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Analysis of Augmented Reality Utilization as Learning Media in Primary Schools

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ABSTRACT

Learning media plays an important role in increasing the effectiveness of delivering material in elementary schools according to the independent curriculum. The aim of this research is to discuss the use of Augmented Reality technology as a learning medium in elementary schools. Augmented Reality enables interactive visualization of material objects, increasing student interest and understanding. The research method used is qualitative with literature study techniques to analyze the use of Augmented Reality as a learning medium in elementary schools. Data from relevant journals was analyzed using qualitative descriptive methods. The research results show that Augmented Reality, which was originally developed for mobile games, has been adapted into an interesting and fun learning tool for students. Augmented Reality is considered a solution to improve the quality of education by utilizing digital technology. The increase in learning outcomes and students' ability to build knowledge based on learning experiences is proof of the effectiveness of using Augmented Reality media in learning in elementary schools. Thus, the use of Augmented Reality in learning can make a positive contribution to achieving educational goals.

Introduction

Media works as means for convey various learning media, which are used by teachers makes it easier and clearer delivery information to participant educate. Various form and type of media used for communicate diverse message or information. Apart from that, the media also plays a role in convey message from sender to recipient with objective stimulate thoughts, attention, and interest's participant educate so that can facilitate the learning process in class. Learning media at the moment this specifically in implementation curriculum independent can help teachers during the learning process taking place with still notice condition school and needs participant educate, this because implementation curriculum this used for adapt with condition school moment this is somewhere appropriate area with development participant educate.

Instructional media helps participants find new abilities and expertise new, besides it's a learning medium aims to ensure participants educate can with easy understand information

and messages conveyed during the learning process taking place. According to Hasan et al., (2021) instructional media is the medium that conveys it message or containing information meaning or objective learning and can used during the learning process. Instructional media very important for help participant educate obtain knowledge, abilities and expertise new. This matter in accordance with opinion Inayah et al., (2023) instructional media is all type device physical design for push interaction and conveying information. Teachers can use learning media for make learning interesting and not boring. Instructional media very important for make it easier delivery material and make material clearer so that student can understand it. Especially in the technological era more and more information developing, learning media very varied and easy for used.

Progress in technology and information Now creating learning media is also increasingly developing. As expressed by Zahwa & Syafi'i, (2022) using technology and information as tools for learning required for make learning the more interesting and not only limited to teachers. This is related to Juliane's opinion regarding students today, teachers are dealing with a generation known as digital natives, namely those who were born and grew up along with very fast technological advances (Carolina, 2023). This generation has the characteristic of liking everything related to technology, innovation, and cooperation. Other expressions regarding digital natives, as expressed by Asyarotin et al., (2018) where this generation needs to try to adapt to technological developments. The lifestyle of the digital native generation is closely related to the use of information and communication technology. It can be concluded that technology is a major need for them. Individuals who are digital natives have actively followed technological developments efficiently and effectively, which in the end will have an indirect impact on all aspects of society.

This impact can be felt by students today, where they are used to technology every day. This technology is what teachers can use in creating learning media. Even though it's true no all teachers can with easy using technology and information media, as well as need skill special for do it. Although so, no can ignored that learning media-based technology this no can avoided or abandoned. Instructional media like this very make things easier for teachers activity study teach because teachers don't need explains a lot material. Additionally, media coverage is based technology very wide, so Can become innovation new in create interesting and effective learning media, one of which is learning media based Augmented Reality.

Augmented Reality in the field of education can be used as a learning aid to convey information in a way that is easier to understand provide more interactive interactions and increase students' imagination and creativity abilities. Augmented Reality technology can encourage students to explore their imagination with innovative methods. They can produce works of art that interact with the surrounding environment, create interactive narratives, or even formulate solutions to real-world challenges. The use of Augmented Reality is also useful for illustrating abstract concepts, such as object structure so that it can increase students' level of understanding and experience an interesting learning experience regarding the material being studied using technology-based learning media (Mustaqim, 2017)

Augmented Reality explained by Rusnandi,et al is combining technology virtual object two or three dimensions to in environment real three dimensions and projecting the virtual object in time real (Alfitriani et al., 2021). Technology This develop with fast in all fields, including education. according to Munir there are five reasons why Augmented Reality is used in the world of education namely: (1) participants educate can remember more lots information in period length, (2) Participants educate get more understanding, (3) can take attention participant educate, (4) can access it when course, and (5) participants educate like

with new ideas and improve thinking critical about the world around they (Purnamawati et al., 2021).

Method

This study aims to analyze the utilization of Augmented Reality as a learning medium in elementary schools. The method used is study qualitative with technique study studies bibliography. Qualitative research emphasizes analysis and in-depth understanding of the social phenomena that are the focus of the research. Literature study techniques are used to collect information that is relevant to the topic or problem being researched, with literature as the main source of reference (Fahrurrozi et al., 2022). According to Synder, the Literature Study Method is used in research to collect and extract the essence of previous studies that are relevant to the topic being discussed. This approach involves analyzing some core pieces of previous research relevant to the topic being discussed, as well as identifying and analyzing expert thinking documented in related literature (Nurislaminingsih et, al., 2020)

Data was collected by collecting several journals that are relevant to the use of Augmented Reality as a learning medium. After that, the researcher analyzed the data using descriptive qualitative analysis methods through literature studies. The results of this analysis consist of descriptive data in the form of written sentences as well as behavioral results observed from previous research conducted by the researcher. There are four stages of literature study in research that can be seen in the following chart (Adlini et al., 2022)
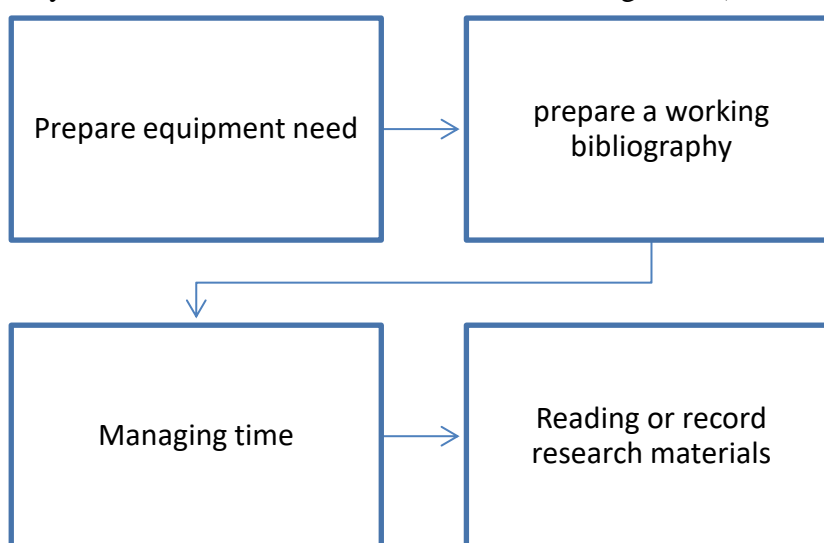

Figure 1. Flow of Research

Results and Discussion

Research methods using literature studies have become common in various studies, especially in the field of education. This approach allows researchers to access data from various sources and references, rather than data collected directly or observed by researchers themselves. In research on the use of Augmented Reality as a learning medium in elementary schools, researchers searched for references related to the use of Augmented Reality in an educational context. The article data is presented in the following table:

Table 1. Articles Review

No	Researcher and Year	Journal	Research Title	Research result
1.	Alfitriani, Maula & Hadiapurwa (2021)	Journal of Educational Research	Use of Augmented Reality Media in Learning Know Earth's Shape	The results of this research are that the development of Augmented Reality - based learning media can be an effective solution in increasing students' understanding of learning material regarding the shape of the earth. Apart from that, the use of Augmented Reality technology can also increase students' learning motivation, making it an interesting alternative to the learning process.
2.	Rahmannisa, Rustini & Herlambang (2023)	Equatorial Social: Journal of Social Sciences Education	Plan _ Build Learning Media Based Augmented Reality Memory Card Game in Learning I PS Class 4 S D	The results of this research are Android-based game cards and applications Augmented Reality includes information about traditional musical instruments and regional songs from all provinces in Indonesia. Even though it has weaknesses such as difficulty detecting markers in low light conditions and a lack of interactive features and sound effects, this learning media is considered suitable for use in Social Sciences learning in grade 4 elementary schools. Positive responses from users, both teachers and students, also provide suggestions for improving the use and evaluation of this learning media.
3.	Usmaedi, Fatmawati & Karisman (2020)	EDUCATIO Journal	Learning Media Development Based Technology Application Augmented Reality in Improving the Teaching Process Student Elementary school	Based on the results of the application evaluation using the black box method, it was found that the application was successful in functioning well as an Augmented reality-based learning medium for English subjects at the elementary school level. The results of a survey conducted by distributing questionnaires to students also show that this learning application has a high level of interactivity and is easy to use. Therefore, it is hoped that the application of this learning media application can improve learning activities to make them more interesting and easier to understand for students.
4.	Rahmawati , Riyanto & Nasution (2023)	Edukasia: Journal of Education and Learning	Android Augmented Reality Smart Card (AARSC) Media to Improve Creative Thinking Skills and Social Sciences Learning Outcomes for Elementary School Students	Based on the results of this study, it can be concluded that the learning media called Android Augmented Reality Smart Card (AARSC) which is used in social studies lessons about Hindu, Buddhist, and Islamic kingdoms in Indonesia is considered very feasible in terms of validity, practicality, and effectiveness. The validity of the media is stated to be very valid, while the practicality is obtained from the implementation of learning and student responses which are considered very practical. The effectiveness of this media is measured from learning outcomes, including significant differences between pretest

No	Researcher and Year	Journal	Research Title	Research result
				and posttest, improvements in students' attitudes, and assessments of creative thinking skills that reach a very effective level.
5.	Yuniawatika , Nurlatifah , Anggraini & Sunaryo (2023)	Aksiologiya: Journal of Community Service	Application of HISAPP Media Based on Augmented Reality as an Effort to Increase Elementary School Students' Understanding of History Material	Teaching social studies, especially in history lessons, is an important thing to teach students from elementary school age. In learning history, students often need media assistance because the material taught tends to be difficult to understand directly. Therefore, we need a media that can bring real-world experiences into the virtual world, such as that offered by HISAP (History Application) media. After following the learning process using HISAPP media, students showed an increase from pretest scores above the KKM of 0% to posttest results above the KKM of 76.40%. Thus, it can be concluded that the use of HISAPP media in learning the history of the Indonesian kingdom is able to increase students' understanding.
6.	Kurniawan & Julianto (2022)	JPGSD: Journal of Primary School Teacher Education Research	Learning Media Development Based AR " Augmented Reality " on Solar System Material for Class 6 Elementary School	The results of this research on the use of Augmented Reality learning media technology have great potential to support educators in delivering material and helping students understand the material. By visualizing objects and events in accordance with the real world, this media can increase student motivation and learning outcomes.
7.	Hamidiyah & Yermiandhoko (2020)	JPGSD: Journal of Primary School Teacher Education Research	Android- Based Augmented Reality Learning Media Material on the Diversity of Traditional Houses for Class IV Elementary Schools	The result of this research is that RAAR uses augmented reality features to scan two-dimensional objects into the real environment via a smartphone screen, using marker cards as markers for object locations. The feasibility of RAAR was assessed from material validation, media validation, and user responses, with the results showing a high level of feasibility as an alternative ICT-based learning media. The pretest and posttest results show that RAAR is effective in improving student learning outcomes on traditional house diversity material, but further trials on a larger scale are needed to more accurately validate the effectiveness of the media.
8.	Faiza, Yani, & Suprijono (2022)	BASICEDU Journal	Augmented Reality - Based Social Sciences Learning Media to Improve Students' Knowledge Competencies	The results of this research are that before using Augmented Reality-based social studies learning media, the learning outcomes of class IV students at SDN Karang Entang Bangkalan were still within the incomplete criteria with an overall percentage getting a score of 55%. However, after using this learning media, student learning outcomes fell within the criteria for completion with an overall

No	Researcher and Year	Journal	Research Title	Research result
				percentage reaching a score of 100%. These findings show that the use of learning media in the process of teaching and learning activities can improve student learning outcomes, make them more active, and reduce boredom.
9.	Suksma, Margunayas & Werang , (2023).	Innovative: Journal of Social Science Research	Development of Android - Based Augmented Reality Digital Learning Media on Solar System Material for Class VI Elementary School Students	The results of research regarding the validity of Android-based augmented reality digital learning media on Solar System material for sixth-grade elementary school students show that this media is suitable for use in the learning process. Evaluation by material experts resulted in a percentage of 93.99% with very good qualifications, while evaluation by media experts resulted in a percentage of 85.99% with good qualifications. Evaluation of the practicality of Android-based augmented reality digital learning media on Solar System material for sixth-grade elementary school students shows very practical qualifications for teachers and students.
10.	Shaumiwaty , Fatmawati , Novita Sari, Yiceta Vanda & Herman (2022)	Journal of Early Childhood Education	Implementation of Augmented Reality (AR) as A Teaching Media in English Language Learning in Elementary School	The result of this research is the use of learning media Augmented Reality shows that results Study students in 4th-grade elementary school experienced an increase. In the middle development developing technology with very fast, learning media Augmented Reality is a great medium appropriate used at level School base Because make it easier student in understand difficult material explained in writing or verbal.

For a long time, education has recognized the importance of using learning media as a means of conveying messages about material, attitudes, and skills to students. Learning media has an important role in the educational process, starting from simple things such as using the surrounding environment to sophisticated technology. This development is reflected in technological advances which have an impact on changes in the world of education. One of the learning media innovations is Augmented Reality, which has been proven to have a positive impact on learning, as found in research results which show an increase in students' interest and learning achievement after adopting Augmented Reality. This success is in line with technological advances which increasingly enable the development of more detailed and interactive learning media, ranging from reality media to media capable of presenting material objects visually and in real terms.

Conclusion

The conclusion from the results and analysis that has been carried out is that Augmented Reality technology, which was originally developed for mobile games with the concept of virtual reality, has been adapted and modified to be used as an interesting and fun learning tool for students. This proves that Augmented Reality can be a solution to improve the quality of education by utilizing digital technology. This is proven by the increase in learning

outcomes and student's ability to build knowledge based on their learning experiences after using Augmented Reality media.

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