



Developing Multimedia Tutorial in Vocational High School Teacher Training

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Abstract. The purpose of community service activities is to provide training for teachers in vocational high schools to develop multimedia tutorials independently. In accordance with the findings of the needs analysis, it is rare for teachers to be trained to develop interactive multimedia tutorial software Implementation of four days of training in off-line mode and fourteen days of mentoring in online mode. After the implementation of the training activities followed by evaluation, to measure the success of the training. Summative evaluation applies the Kirkpatrick-Kirkpatrick model. There are four levels in the evaluation related to training, but the fourth level is not carried out related to the time and willingness of schools to disclose it. All levels of the evaluation carried out received positive responses from the training participants. Regarding the products being developed, some teachers still need additional time and assistance in developing multimedia tutorials.

Keywords: Experiences · Professional · Development · Software

1 Introduction

Vocational high school is one form of formal education unit that organizes vocational education at the secondary education level as a continuation of SMP, MTs, or other equivalent forms or continuation of learning outcomes that are recognized as equal or equivalent to SMP or MTs [1]. Based on the spectrum of expertise, it includes areas of expertise, expertise programs and expertise competencies. There are nine areas of expertise, namely technology and engineering, energy and mining, information technology and telecommunications, health and social workers, agribusiness and agrotechnology, maritime, business and management, tourism, arts and creative industries [2].

State Vocational High School 5 Malang is one of the Vocational High Schools (SMK) among 50 SMKs in the city of Malang and among 13 State Vocational High Schools established by the government in the same city. Based on the spectrum of expertise, SMKN 5 organizes 2 areas of expertise, namely Information and Communication Technology and Arts and Creative Industries. For the field of Information and Communication Technology expertise, the expertise program held is Computer and Informatics Engineering. As for the areas of expertise in the Arts and Creative Industries, there are two skill programs held, namely Fine Arts and Design and Creative Craft Products. The skill

programs consist of eight competency skills, namely software engineering, computer and network engineering, multimedia, fashion, wood and rattan crafts, textile crafts, ceramics crafts, animation.

Referring to the appendix Perdirjen no 07/D.D5/KK/2018 [3] on the structure of the SMK curriculum which contains three contents. The content is national content, regional content and vocational specialization content consisting of the basic areas of expertise, basic expertise programs and competency skills. Contents consist of several subjects that are the same both in terms of number and naming, but not for the content of vocational specialization. These subjects are categorized into three namely normative, adaptive and productive.

During this pandemic, teachers are required to be able to do online learning, especially the provision of learning resources. For this reason, teachers must be able to develop learning media independently, because the need is increasingly urgent to be used by independent learning students.

Multimedia learning is one of the learning media that provides an independent learning environment. Multimedia is one type of computer-based learning, so to develop and use it requires a computer in the process. For the development process, it does not only require knowledge of computers, but skills in developing them, especially operating multimedia developer software.

Multimedia is proven to be able to arouse students' motivation and interest in learning. This learning media is able to make students autonomous in their learning activity. According to Alessi & Trollip, there are many kinds of multimedia based on the learning methods, namely linear, interactive, tutorial, drill & practice, simulation, and games. Media elements are not only presented, but are designed so that students interact with the learning content.

Alessi & Trollip (2001) explained that tutorial learning begins with presenting information, and guiding students in learning the information. There are seven steps that must be taken to design a multimedia tutorial. The steps are presentation of information, question and response, judgment of responses, feedback about responses, remediation, sequencing lesson segments, closing of the tutorial. The seven steps are illustrated in Fig. 1.

Some articles mention training for teachers to develop multimedia [7][8], but few articles on evaluation of teacher training in developing multimedia. Therefore, this paper

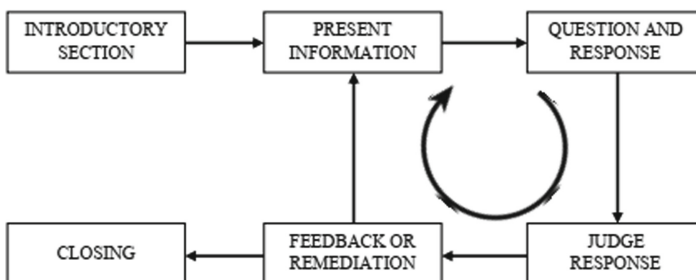


Fig. 1. Interactive Multimedia Tutorial learning.

is important to present an evaluation of teacher training in developing multimedia tutorials. The purpose of this paper is to fill the gap to present an evaluation report for in-service teachers when participating in multimedia tutorial development training activities.

2 Methods

The McArdle model is used in developing the training design which consists of business justification, analysis, design, development, implementation, and evaluation. The six components are made into three stages in implementation. The first stage is the pre-implementation stage, the second stage is the implementation stage and the third stage is the post-implementation stage.

The first stage is the pre-implementation stage which determines the training needs through business justification, needs analysis. This pre-implementation was carried out by obtaining direct data from the field through observation and open interviews. The needs analysis was obtained from discussions and interviews and based on mutual agreement. At this stage, the design and development of training are also carried out. Design and development refer to the results of the needs analysis that has been carried out. The training design includes the training objectives and considers learning theory. While the development includes developing the curriculum, lesson plans, choosing learning strategies, obtaining learning resources, considering the legal implications.

The second stage is the implementation stage of activities which include preparing training programs, organizing presentations, managing audiences. The preparatory activities carried out were checking the room and classroom settings so that it was conducive to learning, including a visual inspection. Logistics adequacy also needs to be re-examined as well as the number of training assistants who assist in technical training. To maintain the consistency of the training plan that is being implemented, the trainer opens himself up to discussion and input during the delivery of materials and breaks. This needs to be done to invite the involvement of participants both in terms of business/business and personal.

The third stage is the final stage of the implementation of training activities, namely evaluation. This activity is needed to measure the effectiveness of the program by filling out a questionnaire after the completion of the training program. The questionnaire contains the objectives of the program, content, methods, and effectiveness of the instructors as well as reactions to the usefulness of the program on the work of the trainees.

The training participants in this community service activity are non-productive SMKN 5 teachers in computer and informatics engineering. The teachers included in this category are normative, adaptive, creative craft, fashion, and animation teachers. For creative craft teachers, it consists of ceramics, batik, and textiles, wood and rattan.

3 Result and Discussion

The learning multimedia software development training was carried out for four days. The material presented is a tutorial on developing software. Starting from the collection of learning materials in the form of text, images, audio and video. The next step is

designing the layout of the multimedia interface and compiling learning materials for each page. The pages are arranged according to the multimedia tutorial design.

The multimedia tutorial developer software used is Autoplay version 8.5.10 from Indigo Rose Corporation. According to Jurayev [9] is included in the category of pedagogical software for test programs. It is also mentioned that pedagogical software is a didactic tool designed to partially or completely automate the educational process with the help of computer technology.

The first level of the evaluation process is the reaction of the students obtained from the questionnaire at the end of the training program. Students' reactions can be obtained from participants' responses to the impression of the activity, the competence of the trainer, the management of activities and the duplication of similar activities in the coming year. The training participants who filled out the questionnaire after the training were 28 people.

Figure 2 presents participants' satisfaction with the implementation of the training. Overall, participants were satisfied with the activity with a total percentage of 93% or 26 people. Of the total percentage, the percentage of participants responding very satisfied was 50% or 12 people, while the responses were satisfied as many as 14 participants or 43%. Only 1 participant responded quite satisfied or 4% and less satisfied also 1 participant or 3%. However, there are some suggestions and comments from teachers regarding the timing of the implementation and mentoring of the training. Additional training time and the mentoring process for developing software needs to be improved. The same as the previous training held in [10].

For the ability of the trainers and presenters of the material to respond positively to filling out the questionnaire items. The percentage reached 100% in the good category consisting of 64% responding very well or 18 people, while 10 participants responded well or 36%. All response results are represented in Fig. 3.

Participants' responses about the management of the training are needed in order to reflect on the activities held. Participants responded positively with a percentage of 100% in the good category. Very good responses in the management of the training got a percentage of 54% or 15 participants, while participants responded well as many as 13 people or 46%. The results of the analysis are presented in Fig. 4 as a pie chart.

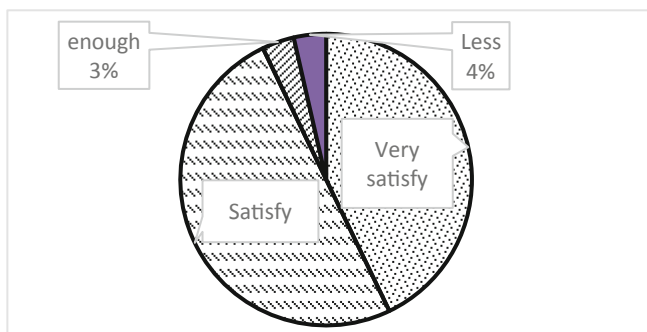


Fig. 2. Level of satisfy trainee

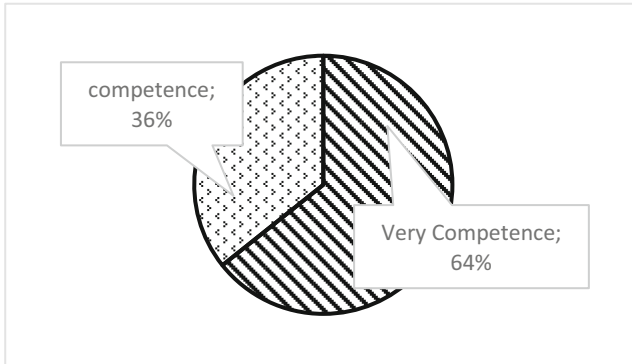


Fig. 3. Trainer Competence

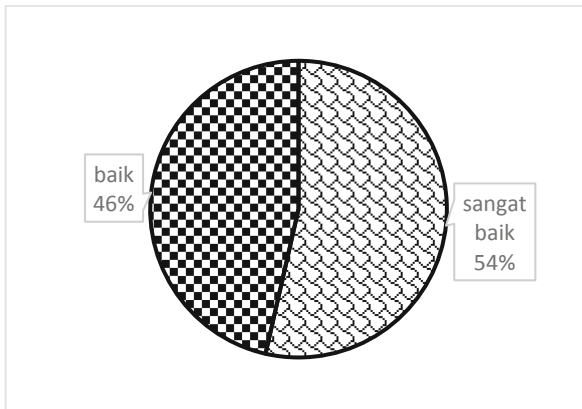


Fig. 4. Trainer in managing learning

To obtain participant satisfaction in the training activities held, the participants gave their responses through a repetition of questionnaire items for similar activities. Data on participant responses were analyzed and represented in Fig. 5, which is a pie chart of similar training activities for next year. Participants responded that it was necessary to carry out similar activities for next year to reach a percentage of 100% or all participants. The response is very necessary to get a percentage of 36% or 13 people and 15 people respond to it is necessary or 54%.

Participants' self-confidence after participating in the training in developing multimedia is quite good. These results were obtained from the response analysis presented in Fig. 6. Participants gave responses to questions about the ability of participants to develop multimedia independently with limited choices, namely yes, no, maybe or others. The percentage of participants who answered yes was able to develop multimedia independently by 68% or 19 people. Participants answered unable as much as 1 person or 3%. Meanwhile, those who gave responses might or had other answers, each of which was responded to by 8 participants or 29%. Other responses are that they need assistance,

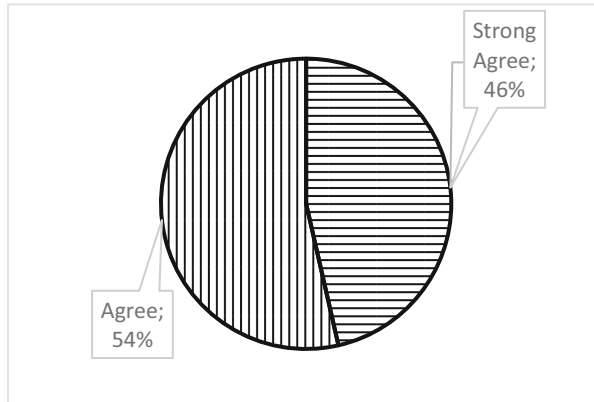


Fig. 5. Still need training next year

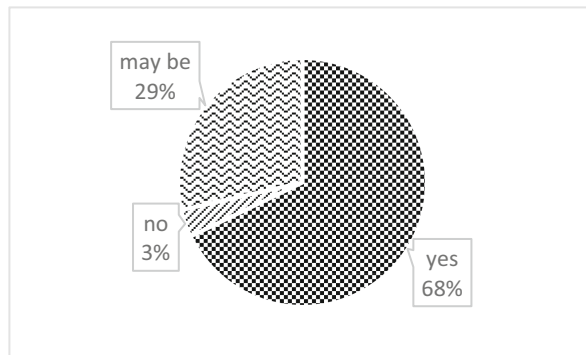


Fig. 6. Teacher belief's

have not been able to maximize their development, and are hesitant because they still have to practice a lot more. Actually, the other responses can be interpreted as being able to develop independently, only the level of self-confidence is still relatively medium.

The descriptive analysis above is the first level of evaluation of the implementation of the training. Although 80% of the participants did not fill out the training, it could represent the overall training implementation activities. The results of the training participants' responses to the implementation of the training can be interpreted as positive activities.

The second level of the evaluation process is learning with the evaluation strategy being a product developed by the participants. Multimedia products have been successfully developed by the trainees, both imitating the product being trained and products for their own needs. Table 1 presents the categorization of multimedia products produced after the training. This categorization is expected to provide an overview of the multimedia products resulting from the training.

The training participants who were categorized as not yet developed or their products imitated the product development being trained but did not meet the element of accuracy

Table 1. Assessment of training product results

Quality Software	N	Percentage
Very Well Developed	7	21
Well Developed	8	23
Pretty well developed	6	18
Not well developed	13	38

in their application as many as 13 people or 38%. The results of training products in the category of starting to develop are products that imitate but the accuracy of their application is still not optimal as many as 6 people or 18%. Multimedia products that develop as expected are imitation products that are produced independently with optimal application accuracy as many as 8 people or 23%. Participants' products that were categorized as very well developed were multimedia developed independently in their subjects with optimal application accuracy of 7 people or 21%. Less than half of the trainees who succeeded in developing multimedia tutorial software were related to factors such as age, previous ICT training, degree, teaching experience and professional activity. The same thing was also found in teacher training in Spain reported by Hinojo-Lucena [11].

The third level of the evaluation process is the transfer of training which measures the participant's adoption of new skills. Table 1 can also be used as a benchmark in the transfer of training by assessing the product for its optimal application accuracy. The percentage is 44% or 15 multimedia tutorial products for training participants. This can also be obtained from the questionnaire questions about independent product development. Figure 5 shows that 19 participants answered yes or 76%. This percentage shows that participants feel confident and confident, because they consider the skills resulting from the training are sufficient to develop independently.

The fourth level of the evaluation process, namely organizational impact, was not carried out, because this training activity was in the context of community service. In addition to requiring more time, this process is also carried out if the implementer of community activities is a member of the organization concerned.

4 Conclusion

Overall the series of community service activities have been carried out well, starting from pre-implementation, implementation and post-implementation. The entire process of applying McArdle's model with six steps grouped into three stages. Each stage produces different products by involving different members or participants. Community service through training activities for developing a multimedia-based learning environment has been carried out effectively. Summative evaluation was carried out by applying Kirkpatrick four levels, but only three levels were carried out and already represented the results of the implementation. The results of the evaluation showed that the training activities held were quite effective in terms of the three levels of process evaluation. The

first level of participants responded positively to the training activities. The second level is about learning through product evaluation strategies developed by participants. The evaluation results show that participants can develop independently, both imitating and independent work based on the subjects being fostered. Some participants have not been able to show optimal results due to age and health factors, but enthusiasm in participating in a series of training is quite high. The third level of measuring the transfer performance of the training gives a pretty good result both in terms of the product being developed and also from the confidence of the trainees in developing the product independently.

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