of knowledge, skills, values and attitudes that are reflected in the habit of thinking and acting in carrying out the profession as a teacher [4].
Some of the opinions above, the researcher can conclude that competence is defined as the knowledge, skills and abilities that are controlled by someone who has become part of himself so that he can perform cognitive, affective, and psychomotor behaviors as well as possible. The main difference between the teaching profession and other professions lies in their duties and responsibilities. These duties and responsibilities are closely related to the abilities required to carry out the profession. This basic ability is none other than the competence that must be possessed by a teacher. 

Teacher competence is needed by institutions / schools that are able to produce quality human beings and are supported by quality human resources. One of the human resources in providing education is the principal. The principal has a very important role in influencing the system in schools. Operationally, the principal is the person who is at the forefront of coordinating efforts to improve quality learning. As the leader of the institution in the school has a big enough role in fostering the ability of teachers in the learning process. Such as increasing discipline, providing motivation, and providing training.

Teacher competence is defined as the ability and authority of teachers in carrying out the teaching profession in teaching and teaching from the learning process to learning evaluation and follow-up. Professional teachers have the obligation to plan learning, carry out a quality learning process, and assess and evaluate learning outcomes, so that to carry out these obligations the first step that a teacher must take is planning learning, especially compiling a syllabus and learning implementation plan. Teacher competency as a core educational competency needs to be improved regularly. Leaving teachers with existing or modest competencies in managing learning activities is a form of "academic drift". Teachers should not be allowed to take self-taught actions, but need intervention in an effort to increase their competence. For this reason, training can improve teacher competence and become a mandatory menu in an effort to improve the quality of the learning process. As a pilot project the training is given to all teachers in elementary schools.

The factor affecting teacher competence is training. Training is a systematic process to develop knowledge, skills and attitudes needed in carrying out one's duties and it is hoped that it will influence the work performance of both the person concerned and the organization where he works [5]. Training is one of the efforts to improve teacher professional competence, in which in this training the teacher's ability is sharpened to be better. According to [6] [7], which concluded that there was an influence between education and training on increasing teacher professional competence. Therefore, it is hoped that the principal will always involve teachers in both internal and external training programs with the aim of optimizing and improving teacher professional competence. The results of research by [8], concluded that the training that teachers have participated in has had a significant effect on teacher pedagogical competence.

Based on the above background, the formulation of the problem in this study is:

1. How much influence does training have on teacher competence in SD Negeri Jati Subdistrict, Kudus Regency in 2020?

The purpose of this research is:

1. To analyze the effect of training on teacher competence at Public Elementary Schools in Jati Subdistrict, Kudus Regency, 2020.

2. LITERATURE REVIEW

According to the Government Regulation of the Republic of Indonesia Number 74 of 2008 concerning Teacher chapter II article 3, it is explained that professional competence as referred to is the ability of teachers to master knowledge in the fields of science, technology and cultural arts which at least includes mastery of:

1. Subject matter broadly and deeply in accordance with the standard content of the Education unit program, subjects and groups of subjects to be taught

2. Concepts and methods of relevant scientific, technological, or artistic disciplines that are conceptually overshadowed or coherent with the Education unit's program, subjects or groups of subjects being taught.
Teacher competence is a set of abilities that must be possessed by teachers in knowledge and in shaping the attitudes, personalities and skills of students in practicing broad and in-depth knowledge that meet the competency standards set out in the National Education Standards.

Professional competence is an ability, able to master theoretical and practical skills [9]. According to the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers Article 10 Paragraph (1) teacher competence includes pedagogical competence, personality competence, social competence, and professional competence obtained through professional education.

1. Pedagogic Competence

Pedagogic competence is a skill or ability that must be mastered by a teacher in seeing the characteristics of students from various aspects of life, be it moral, emotional, or intellectual. The implications of this ability can of course be seen from the teacher's ability to master the principles of learning, starting from theory, studying until mastery of teaching materials [10].

The specific pendagogic competencies for SD / MI teachers can be detailed as follows:

a. Mastering the characteristics of students from physical, moral, social, cultural, emotional, and intellectual aspects.
b. Mastering theoretical learning and educational learning principles.
c. Developing a curriculum related to the subject / development area being handled.
d. Developing educational learning
e. Utilizing information and communication technology for the benefit of learning.
f. Facilitating the development of students' competencies to actualize their various potentials.
g. Communicate effectively, empathically, and politely with students.
h. Conducting assessment and evaluation of learning processes and outcomes.
i. Make use of the results of the assessment and evaluation for the benefit of learning.
j. Reflective take action to improve the quality of learning [11].

2. Personality Competencies

Personality competence is a personal ability that reflects a solid, stable, dignified, mature, wise personality, is a role model for students, and has a noble character. Government Regulation of the Republic of Indonesia Number 19 of 2005 concerning National Education Standards in the elucidation of Article 28 paragraph (3) states that personality competence is the ability of a personality that is solid, stable, mature, wise, and dignified, becomes a role model for students, and has noble character. Personality competencies that must be possessed by teachers, among others; a. Increase faith and devotion to God, in accordance with the religion and beliefs he professes, b. Developing self-confidence, c. Developing an attitude of tolerance and tolerance, d. Become a facilitator in fostering a culture of critical thinking, e. Diligent and tenacious in carrying out the educational process, f. Develop yourself in accordance with the renewal in his profession, g. Able to live up to educational goals, h. Dealing with others on the basis of mutual respect, i. Understand himself in both positive and negative aspects, j. Able to make changes in developing their profession as an innovator and creator.

3. Professional Competence

Professional competence is the ability, expertise, basic skills of educators that must be mastered in carrying out their duties as a teacher. He will be called a professional if he is able to master theoretical skills and practice the learning process and apply them in real terms. Oemar Hamalik explained that the problem of teacher professional competence is one of the competencies that every teacher at the educator level must have [12]. Professional competence is one of the basic abilities that must be possessed by a teacher, namely;

a. Have knowledge about learning and human behavior.
b. Having knowledge and mastering the field of study that he cultivates.
c. Have the right attitude about yourself, school, peers and the field of study they cultivate.
d. Have skills in teaching techniques.
4. Social Competence
Social competence is the teacher’s ability to communicate and interact effectively with students, fellow educators, education staff, parents or guardians of students, and the surrounding community [13]. The social competences that teachers must have are: a. Skilled in communicating with students and parents of students, b. Be sympathetic, c. Can cooperate with the education board / school committee, d. Good at getting along with colleagues and education partners, e. Understand the world around him (environment).
Training is a systematic process to develop knowledge, skills and attitudes needed in carrying out one’s duties and is expected to be able to influence the work performance of both the person concerned and the organization where he works [14],[15],[16]. According to [17], learning tools are things that must be prepared in carrying out the learning process, so training is needed. PAKEM training develops creative learning in the presence of effective and fun learning [18].

3. RESEARCH METHODS
Research design
In this study using quantitative data, that is, research that is required to use numbers, starting from data collection, interpretation of the data, and the appearance of the results. This research is categorized into hypothesis testing research. The method used in this research is a survey method.
The research variables of the research to be studied are Teacher Competence and Training.

Types and Sources of Data
The primary data used in this study is the result of filling out questionnaires by respondents, namely training on teacher competence in Jati District. Secondary data used in this research comes from magazines, the internet, books to support research material, journals, magazines and literature obtained in the library.

Population and Sample
The population of this study were all Primary School teachers in JatiSubdistrict, Kudus Regency in 2020, totaling 315 consisting of PNS and GTT teachers.
To determine the number of samples, it can be taken using the Slovin formula [19] as follows:
\[ n = \frac{N}{1 + Ne^2} \]
Information:
n = number of samples
N = Total population
e = Sample error rate (sampling error), 10%.

Data collection technique
The data collection techniques used in this study were obtained by:
1. Questionnaire.
2. Observation
3. Interview
Data processing
Before conducting data analysis, it is necessary to carry out the following stages of data processing techniques:
1. Editing
2. Coding
3. Scoring
4. Tabulating
4. RESULTS AND DISCUSSION

Based on the results of research that has been conducted on 74 respondents through questionnaires. To get the tendency for respondents' answers to the answers to each variable will be based on the range of answer scores as in the attachment. The training variable in this study was measured through 10 question items that presented the training indicator table from the table. Furthermore, based on the results of the respondents' answers about the training obtained through a questionnaire, a quantification process was carried out, namely changing the qualitative data to be quantitative. All data entered into the frequency distribution table for descriptive statistical analysis.

**Table 1. Distribution of Training Frequency**

| Skor | Frekuensi (f) | Percent (%) | Com. Percent | f. X1 |
|------|---------------|-------------|--------------|------|
| 28   | 1             | 1.3 %       | 1.3 %        | 28   |
| 30   | 1             | 1.3 %       | 2.6 %        | 30   |
| 31   | 1             | 1.3 %       | 3.9 %        | 31   |
| 32   | 3             | 3.9 %       | 7.8 %        | 96   |
| 40   | 2             | 2.6 %       | 10.4 %       | 80   |
| 41   | 7             | 9.4 %       | 19.8 %       | 287  |
| 42   | 9             | 12.1 %      | 31.9 %       | 378  |
| 43   | 18            | 24.3 %      | 56.2 %       | 774  |
| 44   | 10            | 13.5 %      | 69.7 %       | 440  |
| 45   | 9             | 12.2 %      | 81.9 %       | 405  |
| 46   | 2             | 2.6 %       | 84.7 %       | 92   |
| 47   | 2             | 2.6 %       | 87.3 %       | 94   |
| 48   | 9             | 12.7 %      | %            | 432  |
| Total| 74            | 100 %       | 100 %        | 3167 |

Source: Primary data processed, 2020

**Teacher Competency Variable Description**

The teacher competency variable in this study was measured through 12 question items that presented the teacher competency indicator table from the table. Furthermore, based on the results of the respondents' answers about teacher competence obtained through a questionnaire, a quantification process is carried out, namely changing the qualitative data to quantitative data. All data entered into the frequency distribution table for descriptive statistical analysis.

**Table 2. Teacher Competency Frequency Distribution**

| Skor | Frekuensi (f) | Percent (%) | Com. Percent | f. X2 |
|------|---------------|-------------|--------------|------|
| 32   | 2             | 2.6 %       | 2.6 %        | 64   |
| 40   | 1             | 1.3 %       | 3.9 %        | 40   |
| 41   | 2             | 2.6 %       | 6.5 %        | 82   |
| 42   | 1             | 1.3 %       | 7.8 %        | 84   |
| 43   | 2             | 2.6 %       | 10.4 %       | 86   |
| 44   | 6             | 7.8 %       | 18.2 %       | 264  |
| 45   | 5             | 6.7 %       | 24.9 %       | 225  |
| 46   | 5             | 6.7 %       | 31.6 %       | 230  |
| 47   | 23            | 31.1 %      | 62.7 %       | 1081 |
| 48   | 17            | 22.9 %      | 85.6 %       | 816  |
| 49   | 10            | 14.4 %      | 100 %        | 490  |
| Total| 74            | 100 %       | 100 %        | 3462 |

Source: Primary data processed, 2020
Training can Improve Teacher Competence.
The results of testing the training hypothesis can improve teacher competence showing the t value of 2.134 and using a significance level of 0.002, the significance level is less than 0.05, and t table n = 74 is 1.993. Due to the value of t count > t table (2.134 > 1.993), training can improve teacher competence. Training is a systematic process to develop knowledge, skills and attitudes needed to carry out one's duties and is expected to be able to influence the work performance of both the person concerned and the organization where he works.

5. CONCLUSIONS AND SUGGESTIONS

CONCLUSION
Based on the results of research and discussion, it can be concluded. Training can improve the competence of teachers at SD Negeri Jati Subdistrict, Kudus Regency in 2020. The results of testing the training hypothesis can improve teacher competence showing the t value of 2.134 and using a significance limit of 0.002, the significance level is less than 0.05, and t table n = 74 of 1.992. Due to the value of t count > t table (2.134 > 1.992), training can improve teacher competence.

SUGGESTION
Based on the results of the author's research, the following suggestions can be given:
1. Principals of schools should empower teachers who have attended training and provide further guidance to improve the teaching and learning process in schools.
2. For the teacher, it would be better if the training that has been followed can be followed up with an exchange of ideas among teachers in schools, the role of teachers, especially the seniors, is very much needed in the formation of a culture of discussion and giving each other new knowledge among teachers. By discussing between teachers, something that is not clear to a particular teacher can be enlightened by teachers who have more understanding. It is in this forum that every teacher can give and receive knowledge from fellow teachers.
3. Realizing and improving teacher performance requires serious efforts, both from the teachers themselves and from the school principal, for example increasing the role of school principals, providing compensation, increasing teacher discipline and developing teacher resources. The role of the government is also very much needed in this case in order to improve teacher performance.

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