

Training on Utilization of Based Learning Media Virtual Reality for City Science Teachers Jeneponto

Hendra Baharuddin ^{1*}, Riskawati ²

¹ Universitas Negeri Yogyakarta, Indonesia

² Universitas Negeri Makassar, Indonesia

* hendra@student.uny.ac.id

Abstract

Activity devotion to community (PkM) aim to: (1) provide introduction to science teachers at Jeneponto Junior High School regarding Virtual Reality learning media as an alternative learning media IT based, and (2) to train science teachers at Jeneponto Junior High School For capable use learning media based on Virtual Reality. Activity done with method training carried out during 3 stages, stage First training related introduction to various learning media used in accordance with development Revolution Industry 4.0 is one of the media used as a learning medium based on Virtual Reality. Training stage two with material about training use of learning media Deep Virtual Reality based learning as well as stage third do evaluation and strengthening. Activity training carried out responses positive of the teachers indicated with enthusiasm during activity as well as attitude positive for applied learning media Deep Virtual Reality based activity learning in accordance with development technology Information in the Age of Revolution Industry 4.0. The training participants were very interesting and enthusiastic in participating in the training activities. Participants also gain knowledge, skills and motivation by using Virtual Reality-based learning media. Participants responded positively to training activities and were able to apply various learning media in the learning process so as to improve the quality of learning.

Keywords: *Learning Media, Virtual Reality; Science Teacher; Education 4.0*

Introduction

Technology and information moment This develop with fast. Utilization technology and information Not only limited by means of communication or entertainment only, however can be used in various fields, one of which is in field education (Fitria, 2023; Astuti et al, 2020; Andika et al, 2022). Utilization technology information in the field of education is one of them made as a learning medium to support the learning process in schools (Nasir et al, 2019; Refdinal et al, 2023). This support implementation from objective education stated national in Law (UU) No. 20 of 2003 Article 3 states education national function develop ability and shape character as well as civilization dignified nation in framework educate life nation, aims For development potency participant teach to be a man of faith and piety to Almighty God Esa, morals noble, healthy, knowledgeable, capable, creative, independent, and become democratic citizens as well as responsible answer (Ministry, 2003; Hedrick et al, 2022). The Mandate Constitution implies that education should form an intelligent, creative, qualified, innovative and

proactive Indonesian generation to the development of the times, especially in the development of revolutionary era technology industry 4.0 (Permana et al, 2021).

Learning media always follow development technology, starting from technology print, audio visual, computer until technology combined between technology print with computers (Arsyad, 2016). Moment this is a learning medium where combined technology print and computer can be embodied with Augmented Reality (AR) and Virtual Reality (VR) technologies (Mustaqim, 2016; Zhou, 2021). VR technology is integration of digital elements that are displayed in a manner real (real world data) and follow the environment in the real world as well as can be implemented on mobile devices. Very virtual reality helps in simulating something difficult to present in a manner direct in the real world. Excess main of virtual reality is experience that makes the user feel real world sensation in cyberspace (Prana et al, 2017; Matahari, 2022).

Learning media used at the time learning should be customized with development technology information that happened at the moment this (Haryana et al, 2022). One of the learning media that can be applied in the appropriate learning process with development revolution Industry 4.0 is a learning medium based on Virtual Reality (Permanasari et al, 2021). Virtual Reality is a working medium for displaying projection pictures from the screen of a smartphone to be more clear and visible real (Kurniawati et al, 2020). With he advanced increasingly technology sophisticated field education is also needed results development. For example, Virtual Reality besides For entertainment, virtual video and audio display that can also be used as learning media. Using Virtual Reality, can make participants educate more quickly, remember, understand and focus on material (Sunarni et al, 2014; Asikin et al, 2018).

Based on the results of interviews with several science teachers in Jeneponto City, there is a problem in education. Problems education form Not yet optimal use of learning media based on Virtual Reality (Tak et al, 2023). This caused a low teacher 's ability to utilize learning applications and media based on Virtual Reality (Ahir et al, 2020). This is very unfortunate because almost all teachers and students in the school have their own cell phone smart. Potency cellphone cleverness should be used by teachers and students to support the learning process (Suryanto et al, 2018). During This cellphone clever, more Lots utilized for less purpose are productive, even negative by teenagers (Zulfarina et al, 2021). Because that field solution form business enhancement deep teacher skills using learning media Deep Virtual Reality based form series activity training so that teachers can know and use it in the learning process.

Responding to things teachers admit about their limitations, then team devotion public have an idea to introduce, utilize and use learning media based Virtual Reality as one alternative learning media to support quality implementation of the learning process. Based on results analysis such, then activity business in enhancement understanding and deep teacher skills using learning media Deep Virtual Reality based form series activity training with the theme "Training Utilization of Learning Media Virtual Reality Based for Science Teachers in Jeneponto City"

Method

Activity This done with method training will give introduction regarding learning media Virtual Reality based as well give guidance in a manner direct to participant training namely science teachers who are members in Jeneponto City Science Subject Teacher Conference (MGMP). Following This outlined implementation activity consists from:

1. **Preparation:** At stage preparation done monitoring and determination location and target as well as drafting materials / materials training.

2. Implementation Training

In stage this is done to explain about the scope of learning media in the revolutionary era industry 4.0. Session training This focuses on giving explanation regarding learning media Virtual Reality based as well give motivation for the teacher to get using learning media one of them is a learning medium based on Virtual Reality. In implementation activity This consists of three stages: (1) Stage First training about introducing various learning media used in accordance with development Revolution Industry 4.0; (2) Stage 2 about training use of learning media Deep Virtual Reality based learning. At this stage 2, the teacher is guided in using VR Box, supporting applications and videos in Virtual Reality; (3) Stage 3 ie evaluation implementation activity for known response participant to activity through instrument questionnaire.

Activity training done through a number of method training, namely: (1) Method Lecture, done For give explanation and motivation about learning media based on Virtual Reality; (2) Tutorial method, where participant training follow every instructions given by the tutor so participant truly understand every step in use of learning media based on Virtual Reality; (3) Method Practice, where participant training given chance practice every step Work in accordance instruction from tutors; (4) Question and answer method/ discussion, method ask answer done For give chance for participant in response delivery facilitator/tutor. This allows teachers to dig in knowledge as much about learning media based on Virtual Reality (Mao et al, 2021).



Figure 2. Stages of PKM Implementation

Results and Discussion

The Devotion team in implementing the PKM program for the first time intertwines communication with partners. Partner in PkM This is Middle School Science Subject Teacher Conference (MGMP) in Jeneponto City. Devotion team do communication and friendship with the management of the MGMP IPA who was welcomed directly by the head of the MGMP IPA Jeneponto City namely Mr. Drs. Arifurahman which is located at SMP Negeri 5 Jeneponto. Activity friendship This means to do discussion beginning related dedication performed. From the results discussion is obtained agreement about timetable implementation activity devotion to society. Target implementation devotion to the public are the existing science teachers joined in MGMP IPA Jeneponto City.

Implementation activity devoted to the public attended by participants training, namely science teachers who are members in the MGMP IPA Jeneponto City, totaling 40 people (Ji, 2021; Cheng, 2021). Besides the teacher, also attended the Coordinator of Jeneponto Junior High School Supervisors and Supervisors. Results obtained from activity devotion to the public is implementation third stages implementation devotion. Stage First training is about introducing various learning media used in accordance with development Revolution Industry 4.0 is one of the media used as a learning medium based on Virtual Reality (Bujdosó, 2016). After going through training this 1st stage expected the teacher has know appropriate learning media with development technology Information in the Age of Revolution Industry 4.0 ready applied in learning. Training stage 2 with material about training use of learning media Deep Virtual Reality based learning. After training stage 2 finished carried out, the teacher at the locus devotion guided in use of VR Box, supporting applications and videos in Virtual Reality (Sunarti et al, 2021). Training stage 3 is done at the end period devotion, but he did stage third this to confirm results and progress participant activity devotion. On session final this is done evaluation implementation activity devotion for known response participants to activity through instrument consisting of a questionnaire from seven aspects. Response can be seen in Table 1.

Table 1. Response participant training

Aspect Response	Percent	Interpretation
Usefulness activity training	100	Very Good
Linkages activity training in enhancement quality learning	85	Very Good
Enhancement knowledge about use of learning media virtual reality based	95	Very Good
Enhancement Skills in using learning media virtual reality based	85	Very Good
Enhancement motivation For using learning media based virtual reality in the learning process	90	Very Good
Interest on learning media virtual reality based delivery in training	85	Very Good
belief For use learning media virtual based reality in the learning process furthermore	77	Good
Average Response	88	Very Good

Based on the results questionnaire, it is known that in a manner general participant training gives every response good (88%) against implementation activity. Participants can benefit from activity training to enhance quality learning. Besides that activity training this also improves knowledge, skills and motivation participants in using learning media based on Virtual Reality. This is because the use of learning media in the learning process can increase understanding, skills, motivation and interest in learning (Arsyad, 2016; Sunarni et al, 2014; Asyhar, 2012). Participants training very interested and enthusiastic in follow training so that their own belief for using learning media Deep Virtual Reality based learning.



Figure 2. Display of learning media based on Virtual Reality using Google VR

In implementation activity obtained a number of factors to be challenged that is lack of internet network in schools adequate. This is handled by the executor activity to provide internet networks through cellular data providers which are then used by participants via smartphone tethering mode. Only of course, conditions this then will become a challenge for party schools that can provide more internet access good and wide for teachers and students. Condition next is difficult to arrange timetable activity because of the dense teacher's schedule at school. Besides it, not yet availability means in the form of a VR box or Google VR at school, This can handled by the team executor devotion with provide google VR tools in the training process, conditions this also be challenge party school so you can provide means in support use of learning media appropriate Virtual Reality based with development technology and information in the era of the Revolution Industry 4.0.



Figure 3. Participants' enthusiasm for VR training

Conclusion

Training on Utilization of Based Learning Media Virtual Reality for City Science Teachers Jeneponto. Activity done with method training carried out during 3 stages, stage First training related introduction to various learning media used in accordance with development Revolution Industry 4.0 is one of the media used as a learning medium based on Virtual Reality. Training stage two with material about training use of learning media Deep Virtual Reality based learning as well as stage third do evaluation and strengthening. Conclusions obtained from activity devotion to public form training use of learning media based on Virtual Reality for science teachers in Jeneponto City done with fluent through third stages activity. Participant training is very interesting and enthusiastic in follow activity training. Participants also earn knowledge, skills and motivation for using learning media based Virtual Reality. Participants give a positive response to activity training and can apply various learning media in the learning process so that they can increase quality learning.

Acknowledgment

-

References

- Ahir, K., Govani, K., Gajera, R., & Shah, M. (2020). Application on virtual reality for enhanced education learning, military training and sports. *Augmented Human Research*, 5, 1-9.
- Andika, Y., Ekowati, S. H., Ismail, S., & Hierro, I. A. (2022). Need an analysis of virtual reality-based learning media for French listening skills of DELF A1. *KEMBARA: Jurnal Keilmuan Bahasa, Sastra, dan Pengajarannya*, 8(1), 37-50. <https://doi.org/10.22219/kembara.v8i1.20024>
- Arsyad, A. (2016). *Media Pembelajaran*. Jakarta: Raja Grafindo Persada.
- Ashhar, Rayanda. 2012. *Creative Develop Learning Media*. Jakarta: Reverberation Persada (GP) Press Jakarta.
- Asikin, N., Daningsih, E. (2018). Development audio-visual learning media of hydroponic system on biotechnology topic for senior high schools. *Advances in Social Science, Education and Humanities Research*, volume 174. Atlantis Press. <https://doi.org/10.2991/ice-17.2018.44>.
- Astuti, A. P., Mawarsari, V. D., Purnomo, H., & Sedyono, E. (2020, April). The use of augmented reality-based learning media to develop the technology literacy of chemistry teachers in the 21st century. In *AIP Conference Proceedings* (Vol. 2215, No. 1). AIP Publishing. <https://doi.org/10.1063/5.0000745>
- Bujdosó, G. (2016). Virtual reality in teacher training-developing presentations in virtual reality. In *ICERI2016 Proceedings* (pp. 4900-4905). IATED.

- Cheng, J. (2021). Evaluation of physical education teaching based on web embedded system and virtual reality. *Microprocessors and Microsystems*, 83, 103980. <https://doi.org/10.1016/j.micpro.2021.103980>
- Fitria, T. N. (2023). Augmented Reality (AR) and Virtual Reality (VR) Technology in Education: Media of Teaching and Learning: A Review. *International Journal of Computer and Information System (IJCIS)*, 4(1), 14-25. <https://doi.org/10.29040/ijcis.v4i1.102>
- Haryana, M. R. A., Warsono, S., Achjari, D., & Nahartyo, E. (2022). Virtual reality learning media with innovative learning materials to enhance individual learning outcomes based on cognitive load theory. *The International Journal of Management Education*, 20(3), 100657. <https://doi.org/10.1016/j.ijme.2022.100657>
- Hedrick, E., Harper, M., Oliver, E., & Hatch, D. (2022, May). Teaching & learning in virtual reality: Metaverse classroom exploration. In *2022 Intermountain Engineering, Technology and Computing (IETC)* (pp. 1-5). IEEE. <https://doi.org/10.1109/IETC54973.2022.9796765>
- Ji, Y. (2021). Use of virtual reality technology in animation course teaching. *International Journal of Emerging Technologies in Learning (iJET)*, 16(17), 191-208.
- Kurniawati, A., Abdullah, F. F., Agustiono, W., Warninda, S. S., & Kusumaningsih, A. (2020, July). Introduction Virtual Reality for Learning Media in Schools in Indonesia. In *Journal of Physics: Conference Series* (Vol. 1569, No. 2, p. 022065). IOP Publishing.
- Mao, R. Q., Lan, L., Kay, J., Lohre, R., Ayeni, O. R., & Goel, D. P. (2021). Immersive virtual reality for surgical training: a systematic review. *Journal of Surgical Research*, 268, 40-58. <https://doi.org/10.1016/j.jss.2021.06.045>
- Matahari, T. (2022). WebXR Asset Management in Developing Virtual Reality Learning Media. *Indonesian Journal of Computing, Engineering and Design (IJoCED)*, 4(1), 38-46. <https://doi.org/10.35806/ijoced.v4i1.253>
- Ministry of National Education [MONE]. (2003). Law No. 20 of 2003 About the National Education System. Jakarta: Ministry of National Education.
- Mustaqim, I. (2016). Utilization of augmented reality as a learning medium. *Journal of Technology and Vocational Education*, 13(2), 174-182.
- Nasir, M., Fakhruddin, Z., & Prastowo, R. B. (2019, November). Development of Physics Learning Media Based on Self-Efficacy Use Mobile Augmented Reality for Senior High School. In *Journal of Physics: Conference Series* (Vol. 1351, No. 1, p. 012018). IOP Publishing.
- Permana, H., Bakri, F., Salsabila, I. H., Ambarwulan, D., Mulyati, D., & Sumardani, D. (2021). The Development of Augmented Reality Application to Explore Fluid Concepts. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, 7(1), 53-60. <https://doi.org/10.21009/1.07106>

- Permanasari, A. E., Hadi, S. H., Hartanto, R., & Sholihin, M. (2021, September). The Advantage of Augmented Reality Technology for Supporting Learning Media in Ethics Learning. In 2021 7th International Conference on Education and Technology (ICET) (pp. 204-208). IEEE. <https://doi.org/10.1109/ICET53279.2021.9575114>
- Pranata, MA, Santyadiputra, GS, Sindu, IG (2017). Balinese fruit shooter game design based on virtual reality as a learning medium. Janapati: National Journal of Informatics Engineering Education, 6(3), 256-270.
- Refdinal, R., Adri, J., Prasetya, F., Tasrif, E., & Anwar, M. (2023). Effectiveness of Using Virtual Reality Media for Students' Knowledge and Practice Skills in Practical Learning. JOIV: International Journal on Informatics Visualization, 7(3). <http://dx.doi.org/10.30630/joiv.7.3.2060>
- Saputro, RE, Saputra, DIS (2014). Development of learning media know the digestive organs man use augmented reality technology. Journal Buana Informatics, 6(2), 153-162.
- Sunarni, T., Budiarto, D. (2014). Perception effectiveness teaching media virtual reality (vr). Proceedings Semantics, 179-184. ISBN: 979-26-0276-3.
- Sunarti, S., & Ting, H. L. (2022). Virtual Reality Based Project-Based Learning Model in Online Learning. Journal of Development Research, 6(1), 61-65. <https://doi.org/10.28926/jdr.v6i1.196>
- Suryanto, A., Kusumawati, D. A., & Sanhoury, I. M. (2018). Development of augmented reality technology based learning media of lathe machines. Jurnal Pendidikan Teknologi dan Kejuruan, 24(1), 32-38. <https://doi.org/10.21831/jptk.v24i1.18245>
- Tak, N. Y., Lim, H. J., Lim, D. S., Hwang, Y. S., & Jung, I. H. (2023). Effect of self-learning media based on 360° virtual reality for learning periodontal instrument skills. European Journal of Dental Education, 27(1), 1-8. <https://doi.org/10.1111/eje.12769>
- Zhou, J. (2021). Virtual reality sports auxiliary training system based on embedded system and computer technology. Microprocessors and Microsystems, 82, 103944. <https://doi.org/10.1016/j.micpro.2021.103944>
- Zulfarina, Z., Syafii, W., & Putri, D. G. (2021). E-magazine based on augmented reality digestive as digital learning media for learning interest. Journal of Education Technology, 5(3), 417-424. <https://doi.org/10.23887/jet.v5i3.36110>