TRAINING ON MAKING CONSTRUCT-BASED MULTIMEDIA AS AN ALTERNATIVE TO MATHEMATICS LEARNING MEDIA

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SUMMARY:

The development of computer technology is increasingly rapid, this encourages teachers to prefer computer-related media. Learning subjects (maple) using *Construct* media has not been widely done, because the *Construct program* is a new program that has not been widely used in the world of education. Construct-based interactive media is media created using the *Construct program* with the subject matter of mathematical maple material.

The methods that will be used in the implementation of this service are socialization, practice, mentoring, and evaluation. This training material will be carried out in 2 stages where the first stage will focus more on providing information about the material related to the role of multimedia in learning using applications. This information is very important so that training participants get an idea of the role of technology in learning, as well as the importance of training as a form of teacher self-development.

The second phase of training will focus on training in media creation using the *Construct application*, the management of learning materials. With this multimedia, teachers are expected to be able to provide additional learning and evaluation anytime and anywhere.

Keywords: Multimedia; *Construct*

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1. INTRODUCTION

Today, children have known technology such as gadgets since they were toddlers. Children who are familiar with this technology are referred to as generation Alpha. They grew up with the rapid development of technology. Today's technological changes make generation Alpha a transformative generation (Mccrindle, 20019). In the face of Alpha generation who are already accustomed to technology, teachers must have.

The use of Construct learning media can be one solution to stimulate and increase the level of student activeness in following learning. The use of technology as a learning medium can be made one of them by using *Construct*. *Construct* is an app designed to introduce mathematical material in a simple way so that it can be understood by anyone from any background. *Construct* is one of the software that is very dedicated to children aged 8 to 16 years that is appropriate for the age of students. Technology-based learning media in the form of *Construct* presents learning materials and quizzes in it that require students to work independently. In this case, students will become more aroused and active to participate in learning considering that in this era of globalization students are also inseparable from technological developments.

Teachers as professionals are expected to continuously make changes that can at least adjust to developing

technology (Fauzyah et al., 2019: 800). The use of learning media is one example of changes that are expected to increase student understanding of the material taught. Ramli (2012: 1-2) argues that learning media is used as a tool used to help students understand the material in the learning process. It was also explained by Harsiwi &; Arini (2020: 1105) that learning media is one of the learning components needed in connecting material delivery, where from previous research it is known that the use of learning media increases the ability to master concepts, and the ability to think critically. The low learning ability of students is caused by low motivation and interest of students in the learning process. Students tend to feel bored and passive, this is the opposite of the curriculum that expects students to be more active in the learning process, this is also explained in research conducted by Wahyuni that low student learning outcomes are caused by students who are difficult to understand mathematical concepts themselves (Wahyuni, 2019: 169). Monotonous and boring learning is the main reason for students' lack of motivation and interest. The use of learning media can also develop student creativity and increase student attention in learning, therefore the use of learning media will help student learning motivation. With this, teachers are required to be able to use learning media to increase student motivation and reduce student boredom in the learning process.

According to Rahma (2019: 88), in learning practices, teachers are still not innovative in the use of learning media. This is due to (1) teachers consider the use of learning media to be prepared, (2) teachers are not familiar with the use of ICT-based media, (3) there is no availability of materials and tools to create and use learning media, (4) teachers do not know the importance of using learning media, (5) teachers do not have the ability to use learning media, (6) teachers do not have time to make learning media, (7) Teachers are used to using lecture methods. Teachers are required to be able to create their own technology-based learning media. There are several types of learning media that are usually used in the learning process, for example visual, audio, audio-visual and computer-based.

It is known that in mathematics learning, the majority of students often experience difficulties in learning, this is due to several factors. First, students do not understand the concept of learning so that they experience difficulties in the learning process and cause students to be lazy to learn. Second, students feel bored with monotonous learning and use lecture methods. From these two reasons, it can be concluded that students need to know the concept of learning and the use of different methods in learning.

2.   PROBLEM SOLUTION

From the previous question, the author has an idea to develop multimedia learning based *on Construct* for learning. *Construct* is one of the most dedicated software. Technology-based learning media in the form of *Construct* presents learning materials and quizzes in it that require students to work independently. In this case, students will be more excited and active to participate in learning considering that in this era of globalization, students are also inseparable from technological developments. In the development of multimedia learning, it was made to overcome the limitations of aspects in the form of images, animations, sounds, and feedback that have not been maximized in the conventional learning media used previously. Seeing the importance of learning media as an intermediary in conveying information, the development of interactive learning multimedia can be used as one of the solutions to overcome problems in the learning process.

This service produces several elements that can be used in the multimedia learning development process, producing construction-based multimedia products developed using computer devices, containing learning materials. Educators are given training in making construction-based multimedia that is specific to their subjects. To test the feasibility of construction-based multimedia by conducting product trials to students, then product attractiveness tests are assessed by students.

Syukria (2017: 106) interactive multimedia is a multimedia that is operated by users using a regulator so that users can adjust the next process as they wish. With interactive multimedia learning, teachers are helped when delivering material and the learning atmosphere is not boring, and will help students understand the content of the material. This statement is supported by previous research written by um Madinah entitled Development of Interactive Multimedia Based on Scientific Approach to Light Material obtained with the results of 75% of students achieving KKM from a total of 28 students. According to Sudjana and

Rifai in Sukiman (2012) interactive multimedia has several advantages, namely: (1) Learning will be more interesting so that it can foster learning motivation, (2) learning materials have clearer meanings, (3) learning methods can be more varied, (4) students can learn more because students are able to interact with the media directly.

3. IMPLEMENTATION METHOD

In the implementation of this activity will collaborate with Universiti Sains Malaysia, by providing training on making Construct-based learning multimedia to educators to make it easier to carry out the learning process. The implementation method in this activity begins with socialization with educators in collaboration with the principal. With the permission given by the principal, this activity will run smoothly and receive a lot of support. The socialization first discussed the purpose of holding this activity, which is to help educators overcome existing problems. Then explain how or the process to turn teaching materials into *Construct* applications. In making multimedia using a certain way to explain to educators who live far from urban areas.

This service will be carried out at Universiti Sains Malaysia, considering the selection of schools because it has not been maximized in the use of Construct-based multimedia. In making multimedia, the chairman provides training to educators in making multimedia learning by inviting multimedia development experts, while members assist the chairman in carrying out the activities to be carried out and accompany educators in making Construct-based multimedia learning.

This service uses causative data analysis techniques in evaluating the final results of this Construct- based multimedia training aimed at determining the sustainability and effectiveness of multimedia use. In this service, there is no evaluation of students' understanding of learning, but only focuses on increasing educators' involvement in making Construct-based multimedia that will be used in the learning process that presents multimedia principles.

Result

Improving Teacher Competence

The results of the pretest showed that the average initial competency score of participants was 58.4. After training, the posttest score increased to 85.1, with an average difference of 26.7 points. The t-test showed a significant improvement ($p < 0.05$), indicating that training was effective in improving teachers' ability to create interactive learning multimedia.

All participants managed to make at least one Construct-based educational game. The themes raised are related to mathematical topics such as number operations, fractions, and measurements. The resulting media features interactive elements such as drag-and-drop, quizzes with scores, and motion animations.

Participant Satisfaction

The results of the questionnaire showed that the training received a very positive response:

- 92% Participants found the training very rewarding
- 88% Feel confident in developing media independently
- 96% express wanting to apply this medium in their mathematics learning

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