# Development of Android-Based Educational Games to Improve Letter Recognition Ability in Early Childhood in Kinali Pasaman Barat

Rakimahwati Rakimahwati[1,] Nisaaul Hanifah[2]

[1]*Early Childhood Education, Universitas Negeri Padang*
[2]*Early Childhood Education, Universitas Negeri Padang*
*Email: rakimahwati10@yahoo.com*

**ABSTRACT**
Based on the preliminary study that the researcher did, the researcher saw that there were still many children who did not know the initial letters in terms of recognizing symbols such as the letters of the alphabet. This study aims to produce educational games to improve early childhood letter recognition skills that are valid, practical, and effective. This research uses the Branch ADDIE model development method. which stands for Analysis, Design, Development, Implementation and Evaluation. Data collection techniques used in the form of a questionnaire. The results obtained from the development of children's reading skills through android-based educational games were declared valid, practical and effective. In the initial development process, the developer consults with media experts to get input and suggestions about the developed media. To determine the validity of the product, expert validation of media experts, material expert validation and field expert validation tests (expert lecturers) were carried out to determine the validity of the product. The results of the assessment were analyzed using a Likert scale. Informants in this study were teachers and children. Data collection techniques used consisted of questionnaires, and documentation. The data analysis technique uses validity analysis, practicality analysis and effectiveness analysis.

*Keywords: Educational Games , Letters, Early Childhood*

## 1.     PRELIMINARY

The stage of early childhood is the most important period in human life, at this stage there is good potential for the growth and development of children. Maturity in helping children's growth and development in the golden period can help 6 areas of child development , namely emotional, social, physical, cognitive, language and creative [1]. However, in some concepts, early childhood is at a critical period, namely the golden age that cannot be repeated in the following periods, if the potential is not stimulated and guided optimally, it will hamper the child's development stage. The way to stimulate children's potential and talents is to start early education. Early childhood is an early childhood of a child who is experiencing a very rapid development process for the next life [2]. In addition [3] also defines early childhood as an individual figure as a sociocultural being who is undergoing a very fundamental development process for the next life and has several characteristics.

According to Law No. 20 of 2003 concerning the National Education System Article 1 paragraph 14 states that "early childhood education is an effort aimed at fostering children from birth to the age of six years carried out by providing educational stimuli to help physical and spiritual growth and development. in order to have readiness to enter further education. Followed by [2] early childhood education is essentially education organized with the aim of facilitating the growth and development of children as a whole or emphasizing on the development of all aspects of the child's personality. In early childhood education in the 2013 curriculum it is stated that early writing and reading skills are termed literacy abilities, in education it is stated [4] that literacy is the key for early childhood and is the foundation in the academic field. [2] stated that literacy is also referred to as

literacy which is interpreted as literacy, recognizing writing, and being able to read writing.

The ability to recognize initial letters is very important to be built here, perhaps according to the child's age stage so that the language skills possessed by the child develop so that it affects the child's personality in society [5]. Soenjono argues that the ability to recognize letters is the stage of child development from not knowing to knowing about the relationship between the shape and sound of letters, so that children can know the shape of the letters and interpret them [6] According to Hasan, the introduction of letters from kindergarten age is the most important thing in teaching, it must go through the process of socialization and reading teaching methods without burdening children with fun learning activities [7]

Learning letters that have developed in the digital era brings the latest breakthroughs in the digital world. Everyone has the right to enjoy the available technological facilities, including in the field of education, digital games as a learning tool where digital games do not only present immersive and fun activities, but also related activities. with learning content to achieve goals [8] One of the games that provides benefits to children in learning content is educational games. Educational games are examples of games that are fun and provide learning content. Educational games are learning media in the form of games that can stimulate human thinking, including increasing concentration and solving problems. According to Patton, educational games have played an important role in modern educational methodologies ([9].

Based on the pattern possessed by the game, players are required to learn so that they can solve existing problems. Game status, instructions, and tools provided by the game will guide players actively to explore information so that they can enrich their knowledge and strategies while playing. [10] Saying that Game education is a game developed for the purpose of education which has the characteristics of educational and entertaining. Agree with that (Klisch et al., 2013) stated that this educational game reflects the learning style of a generation that is more digitally savvy and represents the trend in formal and informal educational settings towards the use of technology. agree with research [11] that educational games are stated as games that can educate and provide education to students by using various kinds of games.

Based on observations and initial interviews at RA in Kinali district, it can be seen that the development of the ability to recognize initial letters is still not well developed. This can be seen when the teacher asks questions on the blackboard about the letters written by the teacher, when the teacher asks the children to

guess the letters written at random, only a few children can answer, the rest are hesitant and silent. On the other hand, letter recognition carried out in RA Kinali District is still using old ways that are less effective, and the lack of use of media.

The researcher aims to improve the ability to recognize children's letters through an Android-based educational game at the age of 5-6 years in Raudhatul Atfhal, Kinali District.

The expected benefit in this research is to increase knowledge in the field of early childhood education, especially to improve the development of cognitive and language aspects, especially in the ability to develop letter recognition. The benefits for children, namely the ability to recognize early childhood letters can be increased through educational games, for teachers, namely being able to innovate in developing learning methods with varied media. For further researchers can also use other methods and media that can improve the ability to recognize letters.

This game is designed with attractive and interactive images so that children are interested in being active in running the game. Children who answer correctly will be rewarded in the form of praise so that children will feel confident in their abilities. Based on this description, the authors developed the development of educational games to improve the ability to recognize letters for early childhood in the Kinali district.

## 2. RESEARCH METHODS

The type of research used in the research is Research and Development (R&D) which is used to improve the implementation of learning in RA. According to [12] stated that RnD is a deliberate method, directed at finding findings, developing and producing. As for the development model used, ADDIE, [13] said that this research was carried out in stages. Analysis, Design, Development, Implementation and Evaluation. The measurement scale used is a Likert scale. The data collection technique in this research is to use instruments in development research. In this case the researcher asked for expert help to validate the Educational Game to increase character values in children. The data analysis technique uses validity analysis, practicality analysis, and effectiveness test analysis.

## 3. RESEARCH RESULT

### 3.1. *Research and Development Results*

The research and development carried out resulted in a product in the form of the development of educational games in improving the ability to recognize letters for early childhood in Kindergarten,

Kinali District, West Pasaman which was developed using the Branch model (ADDIE) with the results of each stage of development described as follows:

### 3.1.1. Analysis

Based on the results of observations that the researchers conducted on June 5, 2021 in Raudhatu Atfhal, Kinali District, there is a development of the ability to recognize the letters of the alphabet that is still not well developed. This can be seen when the teacher asks questions on the blackboard about the letters written by the teacher, when the teacher asks the children to guess the letters written at random, only a few children can answer, the rest are hesitant and silent.

The results of interviews with teachers and school principals Raudhatul Atfhal in Kinali on June 5, it was found that children did not pay attention to the teacher when asking questions or questions about letters, when asked about letter recognition, children tend to forget the letters asked by the teacher.

### 3.1.2. Design

The following is the design of educational games based on the problems from the analysis above, the design starts from:

a.  compiling game plots, compiling game plots in the form of material in learning media. Products designed according to the order of the game (Letter Balloons, Letter puzzles, Syllables, Letters, Words)

b.  choosing learning media, learning media are selected based on the purpose of delivering material in the form of games.

c.  designing storyboards .

In making educational games, researchers use the Adobe Anime application, the advantage of this application is that the colors displayed in the image are brighter and feel alive so that they produce interesting games for children. After the design process is complete, the product is consulted with the supervisor for review in order to get suggestions for improvement until the game is declared ready by an expert lecturer. The following is the development of educational games through Storyboard:
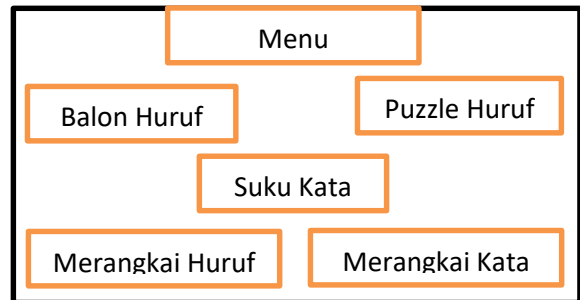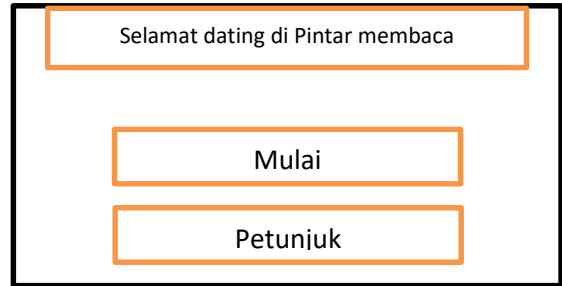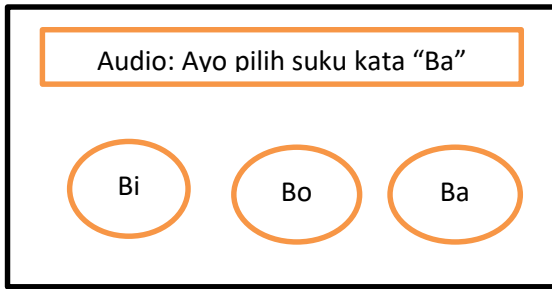


**Letter Balloons** (audio: let's choose the correct vowel and alphabet balloons, in the right order)
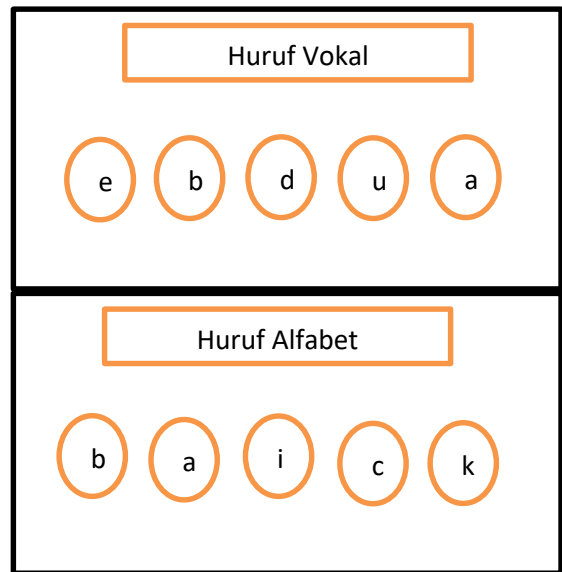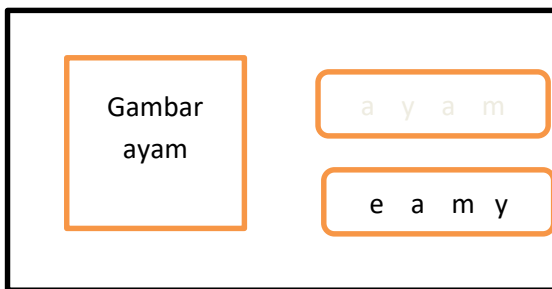


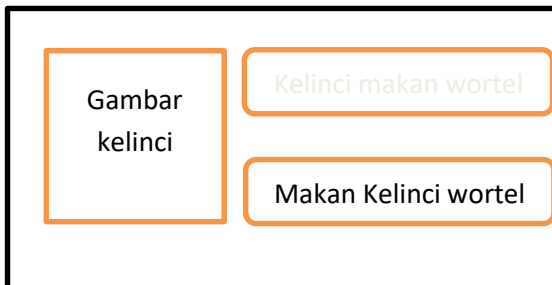**Letter Puzzle** (let's match the Letter Puzzle correctly)

**Syllables (audio: let's choose the correct syllable and follow the question directions)**



**Arrange the Letters** (audio: let's arrange the letters, and choose the correct letters according to the picture)



**Stringing Words** (audio: let's arrange words into sentences, according to the picture)



### 3.1.3. Development

Educational games are made through the adobe animate application, an application that can make games more colorful and interesting for children. The games are made adapted to the theme and development of early childhood. In making educational games, starting from determining what games will be made, a combination of animation, music and voice acting to support children's understanding of playing educational games, so that they will be more liked and can support the child's learning process. The structure in this educational game includes covers, game instructions, game lists, rewards. The design itself is contained in the source design and initial design. Validator results by experts. Based on the validation of the material for this game,

it is further adjusted in the curriculum, the game according to the average coefficient value of 93.75% can be declared very valid. While the average value of media experts is 96%. it can be stated that it has a valid item validation and is declared suitable for use with a slight revision on the game cover that has omitted the PICA (Pintar Baca) writing.

### 3.1.4. Implementation

At the implementation stage, it is done by preparing an Android-based educational game product that has been declared feasible by experts and tested on children. In the next stage, educators assess educational games to determine the feasibility of games when used by children and how children respond after using these educational games. The implementation of Android-based educational games to improve early childhood reading skills is carried out at Raudhatul Atfhal 78 Bangun Rejo class B2 (Fatimah class) consisting of 14 children. Furthermore, the media were assessed by the teachers in the FGD (Forum Group Discussion) activity which was held on Saturday, July 17, 2021. The average percentage of practicality from the two teachers was 90.2%. From the results of the practicality test, it is stated that Android-based educational games to improve children's reading skills are stated to be practical.

The practicality test is the level of practicality of the game being developed so that it can be seen how practical it can be used by the teacher. This practicality test was carried out to determine the extent of the benefits and ease of use of games by teachers. The practicality questionnaire given to the teacher was filled out after the game was finished being applied to the child. The teachers who assessed the questionnaire were Kasmawati S.Pd from class B2 and Eka Ramadani (assistant teacher) on July 16, 2021, Friday. Furthermore, the assessment of the game media was also assessed by the teachers of RA Islam Bakti 78 Bangun Rejo as many as 6 teachers. The results of the practicality test with an average of 96.1% stated that the Android-based educational game developed was stated to be very practical. The data on the results of the effectiveness test were obtained by calculating the results of the assessment through observation and LKA in the large group test in class B2, which consisted of 14 children, the assessment was carried out by the class teacher. Table of LKA assessment results from the results of the Effectiveness assessment, it was found that 85% were declared effective for Android-based educational games to improve children's reading skills in Kindergarten.

## 3.1.5. *Evaluation*

The fifth stage of the ADDIE development model is the Evaluation stage or the assessment stage. From the results of the material experts have adequate and valid item validity and the conclusion of the assessment from the validator is declared feasible to continue to research. The results of suggestions and conclusions from media experts were declared suitable for use with revisions, revisions from media experts and materials were carried out for improvements to the better. Educational games are made though the adobe animate application , an application that can make games more colorful and interesting for children. The games are made adapted to the theme and development of early childhood.

In making educational games, starting from determining what games will be made, a combination of animation, music and voice acting to support children's understanding of playing educational games, so that they will be more liked and can support the child's learning process. The structure in this educational game includes covers, game instructions, game lists, rewards. The results of the development of early childhood educational games are as follows:

Educational game icon



**Figure 1. Game icon**



**Figure 2. Game front page**

The front page contained in the game contains greetings for dating, the title of an educational game, where the title is included in order to provide information and an overview to game users that this game guides children to be good at reading. On the cover there is also a background image of forest land and livestock which illustrates that the researcher uses an animal theme. The color of the text that contrasts with the background of the image makes the child

more interested in playing the game. on the cover also children will be directed into the game and game instructions.



**Figure 3. Game menu**

There are five types of games given, namely letter balloons, letter puzzles, stringing letters and stringing words.





**Figura 4. Letter Balloons**

Children guess the letter balloons instructed by the audio according to the sequence of vowels and consonants

**Figure 5. Letter Puzz**





**Figura 6. Suku Kata**

There are 9 syllables Ba, bi, bu, be, bo. Da, di, du, de, do. Fa, fi, fu, fe, fo, Ha, hi, hu, he, ho, Ka, ki, ku, ke, ko, Ma, mi, mu, me, mo, Pa, pi, pu, pe, po. Ra, ri, ru, re, ro. Sa, si, s





**Figura 7. Merangkai Huruf menjadi kata**

In this letter stringing game there are 8 slides of the game. Arrange the letters with the pet theme as follows: Chicken, Fish, Horse, Cow, Deer, Eagle, Cat, Rabbit



**Figure 8 stringing words into a sentence**

This word stringing game is a game that takes children to arrange words according to the pictures listed by clicking on the thick words below. Here are 6 sentences that the child will compose: Rabbit is eating carrots, Duck is swimming in water, Cow is eating grass, Monkey is eating banana, Bird is flying with wings, Mother hen and three chicks.

## 4. CONCLUSION

Reading ability is a determinant in the development of early childhood in the next stage. This study aims to develop educational games to improve children's reading skills. The method used is ADDIE. The development procedure in this study follows the sequence of activities in the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model. The steps taken after the product is made are validity test, practicality test and effectiveness test. The results obtained are game products have high validity, namely 83% in the very valid category, and 93% practicality in the very practical category. In terms of effectiveness, the success of this game development has been proven to be able to increase children's reading ability by 85%.

Educational games to improve early childhood reading skills are valid, practical and effective. The development of educational games has been innovated to be able to develop children's reading skills. This educational game can be played and run on the android application. This educational game is made in a way that is easily understood by children and is expected to be able to improve children's reading skills and can be guaranteed when they are at home during the pandemic.

## 5. SUGGESTION

Based on the conclusions and implications of educational games to improve the ability to recognize letters for early childhood in kindergarten, some suggestions can be made as follows:

For school principals, the results of this study can be used as input for fostering teachers in the use of interesting and fun educational games by children. For teachers in Kindergarten, to be able to use Educational Games to Improve Early Childhood Letters recognition in Kindergarten.

For parents, in order to understand every stage of child development so that they know the importance of stimulating aspects of child development by providing opportunities and experiences for children to increase their ability to recognize children's letters optimally.

Advanced researchers can Educational Games to Improve in Kindergarten with other themes. Readers are expected to use this article as a source of knowledge and knowledge to add insight

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