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DEVELOPING AUGMENTED REALITY-BASED LEARNING MEDIA IN IMPROVING YOUNG LEARNERS' SHORT STORY LISTENING SKILLS

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Abstract

The lack of innovation and variety of media used in the Indonesian language learning process causes a lack of listenin skills for students short stories. This research is shown to create a learning media product in the form of a short story book based on augmented reality which can be effectively used to improve students listening skills. The type of research used is research and development with reference to the ADDIE model with the stages of analyze, design, development, implementation, and evaluation. Subjects for small scale trials of this study used 6 students and on a large scale trial using 31 students. The product validation test was carried out by 1 media expert and 1 material expert. Data collection methods used observation, interviews, and questionnaires. The product effectiveness test used t-test and N-Gain test. The results explain that augmented reality-based storybook learning media is said to be feasible with 91% value achievement from media experts and 89% support from material experts. These results also provide an effectiveness value through the t-test analysis test value Ha is accepted and the N-Gain obtained is ≥ 0.70. Thus it can be explained simply that the learning media is feasible and effective to use in learning Indonesian, especially in short story listening skills. The development of this media can be used by teachers to support interesting and fun learning so that it can improve listening skills.

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INTRODUCTION

The development of life in the industrial revolution 4.0 is actually continuing to develop rapidly, this can be seen in the development of changes in all aspects of life, including educational aspects (Hutagalung & Rachman, 2023; Lubis & Dasopang, 2020). Education plays an important role in developing the life of society as a whole (Blossfeld et al, 2019; Salsabila et al, 2021). Education can help improve a persons thinking ability, quality of life, and character (Hakim, 2023). The use of technology in education in the 21st century is particularly relevant, given the innovation, efficiency and effectiveness of language teaching in the Indonesian curriculum (Looi et al, 2023; Rahayu et al, 2022).

Learning in the 21st century brings a shift from information based learning to learning that is innovative, creative and fun (Milio et al, 2024). Basically, educators have a driving role in the scope of education (Mukarromah & Andriana, 2022). In learning activities, educators usually utilize a lot of learning media as part of the interactions used to build learning. So with this, educators have an important role to provide understanding in the use of learning media (Mukarromah & Andriana, 2022). Basically, every educator needs to understand the characteristics of students to determine the use of appropriate learning media. Variations in learning media must be tailored to the material, objectives, and learning activities (Wuarlela,

2020). So, learning media becomes the main scope of learning activities needed to provide success and achieve goals in learning, including learning Indonesian.

It should be understood that Indonesian language education covers some language skills that need to be mastered include writing, speaking, listening and reading (Akhyar, 2019; Iswatiningsih & Lestari, 2023; Padmawati et al, 2021). According to Dhieni (2021), language development is one part that needs to be understood and acquired by every child in adapting to the surrounding environment. Language mastery is needed by covering listening, speaking, reading and writing skills to be applied to children (Alifa & Setyaningsih, 2020).

Listening skills are a language skill with attentive listening activities that are critical and review to obtain important information, and have several functions that affect other aspects of linguistic aspects (K. Perayani & I.W. Rasna, 2022; Musyadad, 2023; Zhang, 2023). Basically, listening skills are needed by every child, including children aged 4-5 years with various skills they have including understanding stories, retelling stories, and listening to other peoples words, this is a part that has been explained in Permendiknas Number 58 (Mianawati et al, 2019). Listening skills are included in receptive language, which has an understanding that listening skills are a strong foundation part compared to other skills (Mianawati et al, 2019). In improving students listening skills, of course, teachers must choose the right learning media and adapted to the characteristics of students, and the material to be taught.

Basically, learning media is one part of helping educators support learning with the aim of facilitating these learning activities so that students can understand the intended material (Fadilah et al, 2023; Firmadani, 2020; Miasari et al, 2022). The widespread advancement of technology requires educators to develop various technology-based learning media. One of them is the development of augmented reality short story book learning media in Indonesian language learning skills listening to elementary school short stories.

The lack of students skills in listening to short stories is due to the use of learning media that is less innovative, varied and interactive (Lubis & Dasopang, 2020). Works of fiction formed in the form of prose that are usually read in one sitting are called short stories (Tanjung, 2019). According to Tarigan (In Praheto, 2022) Short story is a story that can be read in 10 to 30 minutes, the number of words ranges from 500 to 5,000 words (Praheto, 2022). Products developed by utilizing technology 4.0 created through developing objects through virtual 2D, 3D to 4D and implemented in real life are called augmented reality (Hutagalung & Rachman, 2023; Kiptiyah et al, 2023; Riskiono et al, 2020; Punar, 2022). Creating a pleasant atmosphere can be obtained from the use of innovative and interesting learning media. Augmented reality short story book is a short story book in the form of augmented reality where the contents of the media can appear with a more real display, animation in the media appears in 4 dimensional form, there is supporting audio, and the story in the book contains a range of 500 to 5,000 words that can be read in 10 to 30 minutes. There have been many studies that develop augmented reality as a learning media. Research by Wulan Tri Puji Utami & Novy Trsinani (2021) trying to developed a story with the help of augmented reality as an adaptation in the application of literacy during the last pandemic. In fact, this is supported by research results which explain that this development requires a feasibility test carried out by media experts and material experts and supported by practitioners as assessors of the effectiveness of product use (Utami & Trisnani, 2021). Another research was conducted by Vini Elga Sugiri & Rudy Cahyadi (2020) on the application of augmented reality for the storybook "Petualangan Jaka Aksara". This research is proven to develop imagination and build emotional intelligence in children (Sugiri & Cahyadi, 2020). Similar research was conducted by Ferdinand Hilkia Tumbuan, Virginia Tulenan, Dringhuzen J. (2019) Mamahit regarding augmented reality storytelling of childrens stories "The Proud Deer". The results of the research conducted by Ferdinand et al explained

that 90% of the 20 respondents proved that this application was interesting and could facilitate and help students in understanding the visualization of storybooks (Tumbuan et al, 2019).

Through some previous research, this study has a difference that is focused on listening skills for short stories in grade IV Indonesian language subjects. The selection of this material is tailored to the needs of students in the classroom. The development of augmented reality short story book media is carried out by paying attention to aspects of curriculum suitability, suitability to the level of thinking of students, instructional, technical, supporting material, and content, so that the utilization of augmented reality short story book media in learning can be maximized (Gunawan & Ritongan, Asnil. A., 2019). Thus, augmented reality short story book media can potentially provide real experiences to students in the learning process (Hutagalung & Rachman, 2023; Khan, et al, 2019; Permana et al, 2022). Through the use of this media, it is hoped that students can have a memorable experience in developing their language skills by utilizing current technological developments (Hutagalung & Rachman, 2023; Karchner et al, 2022; Silva et al, 2023). Through the development of augmented reality-based short story book media, it is actually specially designed by integrating smartphones, so that it can provide convenience for students in accessing the media.

This research aims to develop Indonesian language learning media augmented reality short story book that is tailored to the needs of students, materials and learning objectives. This research is different from previous research, the results of this development research provide innovation and variations in learning media in the content of elementary school Indonesian lessons on short story listening skills. This media can be chosen by teachers to be used in learning activities in order to create an atmosphere of fun learning activities and students are increasingly motivated. This study aims to improve students short story listening skills. Based on this, it is interesting to conduct research and development of augmented reality short story book media in improving students short story listening skills.

RESEARCH METHOD

Research Design

The method chosen in this research is Research and Development by emphasizing research through needs analysis and developing products (Prananda & Wardana, 2020). This development research is a research method that aims to produce certain products and test the feasibility and effectiveness of these products (Dinayusadewi, 2020; Sudaryono, 2021). The type of research used by the author is R&D with the ADDIE development model developed by Dick and Carry. According to Dick and Carry, ADDIE has 5 stages, namely Analysis, Design, Development, Implementation, Evaluation. (Tegeh et al, 2019). The author chose to use the ADDIE development model because the product developed in this study is an augmented reality-based short story book as a learning medium that aims to improve short story listening skills.

Population and Sample

The subjects of this study were 31 fourth grade students of SD Negeri Sarirejo 1 Demak Regency. The subjects in this study used 6 fourth grade students for small scale tests and 31 students for large scale tests. To measure the feasibility of augmented reality short story book learning media, a material and media feasibility validation test was conducted by 1 material expert and 1 media expert. The selected validators are experts in their fields with minimum educational qualifications of Masters and have a certificate of competence. After the augmented reality short story book learning media is declared feasible by the validator, then the media is tested and given feedback (assessment) by teachers and students in small scale and large scale tests.

Instruments and Research Procedure

The author uses the ADDIE development model developed by Dick and Carry. According to Dick and Carry, ADDIE has 5 stages, namely Analysis, Design, Development, Implementation, Evaluation (Tegeh et al, 2019). The analysis stage, is the initial stage carried out by the author to analyze the problems and needs of teachers and students. The design stage, the author determines the right solution by adjusting the product to be developed and then planning the design developed. The development stage is carried out by developing ideas that have been designed in the previous stages according to the needs of augmented reality short story book products. Before being implemented, a feasibility assessment by media experts and material experts is needed. The application stage, carried out by implementing the use of media through trials at the place chosen as the implementation of the research. At the evaluation stage, the author conducts a final evaluation to determine the feasibility of the media, and the effectiveness of the augmented reality short story book. Figure 1 explains the research procedure.

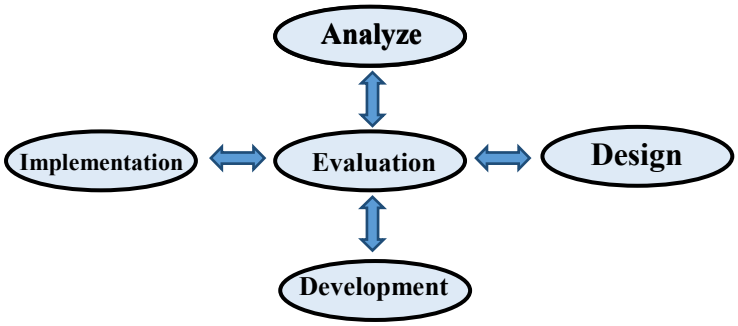

Figure 1. Research Prosedure in Developing
Augmented Reality Short Story Book

Data Collection Techniques

The author uses observation, interview, and questionnaire techniques. Observations were made in class IV during the Indonesian language learning process. Interviews were conducted with teachers and students to obtain information about the problems and needs of students during the Indonesian language learning process. The distribution of questionnaires that will be given to material experts and media experts with the aim of obtaining data on the feasibility of augmented reality short story book learning media.

There are four aspects in the media expert test, namely aspects of curriculum suitability, aspects of suitability for the level of thinking of students, instructional aspects, technical aspects. The four aspects can be described as the following indicators.

Table 1
Media Expert Validation Assessment Indicators

Aspect	Indicator
Aspect of curriculum suitability	• In accordance with the learning objectives to be achieved
Aspect of appropriateness to the learners level of thingking	• Appropriateness of language to the learners level of thinking
Instructional aspects	• Media display emphasizes targeted information • Interactive media
Technical aspects	• Audio compatibility with the material • Selection of fonts and font sizes is appropriate • Easy to use • Instructions for use • Practical

The results of the data obtained through the media expert validation questionnaire were then analyzed using a simple percentage statistical formula by Arikunto (in Shafira, Mutia Y. R., Nuruddin, W., 2022). Then the results are transformed into categories as follows.

Table 2
Media Expert Assessment Provisions

Presentase	Kriteria
76% - 100%	Very Feasible
51% - 75%	Feasible
26% - 50%	Feasible Enough
0% - 25%	Less Feasible

The material expert validation test includes three aspects, namely curriculum suitability, supporting material, and content. These three aspects can be described as the following indicators.

Table 3
Indicators of Material Expert Assessment

Aspect	Indicator
Aspects of curriculum suitability	• In accordance with the learning objectives to be achieved
Material support aspect	• Supporting learning materials
Content aspect	• Appropriateness of themes and titles to the material and level of learners • Presentation of plot and setting in accordance with the material • Appropriateness of the use of characters, characterization, and point of view with the level of learners • Appropriateness of the use of language style with the level of learners

The results of the data obtained through the media expert validation questionnaire were then analyzed using a simple percentage statistical formula by (in Shafira, Mutia Y. R., Nuruddin, W., 2022). Then the results are transformed into the categories in table 4.

Table 4
Provisions for Material Expert Assessment

Presentase	Kriteria
76% - 100%	Very Feasible
51% - 75%	Feasible
26% - 50%	Feasible Enough
0% - 25%	Less Feasible

Data Analysis

The method used in this research is a mixed method using qualitative methods as a method of describing data and quantitative methods used to analyze statistical data in answering questions. In terms of data collection techniques, it is also supported by interviews and questionnaires (Sugiyono, 2019). The data analysis used is actually by providing a description and interpretation of the data that has been collected. In addition, data analysis for quantitative is also supported by pretest and posttest results. The stages carried out in analyzing qualitative data are by collecting data and then converting it into a final value so that conclusions can be drawn and also the presantes score. In this study, the media developed are suitable for use, because they provide high scores from the assessments that have been accumulated. However, it should be understood that analyzing the results of the pretest and

posttest is different, additional applications are needed, namely SPPS Version 22.0 statistics to carry out data management as a normality test and continued with the T-Test and N-Gain test, with the aim of analyzing the effectiveness of the augmented reality short story book media.

RESEARCH FINDINGS AND DISCUSSION

Research Findings

Augmented Reality Short Story Book

Research and development of augmented reality short story book learning media is conducted on short story material in short story listening skills. The research starts from the analysis stage. The analysis stage, resulted in the analysis found that there are problems and needs for Indonesian learning media that are less interesting and fun in learning; learning media is still in printed form not yet digital; and does not increase students interest in learning so that it underlies the need for the development of augmented reality short story book learning media in Indonesian subjects. Based on the problems and needs at the analysis stage, the next stage is the design stage.

The design stage, results of the design will later be arranged systematically with the aim of providing attractiveness and adjustments to the material focused. The preparation of instruments as much as possible must pay attention to aspects of material feasibility and media feasibility owned by the media. Media selection is based on the analysis of predetermined stages that have been carried out previously. Through this, augmented reality based short story book learning media was chosen as one of the solutions to overcome the limitations contained in Indonesian language learning, especially listening skills. The design of media development design is carried out by designing augmented reality short story book learning media in such a way as to pay attention to aspects of curriculum suitability, suitability for the level of thinking of students, instructional, technical, material support and content in the designed learning media.

The development stage realizes the product development design and tests the feasibility of the developed product, namely in the form of augmented reality short story book learning media for short story listening skills. Testing the feasibility of learning media is carried out by validators who have a certificate of competence and minimum educational qualifications of Masters. The results of data analysis regarding the feasibility of augmented reality short story book learning media found in the first stage obtained a score of 75% from media experts and a score of 75% from material experts with a feasible category. Revisions need to be made so that the augmented reality short story book learning media developed reaches the very feasible category. Thus, in the second stage, a score of 91% was obtained from media experts and a score of 89% from material experts with a very feasible category. The results of the first and second stage validator assessments are presented in more detail in table 6.

Table 5
Augmented Reality Short Story Book Media Validation Score

Validation	Phase 1		Phase 2	
	Presentage	Criteria	Presentage	Criteria
Media	75%	Feasible	91%	Very Feasible
Material	75%	Feasible	89%	Very Feasible

After the media is declared feasible by experts, then implementation will be carried out through trials at the institution with the aim of measuring the effectiveness of the media. The next stage is the implementation stage for product trials. The application stage was carried out twice, on a large scale with the support of 31 students while on a small scale it required 6 students. The implementation of product trials begins with students doing 20 pretest questions

before learning. After students work on pretest questions, then carry out learning using augmented reality short story book media that is accessed using a cellphone. After completing the learning, then students do 20 posttest questions. Furthermore, the results of the pretest and posttest of students were analyzed using the normality test, T-Test, and N-Gain. The pretest and posttest results that have been analyzed are used to provide an explanation of the effectiveness of augmented reality short story book media on short story listening skills.

The evaluation stage is conducted to test the effectiveness of augmented reality short story book in learning. The results of the small-scale and large-scale pretest and posttest were analyzed with a normality test with the aim of understanding that the data could have a normal distribution or not. The normality test uses the Shapiro-Wilk test. The test results are as follows.

Table 6
Normality Test Results of Small Scale and Large Scale Pretest Posttest

Test Of Normality				
Scale	Tes	Shapiro-Wilk		
		Statistic	df	Sig.
Small Scale	*Pretest*	.982	6	.960
	Posttest	.982	6	.960
Large Scale	*Pretest*	.946	31	.117
	Posttest	.939	31	.077

It can be seen in the table above, the significant results of the small scale on the pretest 0.960 and posttest 0.960. The large scale shows significant results of pretest 0.117 and posttest 0.077. The results of the pretest posttest normality test on a small and large scale show that it gives a significant category by showing a value of more than 0.05, so it can be concluded that the results of the pretest posttest on a small scale and large scale show normally distributed data so that it can be continued with parametric tests. The t-test and N-Gain test were conducted to determine the effectiveness of using augmented reality short story book in learning to improve students short story listening skills. According to Novita (2019), there are interpretation criteria in an N-Gain index as follows.

Table 7
N-Gain Index Interpretation

Nilai N-Gain	**Kriteria**
N gain ≥ 0,70	High
0,30 < N-Gain 0,70	Medium
N-Gain ≤ 0,30	Lower

Furthermore, the authors calculated the existing data in the small-scale and large-scale trials based on the t-test and the N-Gain formula obtained the following results.

Table 8
Effectivness Test Results

Scale	**Test**	**Value**
Small Scale	Sig. (2-tailed)	0,000
	N-Gain	0,81
Large Scale	Sig. (2-tailed)	0,000
	N-Gain	0,71

It can be seen in the table above it is known that on a small scale Sig. (2-tailed) is 0, the N-Gain value is 0.81. On a large scale Sig. (2-tailed) is 0, the N-Gain value is 0.71. Sig. (2-tailed) small scale and large scale < 0.05, so Ha is accepted. The N-Gain value on a small and large scale shows an N gain of ≥ 0.70 with a high category.

Thus it can be concluded based on the results of the t-test and N-Gain test that augmented reality short story book is effectively used in Indonesian language learning to improve students short story listening skills.

Discussion

The purpose of this research is to create augmented reality short story book learning media designed for grade IV students. The goal is to improve learners short story listening skills. Previous research shows that augmented reality is used as a literacy material, and focuses on building childrens emotional intelligence and is used to help students understand storybook visualizations (Sugiri & Cahyadi, 2020; Tumbuan et al, 2019; Utami & Trisnani, 2021). No one has developed augmented reality short story book learning media for Indonesian language subjects that focus on improving the listening skills of grade IV students. The design of augmented reality short story book media development is based on learning problems and learning needs (Kose & Guner-Yildiz, 2021). Learning problems and needs that are the basis for designing augmented reality short story book media development on short story listening skills, including the availability of interesting and fun Indonesian language learning media, learning media according to the characteristics of students, and media in accordance with learning objectives. The need for innovation and variations of media in learning Indonesian becomes an obstacle in creating an interactive learning environment for students (Fatimah et al, 2019). The use of media previously only focused on printed media such as books, indirectly the printed media creates the impression of teacher-centered learning, and boring. In addition, learning objectives and learner needs that require the development of learning media that includes visual, audio, and kinestic elements cannot be fulfilled due to the use of learning media that lacks innovation (Anjaswuri et al, 2023; Hutagalung & Rachman, 2023; Tumbuan et al, 2019).

The need for Indonesian language learning media for short story listening skills is driven by the different characteristics of students. Learners generally have certain characteristics and learning style tendencies that vary in understanding the material learned easily (Filgona et al, 2020; Schmitt, N., & Rodgers, M.P.H., 2019). Learners need innovative, creative and fun learning media based on student characteristics and learning objectives. Learning media augmented reality short story book on short story listening skills provide interaction experiences to learners with abstract concepts in real-time (Hutagalung & Rachman, 2023; Riskiono et al, 2020; Punar, 2022). The development of augmented reality short story book media provides a learning concept by providing visualization into the users real world environment quickly. As much as possible, augmented reality short story book media presents abstract concepts in learning through concepts based on real examples that are relevant to the real environment, thus learning can be more contextualized (Dung, 2021; Sarwinda et al, 2020).

Augmented reality short story book helps teachers create participatory learning experiences according to learning objectives (Firdanu et al, 2020). The augmented reality short story book design is developed to include activities and learning experiences to improve learners skill competencies. The skills aspect includes the ability to listen to short stories to get important information in the short story. Thus, the augmented reality short story book learning media is designed using a project-based learning model where learners are given project assignments with groups to make important information boards on short stories using all materials or tools, as well as techniques or ways of working (Akbar et al, 2023; Halawa, 2021). Thus, students are actively involved in learning according to their learning style and gain direct experience of the material being studied.

The fulfillment of audio, visual and kinesthetic elements in augmented reality short story book learning media shows that the potential of augmented reality short story book can

lead students to gain new experiences in the learning process that are relevant to the times (Hutagalung & Rachman, 2023; Karchner et al, 2022; Silva et al, 2023). This means that students are directly involved in learning so that the information or material obtained by students is 90% of the level of involvement in doing. Augmented reality short story book media can stimulate the imagination and motivate students in learning. This is evidenced by the feasibility level of augmented reality short story book media developed by the author obtaining an assessment in the very feasible category from a team of experts. The feasibility of media that has been owned by augmented reality short story book learning media makes this media effective to use, efficient and interactive in providing a complete learning experience for students (Panchenko et al, 2020). The effectiveness of augmented reality short story book media is based on the results of the pretest and posttest analysis test of students where there are differences in learning outcomes in students short story listening skills before using the media and after using augmented reality short story book media, and the value of the N-Gain test results which show N-Gain of ≥ 0.70 with a high category, meaning that augmented reality short story book media is effectively used in learning to improve listening skills for grade IV short stories (Hadid et al, 2019; Silva et al, 2023).

The findings of this study support previous studies, which highlighted on improving the short story listening skills of grade IV students. The augmented reality short story book media developed by the author consists of 12 pages of short stories that provide a learning experience by presenting 4 dimensional animation in real time and supporting audio. The characters in the media developed by the author can be enlarged and minimized according to the users wishes. The augmented reality short story book learning media allows increasing learner memory of the learning process (Rohman et al, 2024). The active involvement of learners in the learning process provides direct experience of interacting with each other to gain a full experience in the aspect of skills in line with the times (Hutagalung & Rachman, 2023; Karchner et al, 2022; Silva et al, 2023). Augmented reality short story book learning media is very feasible and effective to be applied to Indonesian language subjects that focus on listening skills for grade IV short stories.

CONCLUSION

This research produces augmented reality short story book products to improve students short story listening skills. Augmented reality short story book developed provides a learning experience by presenting 4 dimensional animation in real time and supporting audio. The characters in the developed media can be adjusted according to the users wishes. The findings of this study indicate that augmented reality short story book media is feasible and effective in the Indonesian language learning process. The very feasible category is obtained from the results of the expert teams assessment. The effectiveness is based on the results of the pretest posttest data analysis through the t-test and N-Gain test, the t-test shows the difference in the learning outcomes of students short story listening skills before and after using augmented reality short story book media, and the N-Gain test results produce an N gain value of ≥ 0.70 with a high category. Based on the results obtained, augmented reality short story book is very suitable and recommended to be used as media in the Indonesian language learning process on short story listening skills. The development of augmented reality short story book learning media can be used by teachers to create a more interactive and fun learning atmosphere for students so that short story listening skills can improve.

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