ISSN : 2963-9158
E-ISSN : 2963-9166

Communautaire: Journal of Community Service
Vol. 01 No. 01 June (2022) : 14-20
Available online at https://serambi.org/index.php/communautaire

Virtual Reality-Based Learning Media Design Training

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Keywords:
Training, Learning Media Design, Virtual Reality

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ABSTRACT

This activity aims to facilitate the design of learning media based on Virtual Reality (VR) for educators to be able to present innovative learning in the classroom. The method used in this mentoring activity consists of four stages: Asset Based Community Development called "ABCD". The mentoring training went smoothly even though only 44 participants out of 184 registered. After the participants participated in the mentoring activities, they could conclude that they already had the knowledge and understanding of the suitability of devices that could be used in VR. In addition, participants succeeded in making VR scenes according to the subjects taught in class and tried to implement them for students. Thus, the learning process carried out by participants can continue to experience novelty and innovation.

Please cite this article in APA style as:
Astari, T. (2022). Virtual Reality-Based Learning Media Design Training. *Communautaire: Journal of Community Service, 1*(1), 14-20.

INTRODUCTION

The development of information and communication technology today has a global impact on all aspects of life, economically, socially, healthily, and educationally. They also apply to all levels of society, including educators. An educator is required to improve his competence in the use of computers and the internet at school. In addition, educators are also needed to be able to implement these competencies in classroom learning (Lia, Isroqmi, & Indasari, 2017). As a result, educators must have sufficient knowledge and understanding of technology-based learning media.

The presence of learning media technology in Virtual Reality (VR) provides new hope for the learning process. VR is one of the promising technologies, where VR users will be presented with a virtual world like the original. VR development in Indonesia is currently not so fast, even though in developed countries, VR development is up-and-coming. The use of VR in

collaboration with school materials is still rare. Generally, smartphone users with game applications still dominate VR in Indonesia (Sulistyowati & Andy Rachman, 2017). Meanwhile, learning using VR provides new and fun learning practices for students. VR presents an interesting video or image with a customized time duration (Ariatama, Adha, Rohman, Hartinio, & Ulpa, 2021).

One of the obstacles to implementing VR in the learning process is the limited knowledge, and skills educators possess. They cause a lack of use of these media in the learning process. Thus, an introduction to VR is needed for educators and assistance in designing VR-based learning media. That can be implemented in the classroom. After mentoring is done, educators are expected to be able to present innovative learning through VR.

METHOD

Asset Based Community Development is used to achieve the expected conditions in this service. Asset Based Community Development, or the term "ABCD," is one of the methods in PKM where the main activity is community development. The focus in the ABCD concept is the community as the target of empowerment, where the community is no longer referred to as a vulnerable group and has no potential but is seen as a group that has the potential to get out of various problems (Sukarno, Prasetiyaningtiyas, & Khusna, 2022). This potential can be in the form of wealth owned within (intelligence, care, mutual cooperation, togetherness, etc.) or in the form of the availability of Natural Resources (SDA) (Al-Kautsari, 2019).

The group's limitations are more in the absence of access to maximize their potential and the limited resource system so that groups cannot maximize their potential. The community groups referred to in this service are teachers and lecturers. Based on the ABCD method, several stages of activities were derived. The settings used in this PKM can be seen in Figure 1. The steps of Service Implementation are below.

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Implementing the assistance service for designing learning media based on Virtual Reality (VR) can be described as follows.

1. Planning

At this stage, it begins with forming a service team to provide Virtual Reality (VR) assistance. Furthermore, holding a Focus Group Discussion (FGD) with Guru Binar and Millealab regarding the mechanism for implementing

service, including compiling the needs needed in assisting the design of Virtual Reality (VR)-based learning media. The activities are planned to be carried out from June 23 to July 30, 2021.

2. Preparation

Things that need to be prepared in the service include e-posters, Google participant registration forms, attendance lists, pre-test and post-test, activity materials, VR scene scenarios, VR content assessment formats, and others.

3. Implementation

The implementation of this service was carried out by two presenters accompanied by Guru Binar and Millealab. The implementation stage starts by giving a pre-test to the participants. Then the presenter continues to provide an introduction to the Guru Binar and Millealab teacher platforms as well as VR during the onboarding session. The final result expected by the participants is to practice making VR scene scenarios that students can later implement. The implementation of assistance in designing VR-based learning media is carried out in a hybrid learning manner using three learning media: the Guru Binar and Millealab teacher platforms and Zoom Meetings. The list of activity materials can be seen in Table 1. The list of Service Materials is as follows.

Table 1. The list of Service Materials

Activity Material	Learning Media
On Boarding Session	Zoom Meeting
Introduction to Design Thinking	Guru Binar Platform
VR Exploration	
Designing VR Scene Scenarios	
VR (Live Coaching) Creation	Millealab and Zoom Meeting
- Millealab account registration	
- Millealab exploration	
- VR Scene Scenarios	
Reflection and closing	Zoom Meeting

4. Evaluation

At the evaluation stage, participants were given a post-test, which included questions about VR and the implementation of assistance to improve the next service activity.

FINDINGS AND DISCUSSION

The mentoring activity for the design of Virtual Reality (VR)-based learning media began with an onboarding session on June 23, 2021, synchronously using a zoom meeting. The number of participants registered for

this service activity is 184. However, only 44 participants were able to take part in the activity. Previously, the training initially collected information about the extent of the participant's knowledge and skills in VR. Based on the results of the analysis of participants' knowledge at the beginning, as much as 60% (110 people) already knew VR, 37% (68 people) did not know, and 3% (6 people) did not answer (Astari, 2021). Participants who can participate in onboarding session activities can be seen in Figure 2—attendance of the following On-Boarding Session Participants.

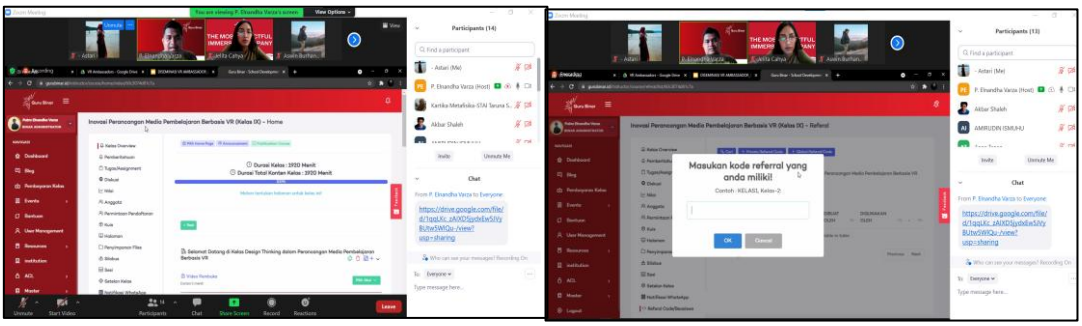

Figure 2. Attendance of Participants' On-Boarding Session

In the onboarding session, the material presented included welcome remarks from the Guru Binar and Millealab teachers, an introduction to the Guru Binar and Millealab teachers, a simulation of registration to the Binar and Millealab teachers, and discussion sessions. Then, participants will learn independently and asynchronously using the Guru Binar platform for 1,920 minutes. The detailed material studied by the participants was welcome to the design thinking class in designing VR-based learning media. Next, design thinking in education, introducing VR technology concepts, creating VR scene scenarios, synchronous class reflection sessions, and independent and closing assignments. The appearance of the Guru Binar Teacher's platform is presented attractively and adjusted to the needs of the participants can be seen in Figure 3. The following Guru Binar Platform display.

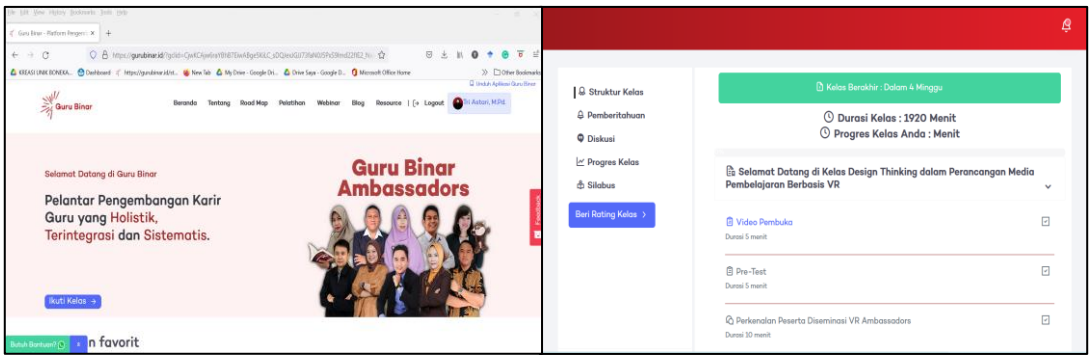

Figure 3. Display of Guru Binar Platform

After carrying out asynchronous activities, participants participated in synchronous activities again using the zoom meeting media 3 (three) times with a duration of 2 (two) hours per meeting. In this activity, the material presented included account registration and MilleaLab exploration sessions, VR scene scenarios, VR reflections, and closing activities. The Millealab display can be seen in Figure 4. The following Millealab display.

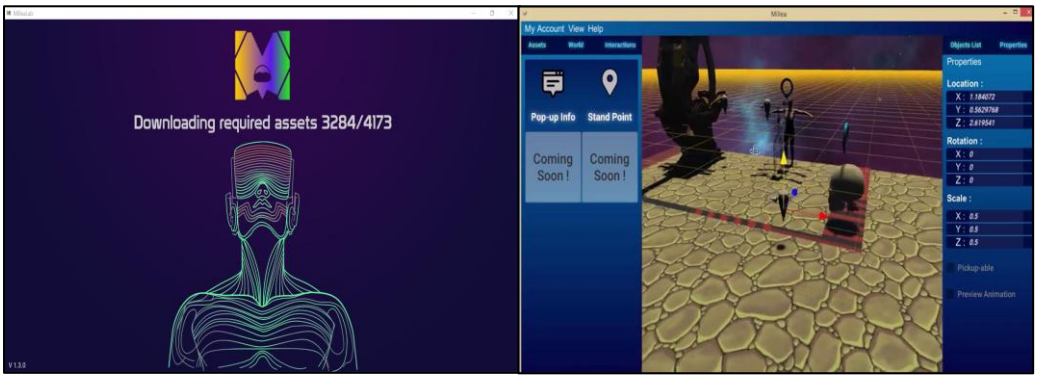

Figure 4. Millelab Display

The evaluation results of this mentoring activity explained that participants with knowledge and skills succeeded in developing VR by 3.3% (6 people) and 20.7% (38 people) until completing the material on the Guru Binar platform. At the same time, the rest did not participate in the dissemination. The material learning scenes that the participants successfully created included fiber optic communication, mathematics, sports education, history, and science. One of the results of the location that the participants can make can be seen in Figure 5—the results of the VR Scene Participants below.

Figure 5. Results of Participant VR Scene

While the description of some participants who have implemented VR scenes to students or students asynchronously with zoom meetings and face-to-face meetings can be seen in Figure 6. Implementation of VR Scenes below.

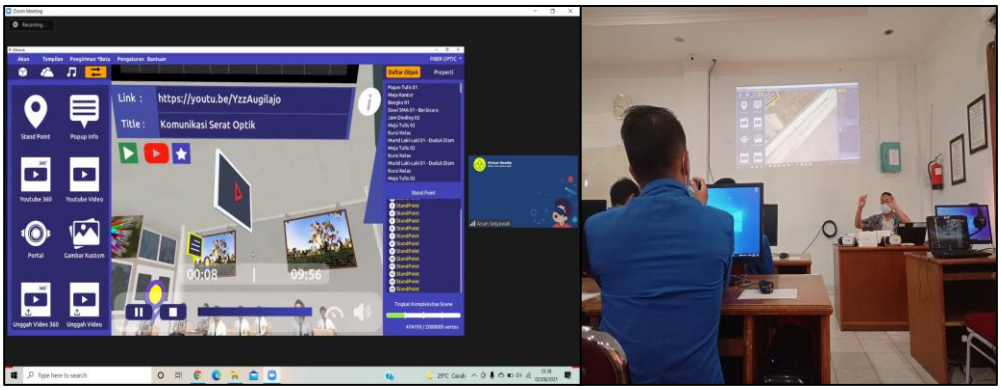

Figure 6. VR Scene Implementation

Based on the information of participants who have implemented learning using VR, students feel enthusiastic. Learning using VR can encourage innovation in teaching media different from before to increase students' participation and critical thinking perspectives and bring students closer to VR technology (Ariatama et al., 2021). When using VR, users experience being in outer space and exploring every object in it. Based on usage data, this application has met 83% of user needs in studying the Solar System (Adiwisastra, El-Ahmed, & Bahri, 2019). In addition, it can be implemented Virtual Reality with a simple application by general and architectural practitioners (Syafril, 2019).

After reflecting on the results of the evaluation of the participants, several obstacles occurred in the service process, including a short dissemination time (1 month) of 26%, hybrid learning of 24%, quota constraints, and a limited network of 23%. The device has not been used yet—the good by 21%, and others by 6% (Astari, 2021). Furthermore, the problem has been submitted to the relevant parties for improvement, such as using PC/Laptop devices that are insufficient to install MilleaLab. In addition, the implementation of this assistance is planned to be carried out on an ongoing basis for educators to see developments and continue to encourage the implementation of innovative learning. In addition, mentoring and discussions are also ongoing through WhatsApp, SMS, or telephone media.

CONCLUSION

After participating in the mentoring activity for designing learning media based on Virtual Reality (VR), participants know and understand the suitability of devices that can be used in VR. In addition, participants have succeeded in making VR scenes according to the subjects taught in class and trying to implement them for students. Thus, the learning process carried out by participants can continue to experience novelty and innovation.

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