

Virtual Reality Based Hypermedia Training for Teachers of MAN 2 Model Makassar

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Abstract

This Community Service Activity (PKM) aims to: (1) introduce Virtual Reality-based learning media to the teachers at MAN 2 Model Makassar as an alternative IT-based learning media, and (2) train the teachers at MAN 2 Model Makassar in utilizing Virtual Reality-based learning media. The methods used in this program include presentation, demonstration, and practical methods. The presentation method is intended to introduce hypermedia software with the Millers Lab application, explain its benefits, and its application in creating Virtual Reality-based media. The demonstration method will showcase how the program operates, while the practical method provides teachers with the opportunity to directly create learning media relevant to their subjects using Virtual Reality technology.

Keywords: *Virtual Reality; Hypermedia; Technological Innovation; Covid 19 Pandemic*

Introduction

In 2020, the Covid-19 pandemic swept across the globe, causing a health crisis that affected almost every corner of the world (Purwanto et al, 2020; Sholihin et al, 2020). The impact of the pandemic was felt across various sectors, including education. To address the pandemic, countries worldwide implemented social distancing measures, which involve limiting social interactions to reduce the spread of the virus (Tillman et al, 2019; Wilder et al, 2020). These social distancing measures resulted in disruptions to in-person schooling and affected educational activities.

The Covid-19 pandemic led to the declaration of a Public Health Emergency, particularly in the education sector, with school closures and interruptions to teaching and learning activities. Face-to-face learning, which was previously the norm, had to be temporarily suspended (Lv et al, 2022; Çetin et al, 2023). To address this situation, changes in the learning model were necessary to move away from in-person methods as a strategy to mitigate the spread of Covid-19 (Wang, 2017; Çetinkaya et al, 2021). The Ministry of Education and Culture issued Circular No. 4 of 2020 regarding education policies during the coronavirus disease (Covid-19) emergency, which included home-based learning through online or distance methods. During the pandemic, online learning was implemented almost worldwide (Goldschmidt, 2020; Sahin et al, 2020), and all schools adopted distance learning methods.

MAN 2 Model Makassar also implements distance learning in its educational activities. As one of the leading madrasas in the city, MAN 2 Model Makassar continues

to strive to become a modern center for education in religion, social studies, science, and languages. The objectives of MAN 2 Model Makassar include: (1) enhancing the faith and piety of students; (2) developing students' intelligence in both academic and non-academic areas; (3) facilitating students' progression to prestigious public and private universities; (4) providing sufficient theoretical and practical knowledge to ensure students are intellectually, emotionally, and spiritually competent; (5) training students to apply religious teachings and develop wise attitudes in daily life; (6) offering life skills through various development programs in technology, sports, arts, scouting, and scientific research according to students' interests and talents (Yaoyuneyong et al, 2016; Okumuş et al, 2022).

Technology and information are rapidly advancing. The application of technology and information is not limited to communication or entertainment alone but can also be applied across various sectors, including education (Cherner et al, 2022; Mora et al, 2018). In the field of education, information technology can be utilized as a learning medium to support the educational process in schools, particularly in the context of distance learning. Learning media continually evolve with technological advancements, from print technology and audiovisuals to computers and combinations of print and computer technologies (Marienko et al, 2020; Koutromanos et al, 2021; Fidan et al, 2019). Currently, learning media that combine print and computer technology can be enhanced with Augmented Reality (AR) and Virtual Reality (VR) technologies (Mustaqim, 2016). The learning media used should align with the latest developments in information technology. One of the learning media suitable for the Industry 4.0 revolution is Virtual Reality-based media (Uys, 1998; Voronina et al, 2019).

VR technology involves integrating digital elements that are presented in a realistic format (real-world data) and interact with the real-world environment, and can be implemented on mobile devices (Arvola et al, 2018). Virtual Reality facilitates the simulation of scenarios that are difficult to present directly in the real world (Turan et al, 2018). The main advantage of Virtual Reality is the immersive experience that provides users with a sense of being in a real-world environment within a virtual space (Pnata et al, 2017; Hidayat et al, 2021). Virtual Reality environments generally offer visual experiences displayed on a computer screen or through stereoscopic devices, with some simulations also providing additional sensory information, such as sound through speakers or headphones.

The learning activities that were previously conducted face-to-face at MAN 2 Model Makassar have now shifted to an online format. This transition has led to various challenges, as educators have had to quickly adapt to new technology, which has drained their energy. Additionally, students have become frustrated due to the ineffectiveness of online learning methods and the high consumption of internet data. They are looking for new methods that can make the learning process more engaging and integrated with technology. One potential solution is to use Virtual Reality technology as a learning medium. By employing Virtual Reality, learning can become more engaging, innovative,

and stimulating for students' imagination. However, the use of this technology requires careful preparation from the educators (Rao et al, 2020).

Observations have revealed that a major issue in remote learning at MAN 2 Model Makassar is the suboptimal use of Virtual Reality-based learning media. This is unfortunate, considering that nearly all teachers and students at the school have their own smartphones. The potential of these smartphones should be utilized to support the learning process. Currently, smartphones are predominantly used for less productive or even negative activities by teenagers (Yu et al, 2022). To address this issue and considering the limitations faced by teachers, the community service team plans to introduce, utilize, and implement Virtual Reality-based learning media as an alternative to enhance the quality of education during the Covid-19 pandemic. Based on this analysis, a training program will be conducted to improve teachers' understanding and skills in using Virtual Reality-based learning media, with the theme "Virtual Reality-Based Hypermedia Training for MAN 2 Model Makassar Teachers."

Method

In this community service program, three main methods are applied: presentation method, demonstration method, and practical method. The presentation method is aimed at introducing the Millealab application, explaining its benefits, and how it is used in creating Virtual Reality-based learning media (Karacan et al., 2021; Kavanagh et al., 2017). The demonstration method focuses on the operational aspects of the program, while the practical method provides teachers with the opportunity to directly create learning media related to their lessons using the Millealab program.

The steps taken in the community service activities include several stages: (1) Preparation, which is the initial phase before the implementation of the program. During this stage, the team conducts various activities such as internal coordination to plan the implementation conceptually and operationally, defining the task descriptions for each member, and preparing PKM instruments such as attendance sheets, questionnaires, work sheets, consumption arrangements, publicity, location, and documentation; (2) Training Implementation, which is the stage where training is provided to teachers at MAN 2 Model Makassar. This training includes presentation materials, practical sessions on creating Virtual Reality-based learning media, practical assignments, mentoring, evaluation and refinement of Virtual Reality-based learning media by the team, and reflection and closure of the community service program.

Results and Discussion

For the first time, the service team in this public partnership program established close communication with its partner, MAN 2 Makassar. The service team communicated directly with the Head of MAN 2 Model Makassar to discuss and plan the implementation of the service activities. From these discussions, an agreement was

reached on the schedule for the community service activities aimed at the teachers of MAN 2 Model Makassar.

The Virtual Reality-Based Hypermedia Training for MAN 2 Model Makassar Teachers took place on August 1, 2023. This PKM program involved organizing workshops and training for the school's teachers, as well as providing guidance in creating products until they were completed and met expectations. Additionally, the training needs analysis included a schedule for 4 online meetings via Zoom, both synchronous and asynchronous, and the participants' commitment to ongoing training.

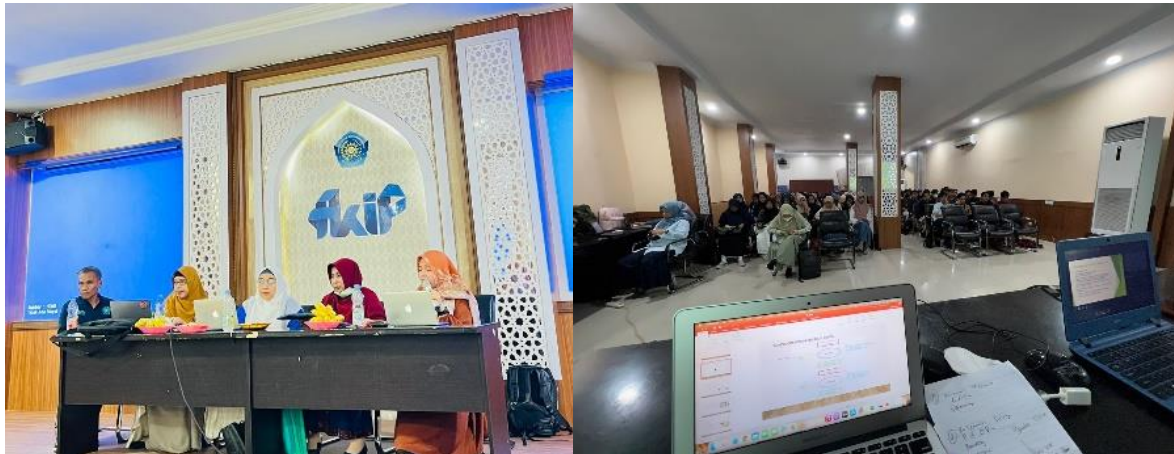


Figure 1. Doc. Opening of PKM; sharing with participant

It started with a discussion with the teachers of MAN 2 Model Makassar regarding face-to-face learning in the current pandemic era. From the meeting, it was found that the learning media they use does not yet incorporate Virtual Reality concepts. Creating Virtual Reality-based learning media is new for the teachers at MAN 2 Model Makassar, which has led to their interest in participating in the Virtual Reality-based hypermedia training. The schedule for the PKM activities for the teachers at MAN 2 Model Makassar is presented in the table below. The training is conducted online via Zoom, both synchronously and asynchronously. The training schedule for the teachers is as follows:

- a. First meeting on Wednesday, August 25, 2023: The PKM activities began with creating accounts on Google and the Millealab application, followed by the installation of the Millealab application on each participant's computer and smartphone.

Table 1. Meeting I

Pert. I	Time	Activity
Wednesday, 25 August 2023	08.00 – 09.00	Opening
	09.00 – 10.00	Email Creation
	10.00 – 12.00	Make account atmillealab
	12.00 – 13.00	Rest
	13.00 – 15.30	Install application Millealab
	15.30 – 16.00	Q& A Session

- b. Second meeting Thursday, August 26, 2023: At a meeting on the 2nd day filled with activity practice making learning media virtual reality based.

Table 2. Meeting II

Pert. II	Time	Activity
Thursday, 26 August 2023	09.00 – 10.00	Practice Create Media Learning Session 1 based Virtual Reality
	10.00 – 12.00	Practice Create Media Learning Session 2 based Virtual Reality
	12.00 – 13.00	Rest
	13.00 – 15.30	Practice Making Learning Media Virtual Based Reality session 3
	15.30 – 16.00	Q& A Session

- c. Third meeting Wednesday, September 1, 2023: At a meeting on the 3rd day filled with activity practice virtual reality based games.

Table 3. Meeting III

Pert. III	Time	Activity
Wednesday, 1 September 2023	09.00 – 10.00	Material Create Games with Application session 1
	10.00 – 12.00	Material Create Games with Application session 2
	12.00 – 13.00	Rest
	13.00 – 15.30	Practice Making Games
	15.30 – 16.00	Q& A Session

- d. Fourth meeting Thursday, September 2, 2023: For the meeting final in PKM activities are filled with accompaniment making learning media virtual reality based, continued with representative participantssimulating practice teaching assisted hypermedia based on virtual reality that has been made.

Table 4. Meeting IV

Pert. IV	Time	Activity
Thursday, 2 September 2023	09.00 – 10.00	Accompaniment Making Learning Media Virtual Reality Based
	10.00 – 12.00	Simulation Practice Teach with use Hypermedia Based on Virtual Reality
	12.00 – 13.00	Rest / Pray / Eat
	13.00 – 15.30	Simulation Practice Teach with use Hypermedia Based on Virtual Reality
	15.30 – 16.00	Q& A Session

Based on the activity table provided, over the course of four days, participants were given material on creating email accounts, setting up accounts on Millealab, installing the Millealab application, developing Virtual Reality-based learning media, creating games using applications, and simulating teaching practices with Virtual Reality-based hypermedia. At the end of the program, teachers were required to complete practical tasks, including creating Virtual Reality-based learning media, developing games with applications, and conducting simulations and teaching using Virtual Reality-based hypermedia (Akçayır et al, 2017). The activities proceeded smoothly and were

interactive. Throughout the four days of online training, participants demonstrated high levels of activity and enthusiasm, engaging seriously with all sessions and materials provided. This was evident from their active participation in following the material presentations by the PKM team and their willingness to ask questions when they did not fully understand the content.



Figure 2. Doc. Practice making learning media

To assess the success of this community service activity, an evaluation was conducted with the training participants after the completion of all activities, including lecture delivery, discussions, and practice sessions. The purpose of this evaluation is to gauge how well the teachers at MAN 2 Model Makassar have mastered and applied the skills taught. Specifically, the evaluation aims to determine whether the teachers have succeeded in developing Virtual Reality-based learning media, designing and creating games using relevant applications, and conducting teaching simulations using Virtual Reality-based hypermedia. Additionally, the evaluation includes an assessment of the effectiveness of the training in enhancing participants' practical skills and understanding of the technologies taught. The results of this evaluation are expected to identify areas for improvement as well as the success of the training in preparing teachers to face the challenges of digital learning.

Several challenges faced by the participants during the training included unstable signal issues, variations in teacher ages affecting the speed of understanding the material—where some participants grasped the content quickly while others were slower. Additionally, differences in facilities and infrastructure at each school impacted the practice of creating Virtual Reality-based learning media, with participants encountering difficulties according to their respective classroom conditions. The lack of experience in creating learning media also posed a challenge. Amid the Covid-19 pandemic, Virtual Reality-based learning media is expected to serve as an effective alternative to support the quality of the teaching and learning process.

After the implementation of this service program, it is hoped that teachers will be able to position learning media as a crucial element in the teaching and learning process. Learning media plays a key role in achieving optimal learning outcomes and enhancing

the effectiveness and efficiency of the learning process. Teachers are expected to develop and utilize available learning tools in schools in line with the advancement of the times. Furthermore, following this training, it is anticipated that teachers will understand and apply learning media that aligns with the developments in information technology in the Era of Industry 5.0.

Conclusion

The conclusions of this PKM activity are: (1) MAN 2 Makassar warmly welcomed and fully supported all activities of the Community Partnership Program (PKM), as evidenced by the active and enthusiastic participation of attendees in all provided activities and materials; (2) Training in creating Virtual Reality-based hypermedia learning materials is crucial because it can enhance teachers' careers in facing the challenges of the 5.0 Industrial Revolution Era; (3) Assistance in creating Virtual Reality-based hypermedia learning materials is essential, as the online process can sometimes be confusing for teachers.

Acknowledgment

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