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Research Article

The Development of Augmented Reality As English Learning Media in Junior High School

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Abstract.
The existence of learning media on various platforms provides variety and assistance for teachers in delivering learning materials. Not much has been developed in educational media compared to entertainment media such as gaming, films, songs, dance, and music. Educational media need to be packaged in a simple, effective, and efficient manner and respond to the needs of today's students. In the context of the world of learning English at the junior high school level, learning media is needed as an effort to provide real experience in terms of honing English communication skills. Augmented Reality is one of the media that is able to bridge the needs of students, namely making abstract learning experiences feel concrete. Therefore, this research aims to design learning media for junior high school English on the basis of Augmented Reality with content containing stories from North Sumatra. The research method applied in this study is Research & Development. Data acquisition techniques used were documentation, questionnaires, interviews, and tests which were applied in accordance with nine research stages, namely: (1) identification and analysis of media needs; (2) collection of media materials and tools; (3) development of media prototype designs; (4) implementation media prototype; (5) media prototype validation; (6) media prototype revision; (7) media trial on junior high school students; (8) final revision; and (9) media prototype that has been tested. The final result of this study contains AR in the form of flash cards. AR markers are printed on cards and students only focus their smartphone cameras on markers that have been printed in card form. After the camera has successfully scanned the marker, a learning video will appear. There are five cards (markers) in this study, and each card will play a different learning video.

Keywords: augmented reality, media, English, junior high school

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1. INTRODUCTION

Along with the development of technology, especially educational technology, conventional learning aids can be substituted with various learning media. With rich and varied learning media, an educator can condition a variety of classroom situations, and produce a learning atmosphere that is relevant and good for students. One of the media that is

a means that can provide a learning atmosphere that stimulates interaction, inspires, is fun, challenges, and encourages students is learning media in the form of Augmented Reality (AR).

Craig (2013) states that AR is a technological advancement that combines existing virtual objects created by computers with objects that exist in the real world around humans, and in actual times [1]. AR is already commonly applied in the industrial sector, such as in the medical sector for surgical training, in the manufacturing sector to help simplify the process of producing services and for branding company products. Apart from the existence of interactive, interesting and contemporary media which is important, media which contains local wisdom is also urgent so as not to lose Indonesia's noble values amidst the strong flow of foreign culture. For example, North Sumatra Province, which has a variety of ethnicities and cultures, has many folk tales which, if used as content for English language learning materials, will provide an educational and valuable impact so that students not only learn interestingly but also develop the noble values of local wisdom in historical, geographical and anthropological aspects. , and sociological. Referring to the benefits of AR in the field of education, it has the distinction of being a medium that has a big influence in supporting teaching staff to reconstruct real objects that cannot be seen with the naked eye [2]

From the previous explanation, it can be stated that AR can be applied as an alternative learning media that is used by inviting users to learn while experiencing experiences that feel real. AR is a breakthrough that can be applied in the world of education with a combination of learning aspects while experiencing real experiences when students receive certain material. Therefore, this research was created to design English learning media for junior high schools based on Augmented Reality with North Sumatra folklore content, so that students can learn English with interesting media while getting to know the local wisdom of the North Sumatra region.

One of the media that is currently developing rapidly is AR (Augmented Reality) based media. AR has the aim of developing understanding of the environment and creating real and virtual environments as new interfaces and presenting appropriate messages so that they can be used in the context of education, training, production, military, games and various entertainment [3]. Research related to designing AR-based learning media is not something new and there is previous research on this issue, including Nitrina (2021) [4], Aditama, et al (2019) [5], Mustaqim & Kurniawan (2017) [6], Nazilah & Ramdhan (2021) [7]. However, the focus of the research is on developing narrative text media for junior high school students, which has never been studied. This is the

basis why researchers are very interested in designing AR-based narrative text learning media for junior high school students containing folk stories.

AR can be activated using 2 methods, namely Marker AR and Markerless AR [8]. AR markers utilize monochrome illustration images as markers that are identified by the device camera to produce the media. Meanwhile, Markerless AR is a method that does not use markers for the tracking process. The Markerless AR method is commonly applied in large companies. In the education sector, markers are usually implemented to display learning material content. In this research, researchers also used markers to display narrative text learning videos.

2. METHODOLOGY/ MATERIALS

This research applies an R & D (Research and Development) approach. R & D is research used to create an educational product and test its feasibility until the product is suitable for widespread use [9]. Researchers collected learning material related to Narrative Text through teaching modules, book references, relevant internet sources, where the material included North Sumatran Folklore. This Augmented Reality product was created using Android Studio software. Meanwhile, the animation in it was created using Animaker, Adobe Photoshop CS3, Audacity software, and Capcut Pro. The subjects of this research involved junior high school students at level VII for the 2022/2023 Academic Year at SMP Negeri 45 Medan. The research subject was chosen because it is relevant to the research object, namely the flow of English learning objectives for junior high school students in the Merdeka Curriculum which contains narrative texts which will be given the content of North Sumatran Folklore. Meanwhile, the development of design and manufacture of English learning media is carried out in the computer laboratory of Politeknik Negeri Media Kreatif, Medan. Data collection techniques are applied in the form of documentation techniques by organizing Narrative Text material through teaching modules, book references, relevant internet sources as well as carrying out needs analysis of folklore content and adjusting the complexity of the material to Phase D according to junior high school level. Furthermore, to ensure that the Augmented Reality-based middle school English language learning media is suitable, validation and trials are carried out by conducting observations, giving questionnaires and interviews with research subjects.

This research will be implemented through 6 stages with procedures according to the pattern designed by Borg and Gall [10]:

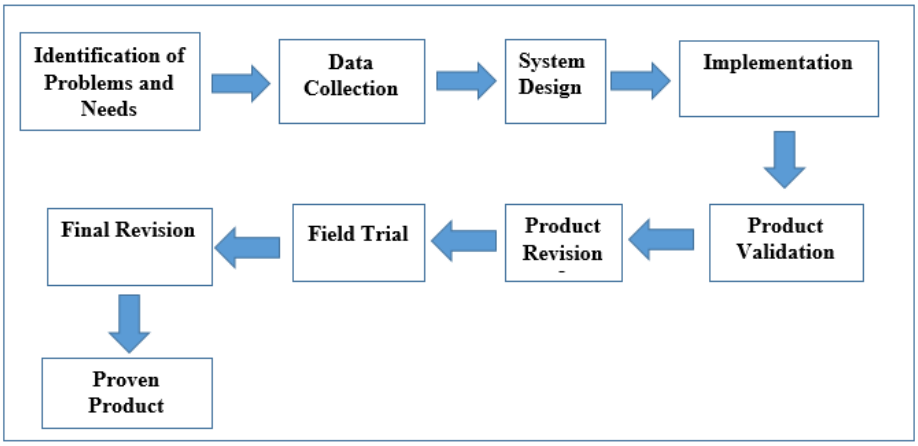


Figure 1: Research Procedure.

With the completion of the 9 stages, the media prototype that has been tested is ready for widespread use.

The data analysis method is applied through a quantitative descriptive method, namely by examining quantitative data taken from expert test questionnaires and field tests. The questionnaire was assessed using the LSR (Likert Summated Rating) model.

$$P = \frac{x}{xi} \; x \; 100\%$$

P = Percentage of User response

x = The total number of respondents' answers in all items

xi = The sum of maximum overall scores in one item

100 % = Constant

After the eligibility percentage is known, interpretation is carried out according to the following table.

TABLE 1: Assessment Score Criteria.

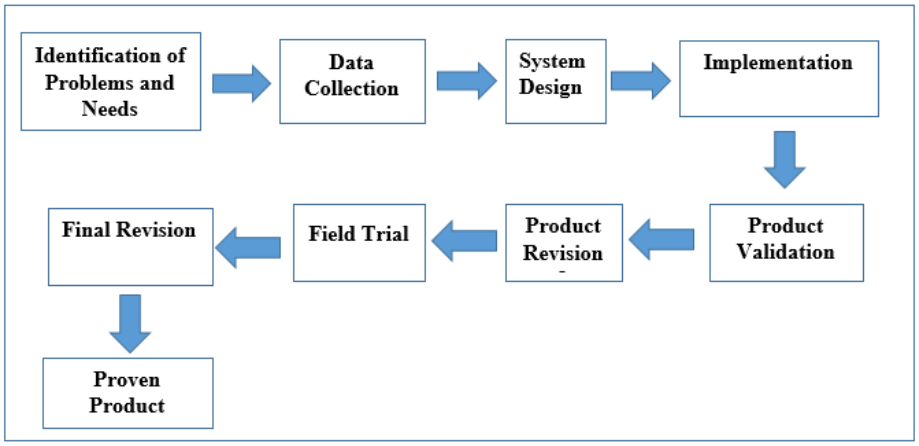
Percentage	Criteria
0% - 20%	Totally Inadequate
21% - 40%	Not Eligible
41% - 60%	Enough
61% - 80%	Worthy
81% - 100%	Totally Worth It

3. RESULTS AND DISCUSSIONS

Before creating this augmented reality, the author analyzed the need by collecting relevant data so that what the author wanted to create fit the context of the desired need. Data collection was carried out through observation, interviews and basic research. In addition, the author has discussed with relevant parties to obtain information to support decision-making on what will be done in preparing this application. In addition, the author also analyzes the necessary requirements to implement this application. Analyze the functional needs in the form of urgency in creating this application that can be used as an alternative learning medium in learning English, especially in narrative text materials for students SMPN 45 Medan. Functional requirements analysis includes the applications required and the content that will be included in the application. Another requirement analysis performed is to analyze the software requirements required for this application to function optimally. This augmented reality product is created using software, specifically Android Studio. Meanwhile, the animation was created using Animaker, Adobe Photoshop CS3, Audacity and Capcut Pro software.

How To Play the Augmented Reality

Click the icon App on the menu



Thera are 4 menu in this namely start AR, how to use, Developer and about.

Click Start button to play narrative text video

Scan marker using phone camera

Then, The narrative text video will appear

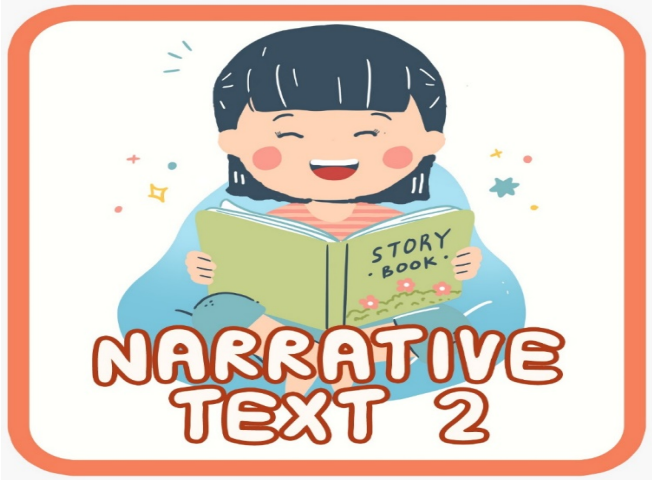
3.1. The Appereance of Augmented Reality

This following picture is the appearance when opening “the Linear application”

This following picture is is the view when clicking start AR and pointing the camera at the marker

This following picture is the Marker 1 which will display a learning video about Explanation of Narrative text

This following picture is the Marker 2 which will display learning video about types of Narrative Text and Language Features



This is the Marker 3 which will display a video, “the legend of Lake Toba”, The duration of the video is 4.49

This is Marker 4 which will display a video “the legend of Sampuraga, The duration of the video is 2.59

This is the Marker 5 which will display a video “the legend of Hanging stone”. The duration of the video is 4.50

3.2. Evaluation

This step is done to determine the value or quality of the learning materials developed by the researchers. The mentioned rating is based on the evaluation of media experts, materials experts and student feedback. The results of expert evaluation and student feedback are shown in the following table:

TABLE 2: Results of assessment by material experts based on aspects of material feasibility.

No	Aspect	Percentage	Criteria
1	learning	87	Totally Worth It
2	Curriculum	86.5	Totally Worth It
3	Material Contents	88.7	Totally Worth It
Total		262.3	
Avarage		87.4	

Based on the table 2, it can be concluded that the assessment results from material experts based on learning aspects, curriculum and material content obtained a percentage average of 87.4%. These results show that the learning media developed in terms of material feasibility is included in the very feasible category.

Based on the table 3, it can be concluded that the results of expert assessments based on aspects of coloring, display on screen, commands, display design, and animation and sound obtained an average percentage of 86.8%. These results indicate that the learning media developed in terms of material feasibility is included in the very feasible category.

Table 3: The results of the assessment by media experts based on aspects of media suitability.

No	Aspect	Percentage	Criteria
1	coloring	86	Totally Worth It
2	appearance on-screen	88	Totally Worth It
3	commands	85.5	Totally Worth It
4	display design	86	Totally Worth It
5	Animation and sound	88	Totally Worth It
Total		434	
Avarage		86.8	

If averaged, the total assessment of all experts from both material experts (87.4) and media experts (86.8) is 87.1 %

Table 4: Table 9. Results of calculating students' questionnaires.

No	Aspect	Percentage	Criteria
1	content quality	89	Totally Worth It
2	evaluation	87	Totally Worth It
3	grammar	86	Totally Worth It
4	motivation	90	Totally Worth It
5	use of illustrations	88	Totally Worth It
Total		440	
Avarage		88	

Based on the table 4, it can be concluded that the results of calculating student responses in class trials based on aspects of content quality, evaluation, grammar, motivation and use of illustrations obtained an average percentage of 88%. These results indicate that the learning media developed is included in the very feasible category.

4. CONCLUSION AND RECOMMENDATION

This application has been validated by 9 experts in the fields of English teaching, technology and educational learning media and programming. the validation score for the feasibility of the application is 87.1%. The qualifications for this Augmented Reality application are very worthy. This application has also been tested on Junior High school students of SMPN 45 Medan, and they have positive response to the

application with questionnaire score of 88%. English language learning media based on augmented reality will provide a pleasant learning atmosphere for students. but unfortunately, to develop this media is not easy, it requires collaboration between English teachers, researchers and IT professionals. Therefore, it is hoped that future researchers will develop other, more interesting, augmented reality-based learning applications by collaborating with various related parties.

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