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AUGMENTED REALITY (AR) MEDIA TO STIMULATE EARLY READING SKILLS IN EARLY CHILDHOOD

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Abstract : Early reading skills are one of the important aspects of language development in early childhood. Early reading is the first stage where children learn to recognize letters, sounds, and words simply. This study aims to determine whether media-based augmented reality (AR) can stimulate early reading skills in children. This type of research is a development research using the ADDIE model. The methods used to collect was instruments. The location of the research was at Darul Hikmah Islamic Kindergarten, the research was conducted in August-September 2024. The results of the study showed that the early reading skills were 43%, after the use of AR-based media, children's early reading skills increased to 78%. Based on this, it can be concluded that using media-based AR can improve children's early reading skills. This research implies that teachers can use AR-based media in the learning process.

Keywords*:* Early reading skills, Early childhood, Media-based Augmented Reality

INTRODUCTION

Language is one of the most critical aspects of development for children. One important component in language development is the ability to read early. Introduction to reading early can be done early.

The phenomenon that exists in society today is that there are still many children who are not able to read simple words. To teach children to read, exciting media is needed. Media is one of the tools that can be used by parents and teachers to teach children to read early.

The media used in this study is augmented reality (AR) based media, which is in the form of digital flashcards containing images, writing, sound, and barcodes for scanning.

Research conducted by Antariani et al., (2021) regarding Big Book media to Improve Early Reading Skills in Early Childhood showed that there was an increase in early reading skills in children who had used big books in classroom learning activities.

Another study conducted by Lestari, (2020) on the Effectiveness of Early Literacy Learning Using Augmented Reality (AR)-Based Children's Book Media at Bina Amal 2 Integrated Islamic Kindergarten Semarang showed that the use of AR-based book media was quite effective in early literacy learning.

Handayani, (2022) conducted a study on Efforts to Improve Early Reading Skills Through Picture Card Media in Children Aged 5-6 Years; the results were that the achievement of early reading skills in Cycle II was 95.57%. Based on these results, there was an increase in early reading skills in children after using picture card media.

The learning media currently used is still not varied, so other media variations are needed so that there are more choices in learning activities, especially the media used in early reading activities.

Many parents still demand that their children read at a very young age. This requires schools to find various fun media for children so that the activity is smooth for them.

Seeing the reality in the field related to the lack of variety of media used in early reading activities by schools, researchers tried to create media variations.

Generally, schools still use ordinary books in early reading activities, where the books only contain writings. This makes children bored because the contents of the book could be more attractive.

In early literacy learning or reading activities, teachers are expected to use interesting media to make the activity fun for children. If children are happy with the media used by teachers, this will likely impact children's early reading skills.

Media needs to be developed from time to time to keep up with the times and meet the needs in the field so that the use of media in learning can be more varied and exciting for children.

Based on the reality in the field, researchers tried to create media that can be an alternative to early reading activities. Researchers try to create a flash card media based on augmented reality (AR). On this flash card, children can see images in three dimensions (3D), and there is audio, where children can hear and know how to pronounce the words listed on the flash card. Researchers hope this media can be an alternative media that teachers can use in early reading activities.

RESEARCH METHODS

The research method used in this study is research and development (R&D) using the ADDIE development model (analysis, design, development, implementation, and evaluation).

At the analysis stage, the researcher conducted a field needs analysis, and the results obtained in the field showed that there was still a need for variations in media used for early reading activities. Furthermore, at the design stage, the researcher began to design flash cards that were on the themes taught in schools.

The next stage is development, where the researcher develops the contents of the flash card; the flashcard contains images, writing, audio, and barcodes. Barcodes can be scanned so that children can see the flash card in three dimensions (3D).

After the development stage was completed, the researcher conducted expert judgment on material experts and media experts. After that, in the implementation process, the researcher implemented it in kindergarten schools.

In the evaluation stage, the teacher accompanies the children to answer several questions on the last sheet of the flash card.

The population taken in this study were kindergarten students aged 5-6 years in the South Jakarta area. The sample used in this study were 5-year-old students who attended school in Kalibata district.

The data collection technique was by using observation and instruments. The instrument sheet contains statement items that the researcher needs to fill in.

The analysis technique used in this study is a quantitative descriptive analysis technique that describes the results of using flash cards in learning activities.

RESULTS AND DISCUSSION

Result

The research was conducted in several stages. In the first stage, the researcher conducted expert judgment on media experts and material experts. Based on the assessment given by media experts, the augmented reality-based flash card media received 92%, while the material experts

received 94.2%. The following is Figure 1 regarding the results of expert judgment:

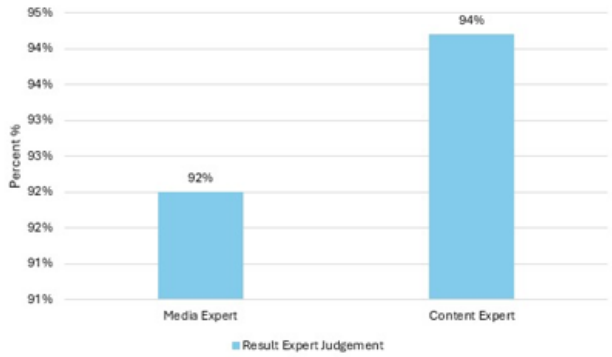

Figure 1. Expert Judgement Result

After getting feedback from media experts and material experts, the researcher made some improvements according to the suggestions from media experts and material experts. After the improvements were made, the researcher conducted observations and pre-tests before implementing AR-based flash card media in schools.

During the research, children were interested in using augmented reality-based flashcard media. This can be seen from their enthusiasm when the teacher showed the 3-D image via laptop.

Teachers not only teach children to read the beginnings through flashcards, but they can also teach them to recognize colors, types of vegetables, and their benefits for the body.

In addition, this augmented reality-based flashcard includes not only 3-D images but also sounds so that children know the writing contained in the flashcard.

The research was conducted at Darul Hikmah Islamic Kindergarten with 12 students as respondents. The following are the results of the pre-test and post-test. Based on the pre-test results, it was found that the early reading skills in children was 43%; after implementing AR-based flash card media for 8 weeks, children's reading ability increased to 78%.

The following is a bar chart for the pre-test and post-test results.

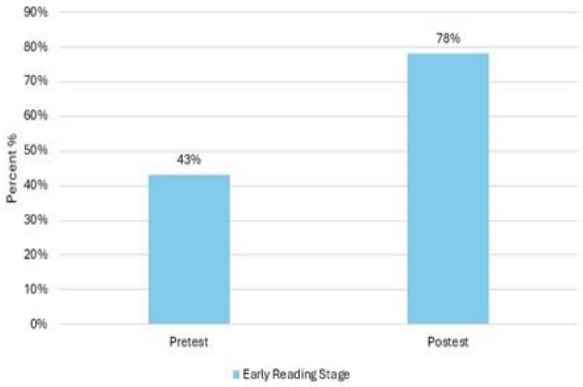

Figure 2. Percentage of Children's Early Reading Stage

The following are pictures of the flashcard used in the research :

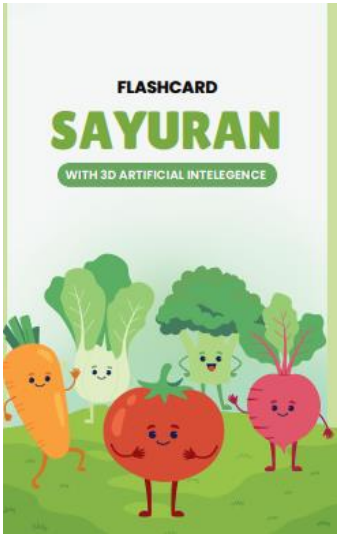

Figure 3. Cover of Flashcard

Figure 4. Description

Figure 5. Instruction

Figure 6.Front side of Flashcard

Figure 7. Back side of Flashcard

Figure 8. Instruction for a worksheet activity

Figure 9. Implementation

Figure 10. Worksheet

Figure 3 contains the cover used in the flash card, where the cover already reflects the theme of the flash card. Figure 4 contains a description of the flash card, while Figure 5 contains instructions for use or how to play the flash card. Figure 6 is one of the contents

of the digital flashcard; Figure 7 is a barcode that can be used to see the contents of the flash card in 3 dimensions, and Figure 8 is an instruction for working on the worksheet found at the end of the flashcard. Figure 9 is an implementation activity for using flash cards in learning activities. Figure 10 is an example of a worksheet worked on by a child. After using the flash card several times, the child will work on the worksheet with the assistance of a teacher.

Discussion

The results of the above study align with the research conducted by Hartanti & Kurniawan, (2022) who researched Augmented Reality Literacy Books as Supporting Media for Early Childhood Literacy Learning. Based on this research, it was found that with the presence of technology, learning will be more optimal and creative to stimulate the development of thinking power, creativity, and language to foster good attitudes, mentality, and morals in children.

Furthermore, research conducted by Maisaroh et al., (2021) regarding the Learning Media Let's Memorize Daily Prayers Using Augmented Reality at PAUD Delima Kebon Jahe showed the results were that the media was exciting and effective for children to use in memorizing prayers.

In another study conducted by Arifin et al., (2020) relating to the Development of STEM Learning Media with Augmented Reality to Improve Students' Mathematical Spatial Abilities, the results were that the learning media developed was suitable for improving students' mathematical spatial abilities.

In addition, research related to augmented reality entitled The Influence of Augmented Reality-Based Comic Media on Elementary School Students' Reading Literacy, research conducted by (Arthawidiani et al., 2022) shows that the use of augmented reality-based comics in learning is effective to stimulate students ability and reading skills.

Further research conducted by (Lidianti et al., 2022), entitled Utilization of Augmented Reality Technology in Learning Hijaiyah Letters and Makhorijul Letters, the results show that the use of augmented reality technology can improve children's ability to read makhorijul letters.

According to the research results above, it can be seen that the use of augmented reality-based media can improve literacy skills in students.

Another study, relevant to reading ability conducted by (Astuti & Istiarini, 2020), entitled Efforts to Improve Early Reading Ability of Children Aged 5-6 Years Through Puzzle Media at PAUD Flamboyan Sukasari, Tangerang City. The results of the study showed that there was an increase in reading skills in children, after using the media.

According to research by (Helvina et al., 2021), titled The Effect of Using Animation Media on Students' Beginning Reading Skills During the Covid-19 Pandemic, the results show that there is an increase in beginning reading skills after using animation media.

Research conducted by (Kartika & Putri, 2023),titled Analysis of Early Reading Ability in Kindergarten, the results show that the use of demonstration methods, practice methods and giving assignments can improve early reading ability in children.

Subsequent study conducted by (E. D. Lestari, 2021), entitled The Influence of Flashcard Learning Media on Beginning Reading Skills in Grade 1 Children of Sd Negeri 01 Sitiung, Dharmasraya Regency, the results showed that there was an influence of the use of flashcards on beginning reading skills in children.

Reffering the research above, it can be seen that the use of media in learning activities can improve reading skills.

Related study conducted by (Pakpahan & P, 2023) entitled Improving

Early Reading Skills in Children Through Multisensory Methods. The results were that subjects who were given multisensory methods experienced early reading skills compared to subjects who were not given multisensory methods.

Research titled Early Reading Skills through the Use of Big Book Media for Early Childhood conducted by (Ritonga & Fathiyah, 2023), the results confirm that there is effectiveness in using Big Book media based on local wisdom in early reading learning activities.

Similar study conducted by (Diana Putri Amalia. M et al., 2022), entitled Motions and Songs to Improve Basic Literacy through Animation Videos, the results shows there is a significant increase in basic literacy values through learning media.

Additional study conducted by (Sa'ida, 2022) entitled Improving Children's Early Reading Skills Through the Montessori Method Sa'ida, the results were that the use of the Montessori method can improve children's early reading skills.

Further research entitled Improving Beginning Reading Skills Through the Drill Method, conducted by (Sumanty, 2020) the research indicate that the Drill method which was carried out in 3 stages for 3 months and combined with The Glasses strategy can improve the ability to read the beginning of students in grade 1 of Elementary School 3 Damar.

Derived from the research above, it can be seen that the use of various media in reading activities can stimulate children's initial reading skills so that children's reading skills can improve.

Another research conducted by Pradibta yang berjudul "hijaiyah" interactive learning for pre-school students, the learning process, especially for children, is learning that gives birth to a pleasant atmosphere. Images and sounds that appear will make children not get bored quickly so that they can stimulate learning in children.

Research undertaken by (Prasetia et al., 2022), entitled Influence of Early Childhood Programs Literacy Movement on Students' Interest and Reading Ability, the results showed that the implementation of the school literacy movement influenced the interest and initial reading ability of early childhood educators. The implications of this research are expected to be an evaluation in overcoming students' initial reading difficulties.

Research entitled Media and Methods for Developing Early Childhood Literacy at Kuttab Al Huffazh Payakumbuh conducted by (Nurhayani & Nurhafizah, 2022), shows that the use of various media and methods can improve students' literacy skills.

Further research performed by (Andriyani & Hermanto, 2022), titled Application of the SAS Method in Beginning Reading Learning in the 21st Century, the analysis shows SAS methode can stimulate and improve students in beginning reading.

According on the research above, various learning methods in learning can enhance students literacy skills.

The research entitled Development of Augmented Reality-Based Story Books for Early Childhood, conducted by (Novia et al., 2023), resulted in learning media using story books that can be used to accommodate early childhood students in developing their reading skills.

Title of research AR 3D Magic Book : A Healthy Interactive Reading Device Based on AR and Portable Projection, implemented by (Pingxuan, 2020), the analysis shows that AR 3D Magic Book can scan images from a picture book to identify corresponding digital information, which can stimulate the interest of teenagers and children in reading, help improve their eyesight, enhance students' experience when reading, and allow them to have a better understanding of knowledge from books, as well as making some complicated instructions more readable.

Another study conducted by (Faiza et al., 2022), Effectiveness of Using Augmented

Reality-Based Social Science Learning Media to Improve Knowledge Competence, showed that augmented reality can improve students' knowledge.

Research entitled Development of Science Learning Media Based on Food Chain Puzzles and Augmented Reality conducted by (Syarif et al., 2022), showed that the use of Puzzle and Augmented Reality media on the material of the rice field ecosystem food chain can make learning effective and interesting and can improve students' understanding and skills in understanding the subject matter.

Another study conducted by (Nirwanto et al., 2021) the title is Puzzle Media Assisted by Augmented Reality in Science Lesson Content on the Theme of Ecosystems, the results were that learning activities were conducted in a conducive and enjoyable manner.

Research entitled Development Of Teaching Materials Based On Augmented Reality (AR) In Science Subjects At Min 1 Kolaka Utara Students**,** conducted by (Husnaini et al., 2023), shows that *teaching materials based on Augmented Reality were feasible to implement in the learning process because they were able to improve learning outcomes and attract students' attention to learning. Integrating AR into the curriculum can improve the quality of science learning in grade 5 of elementary schools.*

Research undertaken by Azizah, titled Penerapan Teknologi Augmented Reality as Interactive Learning Media for the Solar System, the evidence highlights through this built-in Solar System Augmented Reality application, learning becomes more interactive, and students' understanding of the planets of the Solar System can be enhanced.

Referring to the research above It can be concluded that the use of augmented reality can make learning fun and make it easier for children to receive learning materials.

Based on the results of research conducted by several people, none research has been conducted on AR-based flashcards used to stimulate early reading skills.

CONCLUSION

Based on the study results above, it can be concluded that using augmented reality (AR)-based media in learning activities can stimulate early reading skills in children. This flashcard included 3D image, words and sounds, so the student will know how to pronounce it. The pre-test and post-test results show a significant percentage increase during the post-test.

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