



Improving Micro Learning Competencies for Vocational Teachers in the Construction and Property Technology Expertise Program in Malang City: Using A Team Base Project Approach

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ABSTRACT

Micro Learning is considered an innovative approach to enhance the quality of vocational education. This study aimed to increase the knowledge and skills of vocational teachers in the Construction and Property Technology expertise program in Malang City on the Micro Learning model using the Team Based Project approach, as well as their readiness to implement micro learning in their teaching. Twenty teachers participated in the activity, and post-test scores showed an increase in their ability to develop micro learning. However, the questionnaire results revealed that only 70% of teachers were ready to implement micro learning, with the remaining 30% still facing challenges with digital literacy.

Keywords: *Micro learning, Team-based project, Vocational education.*

1. INTRODUCTION

Education is a sector that has been heavily impacted by the pandemic from 2020 to mid-2022 after the president announced the loosening of the mask policy so that education can slowly be carried out offline. Based on the results of observations and interviews with teachers majoring in Building Modeling and Information Design Vocational High Schools in Malang City carried out learning during the Covid-19 pandemic, especially in the odd semester of 2020/2021, face-to-face/offline 50% and in network (online) 50%. The implementation of online and offline learning during the Covid-19 pandemic was carried out by almost 90% of teachers in a simple way. In the sense that the teacher only emphasizes the delivery of material, without properly designing learning methods (organizing content and delivering material) so that students master it quickly. So, the use of lecture learning strategies, the use of power point media, questions and answers become daily habits. Moreover, in online learning, material is only delivered via Google Classroom, or via the WA group, only in the form of PDF text. With such a learning system the implementation of learning cannot be maximized, and student learning outcomes cannot be maximized [1]. This phenomenon forces teachers to

make more use of ICT in learning so that students get meaningful learning.

Implementation of a learning model that contains learning material delivered through a combination of learning strategies and the contribution of ICT as a teaching medium is crucial to do. As is well known, in vocational education it is important to combine education and industry [2]. So that micro learning is considered a solution because it combines learning activities in schools, the business world, and ICT development.

This model uses a Team Based Project approach to encourage students' HOTS (High Order Thinking Skills) abilities, especially the skills of analysis, synthesis, evaluation, and creation. This learning model will also help develop students' creative abilities through Project Based Learning. In addition, micro learning is considered as an approach that is adapted to busy and fast learning conditions and has an impact on students' digital literacy [3]–[5]. So that micro learning is important for improving the quality of learning in vocational high school.

Based on some of these studies, interviews with several Construction and Property Technology Expertise

teachers. The result is that they don't know about micro learning and team base projects so teachers need knowledge and skills about the Micro Learning model with a Team Based Project approach before implementing it in their learning. So, this research focuses on improving the ability of teachers to develop micro learning based on team base projects and their readiness to implement micro learning in learning in the near future.

2. LITERATURE REVIEW

2.1. *Micro learning*

Microlearning is a form of multiplatform instructional unit that provides training with short activities aimed at producing specific results. As an electronic-based learning medium, microlearning presents learning content in the form of targeted short pieces, which can be in the form of audio, video, infographics, or visual images. The goal is to reduce students' cognitive load to make it easier to remember, understand, and apply knowledge [6], [7]. This understanding can be likened to a concept explained in a long book which can be presented briefly in the form of an infographic or a few minutes explanatory video.

Some of the microlearning content includes infographics, interactive infographics, PDFs, e-books, animated videos, whiteboard animations, kinetic text-based animations, explanatory videos, interactive videos, expert videos, recorded webinars, mobile apps, and complex branching scenarios. This is done to achieve the main goal of microlearning, which is to increase the efficiency of the learning process. Some of the characteristics of microlearning include brief and specific presentation of content, use of various media formats, use of online media sources, and cost and time efficiency [8]. But to produce microlearning content, teachers need to be creative in summarizing long content into interesting presentations and students are required to be creative in finding further information [9]. So that the collaboration of teachers and students is needed to achieve learning objectives.

2.2. *Team Base Project*

Team-based project is a teaching method that encourages students to work together in a team to complete a project. The team base project method is also claimed to be able to increase academic scores, exam performance and student involvement in learning [10]. TBL involves teachers and active collaboration of students to apply knowledge through small group discussions by requiring students to work in teams to solve problems [11].

3. METHOD

Improving the learning quality of Building Modeling and Information Design Vocational High Schools students in Malang City needs to be done by starting teacher training regarding the implementation of micro teaching in the classroom through a team base project approach. The implementation is carried out online and offline with materials and activity agendas covering: (1) the nature of the micro learning method based on the case method and team based project, (2) the characteristics of team based project based micro learning models, (3) planning/scenario team-based project-based micro learning, (4) Procedures for implementing team-based project-based micro learning in class, (4) Evaluation of team-based project-based micro learning. Submission of material uses two types of delivery, namely (1) online delivery, and (2) face-to-face delivery. The main target of this activity is vocational teachers for the Construction and Property Technology expertise program in Malang City, consisting of 20 teachers.

The success of this activity is done by measuring the results of the pre-test and post-test. The assessment aspect includes an attitude assessment as measured by the level of teacher attendance and activity. The results of increasing ability are measured from the aspects of teacher knowledge and skills. As for measuring the success of activities using indicators of achievement results, namely: 1) teacher participation of at least 75%; 2) achievement of learning outcomes of at least 60% of 75% of participants; 3) the suitability of the material coverage with the needs of the participants is at least 75%; 4) participants' expectations of the facilitator's abilities; 5) the urgency of the material presented; 6) readiness of participants in implementing micro learning. The assessment instrument applied to indicators 1-6 consists of several elements, namely attendance lists, question and answer sessions, learning achievement tests, and observations during the activity.

Achievement of result number 6, is more specifically measured based on previous research, namely by classifying teachers' readiness in implementing micro learning into: 1) readiness in using micro learning; 2) the use of various sources of material; 3) readiness for making learning media; 4) use of computers, smartphones and laptops; 5) internet optimization in all activities [12]. This indicator is measured using a questionnaire that is distributed online. All measurement results were analyzed using descriptive analysis.

4. RESULTS AND DISCUSSION

In general, the results of the training can be seen from 6 (six) factors, namely 1) teacher participation of at least 75%; 2) achievement of learning outcomes of at least 60% of 75% of participants; 3) the suitability of the material coverage with the needs of the participants

is at least 75%; 4) participants' expectations of the facilitator's abilities; 5) the urgency of the material presented; 6) readiness of participants in implementing micro learning. The following are the results and discussion based on the research findings:

4.1. Teacher Participation

Referring to the list of attendees for each activity, the level of attendance of participants can be presented in Figure 1 below.

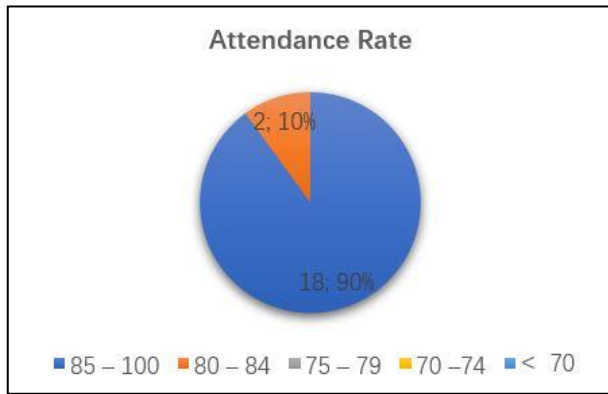


Figure 1 Attendance Level of Participants

Figure 1 shows that the attendance rate of the participants in the training was very high, which was the main supporting factor in the implementation of the activities. There were no significant obstacles during the training, and Micro Learning with the Team Based Project approach went according to plan.

4.2. Achievement of Learning Outcomes

Through the training there has been an increase in the participants' understanding of the training material. Following are the results of the comparison of the pre-test and post-test values:

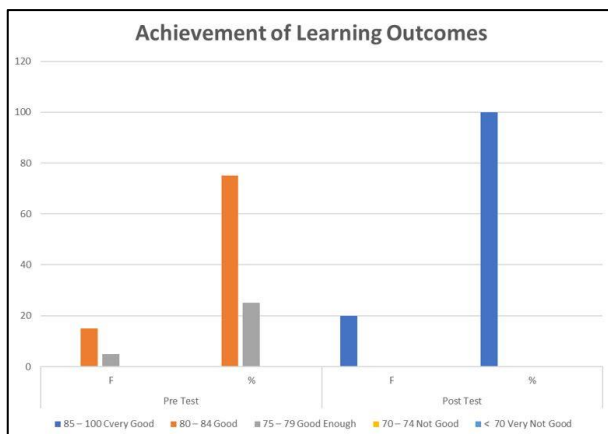


Figure 2 Mastery of Material Before and After Training

Based on the picture above, it can be seen that the results of the pre-test and post-test show an increase in participants' knowledge in the development and application of Micro Learning with a Team Based Project approach. In addition, during the training, participants made assignments in the form of written reports on micro learning designs that were successfully completed with satisfactory results. As is known, training is one way to improve teacher competence [13], [14]. In this case, through this training, participants succeeded in increasing their knowledge and skills in developing and implementing Micro Learning with a Team Based Project approach. Thus, this condition has an impact on improving the quality of learning in vocational high school and ultimately also improving the quality of vocational high school graduates. Even so, efforts are needed to ensure that there is no plagiarism in conveying ideas from the sources used.

4.3. Conformity of Material Coverage with Participant Needs

One of the important components in training is the suitability of the material coverage with the needs of the participants so that it will be more targeted. The results are presented in the following graph:

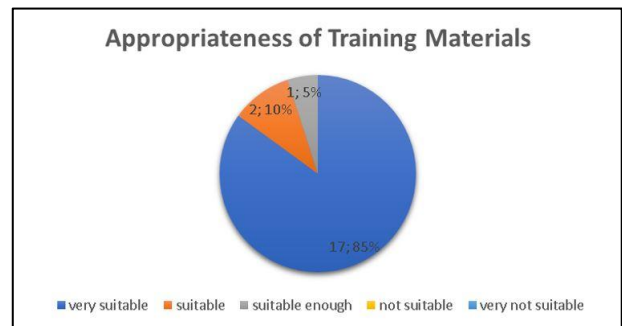


Figure 3 Graph of suitability of training materials

From the results of graph 3, it can be seen that the majority of the training participants, namely as many as 85%, stated that the material presented was very suitable for their needs. A study shows that if participants feel the material being studied fits their needs, then learning outcomes can increase [15]. Thus, it can be concluded that the material presented in the training has met the needs of the participants and has the potential to improve their learning outcomes.

4.4. Participants' Expectations on Facilitator Capability

Participants' perceptions of the facilitator's competence greatly affect the learning outcomes of the trainees [15]. Based on the analysis of participant perception data on the competence of the facilitator, it is presented as follows:



Figure 4 Graph of participants' expectations of the facilitator's abilities

From the data shown in Figure 4, it can be seen that the majority of participants (80%) gave a "very good" assessment of the competence of the activity facilitator, while 10% of participants gave a "good" rating. These results indicate that the activity implementing team acting as presenters has understood the material and is able to convey it properly through the right method for the participants. The competence of the facilitator greatly influences the enthusiasm of the participants in participating in training activities, so that if the competency of the facilitator is not good, the training will not run smoothly. Therefore, it is important for the facilitator to understand the characteristics of the participants and apply the right methods to provide quality training.

4.5. Urgency of Material Presented

Besides the training material must be in accordance with the needs, participants must also consider the material studied is important in supporting their work. Participants' perceptions of the importance of training materials, especially for improving the competence of vocational teachers, are presented in Figure 5 below.

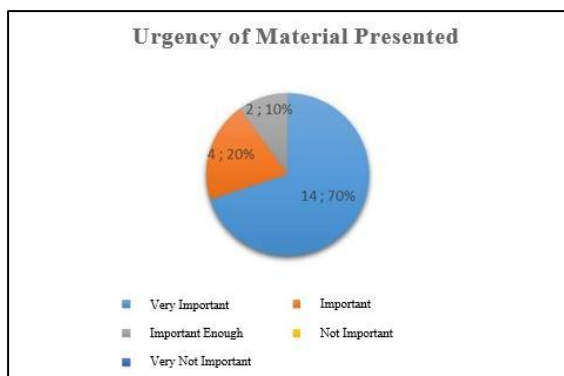


Figure 5 The urgency of the material presented

Based on Figure 5, it can be concluded that the majority of participants (70%) considered the material provided to be very important, while 20% stated that the material was important. From these results, it can be suggested that the training materials presented must be considered important by the participants as support for their work. As stated by [16], besides having to be in accordance with the needs, it is an urgency for participants to consider the material important in improving learning outcomes.

4.6. Readiness of Participants in the Implementation of Micro Learning

Increasing competence in micro learning also relies heavily on the readiness of teachers to implement micro learning in their classes. The following picture shows the results of their readiness:

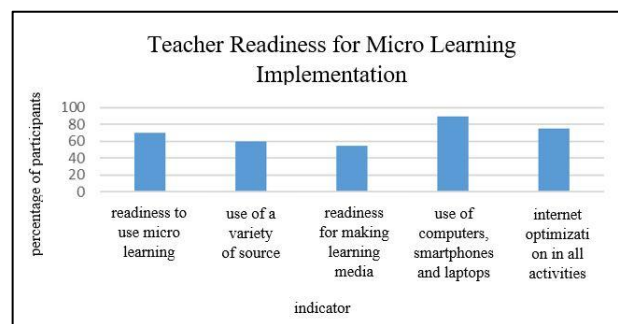


Figure 6 Graph of Participant Readiness in Implementing Micro Learning

The picture above shows that indicators of using various learning resources and making ICT-based learning media are lower than other indicators. According to Tjutju Yuniarsih [12], this is caused by the limitations of learning media that suit the needs of each subject in the micro learning program. However, the research results show that 70% of teachers are ready to develop micro-based learning materials to encourage students to learn independently. Therefore, it is very important for teachers to understand how to develop learning materials that are interesting and can motivate students to learn more deeply[17].

Through this training, it is hoped that participants will gain knowledge and skills related to Micro Learning using a Team Based Project approach. Based on research [18], [19], learning Micro Learning with a Team Based Project approach is proven to increase learning outcomes and use learning resources more efficiently, and therefore is often referred to as the most effective learning model. Therefore, through this training it is expected that participants will have

knowledge and skills related to Micro Learning with a Team Based Project approach.

5. CONCLUSION AND SUGGESTION

5.1. Conclusion

Based on the evaluation and direct observation of the implementation of activities, it can be concluded that there is an increase in teacher competence in planning team-based micro learning projects. In addition, this activity proved to be effective in increasing the knowledge and skills of participants in developing and implementing micro learning with a Team Based Project approach in the implementation of learning. In addition, participants' perception indicators such as the competence of the training facilitators, the relevance of the training materials to the needs of the participants, the importance of the training materials to the participants, and the level of attendance of the participants were included in the good category. Although not all teachers are ready to implement micro learning in their learning in the near future

5.2. Suggestion

To better prepare teachers in the implementation of micro learning with a team base project approach, it is necessary to make efforts to increase digital literacy as a support. Besides that, it is also necessary to improve micro learning in vocational high school in other regions.

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