Science Get Journal
Vol. 01, No. 2, July 2024, 19-29
e-ISSN: 3062-6595

Development of Augmented Reality-Based Flipbook Media to Improve Children's Writing Skills

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Article Information
Received: July 29, 2024
Revised: July 30, 2024
Online: August 01, 2024

Keywords
Augemented Reality, Flipbook, Wiriting Skill

ABSTRACT
Porpuse this study to produce Flippbook media based on augmented reality for writing skill with materials that are adjusted to the age of kindergarten namely the Solar System. This Method research is a research and development (RnD). The model uses the Four-D (4-D) model which consists of four stages of development, namely Define, Design, Develop, Disseminate. Subject this research is children at TK ABA 1, 32 and 42 Banjarmasin. The instruments used are observation, expert and media expert validation checklists of skala likert and documentation. The results of this study state that the development of flipbook-based augmented reality media can be developed as a learning media aid for writing for children. The implication of this research is that it can be applied as a learning medium for children age 5-6 years at TK ABA 1,32 and 42 Banjarmasin in writing skills so that they can improve. The conclusion of this study is that the development of flipbook-based augmented reality media can build creativity, imagination and writing skills for children. Several unique and interesting images help children improve their writing skills.

Keywords: *Augemented Reality, Flipbook, Wiriting Skill*

INTRODUCTION

Writing is a medium for communication, a place where children can convey meaning, ideas, thoughts and feelings through meaningful words. Writing skills for early childhood need to be developed(Gordon, Garcia-Nevarez, Roundtree Henderson, & Valero-Kerrick, 2013). In addition to being a basic skill in language, writing is also a form of expressive skill aimed at children in expressing their thoughts and ideas. Therefore, there also needs to be learning media that can help children's writing skills develop with fun and non-coercive learning.

Writing activities in kindergarten must have the child's readiness and maturity. This activity is carried out if the child's fine motor skills have matured when holding a pencil. At first, children

http://dx.doi.org/10.69855/science.v1i3.44
https://gpijournal.com/index.php/science
PUBLISHED BY : GPress Indonesia

only scribble, but as they develop, children will have the ability to imitate shapes and the ability to move writing tools(Baiti, Zulkarnaen, & Sarimah, 2022). Children start scribbling around the age of 2-3 years and at the age of 4-5 years children will be able to rewrite the letters they see and imitate writing several short words (Setiyaningsih & Syamsudin, 2019). Writing provides an opportunity for children to express what they have heard and seen in writing or pictures (Nurtiani, Ajimah, Bina, & Getsempena, 2019).

The development of writing for early childhood has several stages, namely: a. random and undirected writing stage, starting to control, giving names to scribbles b. the stage where children's writing is almost the same as the original or starting to be legible c. children write in the form of pictures that show a presentation of what they see and observe d. fine motor skills appear to design pictures, in writing letters and numbers often combine into one like a word, and the size of the letters is not as usual (Zumira,2022) e. the stage where children make pictures or writing that is the same as what is imitated, make letters with the same size and try to use connected letters, capital letters and lowercase letters correctly (Astuti,2016).

Based on the results of the problem analysis, a number of teachers at Aisyiah Kindergarten, Banjarmasin City still have difficulty in helping interesting and meaningful writing learning for early childhood. The writing learning encountered is still conventional by writing letters according to what is written on the board and exercise books(Sartori, Castellaro, & Peralta, 2022). So that children easily get bored of learning and are less interested in writing activities. Writing is a learning activity that is considered monotonous with sheets of paper or just drawing or scribbling. Therefore, as a solution to the basic problem, an interactive learning media, Learning to write for children needs to be taught from an early age. Although writing skills are not the main aspect in Early Childhood Education (PAUD). However, the demands of children to be able to read and write at the next level of education. This is what makes teachers focus on being able to develop children's writing skills according to the stages of development (Hafidzoh Rahman, Mayasari, Arifudin, & Wahyu Ningsih, 2021). As an early childhood teacher, you have an important role in introducing children to communicating images and words using media that can attract children's attention in learning(Sartori et al., 2022).

The existence of media is very important in order to achieve learning goals. The use of media in learning is to accelerate the learning process and help students in understanding the material presented by the teacher in class . This is in accordance with the concept of early childhood education according to Piaget that early childhood is at the pre-operational stage where children aged 2-7 years are still unable to think abstractly so that the existence of APE greatly helps the teaching and learning process in PAUD (Baiti, N., Yusuf, M., & Murni, 2021). The existence of learning media makes the learning.

Process more interesting and can increase children's motivation in learning. Flipbook media based on Augmented Reality is a three-dimensional digital media that can be used to teach children to write and recognize letters like real objects. Writing skills using this media will be more interesting and unintentionally help children learn to recognize letters and words. Flipbook learning media is made with an attractive display because children can see a replica of a certain object directly. This

media is also rarely used for the writing learning process. This learning media is one of the supports for learning in the classroom to make it more interesting besides teaching writing in the form of sheets of paper(Oktavianingsih & Fitroh, 2022).

Learning to write for children needs to be taught from an early age. Although writing skills are not the main aspect in Early Childhood Education (PAUD). However, the demands of children to be able to read and write at the next level of education. This is what makes teachers focus on being able to develop children's writing skills according to the stages of development . As a teacher, early childhood has an important role in introducing children to communicating images and words using media that can attract children's attention in learning (Oktavianingsih & Fitroh, 2022).

The existence of media is very important in order to achieve learning goals. The use of media in learning is to accelerate the learning process and help students in understanding the material presented by the teacher in class(Brewer, 2007). This is in accordance with the concept of early childhood education according to Piaget that early childhood is at the pre-operational stage where children aged 2-7 years are still unable to think abstractly so that the existence of APE is very helpful in the teaching and learning process in PAUD. The existence of learning media makes the learning process more interesting and can increase children's motivation in learning.

Flipbook media based on Augmented Reality is a three-dimensional digital media that can be used to teach children to write and recognize letters with real objects. Writing skills using this media will be more interesting and unintentionally help children learn to recognize letters and words. Flipbook learning media is made with an attractive display because children can see a replica of a certain object directly. This media is also rarely used for the writing learning process. This learning media is one of the supports for learning in the classroom to make it more interesting besides teaching writing in the form of sheets of paper.

The state of the art of this study, the author took from previous research that can be used as a reference and consideration for research. "Augmented Reality-Based Flipbook as an Innovation in Biology Learning Media" this study is shown as an innovation media in learning biology for high school level. The similarity of this study is developing the same media(Prasetya & Hirashima, 2018). The difference lies in the subject studied and in previous research as an innovation in biology learning media, while what the researcher developed was the writing skills of early childhood children so that the level of depth of discussion is also different(Ruhaena, 2015).

Next, the research entitled "Using Letter Card Media to Improve Beginning Writing Skills in Intan Komara Kindergarten Group B" the results of this study showed an increase in writing skills in each cycle. Likewise, the research entitled "Improving Children's Letter Writing Skills Through Letter Card Media in Group B of Pertiwi Nglaban Kindergarten, Nganjuk Regency, East Java" had the same results with an increase in each cycle. Many researchers have found other studies developing letter cards(Siregar, Meilanie, & Purwanto, 2020). Therefore, researchers are interested in developing digital flipbook media based on Augmented Reality as a form of innovation oriented to improve children's writing skills. This research was developed because there has been no similar research to help learning to make children more interested in writing. Flipbook media based on

augmented reality is packaged in digital form in the form of text elements, images and colors that are attractive and easy to understand(Prasetya & Hirashima, 2018).

The formulation of the problem in this study is how are the results of the development of augmented reality-based Flipbook media to improve children's writing skills at Aisyiah Kindergarten, Banjarmasin City? Thus, this study aims to produce augmented reality-based Flipbook media to improve children's writing skills at Aisyiah Kindergarten, Banjarmasin City. Augmented Reality-based Flipbook media is a three-dimensional digital media that can be used to teach children to write and recognize letters like real objects. Writing skills using this media will be more interesting and unintentionally help children learn to recognize letters and words. Flipbook learning media is made with an attractive appearance because children can see imitations of certain objects directly.

METHODS

This research is a research and development (RnD). Research on the development of Augmented Reality-based Flipbook Media to improve writing skills for early childhood. The development model uses the Four-D (4-D) model which consists of four stages of development, namely Define, Design, Develop, Disseminate. This development model consists of four stages. The define stage is carried out with initial analysis. The design stage is carried out by compiling instruments, selecting teaching materials, selecting formats and designing initial products. The develop stage includes the product development stage, expert assessment stage and trial. The disseminate stage is the stage of using products that have been developed on a wider scale. The development procedure for this research is based on the selected development model. This research focuses on the development of an Augmented Reality-based Flipbook to improve writing skills for early childhood(Sugiono, Syah, & Alifia Rahmani, 2022).

The subjects of this study were 30 children aged 4-5 years at Aisyiah Kindergarten, Banjarmasin City. The total actual score obtained is then converted into qualitative data on a five-point scale by referring to the conversion formula in the table.

Table 1. Qualitative Category of Data Interpretation

No	Score Kuantitatif	Grade
1	$(M + 1{,}50s) < \bar{X}$	A
2	$(M + 0{,}50s) < \bar{X} \leq (M + 1{,}50s)$	B
3	$(M - 0{,}50s) < \bar{X} \leq (M + 0{,}50s)$	C
4	$(M - 0{,}50s) < \bar{X} \leq (M + 0{,}50s)$	D
5	$\bar{X} \leq (M + 150s)$	E

$\bar{X}$= Average actual score

M = Average ideal score = 1/2 (maximum score + minimum score)

S = Ideal standard deviation = 1/6 (maximum score - minimum score)

The observation sheet is very practical/very valid (A), practical/valid (B), quite practical/quite valid (D), and very less practical/very less valid (E)..

DISCUSSION

This study aims to produce Flippbook media based on augmented reality with materials that are adjusted to the age of kindergarten and the theme in kindergarten, namely the Solar System. In addition, the purpose of this study also aims to determine the feasibility of Flippbook Media based on augmented reality to improve children's writing skills at Aisyiyah Kindergarten, Banjarmasin City. Sampel are TK ABA 1, 31 and 42.

1. Initial and Final Analysis

Basic analysis of the results of observations almost all of Aisyiah Banjarmasin Kindergarten teach or introduce writing and the solar system only with teaching materials that are still monotonous using picture story books and full of writing. From interviews with educators have never used media in the form of AR-based Flipbooks.

2. Analysis of Students

In learning, children need media that attracts attention and can be used to learn to write which is not only limited to reading and writing but how children can interpret the learning.

3. Concept Analysis

In determining the material and objectives of Flippbook based on augmented reality, it is adjusted to the theme in the odd semester of 2023/2024 at Aisiyah Kindergarten, Banjarmasin City. In Aisyiyah Kindergarten, Banjarmasin City, the theme chosen was the solar system. Therefore, this theme was raised as material in the media to be developed.

4. Formulation of Learning Objectives

This media explaining about abstract concept and more axcited picture. Design Stage, designing the creation of an augmented reality-based Flipbook using Canva software, and Fliphtml5 and assembler edu for AR bases including story narratives and references.

a. Preparation of An Augmented Reality-Based Flipbook Framework

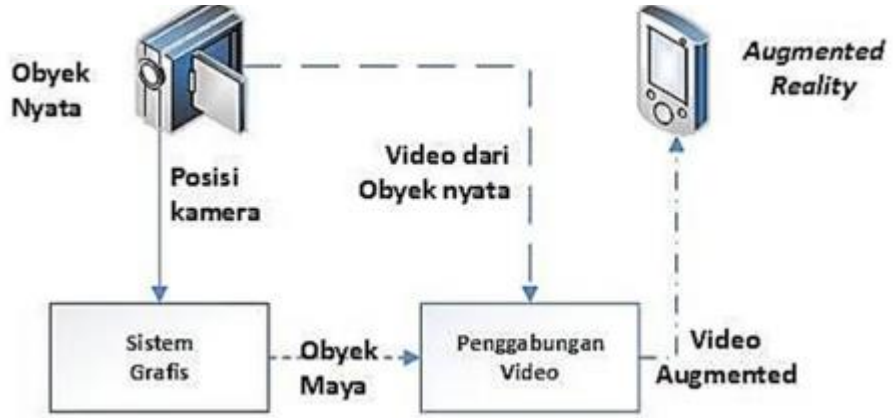


Image 1. Augmented Reality Working Diagram

b. Systematic and Material Design

The material is taken from the solar system theme. The material is raised with a theme according to the theme in the school and the storyline as well.

c. Instrument design

This inatrumen is likert skala about cover, layout and content for validation of media and materials.

1. Development Stage

a. **At this stage**, a Flippbook based on augmented reality is made using Canva software, and Fliphtml5 and assembler edu for AR including story narratives and references. The steps taken are; (a) Creating a storyline that is adjusted to the theme, characteristics of children, (b) media is made using canva and fliphtml5 as a form of Flippbook that can be distributed to schools in electronic form. The material in the Flippbook media based on augmented reality takes the theme of the solar system which contains several planets. (c) after editing the image on Canva is adjusted to the storyline that has been narrated (d) the final design is made in the form of an e-book using the Fliphtml5 application and made into an assembler application to be used as AR.

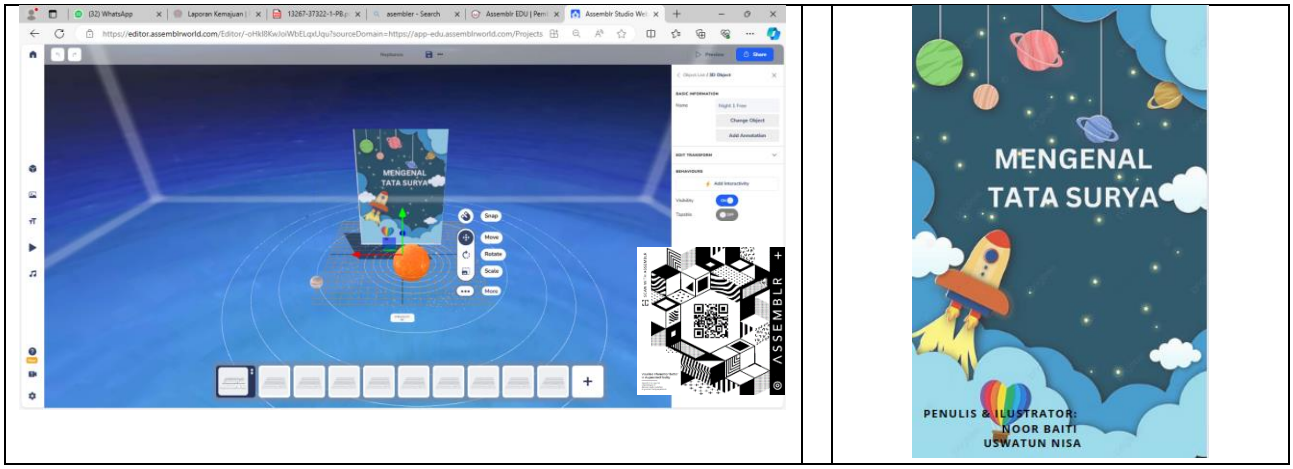


Image 2 *Flippbook berbasis AR* and barcode AR with Assembler edu aplication https://asblr.com/rcpfx atau https://online.fliphtml5.com/fcyxt/uxuq/

b. Validation by Material Experts

The score of the results from the material expert validator on the assessment of the material aspect obtained an average result of 70 with valid criteria, then the linguistic aspect obtained an average of 75% with the criteria "valid" on validator 1. Validator 2 gave a very valid value to the material that had been made. The results of the material validation show valid and very valid criteria which can be seen in the following graph:

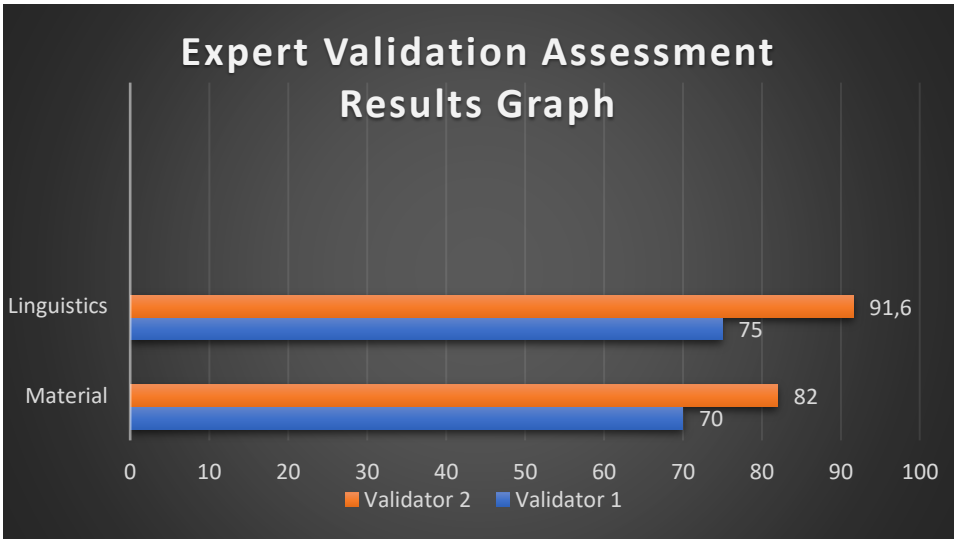


Image 3. Graph Expert Validation Material

The graph in this image shows the results of the validator's assessment of the AR-based Flippbook aspect. Based on the validation results, it is stated that it is quite valid but there are several parts that need to be revised.

c. Media Expert Validation Results

The score of the media expert validator on the programming aspect assessment obtained an average result of 75 with valid criteria, then the presentation aspect obtained an average of 87.5 with "valid" criteria and on the cover aspect with an average of 83.3 with valid criteria. The score of the media expert validator on the programming aspect assessment obtained an average result of 75 with valid criteria, then the presentation aspect obtained an average of 87.5 with "valid" criteria and on the cover aspect with an average of 83.3 with valid criteria. The results of the media validation show valid criteria that can be witnessed in the following graph:

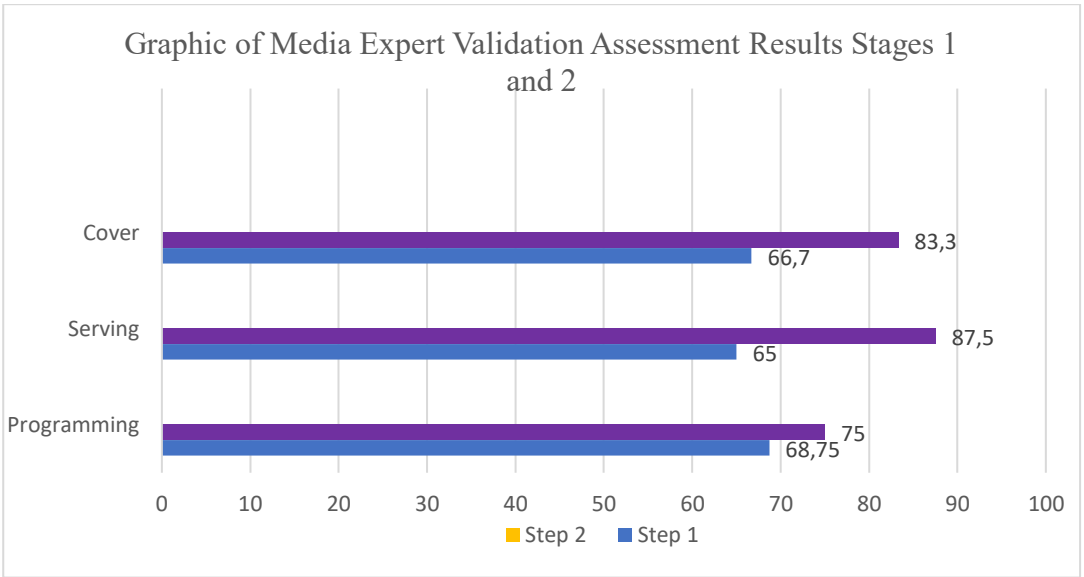
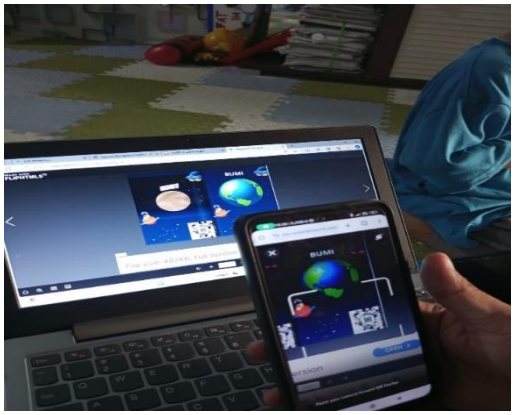


Image 4. Graph Expert Validation Media

d. Dissemination

Dissemination was carried out by researchers to early childhood children aged 5-6 at TK ABA 1, 31, and ABA 42 Banjarmasin. Based on the validation of material experts, media, teachers and trials to children, it can be concluded that the AR-based Flippbook Media development media can be used for early childhood in improving children's literacy skills. Literacy is the ability that a person has to manage and understand information in reading and writing. Literacy means a person who learns according to Latin. According to (Umar, 2015) literacy is not just understanding a reading or writing but is a person's ability to understand and use, analyze certain information (Herdiana, 2019). Children's literacy skills must be developed using several supporting components (Baiti, 2022). One of the supporting components in question is media to improve children's literacy skills. This is in accordance with the statement(Flewit, 2011). Stating that to achieve children's literacy development readiness, various media are needed to support it. Media is a tool that functions to convey messages (Boove, 1997). Media is an intermediary for conveying information from the sender to the recipient of the message such as print media, electronic media, and handicraft media.

Literacy learning, especially reading for children, can be done by getting used to reading stories or tales or telling stories continuously or making it a habit(Jalongo, Dragich, Conrad, & Zhang, 2002). Activities are carried out to help introduce children to the world of literacy and the activities are simple. In the world of education, reading skills are the most important basic thing, especially for early childhood(Baiti & Hasanah, 2023). Reading literacy is a skill that is expected for children to be able to understand and use every form of reading and information they get. Reading activities are the initial skills that children must have for their reading literacy skills(Wiyani, 2017).



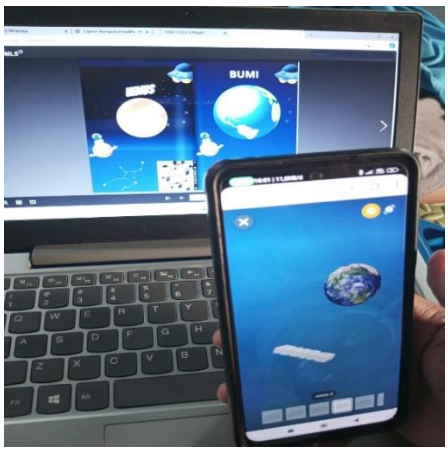


Image 5. AR Finished at link https://asblr.com/rcpfx

	
Back page	Front Page

Image 6. Back Page and Font Page https://online.fliphtml5.com/fcyxt/uxuq/

Interesting media is needed so that learning is not boring. Early childhood is still in the concrete pre-operational thinking stage(Jalongo et al., 2002).Therefore, literacy learning will be simpler and more enjoyable if packaged with the help of story books. Story book media is useful for increasing children's language development and imitating good characters in a story will also develop their personality(Hafidzoh Rahman et al., 2021). Children can present their world with words, shadows through text, pictures and colors. AR-based Flippbook media is a type of illustrated story book that has minimal words with a more concrete story concept so that children are helped from abstract story concepts and children are able to create meaning from the results of reading illustrations and pictures outside of written text(Tyas, Nurharini, Wulandari, & Isdaryanti, 2022)

CONCLUSIONS

The feasibility to be used based on validation by material experts, validation by media experts and trial results by teachers and responses from group B kindergarten children aged 5-6 years. This media development research was conducted at Aisyiyah Bustanul Athfal Banjarmasin can be great media for children's writing skills. Literacy learning, especially reading for children, can be done by getting used to reading stories or tales or telling stories continuously or making it a habit. Activities are carried out to help introduce children to the world of literacy and the activities are simple. In the world of education, reading skills are the most important basic thing, especially for early childhood.

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