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Augmented Reality Media Development Using Assemblr Studio Web in Class VIII Social Science Subjects at MTsN

Ahmad Syarif Irmy[1], Nofri Hendri[2], Septriyan Anugrah[3], Zuwirna[4]
Departemen Kurikulum dan Teknologi Pendidikan,Universitas Negeri Padang

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Abstrak
Penelitian ini bertujuan untuk mengembangkan media Augmented Reality (AR) menggunakan Assemblr Studio Web pada mata pelajaran Ilmu Pengetahuan Alam dan Sosial (IPAS) untuk siswa kelas VIII di Madrasah Tsanawiyah Negeri (MTsN). Penelitian ini menerapkan metode pengembangan media dengan tahap pendefenisian, perancangan, pengembangan, dan penyebaran. Media AR dikembangkan dengan memanfaatkan teknologi Assemblr Studio Web sebagai alat untuk menciptakan konten AR yang relevan dengan kurikulum IPAS.Hasil penelitian menunjukkan bahwa pengembangan media AR menggunakan Assemblr Studio Web dapat meningkatkan keterlibatan siswa dalam proses pembelajaran IPAS di MTsN. Siswa merasa lebih tertarik dan termotivasi dalam memahami konsep-konsep IPAS melalui penggunaan media AR yang interaktif. Selain itu, penelitian ini juga mendapatkan umpan balik positif dari guru dan siswa terkait efektivitas media AR dalam mendukung pembelajaran.Penelitian ini memberikan kontribusi penting dalam pengembangan media pembelajaran yang inovatif dan relevan dengan perkembangan teknologi. Diharapkan bahwa penggunaan media AR ini dapat meningkatkan pemahaman siswa terhadap materi pelajaran IPAS serta memberikan alternatif pembelajaran yang lebih menarik dan efektif di MTsN.

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Abstract
This research aims to develop Augmented Reality (AR) media using Assemblr Studio Web for the subjects of Natural Sciences and Social Sciences (IPAS) for eighth-grade students at Madrasah Tsanawiyah Negeri (MTsN). This research applies a media development method with stages of definition, design, development, and dissemination. *AR media is developed by utilizing Assemblr Studio Web technology as a tool to create AR content that is relevant to the IPAS curriculum.The research results indicate that the development of AR media using Assemblr Studio Web can enhance student engagement in the IPAS learning process at MTsN. Students feel more interested and motivated to understand IPAS concepts through the use of interactive AR media. Additionally, this research has received positive feedback from teachers and students regarding the effectiveness of AR media in supporting learning.This research provides a significant contribution to the development of innovative and technology-relevant learning media. It is hoped that the use of AR media can improve students' understanding of IPAS subjects and offer a more engaging and effective learning alternative at MTsN."*

Corresponding Author:
Name of Corresponding Author,
Ahmad Syarif Irmy
Universitas Negeri Padang
Email :ahmadsyarifirmy3189@gmail.com,

1. INTRODUCTION

Education is one sector that continues to transform along with technological advances. Technology has had a significant impact on the way we learn and teach, opening the door to innovation in learning methods. One of the latest innovations in the world of education is the use of Augmented Reality (AR) technology to improve student learning experiences. AR allows combining the real world with digital elements, creating an interactive and immersive learning environment.

This research focuses on developing Augmented Reality (AR) learning media using the Assemblr Studio Web platform in the context of Natural and Social Sciences (IPAS) subjects for class VIII students at Madrasah Tsanawiyah Negeri (MTsN). MTsN was the right choice for this research because of its important role in secondary education in Indonesia. This research aims to design and implement AR media that is innovative and relevant to the sciences curriculum, with the hope of increasing students' learning motivation and helping them understand sciences concepts better.

2. RESEARCH METHOD

Researchers use a research design in the form of a research and development approach. This research method adopts a 4D model which involves the stages of definition, design, development and deployment. The following are the stages of a 4D model:

2.1 Definition (Define)

The initial stage of this research involved identifying the needs and main objectives of developing AR media for class VIII science subjects at MTsN. This needs analysis involves collecting data from various sources, including the school curriculum, student needs, and learning objectives.

2.2 Design

At this stage, the research designs the basic concept of AR media that will be developed. Concept development involves planning the content structure, user interface, and AR elements that will be used in the media.

2.3 Development

The AR media development process using Assemblr Studio Web is carried out based on the concept that has been designed. AR content creation, integration of multimedia elements, and initial testing are carried out in this stage.

2.4 Spread (Disseminate)

After development is complete, AR media will be introduced to class VIII students at MTsN. This stage is the step where the learning products that have been developed are distributed or introduced to the intended audience and the learning media will also be distributed to other science and science teachers at MTsN 7 Agam.

MethodThis research will provide a comprehensive framework for the development of effective Augmented Reality media in the context of class VIII science learning at MTsN. This approach ensures that the media produced is appropriate to educational needs, relevant to the curriculum, and can maximize student learning experiences. Next, to analyze data from the questionnaire, validity and practicality techniques were used.

3 DEVELOPMENT RESULTS AND DISCUSSION

1) Development Results

The materials and equipment needed to create 3D learning media about animal and plant cells with Augmented Reality using Assembler Studio Web include the use of a computer or laptop equipped with Assembler Studio Web software. The following are the results of the 3D objects that have been created:

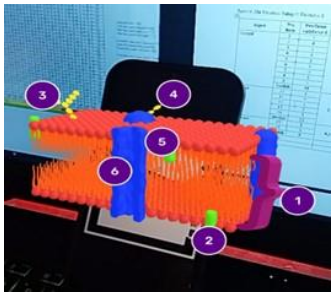

Figure 1. 3D cell membrane object

The next step is to test the validity of the development product through experts. This validity test aims to assess whether the learning media being developed meets applicable media quality standards and scientific standards. The assessment given by experts will be the basis for researchers to make revisions to the learning media that has been created. The suggestions and input provided

by experts aim to improve the quality of learning media, so that the final results produced reach high quality standards and produce more perfect products.

1. **Validity test**

The formula used in the validity test is:

$$NA = \frac{S}{SM} \times 100\%$$

Information:

NA = Final Value

S = Scoreobtained

BC = ScoreMaximum

Next, test the Augmented Reality learning media with media experts. The following are the results of media expert assessments 1 and 2.

Table 1. Media Expert Assessment Results

No	Items	Number of Validator Values 1	Number of Validator Values 2
1	Display Design	44	41
2	Interactivity	25	25
3	*Software*	10	10
	Total	79	76
	Validation Score	99%	95%

The results of research and development of 3D learning media regarding animal and plant cell material using Augmented Reality Assembler Studio Web can be concluded that this media has undergone validity testing by media validators, with an accumulated score of 99% by media validator 1 and a score of 95% by the validator media 2. As a result, this media is categorized as "Very Valid". According to tests conducted by experts, this 3D learning media received a very good category rating from all validators. Therefore, 3D learning media about animal and plant cell material with Augmented Reality Assembler Studio Web has been proven to meet the validity criteria so that it can be used effectively in the learning process of class VIII MTsN students.

Table 2. Material Expert Assessment Results

No	Items	Number of Values
1	Ease of Use	19
2	Interest	20
3	Application	20
	Total	49
	Validation Score	98%

It can be concluded that the media tested on material expert validators received an accumulated score of 98% and was categorized as "Very Valid". Therefore, Augmented Reality learning media is suitable for use in the learning process.

2. **Practicality Test**

Next, process the data to determine the practicality of the resulting learning media. The following formula is used to calculate practicality data:

$$\text{Nilai Praktikalitas} = \frac{\text{Jumlah skor yang diperoleh}}{\text{Jumlah skor maksimum}} \text{ x } 100\%$$

Next, test the Augmented Reality learning media on students. The following are the results of the practicality assessment:

Table 3. Practicality Assessment Results

No	Aspect	Average	Percentage
1	Design and Appearance	4.62	92%
2	Language	4.59	92%
3	*Software*	4.51	90%
	Average	4.58	92%

The practicality test of Augmented Reality learning media was tested on 31 students at MTsN 7 Agam. The practicality test results obtained an average of 4.58 and a percentage of 92%. Augmented Reality learning media is categorized as "Very Practical".

2) Discussion

In general, learning media products have met the requirements for testing. With an average gain of 4.81 and a percentage rate of 96% by the first media expert and 4.75 and a percentage rate of 95% from the second media expert. After carrying out the first stage of revision, the researcher obtained results from the first media expert in the second stage, namely 4.94 with a percentage level of 99% in the "Very Valid" category. For the second validator, the second stage of validation was not carried out, because the product was already suitable for testing in the first stage of validation. For the results of the validity of the material, the researcher only did it once with an average of 4.90 and a percentage of 98% which was categorized as "Very Valid".Next, test the practicality by testing the learning media on 31 class VIII students at MTsN 7 Agam. Based on the results of learning media trials in class VIII 2 science subjects with 31 students as respondents, an overall average result of 4.58 was obtained and a percentage level of 92% which could be categorized as "Very Practical".

4 CONCLUSION

The development of Augmented Reality (AR) learning media using Assemblr Studio Web in Natural and Social Sciences (IPAS) subjects for class VIII students at Madrasah Tsanawiyah Negeri (MTsN) is a significant step in bringing innovation to the learning process. Thus, the development of Augmented Reality learning media using Assemblr Studio Web in science and science subjects at MTsN is a positive step in enriching students' learning experiences. The use of this media has been proven to be effective and in accordance with modern educational needs, and can be a model for the development of innovative learning media in the future.

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