VIRTUAL REALITY REDUCE THE POLLUTION IN TAMAN MENTENG PARK IN JAKARTA

Akkapurlaura[1]*, Tommy Hari Prihatanto[2], Wegig Murwonugroho[3]
[1,2]Visual Communication Design Department, Faculty of Art and Design
Universitas Trisakti, Jakarta
[3]Product Design Department, Faculty of Art and Design
Universitas Trisakti, Jakarta
akkapurlaura@trisakti.ac.id[1]*

ABSTRACT

Society in general already knows global warming or the greenhouse effect is caused by polluted air due to motorized fumes. The presence of city parks, urban forests is considered sufficient reduce this pollution. In several scientific articles, it is stated that microalgae have the ability to absorb carbon dioxide are more optimal than trees in urban forests. On the other hand, Virtual Reality (VR) is the one of the entertaining learning media. How to educate the public and visitors to be more aware of the importance of maintaining good water in ponds, rivers, and beaches not polluted. The method by way of counseling, training, and mentoring the use of VR media of the city community who visited Menteng Park. Community Service involves students of the Faculty of Fine Arts and Design, Trisakti University to be able to do internships in the creative industry PT. Vastu Prajna Vatayana. So this program is one part of Merdeka activities Learning and Independent Campus (MBKM). The results show a positive response towards making This media is a medium that can be commercialized with Jakpro as a BUMD owned DKI Jakarta Government. Children who are visiting Menteng Park understand the content, entertained, and recorded what has been educated. VR media become interactive media in creative and interesting learning.

Keywords: *Interactive Learning, Virtual Reality.*

A. INTRODUCTION

The greenhouse effect can be seen anywhere, even in the world in Indonesia - in particular - climate change is one of the threats to mankind man. So that in Indonesia itself there is a policy to reduce greenhouse gases glass. For this reason, Indonesia contributes to reducing emissions so that in 2060 later emissions are at zero, yet many Indonesians have not understood why and what causes one of these greenhouse gases.

For one of which is needed counseling and education about the dangers of gas effects greenhouses and how to reduce them. Introduces microalgae that play a role in the biomitigation of greenhouse gases carbon dioxide glass through Virtual Reality digital learning. One of the contents of the material that will be delivered is about Microalgae which always carry out photosynthesis, as we already know that one of the The main requirement for photosynthesis to take place is the availability of CO2 gas in the air. Microalgae generally have more efficient photosynthetic characteristics compared to various terrestrial plants and has been suggested to be

one of the an alternative effort to reduce carbon dioxide emissions into the atmosphere (Miyachi, 1997; Pedroni et al., 2004).

Carbon dioxide is a gas that is generally emitted free from industry without experiencing control. On the gas control unit which using the combustion method, CO_2 is expected to be formed because is an indicator of a complete combustion process (Benemann, J., 2003; Benemann, J., 2002; Skjanes et al., 2007). With an average concentration of about 330 ppm in the atmosphere, CO_2 is harmless to humans because it is odorless, colored and do not react with the human body while plants and animals microalgae will grow better in a CO_2-rich environment (Bhaya and Grossman, 2000). However, now the CO_2 concentration in the troposphere is starting to get serious attention because CO_2 is included in the category of Greenhouse Gases (GHG) which is believed to be the cause of the global warming effect. Impact GHGs are increasingly felt, especially with an increase in surface temperature earth (Wang et al., 2008).

Researches that use microalgae as a CO_2 absorption has been carried out, especially in efforts to adapt and select suitable species tolerant to high CO_2 content and high CO_2 absorption also. Learning media are needed as an intermediary for delivering messages, in order to minimize failures during the communication process. One of development of learning media that can accommodate the practical needs distance is a learning media based on Augmented Reality technology. Virtual Reality as an Interactive Digital Learning Media Introducing Microalgae and the Causes of Greenhouse Gases in Menteng Park, Central Jakarta. So that it has the effect of reducing the greenhouse effect, besides educating participants or park visitors to know what and where the greenhouse effect comes from. With the help of Virtual reality that can be downloaded on every cell phone.

B. METHOD

The need for revitalization of urban parks and urban forests, especially Menteng Park for more have edutainment facilities. The community, especially the DKI Jakarta City Government does not yet know the role of microalgae as a producer that produces oxygen and a biomitigator as well as a bioremediator air pollution due to greenhouse gases Type of PPP Indicator: This activity is carried out in the form of counseling and training for visitors and the community around Menteng Park, Central Jakarta. Counseling and training is carried out using VR technology to make it more communicative, informative, and effective to increase public awareness of the role of microalgae in the environment, what their habitat is like, and what must be done so that microalgae remain sustainable in improving air quality in urban environments. This activity is carried out in three main phases, namely preparation, implementation, and evaluation. First, at the preparation stage, the main activity carried out is coordination internally to share tasks and development of

system design. This first stage produces several outputs such as licensing with relevant stakeholders, media design. This activity was attended by Trisakti University lecturers.

The VR media design was carried out by 30 FSRD Trisakti University students under the supervision of lecturers. Meanwhile, the mapping of location points was carried out by 30 FALTL students at Trisakti University under the supervision of lecturers. In the second stage, the main activities carried out are media development, counseling, and training on the use of VR technology to facilitate digital education for visitors and the community around Menteng Park. In the implementation of this, the methods used in the implementation include the following : data collection was also carried out through interviews to measure the achievement of the service program. Aspects of the ability to determine program achievement is the subject's ability to interpret and communicate their understanding of the role of microalgae and their habitats, and efforts that can be made to preserve the role of microalgae for the environment. In the last stage, an evaluation is carried out using the evaluation menu in the menu on the device. Evaluation data were analyzed qualitatively to find responses subject to the presence of VR devices in Menteng Park, and knowing nothing only thing that needs to be perfected in VR, especially in the aspect of the user interface (UI) and user experience (EX).

Table 1. the Method

Observing	Using the five senses and facts relevant to observe.
Interpret	Record the results of observations and relate it to the facts.
Classify	Classify observations based on differences and similarities and determine classification basis.
Predict	Formulate the results of observations used to draw conclusions.
Communicating	Prepare and submit reports in the form of empirical data with tables, graphs or diagrams systematically.

C. RESULT AND DISCUSSION

The stages are carried out one by one in turn based on activities:

1. Field Survey to Menteng Park to see the location
2. Asset and character design, Creating illustrations so that the initial stages makes illustrations such as gas 02, CH2O, trees, etc. The illustrations that were made were made to be partially made in 3D versions.

Figure 1. Character Design

3. Application design creates 3D assets using Unity and sound/audio design, Creating applications that can be used with mobile camera.

Figure 2. A boy with one of 3D assets in Taman Menteng

4. Training on the first day of December 25, 2021 at 15.00-18.00 at Menteng Park with students and visitors to the park. Counseling was given to visitors to Menteng Park with the help of several students.

Figure 3. Training for Visitor of Taman Menteng with VR

The material presented is material that educates the public and Menteng Park visitors through Virtual Reality those in Menteng Park, by downloading an application that requires a barcode scan in order to see the AR Animation at the location. Explained about clean air due to the absorption of microalgae in ponds and the sea so it is important to protect the environment and do not pollute river water, pool and sea. One example of a barcode that will be used to scan through a cellphone so that many other plants will appear and things that affect the decrease and increase in CO2 (carbon dioxide) substances.

Figure 4 & 5. Scan Barcode for mobile phone or cellphone

D. CONCLUSION

Virtual Reality as a Digital Learning Media Introducing Microalgae and the Causes of Greenhouse Gases in Menteng Park, Central Jakarta has a very positive impact because it can educate the public to know that there is a microorganism in the form of algae that can absorb carbon dioxide (CO2) so that it can reduce global warming and reduce global warming. The public is always aware of the greenhouse effect, knowing what causes this carbon dioxide gas to increase in Indonesia and other parts of the world.

E. ACKNOWLEDGEMENT (if any)

F. REFERENCES

Adityawan S., A., Tim Litbang CONCEPT , & Murti, M. W. (2010). *Tinjauan Desain Grafis: Dari Revolusi Industri Hingga Indonesia Kini*. Jakarta: Concept Media.

Azuma, R. T. (1997). A Survey of Augmented Reality. *Presence: Teleoperators and Virtual Environments, 6*, 355-385.

Fernando, M. (2013). *Membuat Aplikasi Android Augmented Reality Menggunakan Vuforia SDK dan Unity. Solo. Buku AR Online*. Solo: Buku ar Online.

Frannita, E. L. (2015). *Pengembangan dan Analisis Media pembelajaran Perakitan Komputer Berbasis Augmented Reality untuk Platform Android di SMK YPKK 1 Sleman*. Yogyakarta: Universitas Negeri Yogyakarta.

Nurhadi, & Teguh, R. S. (2014). *Indonesia dalam Infografik. Kumpulan Infografis Kompas*. Jakarta: Buku Kompas.

Raajan, N. R., Shiva, G., Mithun, & Vijayabhaskar, P. V. (2014). A Review on: Augmented Reality Technologies, System and Applications. *Journal of Applied Sciences, 14*, 1485-1486.

Usada, E. (2014). Rancang Bangun Modul Praktikum Teknik Digital Berbasis Mobile Augmented Reality (AR). *Jurnal Infotel (Informatics, Telecommunication, and Electronis), 6*, 83-88.

VIRTUAL REALITY REDUCE THE POLLUTION IN TAMAN MENTENG PARK IN JAKARTA