



Development of Smart Pocket Learning Media to Improve the Ability to Recognize Number Concepts in Children Aged 5-6 Years

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ABSTRACT

This study aims to produce valid Smart Pocket learning media to improve symbolic thinking skills in children aged 5-6 years. This research is a development research with the development model used by Sugiyono. In this study, researchers only used 7 (seven) stages, namely knowing problems and potential, data collection, product design, design validation, design revision, product trials and product manufacturing. The next stage was not carried out due to cost and time constraints. The data collection technique used is a questionnaire, where the questionnaire is validated by material experts, media experts and educators. The type of data generated is quantitative and qualitative data. The average percentage result of the pretest conducted on 3 children is 10.3%, proving that the child's condition is still in the stage of starting to develop. Then the posttest is carried out, namely the condition after the child is given Smart Pocket media, the average percentage result of this posttest is 16% which proves that the child has changed the condition to develop as expected. So it can be concluded that Smart Pocket media to improve the ability to think symbolically for children aged 5-6 years has met the criteria for validity.

Keywords: Early Childhood, Smart Pockt, Symbolic Thinking

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INTRODUCTION

Cognitive is a process of thinking, namely the ability of individuals to connect, assess, and consider an event or event (Adelantado-Renau, 2019; Adhia, 2019; Afifi, 2019). The cognitive process is related to the level of intelligence that marks a person with various interests, especially those aimed at ideas and learning (Al-Khowarizmi,

2021; Allsop, 2019; Bellis, 2019). Cognitive development is needed for the development of cognitive abilities, such as classifying, recognizing numbers, recognizing geometric shapes, recognizing size, recognizing the concept of space, recognizing the concept of time, recognizing various patterns, and others that can be applied in their daily lives (Amir, 2018; Benzing, 2018; Blankenship, 2019). One of the cognitive abilities that need to be developed is the ability to recognize numbers (Al-Khowarizmi, 2021; Bialystok, 2018; Blankenship, 2019).. One aspect of cognitive development is the development of the ability to recognize numbers from 1-10, as stated by Sriningsih that educational practices in recognizing numbers for early childhood in various early childhood education institutions both formal and non-formal channels have often been carried out Children's ability to recognize number symbols is at the stage of calling the number sequence from 1-10, connecting or pairing number symbols with objects up to 10 (not told to write).

Counting ability is one of the cognitive abilities that must be built early, one of which can begin to be taught to children in PAUD (Ainscow, 2020; Akbari dkk., 2022; Al Ayub Ahmed dkk., 2022). In accordance with the PAUD curriculum, one of the competencies that must be understood by children is mathematical counting, better known as beginner counting skills (- Lie dkk., 2020; Adeleke, 2019; Adhia, 2019). The ability to count includes characteristic abilities that start from the closest environment, namely the family, then only to the next stage of counting, namely the simple addition and subtraction stages (Akbari dkk., 2022; Akbay & Delibalta, 2020). As for those who explain that the definition of beginner counting ability is the counting ability of a child whose development starts from the surrounding environment and increases and can solve addition and subtraction problems of numbers 1 to 10 (Mirantika, 2020). The use of media is very important to improve children's counting ability. The definition of learning media according to Guslinda is anything that can be used to provide stimulus to students' thoughts, feelings, attention, and learning interests so that learning objectives can be achieved as planned.

As for some variables in the cognitive development of children aged 5-6 in symbolic thinking, namely mentioning number symbols 1-10, using number symbols to count, matching numbers with number symbols. Play is the most effective approach in carrying out learning activities in early childhood, because with fun activities and using strategies, methods, materials and media that can attract children's attention can be easily understood by students (Abidi dkk., 2020; Afandi, 2021; Akyeampong dkk., 2021). Ways that can be done in developing the concept of number include using supporting facilities in the form of props or game tools that can be used by children in learning activities (Abdelaliem dkk., 2022; Ahmadipour, 2022; Ainscow, 2020). The development of children's symbolic thinking requires the right learning strategies and media to be maximally successful in learning. One of the media that can be used to improve children's symbolic thinking skills is smart pocket. The form of learning media is based on games that aim to convey a learning activity to students.

Based on the results of observations made by researchers at KB. Raudhatul Jannah, there is a problem of children who show delays in cognitive abilities, especially in children's symbolic thinking skills and need to be stimulated. This is due to the lack of recognizing number symbols to count, matching numbers with number symbols, presenting various objects in the form of pictures or writing and not having the initiative in the learning process. From these problems, researchers need to overcome and create learning activities to improve cognitive abilities, especially the ability to think symbolically in children, using games. The Smart Pocket game is a game made from cardboard pasted with panel cloth that resembles a pocket / pocket and ice cream sticks as a tool for counting. The purpose of this study is to determine whether developing Smart Number games can improve the ability to think symbolically for children aged 5-6 years at KB. Raudhatul Jannah.

Smart Pocket development developed by researchers is on numbers 1-10. In the previous Number Pocket, there were only numbers 1-10 in each pocket, then the child would adjust the numbers in the pocket with the sticks provided. The researcher's update is by being able to change or replace the numbers using adhesive Velcro where children can not only mention the number symbols from 1-10 but can also match the numbers with the symbols so that children's symbolic thinking skills can be optimally stimulated. In connection with this, the author intends to conduct research and development.

LITERATUR REVIEW

Symbolic thinking

In education, cognitive development is an important aspect of learner development that relates to how learners learn and think about their environment. Cognitive is understood as the child's ability to think more complexly as well as the ability to do reasoning and problem solving (Desmita, 2010). Developed cognitive abilities will facilitate children in mastering other general knowledge so that they can carry out their functions in broad social interactions. In Piaget's theory, cognitive development is built on the viewpoints of structuralism and constructivism. Structuralism point of view is seen from his view of intelligence that develops through a series of developmental stages characterized by the influence of the quality of cognitive structures. Meanwhile, the constructivism point of view can be seen in its view of cognitive abilities that are built through interaction with the surrounding environment (Basri, 2020). The development of children's cognitive abilities, referring to Piaget's theory, is influenced by 6 factors, namely heredity / heredity, environmental factors, maturity factors, formation factors, interest and talent factors, and freedom factors.

The stages of development of human cognitive abilities are divided into several phases. Piaget divides the development of human cognitive abilities according to age into 4 stages, namely (1) Sensory Stage (Sensori Motorik) which occurs at the age of 0-2 years, (2) Preoperational Stage (Preoperational) occurs in the age range of 2-7 years, and (3) Concrete Operational Stage. Thus according to the stage of cognitive

development above, early childhood is in the preoperational stage, where at this stage, children begin to represent the world with words and images. These words and images indicate an increase in symbolic thinking and go beyond the relationship of sensory information and physical action. The way children think at this level is unsystematic, inconsistent, and illogical (Marinda, 2020).

Symbolic thinking ability is the initial stage of pre-operational thinking, where children begin to mentally imagine an object that is not in front of them. Another opinion states that symbolic thinking ability is a pretend process, early childhood

Express symbolic thoughts by re-enacting an action from parents, or caregivers using a variety of objects. Piaget (1950) also argues that symbolic thinking is that children begin to be able to present an object that is not present through crossing out a picture of a house, person, car, cloud, or other objects. Opinions according to Collins and Laski (2019) state that children aged 5-6 years are important to learn number symbols and letters so that they are able to count and read. Seefeldt and Wasik (2008) also state that children are important to learn number symbols, because they aim to develop sensitivity to a number. According to Berlyne (in Santrock, 2007: 217) describes play as something interesting and fun because it satisfies our exploratory impulses. This impulse involves curiosity and the desire for information about something new and unusual. Games are also a tool through which children can explore and seek new information by offering children the possibility of discovery, complexity, uncertainty, surprise and strangeness. An example is the magic pocket game.

Smart Pocket Media

The number pocket is a simple tool that aims to make it easier for students to understand simple number concepts. This media is rectangular with several boxes attached or called number pockets. The number pockets are used to determine the value of a number. Meanwhile, the straws or sticks in this media are used to determine the number of a number. Raharjo in Martianti Narore in Siti Zulaichah (2014) suggests that number bags are concrete media in the form of bags filled with sticks or straws. In line with the above statement, Heruman (2007: 08) explains that number bags are made in the form of pockets as a storage area and attached to a piece of cloth or paper. The bag symbolizes the place value of a number. While the straw itself is used as a filler for the available pockets as an indicator of the number of numbers to be counted. The benefits of using number bags media in learning are (1) Increasing interest and encouraging students to pay more attention to lessons, (2) Focusing students' attention, (3) Moving a thought into a real and actual situation. By using the number bag media tool and through the delivery of interesting material from the teacher, it is hoped that students can be more motivated in the learning process and more clearly provide lessons so that there is no verbalism knowledge (Ratnasari, n.d.).

The tools and materials used in making this Smart Pocket are used cardboard, panel cloth, ice cream sticks, hot glue, and scissors. How to play this Smart Pocket is the teacher who has provided the media, then asks the children to put the ice cream sticks into the number pockets according to the teacher's direction, then the teacher

chooses the children in turn to come forward and be able to put the ice cream sticks into the pockets that match the number symbols that are available.

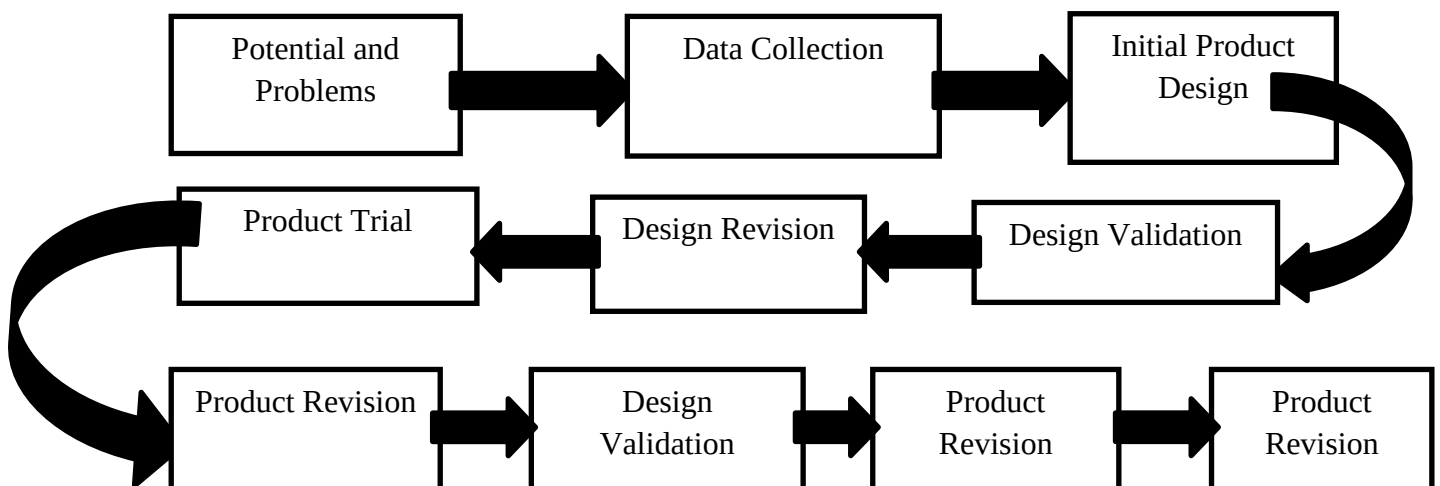
RESEARCH METHODOLOGY

The method used in this research is R&D/Research and Development. Research and development method or in English Research and Development is a research method used to produce certain products, and test the effectiveness of these products. Development or Research and Development (R&D) is a process of developing educational devices carried out through a series of research using various methods in a cycle that goes through various stages. The definition of development according to Amile and Reesnes, R&D is a process of developing educational devices carried out through a series of research using various methods in a cycle that passes through various stages (Sugitono, 2013).

The development used in this study is to use the RnD development procedure according to Borg and Gall which consists of 10 stages of research. The stages put forward by Borg and Gall are as follows:

Figure 1 Stages of R&D Development

Gambar 1 Tahapan Perkembangan R&D



Potential and problems, this research and development is motivated by potential and problems. The potential in this research and development is the rapid development of early childhood learning media, especially smart pocket media. This development can be implemented in the world of education so that it becomes its own potential. Based on the results of research conducted at one of the KB. Raudhatul Jannah regarding learning media that focuses on symbolic thinking by using the same media such as only using a blackboard, so that children feel bored in these learning activities. Data Collection, which is after the researcher finds the problem and the potential of the problem, then the researcher starts to collect data and information. This research seeks information by analyzing what will be studied and to find information about the conditions and situation of learning activities. At this stage of the research, researchers collect data and information gradually in developing products including by looking for

material studies related to aspects of symbolic thinking development for children aged 5-6 years, looking for reference books related to the development of smart pocket media to stimulate symbolic thinking for children aged 5-6 years. Initial Product Design, planning the material from the development of smart pocket media, designing designs on smart pocket media related to size, structure, color and shape, making steps in making smart pocket media, attaching pockets to the media and providing ice cream sticks that have pictures, making steps in playing smart pocket. Design Validation, at this stage after the initial product is completed, then validation to a team of experts consisting of material experts and media experts as follows; Material experts examine aspects of material study in the form of material feasibility and media experts examine elements of suitability and ease of use of the media. Design Revision, this step is an improvement in the smart pocket media design based on the input provided by the material and media experts. This improvement is very likely to be done more than once so that a main smart pocket can be obtained that is ready for wider testing. Product trials, in the field of education product design can be tested immediately after validation and revision. Testing is carried out with the aim of obtaining information on whether the product is effective and feasible to use. The steps taken to test smart pocket products are: 1) directing how to play smart pocket to children aged 5-6 years, 2) children listen, 3) Researchers do recalling to children about the contents of the smart pocket. The final product, this step is a refinement of the smart pocket media being developed. Refinement of smart pocket media is very necessary for more accurate media developed based on input or feasibility test results on a small scale. At this stage, a smart pocket media has been obtained whose effectiveness can be accounted for. The results of the final smart pocket media refinement have a reliable generalization value.

RESULT AND DISCUSSION

Smart pocket is an innovative learning media that aims to improve early childhood symbolic abilities. This media is made with materials that are easily available and equipment that is quite cheap. The materials and equipment used to make this media are:

- 1) Cardboard
- 2) Fabric panel
- 3) Glue gun
- 4) Ice cream stick
- 5) Cardboard paper
- 6) Scissors
- 7) Picture of numbers 1-9
- 8) velcro

The process of making media with the above materials is done in several stages. First, cut out the cardboard as needed. Cutting the flannel fabric by forming like 11 shirt pockets and cutting the flannel fabric to form ice cream. The next stage is to attach the cardboard paper to the cardboard that has been cut before, then attach the pocket-shaped

flannel cloth using hot glue, after attaching the next flannel cloth is to attach Velcro in the middle of the flannel cloth and attach the number image. Next, attach the ice cream-shaped flannel cloth image with Velcro using hot glue to the ice cream stick. The reason for sticking using Velcro is so that it is easily replaced with the learning that will be carried out, for example, such as introducing letters or teaching children about addition. The way to play is only by inserting ice cream sticks with pictures of fruits according to the predetermined numbers. By using ice cream attached to ice cream sticks, children can count concretely.

This research test was conducted on 3 children aged 5-6 years in Parakanlima Village. The first test was conducted at the beginning before the child was given Smart Pocket media. The results of the pretest on these 3 children are as follows:

Table 1. Pretest Results

No	Name	Value
1.	AFA	12
2.	NAP	18
3.	APA	11

$$\frac{\sum xi}{n}$$

$$\frac{12+8+11}{3}$$

Me = 10,3%

Description:

Me = Average Value
= Number of values of each aspect component

Table 1 shows the value of each child who has been tested using a questionnaire that has been prepared which is certainly related to the symbolic thinking indicators of children aged 5-6 years. The score obtained by AFA is 12, NAP is 8 and APA's score is 13. The average result of the pretest conducted on AFA, NAP, and APA is 10.3%. With these results, it can show that these 3 children are still in the stage of starting to develop in symbolic thinking skills.

Table 2. Posttest results

No	Name	Value
1.	AFA	17
2.	NAP	15
3.	APA	16

$$\frac{\sum xi}{n}$$

$$\frac{17+15+16}{3}$$

Me = 16%

Description:

Me = Average Value
= Number of values of each aspect component

Table 2 above shows the results of the posttest conducted on 3 children aged 5-6 years. This posttest is a condition after the child is given Smart Pocket media. Table 2 explains that AFA got a result of 17, NAP got a score of 15 and APA got a score of 16. For the average result of the value of AFA, NAP, and APA this child is 16%. These results can explain that the condition of the 3 children after being given Smart Pocket media changed to Developing As Expected. That way this Smart Pocket media has very valid criteria to be given to children aged 5-6 years in developing symbolic thinking skills. From the results of the trials conducted, it can be concluded that the use of Smart Pocket media in learning makes children enthusiastic and feel happy. This Smart Pocket is very influential to improve the ability to think symbolically for children, which by using an interesting educational game tool can arouse the enthusiasm for learning in children.

In developing the ability to recognize children's number symbols, various stimulations can be given, one of which is by providing media. In line with Febriyani's research, it is stated that in the teaching and learning process the presence of media has an important meaning. Because in these activities the vagueness of the material presented can be helped by presenting the media as an intermediary. Students' learning activities with the help of the media will produce better learning processes and results than without media assistance (Febriyani, 2014). In line with this statement, Yusianti also stated that activities to introduce number symbols are expected to use media that are interesting, creative and fun for children so that the learning process is easy for children to accept by using Smart Pocket (Yusianti, 2016). One of the media that can improve symbolic thinking skills in children is Smart Pocket media.

CONCLUSION

Smart Pocket media is categorized as effective for use as an attractive media in symbolic thinking skills. Thus it can be concluded that Smart Ppocket media is a learning media that is feasible and effective to use as learning to recognize concepts and symbols of numbers 1-10 in children aged 5-6 hold (group B).

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