Improvement of Teacher's Ability to Make IT-Based Teaching and Evaluation Materials Using Scribe, Camtasia and Quiz Creator (Case Study in SMK Negeri 1 Tembarak, Temanggung, Central Java, Indonesia)

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Abstract. Teachers are an important element in the formal education system, both in primary, secondary, and high education. The ability of teachers to prepare teaching materials is very influential on student learning outcomes. Learning materials that are easy to understand and look interesting will be preferred and easily understood by students. Evaluation is one of the benchmarks for knowing the results achieved by students. Success in delivering subject matter certainly influences the results achieved in student evaluation. This study aims to measure the extent to which training in making teaching materials and exam questions based on information and communication technology (ICT) affects improving the ability of teachers in the learning process and evaluation of students. The method used in this study is a method of collecting data with experimental methods for teachers before and after training. The software used in this training was Scribe 1.0.4 and Camtasia 8.0 video for making IT-based learning material and Quiz Creator 4.5.1 used for making student evaluation materials. Survey data collection was conducted on forty teachers who attended training and sixty students at SMK N 1 Tembarak Temanggung. Wilcoxon Test is used to analyse survey data. The results of this study are that there is a significant correlation with the ability of teachers to develop teaching materials before and after training. The results of a survey of students found that 80% of students preferred teachers to use ICT-based teaching materials and 75% of students preferred to work on ICT-based questions rather than conventional exam questions, 87% teachers found to benefit from the training. The Wilcoxon test proves that the teacher's ability to make teaching materials and exam materials increases after training.

1. Introduction

Along with the development of this globalization era, the world of Information and Communication Technology (ICT) is also growing rapidly. Currently, ICT has become a primary need for many groups. By using ICT, a process and activity can be carried out more quickly, easily, and efficiently. Therefore, mastery of ICT equipment needs to be taught at all levels. From the data from the Ministry of Communication and Informatics (Kominfo), it is known that in January 2019 internet users in Indonesia had reached 152 million people or around 55.92% of the Indonesian population which reached 268.2 million. The population increased from 2018, where at that time, Internet users were around 146.26 million or 54.68% [1]. The use of ICT has penetrated all fields, both education [2-10], business [11-13], advertising, social [14], agriculture, industry, smart city [15] and daily necessities. Many studies have been conducted regarding the use of ICTs and social media [16]. In schools, ICT is used to disseminate information on school activities. Research on the use of ICT in education was also carried out by [17], who stated that improving the ability to write teaching materials and self-regulation through representation approach. If initially educational technology (in a very limited sense) was only acting on the level of the implementation of the curriculum in the classroom, the new concept requires educational technology as input, even from the curriculum planning stage. Thus, since curriculum planning must also be studied and determined the form of educational technology to be applied. The new paradigm of education favoured the selection of quality education by prioritizing the principles and practices of autonomy, accountability, accreditation, and evaluation. Success in the teaching and learning process is determined by the relationship of the teacher and students and how the teacher makes an approach in the classroom [18], the impact of learning experience [19], the impact of beliefs and knowledge of technology among teachers [20], level of students awareness level toward ICT and mobile technology [21],a pedagogical model using ICT [22], students literacy [23], essential ingredients to literacy [24] and the state of arts of the models and the methodologies educational with ICT [25] and [26] also by teacher behaviour [27] and even using social media [11]. ICT professional development and ICT practice in the classroom will be enacted in the teacher's classroom [3]. Using ICT will stimulate teacher to integrate pedagogical practice and ICT itself to improve student's material and evaluations [6] and even embedding virtual reality in the classroom [28].

The application of technology in education in the global era of information is how applied the latest types of ICT in educational practice [29] make review and appraisal of e-learning and ICT systems in the teaching process. The teaching and learning process that applies the latest ICT can be the use of electronic media such as radio, TV, internet, and computer network systems, as well as other forms. The use of ICT in education has been used by all countries, both developed and developing countries. Research has been done by [23] exploring student literacy across 44 countries, Bangladesh [30], India, and Hungary [21], Saharan Africa [31], and Korea [32]. In Indonesia, teacher quality improvement program made using various way, by empowering teachers by psychological approach [33], by using ICT [34-37]. The use of ICT for making computer-based exam questions has also been carried out by [38] by utilizing the Wonder Share Quiz Creator to make Arabic language questions, while [39] uses the same software to create computer-based questions (Computer Based Test) at Harapan 1 Vocational School Medan. The use of ICTs to develop teaching materials has been carried out by [36] who uses information technology to obtain teaching materials from the internet. Whereas [38] use ICT to develop teaching materials at SMAN 1 Bulok Tenggamus Lampung.

The purpose of this study was to determine the effect of the use of ICT in improving the ability of teachers and students in SMK N 1 Tembarak Temanggung by training ICT based Teaching and Evaluation material using Camtasia, Video Scribe, and Quiz Creator.

2. Experimental Setup

2.1. Domain of Study
The object of the study were 40 teachers and 30 students at SMK Negeri 1 Tembarak Temanggung. The training includes training on making ICT-based teaching materials using Camtasia 8.0 and Video Scribe 1.0.4 and making exam questions using Quiz Creator 4.5.1. Before and after the training was given a list of ten questions which the questionnaires are about the effects of the training towards the respondents. The analytical method used is the Wilcoxon test which it used to observe the effects of training on these teachers [40].

2.2. Method of Study
Research methods include observation, training, data collection, and analysis of survey results with the following steps:

i. Observation
Observations were made on the teachers at SMK N 1 Tembarak and provided a survey of what was used to make teaching materials and exam materials. From the observations, it was found that 80% answered they used word processing applications, and 100% answered that they wanted to be given training in making teaching materials using ICT-based applications that could be managed online. From these observations, training in the making of teaching materials was carried out using Camtasia and Video Scribe, and training in making and circumventing exam questions using Quiz Creator. The training was attended by 40 teachers.

ii. Training
From the results of observations, training in the making of teaching materials was carried out using Camtasia 8.0 and Video Scribe 1.0.4, and training in making and circumventing exam questions using Quiz Creator 4.5.1. The training was conducted for 6 hours for each application. Training includes the creation of multi-media-based teaching material content and making questions and managing exam questions.

iii. Questionnaire
After the training, a survey was held about the effects of the training. Ten questions to 30 students and 40 teachers were given and processed using the Wilcoxon test with the help of SPSS software.

iv. d. Analysis of test results
After testing, the results obtained from the test are analysed and reported in the documentation.

2.3. Wilcoxon Test.
This theory was used to compare between two groups of interconnected data used the Wilcoxon test. This test has more test strength than the sign test. Assumptions for the Wilcoxon test, the data used is at least an ordinal scale.[43]. The equations for statistical calculation are as in equation (1).
The hypothesis used in the Wilcoxon test is as follows.
H0: $d = 0$ (there is no difference between the two treatments given)

H1: d ≠ 0 (there are differences between the two treatments given) by d shows the difference in value between the two treatments

$$Z = \frac{T - \left[\frac{1}{4N(N+1)}\right]}{\sqrt{\frac{1}{24N(N+1)(2N+1)}}} \qquad (1)$$

Explanation:
N = the amount of data that changes after being given a different treatment
T = number of ranks from a negative difference value (if the number of positive differences is more than the number of negative differences)
Z = number of ranks from a positive difference value (if the number of negative differences is more than the number of positive differences)

Critical area: H0 is rejected if the value is │Z│> Zα / 2 or P-value <α.

3. Results and discussion

Before the training, a survey was conducted on the tools used in the production of teaching materials and evaluation materials. The results are shown in Figure 1, where 75% of teachers make teaching materials with the Word Processing and Presentation Processing Applications, and there are still 20% using conventional methods with blackboards without documentation, and only 5% have used ICT-based tools. Furthermore, the students' examination results were carried out by the teachers, and the average was taken for Bahasa Indonesia subject.
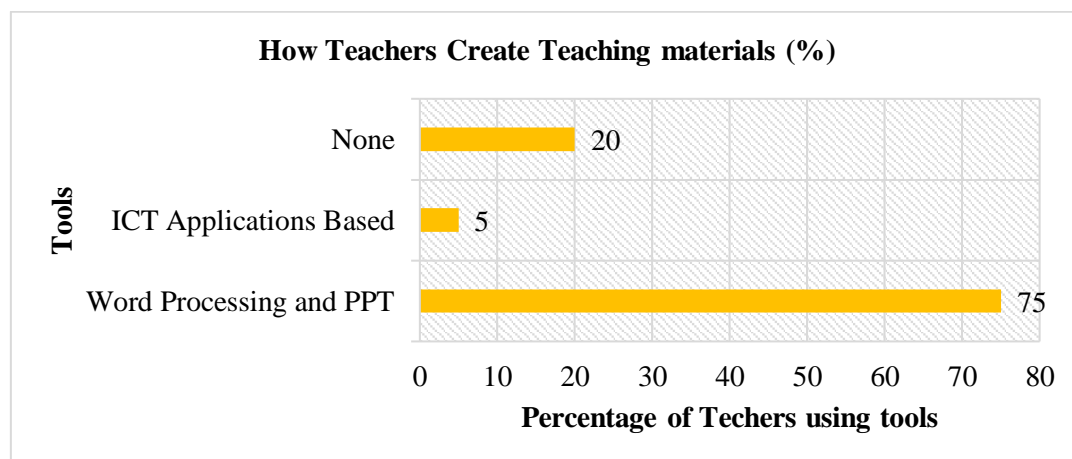

Figure 1. Results of a Preliminary Survey of 40 Teachers in SMK N 1 Tembarak

Then the training on making ICT-based teaching materials and evaluation materials is conducted by using Camtasia 8.0 and Video Scribe 1.0.4. Camtasia Studio is a multi-screen recorder and a video editor used for Windows operating system computer. This application allows one to design, make, and record professional-looking videos easily. It does create an impressive presentation for teachers, learning

materials videos, and tutorials for many purposes. The feature in Camtasia including screen recording for Windows operating system computer, webcam recording, simultaneously record video and audio, built-in video editor, transitions and animations, free music and audio library, make interactive quizzes and record and import presentations from other media. Scribe video is a software for creating teaching materials as if you were teaching using video. Video Scribe is often referred to as whiteboard maker. Interesting and easy-to-understand teaching materials will surely be enjoyed by students. With these two applications, teachers can easily create teaching materials as needed and can be given online to students or recorded and can be studied again at home. Making evaluation materials is something that must be done by the teacher in the learning process to measure students' abilities. Regarding with advances in modern technology products, ICT-based learning models are able to help teachers to facilitate the learning process in achieving goals. Therefore, teachers need to be able to use software that can be used to make teaching materials and student evaluation materials. Quiz Creator is a software that is easily run by the teacher. Because, the display of the software is similar to word processing software, and no less important, the results of questions or quizzes made with Quiz Creator can be in flash files formats so that it can be accessed on any gadget as long as Flash Player is provided, also in web pages and even on CD.

After the training, teaching and evaluation materials were tested on Bahasa Indonesia class in three meetings and evaluated. The result is the ability of students increased by 25% with parameter test scores obtained from the material compared with the previous grades before the teacher made ICT-based teaching materials. Figure 2 shows the results of a score of 30 students before and after training.
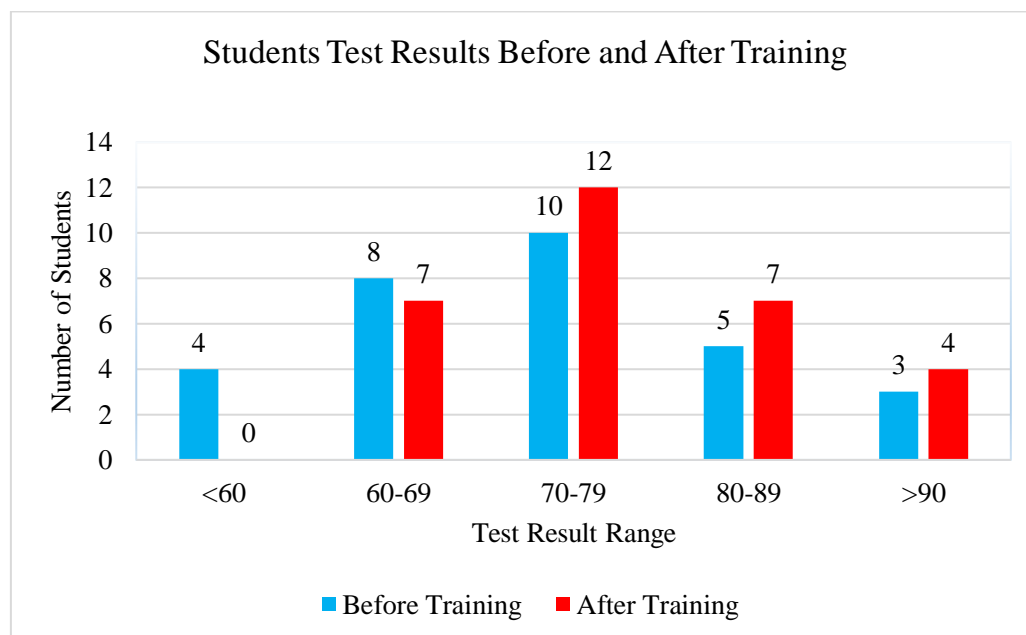

Figure 2. Results of a Preliminary Survey of 40 Teachers in SMK N 1 Tembarak

From Figure 2, the result of the evaluation increase by 25% from averages 69.67 to 72,80. We also asked students if the subject matter was more interesting and easier to understand and the results were that

85% of students answered yes, 10% of students answered not knowing and only 5% of students thought the teaching material was not interesting. Figure 3 shows the result. From the result can be concluded most students prefer the ICT bases student materials and enjoy them more the old one.
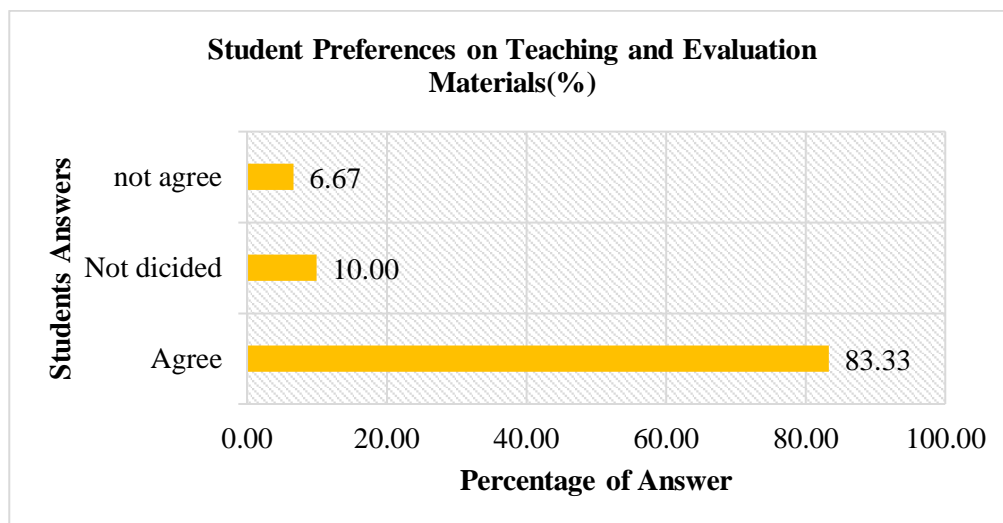

Figure 3. Student Preferences on Teaching and Evaluation Materials.

From the teacher's side, we surveyed whether the training in the making of teaching materials and evaluation materials was useful. From the survey results obtained, 62% of teachers strongly agree, 25% agree, abstain 10 and no one of the teacher answers disagrees or strongly disagree. Figure 4 shows the result.
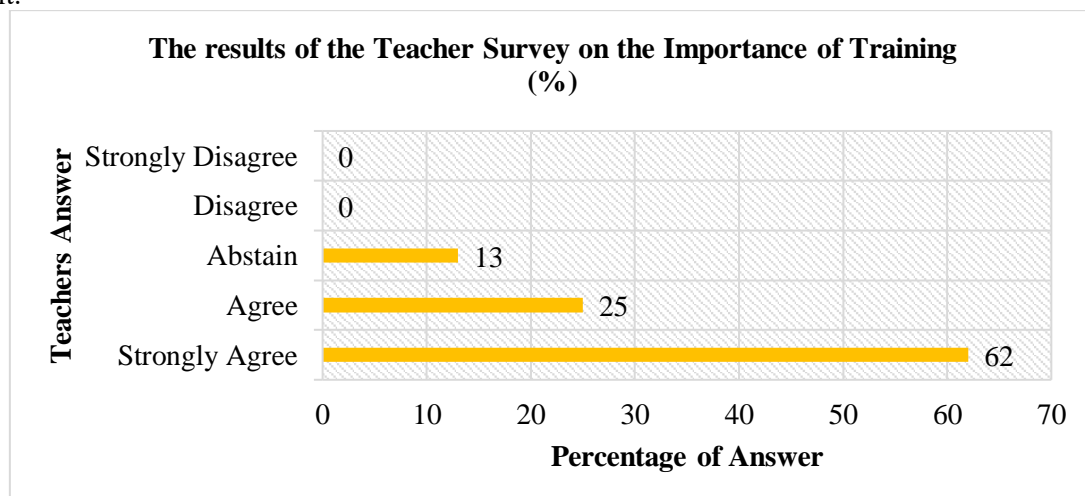

Figure 4. The results of the teacher survey on the importance of training

From these results, the Wilcoxon test was done to find out whether the assumption was that this training was beneficial for the teachers by using another question: It was found that it was easier to manage ICT-based teaching materials and exam questions. By using these applications, managing teaching, and evaluation materials are better. The result of SPPS is shown in Figure 5.

Table 1. The result of the Wilcoxon test for teachers

Test	N	Ranks	
		Mean Ranks	Sum of Ranks
Negative Ranks	0[a]	0.00	0.00
Positive Ranks	40[b]	20.50	820.00
Ties	0[c]		
Total	40[d]		
Test Statistics		Z=-5.617[a]	
Assump. Sig (2-tailed)		0.000	

[a] The values are based on the negative ranks
[b] Wilcoxon Signed Rank Test

Where:
H0: There is no improvement in the ability to manage teaching and evaluation materials after training
H1: There is an increase in the ability to manage teaching and evaluation materials after training.
H0 rejected if Sig (P-value) < α 5%,
Conclusion of result: H0 is rejected; there is an increase in the ability to manage teaching and evaluation materials after training. Thus, training provides a major influence on teachers in managing teaching and evaluation materials.

We also did the Wilcoxon Test using questions before the training on Making Learning Materials, and ICT-based Exam Questions teacher felt that making multimedia-based learning content was difficult, and If they use ICT, the learning content that I create will be more interesting for students. The result is shown in Table 2:

Table 2. The result of the Wilcoxon Test for teachers

Test	N	Ranks	
		Mean Ranks	Sum of Ranks
Negative Ranks	0[a]	0.00	0.00
Positive Ranks	40[b]	20.50	820.00
Ties	0[c]		
Total	40[d]		
Test Statistics		Z=-5.597[a]	
Assump. Sig (2-tailed)		0.000	

[a] The values are based on the negative ranks
[b] Wilcoxon Signed Rank Test

Where,

H0: there is no improvement in the quality of multimedia-based learning content after training

H1: there is an increase in multimedia-based learning content after training

H0 rejected if Sig (P-value) < α 5%,

Conclusion of the result: H0 is rejected; there is an increase in multimedia-based learning content after training. Thus, training provides a major influence on teachers in making learning content.

   And last, we conduct Wilcoxon test on how training improves teachers' quality using the questions: by the training on making ICT based learning and evaluation materials were support their duties as a teacher and if teacher use ICT in developing teaching and evaluation materials then it will improve their quality as a teacher. The result of the Wilcoxon test is shown in Table 3.

Table 3. The result of the Wilcoxon Test for teacher

Test	N	Ranks	
		Mean Ranks	Sum of Ranks
Negative Ranks	0[a]	0.00	0.00
Positive Ranks	40[b]	20.50	820.00
Ties	0[c]		
Total	40[d]		
Test Statistics		Z=-5.607[a]	
Assump. Sig (2-tailed)		0.000	

[a] The values are based on the negative ranks

[b] Wilcoxon Signed Rank Test

Where,

H0: there is no improvement in the quality of teachers after training

H1: there is an increase in the quality of teachers after training

H0 is rejected if Sig (P-value) <α 5%,

Conclusion of the result: H0 was rejected; there was an increase in teacher quality after training. Thus, training provides a major influence on teacher quality.

4. Conclusion

The results of the study proved that training in the making of teaching and evaluation materials had increased students interest and ability of students in receiving lessons and evaluations by 25% and preference by 85%, as well as increasing the ability of teachers in making teaching materials and exam materials by 87%. By using the Wilcoxon test it has also been proven that this training has a good impact on teachers with alpha results of α =-5.607 for improving teacher's ability to manage teaching and evaluation materials, α =-5.597 for improving teacher's ability in multimedia-based learning content, and α= -5.607 for improving the quality of teachers after training. The Wilcoxon test proves that the teacher's ability to make teaching materials and exam materials increases after training.

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