USING VIRTUAL REALITY (VR) TECHNOLOGY AS AN EFFORTS TO ESCALATE INTEREST IN ONLINE LEARNING DURING PANDEMIC

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Abstract

Achieving this goal, humans continue to innovate in making assistive devices to carry out teaching and learning activities, where one of them is making a learning medium. The pandemic period that occurred in 2020 made learning carried out online so that online learning platforms or media became very important to mastered and implemented by both teachers and students. Learning media using virtual reality (VR) is an alternative solution to offer new and fun learning practices for students. VR brings interesting videos/images with adjustable time duration. This article uses a literature study approach, by collecting various materials and information, then the analysis made based on the documentation and reflections that have been compiled. The use of VR encourages learning media innovations that are different from before to increase participation and students' critical thinking perspectives and to bring students closer to VR technology. The characteristics of technology that are suitable for use such as Virtual Reality (VR) media can be implemented in the teaching and learning process in the midst of the current pandemic which aims to attract students' interest and feel a classroom-like atmosphere when offline learning takes place.

Keywords: online learning, pandemic, technology, virtual reality

INTRODUCTION

Since 2020 at the beginning of the quarter, the world community has been shocked by the emergence of the Corona Virus (Covid-19) outbreak which has hit almost all countries in various parts of the world. Not only medical problems that must be faced, but people around the world must pass through the 'grey cloud', because the Corona Virus outbreak has an impact on all sectors, both education, tourism, government, to the smallest scope, namely in everyday life. Coronavirus Disease (Covid-19) is an infectious disease caused by an acute respiratory syndrome or usually known as coronavirus 2 (Sars-CoV-2) and can be transmitted through splashes of saliva or droplets and can also be transmitted through the air (airborne).). At first this disease first appeared in December 2019 in Wuhan, or to be precise the Capital of China's Hubei Province, and since December the spread of the Corona Virus (Covid-19) has occurred globally, which then resulted in a pandemic. The World Health Organization (WHO) shortly on January 30, 2020 after its initial appearance, then declared that the coronavirus outbreak was a Public Health Emergency of International Concern (PHEIC), and declared it a pandemic on March 11, 2020. Even based on data from the Indonesian Ministry of Health per - On November 21, 2020, the number of confirmed

cases due to Coronavirus Disease (Covid-19) in the world reached 57,274,018 cases with 1,368,000 deaths. Meanwhile, according to data from the Public Health Emergency Operation Center (PHEC) of the Ministry of Health of the Republic of Indonesia, it was reported that in Indonesia as of November 21, 2020, there were 497,668 confirmed cases and 15,884 deaths (kemkes.go.id, 2020).

However, since the government's decision regarding the implementation of Large-Scale Social Restrictions (PSBB) which was first declared by the Indonesian government on April 24, 2020 and issued rules regarding recommendations for physical distancing, the education sector cannot be implemented directly. This is because the education sector is considered to have high potential and is very vulnerable if applied offline in terms of the spread of the Corona Virus/Coronavirus Disease (Covid-19), especially in areas in Indonesia which are still recorded as red and yellow zones. Due to the Coronavirus Disease (Covid-19) this has resulted in the teaching and learning process having to be carried out online in addition to the increasingly sophisticated technology that is being developed. All students, both from elementary-high school and university level, are forced to carry out online learning programs at their respective homes. It is hoped that during the pandemic, students will remain productive in terms of learning. But in reality, online learning is a metaphor because students think this is just a vacation, because the effectiveness of online learning is still very minimal compared to direct learning in the classroom. Various learning materials, assignments, quizzes, attendance, daily tests are carried out online through various educational platforms.

Teaching and learning activities are a process of interaction activities carried out by students and educators in a teaching and learning activity and learning resources (Wibowo, Holilulloh, & Adha, 2013; Zulyan, Pitoewas, & Adha, 2014). Learning activities are a way of educators given to students in order to achieve the essence of learning processes, where various ways have been carried out in the process of learning activities such as reading, viewing, and listening with the aim of achieving these learning activities (Wijaya, 2003). Giyono, & Adha, 2020). The very rapid development of information and communication technology at this time also has a major influence in the process of developing various kinds of learning media based on the application of technology as one of the innovations in the world of education (Devi, Pitoewas, & Adha, 2020), this is expected to advance the quality of education. education along with technological advances.

The online learning mechanism is usually carried out using video conferencing through an application that allows teaching and learning activities to be more interactive. At first the students were quite enthusiastic because they felt quite modern by carrying out learning activities using this technology. But over time, student interest decreases along with increasing boredom experienced because there is no physical contact that occurs, there is only sitting all day in front of a laptop or cellphone to listen to learning material (Sahulata.2016). In this case, technology seems to be the ruler that controls our lives every day.

The intensity of interest in online learning systems continues to decrease in proportion to the increasing boredom of students. As a result of this boredom, in some cases students only care about attendance and then ignore learning (Mona, 2020). Therefore, it is necessary to form a new method in the case of online learning so that students can return to be enthusiastic and have an addiction to learning so that it is expected to have a higher consistency value than before. Therefore, it is necessary to innovate the application of more interesting learning media in the teaching and learning process so that it can become a solutive and innovative learning media, namely through media based on Virtual Reality (VR) technology. Virtual Reality (VR) creates immersive

simulations that allow users to interact and feel they are in an environment that exists in cyberspace (Jamil, 2018).

Virtual Reality (VR) technology itself is a way of making learning images appear in the form of three-dimensional media or what is usually better known as 3D, where this process is made through the help of computer components so that the results will look more real and of course. with the support of a number of other important tools. Where this will make the users (students) as if they will see directly and physically in a predetermined environment. With this technology, it is hoped that the concept of interacting in the learning process will become easier to use along with the development of smartphone technology which has an important factor in the implementation of the learning media. Even now, based on research conducted by several researchers, they explain that now only with a smartphone and the help of Google Cardboard can display the world of Virtual Reality (VR).

METHOD

The research method in this article uses library research with a literature review approach, which is an action on the quality and new findings of a scientific work. The literature review activity is carried out in 4 steps, including: 1) formulating problems, 2) searching for literature, 3) evaluating data, 4) analyzing and interpreting. While the research data used is qualitative data. Research based on qualitative data is known as qualitative research, where qualitative data is data that is not in the form of numbers or numbers, so that it is in the form of statements or sentences. (Suliyanto. 2018). Place of library research. Literature research is research conducted using written materials or literature including the results of previous research. This research is usually used for historical research, and the views or thoughts of a character. (Suliyanto. 2018). Meanwhile, according to Mardalis (in Mizaqon, T. 2017), explains that library research is a study used in a study by collecting information and data with the help of various materials in the library such as documents, books, magazines, historical stories.

RESULTS AND DISCUSSION

The criteria for smartphones that can be used to run Virtual Reality (VR) content are smartphones that have gyroscope and accelerometer sensors, where almost all smartphones currently have both sensors. So far, the use of Virtual Reality (VR) technology has been mostly developed in the game world, even though this technology has various other roles such as simulation, interactive learning, and product promotion. With the great potential that Virtual Reality (VR) technology can do, online learning systems can take advantage of this technology and innovate in it so as to make online learning more interactive. In addition, according to Sulistyowati (2017), stating the discussion Virtual Reality (VR) is a computer-based technology in which it combines various special devices such as input and output so that users or students can interact more deeply with the digital environment as if feel in the real world in his vision. In addition, through the implementation of Virtual Reality (VR) it will enable developers to make it possible in the process of creating various virtual environmental designs in a way that will have more potential as a way and form of simulation. Where visualizations that occur when students use Virtual Reality (VR) will occur as a result of activities, visual, and auditory or also occur due to stimuli from other factors.

In addition, at this time we know that the current state of the learning process does not allow it to be opened face to face due to the Covid-19 pandemic and because of this situation, the potential use of Virtual Reality (VR)-based learning media is very much needed in the process of using it, especially in the field of virtual reality. education from elementary school to high school.

Therefore, the government is currently working closely with teachers and educational researchers to continue to explore how the characteristics of appropriate technology to be used such as Virtual Reality (VR) media are sought to be immediately implemented in the teaching and learning process in the midst of this pandemic. The mobile application that is used as one of the main bases for using Virtual Reality (VR) is essentially a reflection of the development of Indonesian society, which according to We Are Social Indonesia data, revealed that based on the results of their research in January 2020, they explained the final data that when These smart phone users continue to increase. Currently, there are 338.2 million smartphone users and 175.4 million active internet users, which is a great opportunity to apply and use technology-based learning media. So that it means that in the future there will be an ever-increasing growth in smartphone users in Indonesia every year, and this makes it an advantage for the world of education to make this impact a more useful thing and have a positive impact on the development of students, especially as a solution in learning process in the midst of a major disaster like the one we are currently facing.

According to Youngblut, C. (1998), stated that the current use and development of visual, audio and multimedia-based learning media as well as the use of Virtual Reality (VR) and Augmented Reality (AR) in the process of learning activities are currently being researched and developed by experts and researchers. Where this is done in order to create a learning process in Indonesia that prioritizes aspects of effectiveness and efficiency in the process of student learning activities. Virtual Reality (VR) is an important part of computers, especially multimedia which will now become a trend in the teaching process in the future and is also a new learning process strategy in the field of educational technology to learn an appropriate technology system to be used in the learning process. learn how to teach. In addition, the use of Virtual Reality (VR) technology in the field of education is currently very appropriate because during the Covid-19 pandemic, learning is still taking place online. Considering the condition of students who are getting bored with the current online learning system, the combined innovation of Virtual Reality (VR) with online learning methods is very potential (Isnanto.2004). Environmental conditions in the Virtual Reality (VR) world can be created using a sketch and then converted into a 3-dimensional form to be displayed in the form of a Virtual Reality (VR) world view.

According to Abror (2017), explaining that essentially, through the birth of Virtual Reality (VR) technology, it really helps humans to feel in a place with sensations like the real world with an overall appearance and makes it easier to know what kinds of objects exist clearly. and real. And the variety of information presented through the Virtual Reality (VR) display will also be much larger and will be more interactive for users such as students compared to other technologies. In addition, the flexibility of virtual world design in Virual Reality (VR) content is a superior value to be applied in the world of education. Various forms such as buildings, classrooms, laboratories, offices, museums and others can be realized in the form of Virtual Reality (VR). This of course aims to attract students' interest in feeling the learning atmosphere like in class when offline learning takes place.

Figure 1. Virtual Reality (VR) In Educations
Source: Sari, R.M.M and Priatna, N. (2020)

The use of Virtual Reality (VR) technology that can be applied in the world of education is not only limited to that, if we delve deeper into many things that can be innovated. The human form or character of each student when entering the meeting room can also be made so that each student has their own physical character so that learning activities still pay attention to aspects of moral value education (Saputro, Pitoewas, Adha, 2013). In addition, the online teaching and learning process often uses powerpoint, word, and pdf as learning media, in the world of Virtual Reality (VR) these media can also be integrated into it. This integration certainly adds to the visualization effect in the online learning system. Another feature that can be applied to the world of Virtual Reality (VR) is a hologram. The holographic display is a technology that utilizes the different viewpoints of coherent light, where the objects we see appear to be real in three dimensions (3D). This feature is very eyecatching because holograms are rarely used in cyberspace in terms of education. Various materials that can be applied in the form of holograms include the shape of the human body skeleton, chemical reaction processes, signal convolution, representation of body cell shapes and others.

At this time the development and application of information technology-based learning media is very much. Especially from the technological aspect, it can be proposed to be used as a supporting reason for educators to carry out learning activities at this time, especially in using information technology-based learning media such as Virtual Reality (VR) in educational units in relation to supporting the improvement of the quality of Indonesian national education during the Covid pandemic. -19 which currently has many obstacles and problems that are felt by students and teachers such as lack of understanding of the learning material, the lack of a more detailed explanation of the material to be understood and there are still many other obstacles that are felt (Saurik, HTT2019). Through this information technology learning media, it is hoped that it will greatly influence and be fought to become one of the main facilitators to assist the government in distributing education throughout the archipelago, because in fact information technology-based learning is currently very necessary because if it only relies on independent learning abilities distance without the help of other important supports such as learning media, this is certainly inseparable from space, distance and time, in order to reach difficult areas, and therefore with the existence of this Virtual Reality (VR) platform, it is hoped that in the development process it will be possible to as soon as possible in Indonesia to be implemented.

In addition, according to the results of research conducted by Lee and Fung (2010), regarding the investigation regarding the effectiveness of using Virtual Reality (VR) as a learning

medium to support improving student learning outcomes, the final result of the research is that by using Virtual Reality (VR) media, this will be able to make an important contribution and a very positive impact in efforts to improve student learning outcomes in the process of student learning activities.
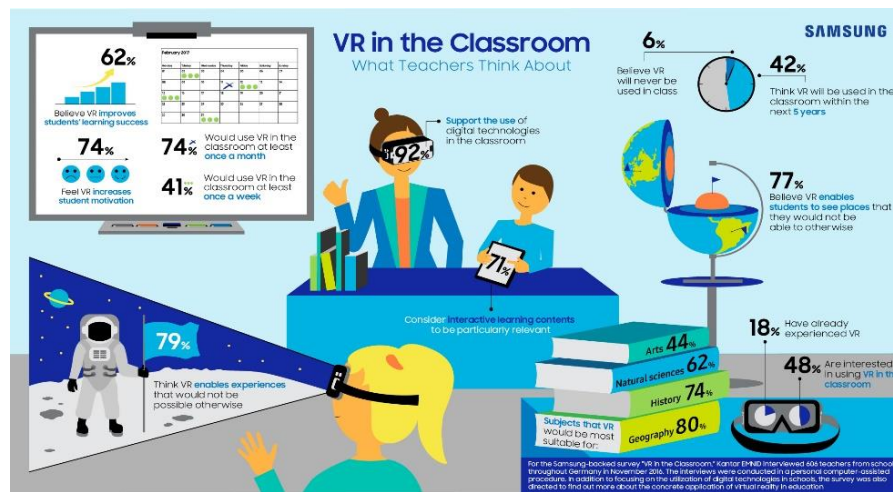

Figure 2. Success Index for Using VR In The Classroom in Germany November 2016
Source: Samsung Newsroom. Germany (2016)

During the pandemic, the educational process can be said to be more monotonous and result in a saturation effect for students in participating in the learning activity process. The existence of innovations with visualization displays and a more attractive user interface with the help of Virual Reality (VR) technology is expected for students to have higher enthusiasm in the future, plus the ease of using Virual Reality (VR) technology is quite simple only with the help of smartphones and google cardboard which are sold at quite affordable prices.

DISCUSSION

The formation of visualization in the world of Virtual Reality (VR) can be realized according to the developer. Where initially a sketch of the class form will be made and then modeling efforts in the form of 3D dimensions will be carried out by using the help of 3Ds Max software in order to produce a file in FBX format. Then after that the FBX file that has been formed is imported into a Unity game engine (Chen, 2005). Where in this case the function is to be able to bring up an object that will be inserted into a Virtual Reality (VR) media using the help of the Google Cardboard SDK. Furthermore, the information content arrangement will be used as a classroom information media using the help of a JSON file. Where the handling of dynamic content in using files in the form of JSON is made using a form-based website (Mehrfard.2020). So that the implementation is applied to a 3D object and JSON-shaped file as one of the class information efforts, and students then produce a Virual Reality (VR) application which is published in the form of a mobile application. Research on the creation of a Virtual Reality (VR) world has been carried out by various groups in Indonesia, if the government considers this online learning to have a long enough duration, then the step of using VR technology is very appropriate (Anggoro, P., 2018).
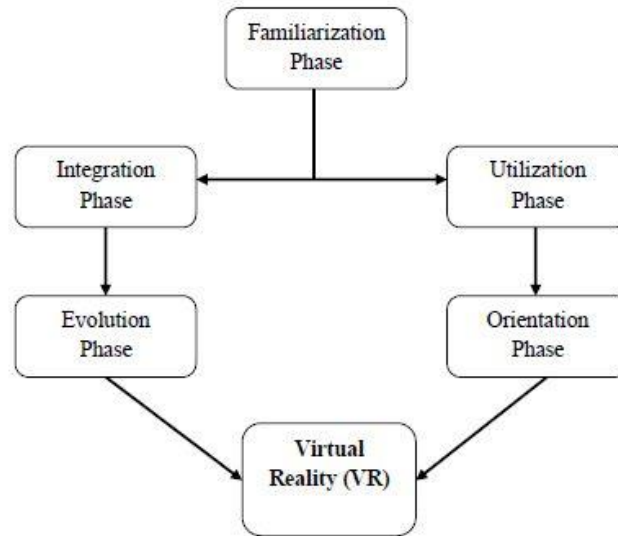
Figure 3. The process of recognizing and implementing VR
Source: Hooper (in Sunarni and Budiarto. 2014)

Meanwhile, the introduction process in the realm of education can be done by means of more intensive collaboration between the government and the teachers. Where according to Hooper (in Sunarni and Budiarto. 2014), explains that in the process of introducing and implementing learning using Virtual Reality (VR) this can be done by applying several steps in it, as follows, namely; familiarization, utilization, integration, reorientation and evolution. Where can be described clearly as follows; First, Familiarization is a level where teachers will be taught to begin to understand the processes and steps in using Virtual Reality (VR) technology. Second, Utilization is a level where educators will begin to experiment in using Virtual Reality (VR) in the process of teaching and learning activities. Third, Integration is a level where educators begin to conduct trials in the use of Virtual Reality (VR) by collaborating in curriculum development. Where at this level, educators will begin to independently design scenarios in the target competency criteria for teaching and learning activities, and are responsible for the success of using Virtual Reality (VR) in learning activities. Fourth, Reorientation, at this level educators begin to consider and try to re-conceptualize the purpose and function of the learning carried out, at this level an educator can also become a center of knowledge or just want to be a facilitator. In addition, at this level, students will become subjects in the process of teaching and learning activities, not objects being taught by educators. Next is the last level or Fifth, or what is usually known as the Evolution level, where at this level requires schools to be involved in adopting Virtual Reality (VR) so that the learning process activities continue to prioritize effective aspects in the process of sustainability.

In addition, currently the era of the industrial revolution 4.0, the relevant government has stated that currently professionalism is needed in the education and educator sector, a dynamic curriculum, adequate and sufficient facilities and infrastructure, as well as the development of technological innovation in learning. Therefore, to face the 4.0 industrial revolution as citizens of Indonesia and the Indonesian government need to prepare themselves as best as possible in developments in all spheres in this 4.0 industrial revolution, which include; the improvement of human resources, increasing the application of ICT (Virtual Reality) in the learning process activities as well as revising the curriculum to be able to adapt to what is needed in the future.

According to research conducted by Zakiyan (2017) regarding Virtual Reality (VR) technology-based learning media, it is stated that currently technology in education has actually

begun to be introduced to help various problems or obstacles in all domains, especially in recognition efforts and learning activities both towards a certain objects or other objects. The results obtained from the research conducted by the researcher stated that the final result was that the process of learning activities with the help of implementing Virtual reality (VR) in its application, when in the field this media always got a positive response and very good enthusiasm by students and educators compared to conventional learning media that are usually used by teachers during classroom learning activities. In addition, according to Zakiyan (2017), it is also stated that the contextual learning process must be able to be carried out related, easy, applying, lesson, interesting, transferring, and actual or known by researchers as REALITA. Therefore, the true learning process activity is a process of communication activities or can be understood as a teaching and learning activity through learning media that requires interesting supporting media and can adjust conditions, especially in the midst of this Covid-19 condition where learning activities are carried out online, or this can also be said as a right, and this right occurs when there is a communication between the stimulus (educator) and the response (students) through a learning media platform (Adha, 2010; Perdana & Adha, 2020; Sinduningrum, 2020). However, it is undeniable that the process of this communication activity occurs after a feedback reaction from students. Therefore, many experts define that learning media as an important vehicle to be able to channel a message of information that is very important to students.

CONCLUSION

The development of Virtual Reality (VR) learning media itself requires intervention and cooperation between the government and the developer. The developer in this case can be a student or an agency engaged in Virtual Reality (VR) technology. Far ahead, with the development of Virtual Reality (VR) technology in education in Indonesia, this system can be applied in various education sectors such as practical simulations in the medical field, disaster response simulations, engineering practicum simulations and others. So with the government's investment in this field, not only doing an innovation in learning systems during the pandemic, but with the help of Virtual Reality (VR) technology, Indonesian education is expected to be more advanced which is in accordance with point 4 Sustainable Development Goals (SDGs), namely ensuring the existence of quality, appropriate and inclusive education to promote opportunities and the right to lifelong learning for all people in the world.

Educational reform is needed which is where this happened due to a pandemic which resulted in a new style of education system both in the system, method and learning process. In addition, education must be democratic, which means education for everyone. This is in line with Article 31 paragraph (1) of the 1945 Constitution. Therefore, it is necessary to innovate and improve the quality of education in Indonesia. Because the effectiveness of learning can essentially be achieved with good learning programs and media which is the responsibility of a teacher in its implementation. Through learning strategies using Virtual Reality (VR) media, it is hoped that it can be a solution and also an answer to the problems of the current learning process in order to continue to create a teaching and learning activity that prioritizes interactive, active, and efficiency aspects that can be achieved so far. can be achieved. Hopefully, the Covid-19 pandemic will not only increase panic in the public sphere but can also be a starting point for Indonesia, especially in the realm of education, to continue to innovate for the realization of the golden generation of the Indonesian nation.

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