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Strengthening Digital Literacy Education Based on *Virtual Reality*

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Abstract

In this increasingly advanced era of technology and information, culture with local wisdom should not be forgotten. The role of local wisdom critically changes and shapes global culture to be meaningful and in accordance with the social and cultural life of society, including in the world of education. Therefore, teachers are currently required to be able to preserve local values amidst the rapid flow of technological progress. One effort that can be made through learning activities using Virtual Reality by social studies teachers in Kudus Regency. Kudus Regency is rich in local wisdom that can be used as a source of social studies learning such as the Menara Kudus Mosque, Kretek Museum, Pati Ayam Site, Kudus Traditional House, etc. Through this local wisdom-based virtual reality , it is hoped that it can train students to preserve socio-cultural conservation values through local wisdom in Kudus Regency. Therefore, to achieve this goal, special skills are needed for teachers to package local wisdom in society into digital form. These skills must be possessed by teachers as educators so that social studies learning can run more meaningfully. The training method in this activity is Community Development Practice which includes team formation, goal formulation, target community identification, needs collection and analysis, problem solution priority determination, preparation, implementation, mentoring, review and evaluation, and ending with determining new needs and targets. The ability to develop digital learning media that is relevant to the times is certainly a skill that is very much needed by teachers in this digital era. Through this community service activity, teachers can improve their skills in developing virtual reality- based learning media . Teachers can package local wisdom materials in digital form which of course will be more appropriate for the native digital generation that currently dominates school benches.

Keywords : *digital literacy , virtual reality, local wisdom*

INTRODUCTION

The development of technology that is increasingly rapid day by day is also accompanied by the development of information to communication that also moves as a form of adaptation to the development of the times. This digital era also demands everything on earth to be more innovative, move quickly, instantly and efficiently. No exception for humans, both in terms of social development, culture, interaction and communication which also continue to move towards renewal. Without realizing it, these movements and changes have led humans to further changes . The development of the latest technology gives new hope for the emergence of various fundamental changes in various areas of life and social relations. Digital literacy is the interest, attitude and ability of individuals in using digital technology and communication tools to access, manage, analyze, and evaluate information, build new knowledge, communicate with others in order to participate effectively in society. The term digital literacy is used to indicate a fundamental aspect of new media, namely digitalization.

Virtual reality or virtual reality is a simulation of an environment by a computer by creating a real experience into a virtual world. Not only can it clearly depict the environment in real terms, but *virtual reality* also allows users to observe the virtual environment and feel like they are in that place. In this era of increasingly advanced technology and information, culture with local wisdom should not be forgotten. The role of local wisdom critically changes and shapes global culture to be meaningful and in accordance with the social and cultural life of society, including the world of education.

Based on the results of observations in several Junior High Schools in Kudus Regency, it is known that Junior High School students as the current young generation are considered to pay less attention to the cultural values in their area because they tend to be more active in enjoying foreign cultures that enter in the form of technological and information advances, even though students should know and adopt local wisdom values earlier, and use them as an analysis in dissecting and separating foreign cultures, so that they can continue to preserve regional culture. There are several local wisdoms in Kudus Regency that must be preserved at this time such as the Menara Kudus Mosque, the Kretek Museum, the Pati Ayam Site, the Kudus Traditional House, etc.

One of the efforts to maintain the local wisdom of Kudus Regency is by making local wisdom a source of social studies learning. Learning resources are more effective today when packaged in digital form. One form of digitalization of local wisdom is by using *Virtual reality* . Through this local wisdom-based *Virtual reality* , it is hoped that it can train students to preserve socio-cultural conservation values through local wisdom in Kudus Regency. Therefore, to achieve this goal, special skills are needed to package local wisdom in society into digital form. These skills must be possessed by teachers as educators so that social studies learning can run more meaningfully. Therefore, based on the background above, this community service intends to provide **Strengthening of Digital Literacy Education Based on Virtual Reality for Social Studies Teachers in Kudus Regency** . Participants in this community service activity are MGMP Social Studies Teachers in Kudus Regency. By implementing this community service activity, it is hoped that Junior High School Social Studies Teachers can not only improve their digital literacy skills, but can also develop *Virtual Reality* -based learning media that can improve students' digital literacy skills.

METHOD

The method of implementing this community service activity is adjusted to the solution of the problem based on the analysis of the situation and problems experienced by the partners. The method used is *Community Development Practice* which includes team formation, formulation of objectives, identification of target communities, collection and analysis of needs, determination of priority of problem solutions, preparation, implementation, mentoring, review and evaluation, and ending with determination of new needs and targets . Community development in the context of this community service activity is to develop teachers' abilities in identifying needs, obtaining resources in meeting the needs of the learning process, namely learning media.

The implementation of the Community Development Practice Method is carried out through a program that includes seven planning steps consisting of problem formulation, program determination, goal formulation, target group determination, resource identification, strategy determination and activity schedule, and finally monitoring and evaluation. The Community Development Practice Method focuses on helping community members who have similar interests to work together, identify needs and carry out activities together to meet needs. The use of this method is in accordance with the objectives of the community service activities that focus on developing teacher skills in meeting the needs of digital-based learning media independently.

RESULTS AND DISCUSSION

Kudus Regency is one of the regencies located in Central Java Province which borders directly with Demak and Jepara to the West, Pati and Jepara to the North, Pati to the East, and Grobogan and Pati to the South. Kudus Regency, which is known as the City of Kretek, is an area that has a rich cultural heritage with local wisdom values that are characteristic of the traditions of the Kudus Community. One of the famous heritages and a form of cultural acculturation between Java, Hinduism and Islam is the Menara Kudus Mosque.

The existence of the Menara Kudus Mosque is a potential that can be developed by teachers to develop a learning media based on local wisdom, where technological advances, especially in the field of information and communication technology, require digital literacy skills that can filter foreign cultures that enter massively and influence various fields, including education. The phenomenon that often occurs among students is the decline in local values due to the disruption of foreign culture, so it is necessary to raise awareness among students of the

importance of actualizing local values in everyday life.

Community Service Activities on Strengthening Digital Literacy Education Based on *Virtual Reality* for Social Studies Teachers in Kudus Regency is one of the Efforts to equip teachers so that teachers can develop learning media that are relevant to the progress of science and technology as well as relevant to students' lives. The ability to develop IT-based learning media is of course combined with local wisdom in Kudus Regency so that instilling values in students can be more effective and efficient. This Community Service Activity is broadly divided into 3 stages which include the planning, implementation and monitoring and evaluation stages.

Planning and Organizing PkM Activity Programs

The first thing done in this community service activity is to identify the problems experienced by Social Studies Teachers in Kudus Regency. The massive influx of foreign culture due to the advancement of science and technology and the lack of mastery of technology by Social Studies teachers in Kudus Regency are the main factors for the community service team to choose a community service activity in the form of strengthening digital literacy based on *virtual reality* . Currently, teenagers in their daily lives cannot be separated from internet access through *gadgets* , be it computers or *cellphones* . The world for them is not limited to the real world, but there is also a virtual world, where through this virtual world foreign cultural values destructively enter and begin to shift local culture and values.

The community service team collaborates with partners, namely the MGMP IPS of Kudus Regency and carries out activities in the form of strengthening digital literacy based on *virtual reality* for IPS teachers. The Joint Community Service Team with MGMP IPS examines various local cultural potentials in Kudus Regency to be raised and developed through digital-based learning media. Based on considerations of the values of tolerance, plurality and real examples of cultural acculturation, the Menara Kudus Mosque was chosen as the content of *virtual reality -based learning media* .

Before the community service activities were carried out, the community service team together with MGMP IPS recorded the needs of materials and tools to compile the media. The tools and materials needed were laptops, internet access, $360^{o \ photos}$, Google Street View applications, *Smartphones* , Google Sites, and Theasys *Websites* . Based on the results of the data collection on the needs of tools and materials, the community service team together with MGMP IPS needed to find a place for activities that could support all activity processes, especially stable internet access. In order for the activities to run smoothly, a management was formed involving Lecturers, Students and IPS Teachers in Kudus Regency. Each party has their own main tasks and periodically communicates with each other.

Implementation of PkM Activity Program

The community service activity was carried out at SMPN 5 Kudus with consideration of easy access, having a fairly large room and a fairly stable internet access point. The community service activity was attended by 41 social studies teachers in Kudus Regency. The activity began with an explanation of the role and competence of teachers in the learning process in the digital era, where students at the junior high school level are currently a *digital native generation* where since birth this generation has been surrounded by computers, digital devices and social media. This certainly requires teacher competence to be able to develop digital literacy skills through the development of digital learning media, so that the social studies learning process can be more relevant to students' lives.

The next activity, the service team introduced *virtual reality -based learning media* . The introduction of *virtual reality* is expected to provide additional options for teachers in delivering materials through digital learning media. The introduction of *virtual reality* is continued by introducing *a website* to create *virtual reality , the selection of web-* based *virtual reality* development based on considerations of convenience and relatively cheap funding needs. *The website* that the service team chose was the Theasys *website* which can accommodate a maximum of 5 $360^{o \ photos}$ to be used as *virtual reality* for free. If the number of photos exceeds 5 photos, then users need to subscribe by paying monthly.

Figure 1. Theeasys *website which is used as a platform for creating Virtual Reality -based learning media* .

In addition to the introduction of the *virtual reality* creation *website* , the service team also introduced the application used to create 360 $^{o\ photos}$, namely by using the Google Street View application which can be downloaded via Playstore. The use of this application requires *a Smartphone* with an Android operating system.
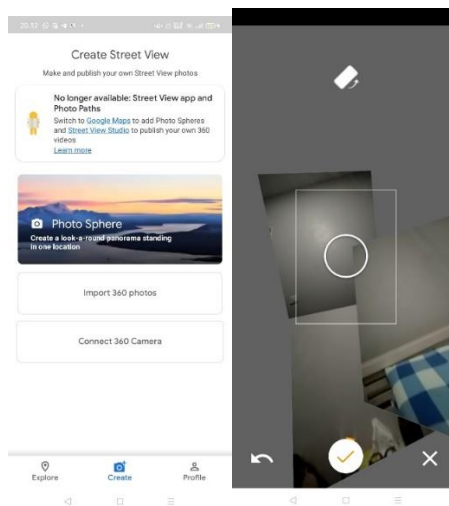

Figure 2. Google Street View application used to create 360 $^{o\ photos}$

After the introduction of *the web* and applications used in creating *virtual reality -based learning media* . The next activity is the presentation of the evaluation of the selection of learning media that suits the needs. Several ways of selecting media and their evaluations are presented by the service team, so that teachers can evaluate whether the selection of learning media is in accordance with the needs or not. This is very important because the selection of learning media is very dependent on the characteristics of the material, students and the facilities and infrastructure available.

The next activity after all the materials were delivered was the mentoring activity for the preparation of *virtual reality -based digital learning media* . In the initial activity, the service team together with the teacher practiced taking 360 $^{o\ photos}$ using the Google Street View application using *a Smartphone* . The photos were taken in the meeting room and in the school yard.

Figure 3. The service team together with the teacher practice making 360 $^{o\ photos.}$

The results of the 360 ᵒ photo taking practice were then entered into the Theasys *website* to be processed into *virtual reality* . Community service participants were given 360 ᵒ photo materials that had been prepared by the community service team beforehand, namely photos of the Menara Kudus Mosque. The community service team accompanied participants in making *virtual reality* starting from uploading photos, combining photos, providing symbols in the photos, to embedding captions in the photos in the form of text, images or videos.
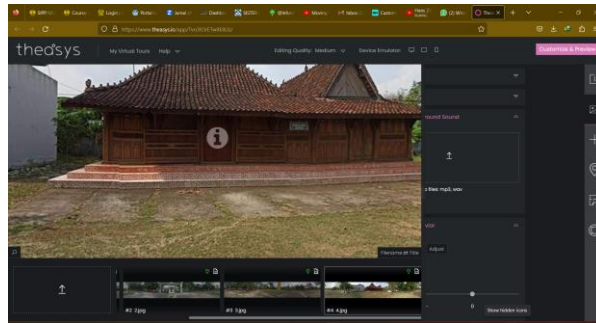

Figure 4. Display of 360 ᵒ photo processing on the Theasys *website*

The final stage of developing *virtual reality -based learning media* is by creating a container to embed *virtual reality -based learning media* . *The platform* chosen is Google Site, the selection of Google Site as a container for learning media is based on its ease of use. Participants under the guidance of the service team created a mini *website* using Google Site and added things needed in the learning process such as learning objectives, embedding teaching materials and embedding *virtual reality*.
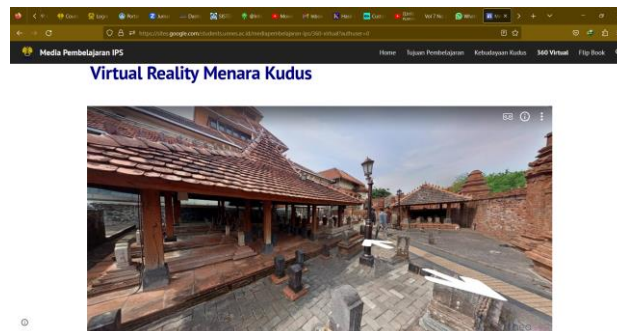

Figure 5. *Virtual reality* view in Google Site

Monitoring and Evaluation of PkM Activity Programs

The final and no less important stage of this community service activity is the monitoring and evaluation stage. This stage aims to see how effective and efficient the activity is, maintain the continuity of the activity so that this activity can continue to be developed in the future, and get useful feedback for improving the next community service activity.

The monitoring and evaluation stages include identifying supporting and inhibiting factors for the implementation of community service, monitoring the sustainability of activities so that they do not stop when the community service activities are completed, reviewing and analyzing new needs and targets for further community service activities based on evaluation results and input from various parties. The ability to develop digital learning media that is relevant to the times is certainly a skill that is very much needed by teachers in this digital era. Through this community service activity, teachers can improve their skills in developing *virtual reality- based learning media. Teachers can package local wisdom materials in digital form which of course will be more appropriate for the native digital* generation that currently dominates school benches.

CONCLUSION

The Community Service Activity of Strengthening Digital Literacy Education Based on Virtual Reality for Social Studies Teachers in Kudus Regency went smoothly with the result of increasing the ability to develop digital learning media that is relevant to the times, of course, a skill that is very much needed by teachers in this digital era. Through this community service activity, teachers can improve their skills in developing virtual reality-based learning media. Teachers can package local wisdom materials in digital form which of course will be more appropriate for the native digital generation that currently dominates school benches.

REFERENCES

SM Lee and S. Trimi, "Innovation for creating a smart future," J. Innov. Knowl., vol. 3, no. 1, pp. 1–8, 2018, doi: https://doi.org/10.1016/j.jik.2016.11.001.

H. Hashim, "Application of Technology in the Digital Era Education," Int. J. Res. Couns. Educ., vol. 1, no. 2, p. 1, 2018, doi: 10.24036/002za0002.

EE Gallardo-Echenique, L. Marqués-Molías, M. Bullen, and JW Strijbos, "Let's talk about digital learners in the digital era," Int. Rev. Res. Open Distance Learn., vol. 16, no. 3, pp. 156–187, 2015, doi: 10.19173/irrodl.v16i3.2196.

M. Lee et al., "How to Respond to the Fourth Industrial Revolution, or the Second Information Technology Revolution? Dynamic New Combinations between Technology, Market, and Society through Open Innovation," J. Open Innov. Technol. Mark. Complex., vol. 4, no. 3, p. 21, 2018, doi: https://doi.org/10.3390/joitmc4030021.

BW Wirtz and V. Göttel, "Technology acceptance in social media: Review, synthesis and directions for future empirical research," J. Electron. Commer. Res., vol. 17, no. 2, pp. 97–115, 2016.

U. Gündüz, "The Effect of Social Media on Identity Construction," Mediterr. J. Soc. Sci., vol. 8, no. 5, pp. 85–92, 2017, doi: 10.1515/mjss-2017-0026.

Setyaningsih, R., Abdullah, A., Prihantoro, E., & Hustinawaty, H. 2019. DIGITAL LITERACY STRENGTHENING MODEL THROUGH UTILIZATION OF ELEARNING. ASPIKOM Journal, 3(6), 1200-1214.)

Sunarni, Theresia, Dominikus and Budiarto. (2014). Perception of Effectiveness *of Virtual Reality (VR) Media Teaching*. National Seminar on Applied Information and Communication Technology. ISSN: 979-26-0276-3. 179-184.

Vincent II, JW 2009. Community development practice. in Rhonda, P. and Pittman, R. H. (ed.) An Introduction to Community Development. New York: Routledge, p. 58– 74.