



Development of Educational Games for Collecting the Alphabet Based on Desktop

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Abstract. This study aims to determine the results of the development of an educational game application to compose the letters of the alphabet and to find out the response of educators about the application of educational games to compose the letters of the alphabet. This study uses the Research and Development (R&D) method with data collection techniques: observation, questionnaires, interviews, and documentation. The research procedures carried out are (1) analysis, (2) design, (3) design implementation, (4) testing, (5) expert validation, (6) feasibility test, (7) media improvement, and (8) producing a product educational game. Based on the results of the validation test, material experts and media experts are in the excellent category. Based on the questionnaire and the results of interviews related to user responses, educators appreciate the results of developing educational games because they can motivate students to recognize letters while playing. The results of the study also showed the development of students in recognizing letters, where the increase in student development in recognizing letters in the excellent category was initially 13.33%, increased to 33.33% in the moderate category, which was initially 24.45% increased to 46.67% and in there is less significant decrease where students who do not know letters are 62.22% and after being given educational games the ability to recognize letters of students in the fewer category changes to 20%.

Keywords: Alphabet · Educational · Improved learning · Games

1 Introduction

During this period, kids begin learning to spell and examine from an early age. That is very critical because it is miles our basis for knowing records. Nevertheless, in well-known, at an early age in kindergartens, they revel in difficulties in learning because the mastering styles of children who want to play are also very influential, and in order that theoretical studying is not the greatest to assist in facilitating teaching spelling and memorizing letters on the way to be later implemented in forms shapes like animals and gadgets that appearance appealing to younger youngsters [1].

Digital games using tablet and smartphone technology for children at home and school are one of the latest trends growing rapidly. Several experts are actively researching the benefits of digital games for children. Digital game-based learning can produce various forms of creative expression, improve thinking processes, and improve learning abilities in children [2]. Elements in digital games can empower children to be trained to think creatively to find solutions to problems that arise in real life [3].

Digital games can help children adapt to the real world, have a positive effect on children's mental health, and improve creative thinking skills according to the developmental age suggested by child psychologists [1]. As in child psychology studies, it is known that an important age for developing children's creativity is in the age range of 2–6 years, namely preschool age. This age range is the period when children begin to think imaginatively. Groups of children aged 2–6 years who have creative and imaginative activities are more active and happy, so they can more easily adapt to the future [4]. Individuals who develop creative thinking in childhood can better overcome negative psychology, as well as repeated negative thoughts. In addition, creativity helps children develop coping strategies and think adaptively [1]. Even though the trend of digital games is increasing rapidly and research on the benefits of digital games continues to be carried out, it is unclear whether digital games can increase children's creativity. Although many researchers agree that digital games have a positive impact, the data proving this assumption is still very limited.

Instructional video games are a shape of computer-assisted getting-to-know. PC-assisted getting to know has been extensively carried out in faculties. The improvement of tutorial games as a medium to help the learning procedure in elegance may be very popular these days [5]. This is because the development of facts generation presently is pretty fast. The PC-assisted mastering gadget is designed based on multimedia, combining visual, audio, and video elements to make it interactive. Academic recreation is a game that aims to arouse children's interest in studying to examine, and kids are trained by way of gaining knowledge while gambling. However, once in the game, in a round-about way, the technique of spotting letters and writing is strolling. Literacy schooling applications in Indonesian are supplied for kids aged 3 to 8 years.

Learning to introduce letters in early childhood is frequently added through trademarks, symbols, and phrases through items. Each letter has three major components as letter identification, first the form or function (image or brand), name (identification), and sound (phoneme) [6]. This method makes it very clean for children to learn to apprehend letters (shapes), pronounce names, and read letters. So, it makes it less complicated for youngsters to discover ways to read and write. Due to fact, children will know the sounds by listening to them. For instance, kids are invited to sound-letter with the aid of letters. Similarly, kids can see, for instance, the phrase "speak," and then the kid is invited to sound out each letter and then integrate the sound of these letters into phrases [7].

When spoken, even as displaying the supposed sounds, whether or not syllables or phrases, the child will get used to seeing the writing and reading sounds. For instance, a card with an ear picture on that is written "ear" with the letter "e" in formidable, the kid will search for the sound on which picture card has the letter "e" Invite the kid to ring the letter perhaps the kid calls it "ear" however, via knowing the sound of the letter "e", the

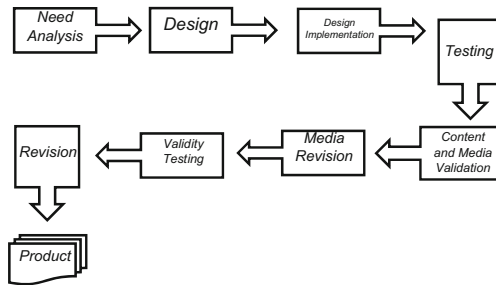


Fig. 1. Step of Research and Development (R&D) [10]

kid will study in step with the label, specifically “ear” [8]. There are several advantages of video games inclusive as: including boosting mind intelligence, extending creativity, can enhance reflexes, making people think fast, and mind nerve reflexes work speedily [6, 9].

2 Methods

The research method used is Research and Development (R&D). This method is used to produce specific products and test their effectiveness of these products. The population in this study were all students at an early childhood school in the city of Makassar. The sample used in this study was 30 students divided into two classes of 15 students each. The sample of this study will be used as the control class and experimental class in the implementation of trials on the results of the educational game development that has been carried out (Fig. 1).

After the development activities, there will be a 10-day classroom trial to measure the success of developing educational games.

3 Results and Discussion

3.1 Result

The results of the development of an educational game in teaching desktop-based alphabet letters to children are shown as follows (Fig. 2):

In this educational game, several features/menus have been developed to teach children to recognize letters: learning, playing, and singing. In the learning feature, there are several button options for the select learning menu that the user can select. These include Uppercase, Object Name, and Lowercase buttons. Moreover, accompanied by a button to return to the main menu and a button to exit the game (Fig. 3).

The play feature is on the main page options in this application, in which there are five choice buttons, namely, Guess the Letter, Arrange the Letters, Guess the Image, and the button to return to the main page and the exit button (Fig. 4).

The singing feature is a page where users can see and sing along with the accompaniment of songs and display letters that change according to the musical accompaniment (Fig. 5).

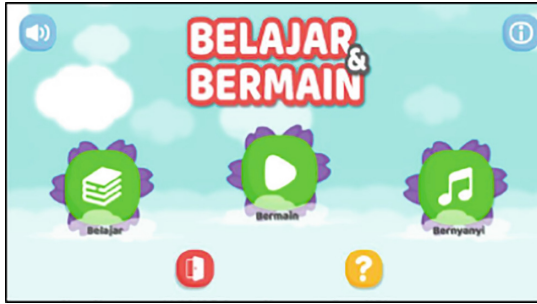


Fig. 2. Main Page Interface



Fig. 3. Learning Page Interface

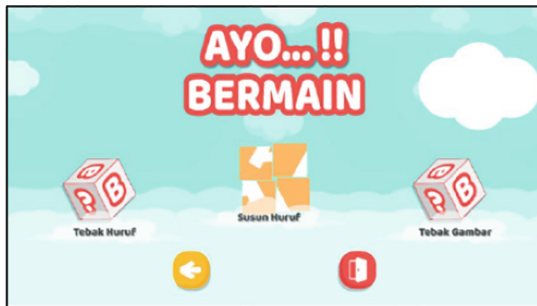


Fig. 4. Playing Page Interface

Testing the effectiveness and success of the results of developing this educational game, we implemented this educational game application in one of the early childhood schools in the city of Makassar. In the trials, we observed two classes at the same level. One test class will use educational games, and one control class that continues to learn to recognize letters using methods from school. The ability to recognize letters after learning will also be divided into three categories: the ability to say letter symbols, the ability to show letter symbols, and the ability to connect letter symbols. Based on the results of the initial observations made, the abilities of the students in the pilot class

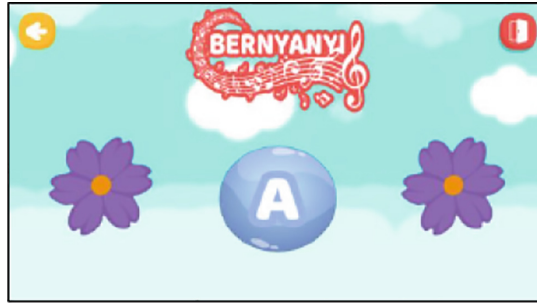


Fig. 5. Singing Page Interface

(Class A) and the control class (Class B), with a total of 15 students in each class for letter recognition activities, are presented as follows (Tables 1, 2 and 3):

Based on these observation activities, learning is then carried out for activities to recognize letters with these two classes. Class A carried out letter recognition activities using developed educational games, and class B carried out letter recognition activities using methods from the school. Implementation of learning for letter recognition activities carried out for ten days. The results of the evaluation after learning activities on letter recognition activities for class A and class B are shown in the following (Tables 4, 5 and 6):

Table 1. Percentage of Initial Ability to Mention Letter Symbols

Class	Good (%)	Moderate (%)	Less (%)
Class A	20	26.67	53.33
Class B	26.67	33.33	40

Table 2. Percentage of Initial Ability to Show Letter Symbols

Class	Good (%)	Moderate (%)	Less (%)
Class A	13.33	26.67	60
Class B	20	26.67	53.33

Table 3. Percentage of Initial Ability to Linking Letter Symbols

Class	Good (%)	Moderate (%)	Less (%)
Class A	6.67	20	73.33
Class B	13.33	13.33	73.33

Table 4. Percentage of Ability Evaluation Results to Mention Letter Symbols

Class	Good (%)	Moderate (%)	Less (%)
Class A	33.33	53.33	13.33
Class B	33.33	40	26.67

Table 5. Percentage of Ability Evaluation Results to Show Letter Symbols

Class	Good (%)	Moderate (%)	Less (%)
Class A	40	46.67	13.33
Class B	26.67	33.33	40

Table 6. Percentage of Ability Evaluation Results to Linking Letter Symbols

Class	Good (%)	Moderate (%)	Less (%)
Class A	26.67	40	33.33
Class B	20	26.67	53.33

Based on the initial ability observation table and the evaluation results table, it can be seen that the average learning outcomes after using educational games have increased more rapidly for students related to letter recognition activities compared to using the methods applied by schools.

3.2 Discussion

Improved learning outcomes based on initial observation tables and evaluation results tables after learning with the educational game method and the methods applied by the school. The increase was seen in all three categories of ability in letter recognition. The average increase in letter recognition to the third category in recognition of letters in the excellent category for class A, which used educational games, increased 20% to 33.33% from 13.33% previously, while in class B, which used the method used by the school increased 6.67% to 26.67% which was previously 20%. In the moderate category, the increase in class A was quite significant, namely 22.22%, from 24.45% previously to 46.67%, while in class B, it increased by 8.89%, from 24.44% previously to 33.33%. Furthermore, in the less category, there was a significant decrease in class A, namely 42.22% from the previous 62.22% to 20%; in class B, there was a decrease of 15.55% from the previous 55.55% to 40%.

Based on the results of the research conducted, it can be seen that in learning letter recognition with methods that use educational games, there is a better improvement compared to the methods used by previous schools. The use of educational games that can increase learning outcomes is also following Fathahillah research [5] which shows that

after learning to use educational games, there is an increase in learning outcomes where previously students who passed according to the Minimum Passing Criteria (KKM) were 4.71% in the pretest increasing to 70.83% on the post-test.

4 Conclusion

Based on the results of research that has been done, it can be concluded: (1) The development of this educational game uses R & D stages and produces an educational game for desktop-based alphabet recognition for children; (2) The trial results show that the results of developing educational games for letter recognition can increase children's knowledge in mentioning, showing and connecting letter symbols.

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