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Developing Ability to Collect Patterns Using Natural Material Media in Class IV Students

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Abstract
This research is based on the results of observations and experiences of researchers, that cognitive ability in compiling patterns is still low. The use of natural material media will be more fun for children in compiling patterns, because natural material media are very interesting for children. Based on this background, the problems studied were formulated, namely: "Can using natural material media develop the ability to compose patterns in fourth grade students?". This study uses a Classroom Action Research (CAR) approach with a sample of fourth-grade students in an elementary school in the city of Mataram. This research was conducted in three cycles, using an assessment instrument in the form of sheets of the ability to compose patterns with natural materials media and teacher observation sheets. The results of this study, namely the media of natural materials proved successful and able to develop the ability to compose patterns in fourth-grade elementary school students. This can be seen from the results of data analysis on the use of natural media in the first cycle reaching 58.34%, the second cycle 70.84%, and the third cycle 87.50%. Based on the results of the study, it can be concluded that the act of learning through the use of natural media can develop the ability to compose patterns in fourth-grade students in elementary schools.
Keywords: *natural media; pattern; elementary school*

Abstrak
Penelitian ini dilatar belakangi hasil pengamatan dan pengalaman peneliti, bahwa kemampuan kognitif dalam menyusun pola masih rendah. Penggunaan media bahan alam akan lebih menyenangkan bagi anak dalam menyusun pola, karena media bahan alam sangat menarik bagi anak. Berdasarkan latar belakang tersebut dirumuskan permasalahan yang diteliti yaitu: "Apakah dengan menggunakan media bahan alam dapat mengembangkan kemampuan menyusun pola pada siswa kelas IV?". Penelitian ini menggunakan pendekatan Penelitian Tindakan Kelas (PTK) dengan sampel 30 Siswa kelas IV di SDN 26 Ampenan, Kota Mataram. Penelitian ini dilakukan dalam tiga siklus, menggunakan instrumen penilaian berupa lembar hasil karya kemampuan menyusun pola dengan media bahan alam dan lembar observasi guru. Hasil penelitian ini, yaitu media bahan alam terbukti berhasil dan mampu mengembangkan kemampuan menyusun pola pada siswa kelas IV Sekolah Dasar. Hal ini dapat diketahui dari hasil analisis data penggunaan media bahan alam pada siklus I mencapai 58,34%, siklus II 70,84% dan siklus III 87,50%. Berdasarkan hasil penelitian dapat disimpulkan bahwa Tindakan pembelajaran melalui penggunaan media bahan alam dapat mengembangkan kemampuan menyusun pola pada siswa kelas IV di Sekolah Dasar.
Kata Kunci: media alam; pola; sekolah dasar

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INTRODUCTION

Elementary school education is a coaching effort aimed at children from birth to the age of six which is carried out through the provision of educational stimuli to help physical and spiritual growth and development so that children have readiness to enter further education (Freitag et al., 2013). According to the NAEYC (National Association for Education of Young Children), children are individuals who are in the age range of zero to eight years. In this age range, children experience a golden age, where children begin to be

sensitive or sensitive to receive various stimuli. Aspects of child development will be seen both in aspects of religious and moral values, socio-emotional, cognitive, language, physical-motor and artistic (O'Connor & Scott, 2007). One of these developmental aspects is cognitive development which must develop according to the age level. Based on observations made by researchers, it shows that learning outcomes in aspects of cognitive development form patterns in group children (Trenado et al., 2018).

Cognitive development in compiling patterns in students tends to experience saturation. There are indications of the emergence of this saturation due to the use of media in the introduction of the concept of an inappropriate and unattractive pattern sequence and the lack of motivation from the teacher to stimulate children's activities so that children are less active in learning. For that we need new media in learning in the field of cognitive development (Roblyer & Doering, 2014). The chosen alternative is to use natural materials media. Cognitive is a thought process, namely the ability of individuals to relate, assess, and consider an event or events. Cognitive processes are related to the level of intelligence (intelligence) that marks a person with various interests, especially those aimed at ideas and learning (Usmaedi et al., 2020);(Chakrabarti et al., 2018); (Klosterman, 2017).

Based on the results of a preliminary study conducted on 20 students in grade IV SDN 26 Ampenan. It was found that the fourth grade students still had difficulties in finding number patterns in the number sequence material. The results of interviews with teachers also stated that students still had problems in determining unknown numbers based on known number information. Based on the results of the test questions given, it is known that students who can determine number patterns can be seen in Figure 1.

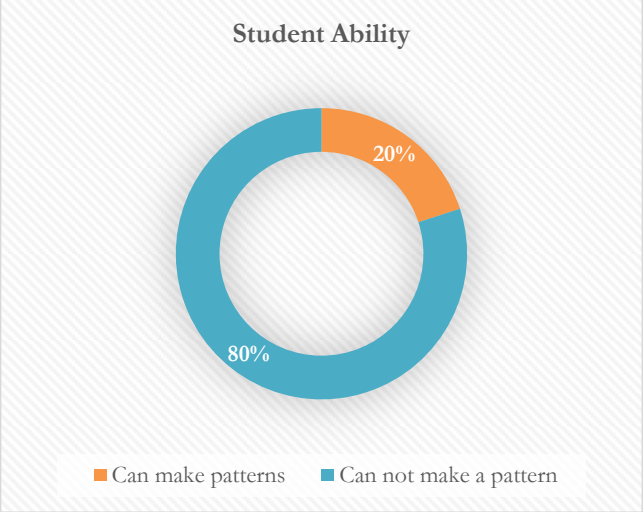

Figure 1. Preliminary Study Result

Patterning is arranging a series of colors, parts, objects, sounds and movements that can be repeated. The ability to recognize patterns in early childhood starts from simple things to more complex things. the pattern that what needs to be developed is to arrange things repeatedly, such as the AB-AB and ABC-ABC patterns in group A children. Meanwhile for group B is the ABCD-ABCD pattern (Banerji & Chavan, 2016). Learning media is an intermediary tool (means) to deliver learning material, so that the desired material can be conveyed appropriately, easily, and is accepted and understood as it should be by students (Uricchio, 2018). According to Sudjana (in Flood et al., 2018) natural materials are materials that are directly obtained from nature. Natural materials that can be used as playing media include: rocks, wood and twigs, seeds, dry leaves, midribs and bamboo (Saputri et al., 2020).

RESEARCH METHOD

The type of research used is Classroom Action Research. Classroom Action Research (CAR) used refers to the Kemmis & Taggart model design (Mertler, 2017). The implementation of this classroom action

research is located in one of the elementary schools of 26 Ampenan in the city of Mataram. The research time starts from the research permit until reporting. The subjects in this study were fourth grade students at the elementary school level with a total of 24 students, consisting of 15 boys and 9 girls. Only 8 children who can complete the task of compiling patterns well.

The procedure used in this research is classroom action research. The Classroom Action Research (CAR) design model used refers to the Kemmis & Taggart model design (in Temple-Smith et al., 2009) by using 3 (three) cycles and each cycle consists of 4 (four) stages, namely planning, implementation, observation and reflection. The four steps are one cycle or one round, meaning that after the fourth step in cycle I then carry out the first step in cycle II and so on sequentially. The type of data needed is data about the ability to compose patterns in grade IV elementary school students and data about the implementation of learning activities when the action stage of classroom action research is carried out. The data collection technique in this research is the technique of the work of using the instrument of the guide / rubric of the work.

The data analysis technique to test the action hypothesis in this study is a quantitative descriptive technique by comparing learning completeness (percentage who received 3 stars and 4 stars) between the time before the action was taken, the first cycle of action, the second cycle of action, and the third cycle of action (Jennings, 2018). The criteria for the success of the action is an increase in learning mastery (after the third cycle of learning completeness reaches at least 75%).

RESULT AND DISCUSSION

1. Cycle 1

From the results of the assessment on learning activities to compose patterns using natural material media in cycle I, it is known that the ability to compose patterns of students is as many as 14 children or 58.34% including the category of ability to compose patterns using natural materials media completely and 10 children or 41.67 % unfinished. This is because children still have difficulty in sorting the arrangement of patterns that have been taught by the teacher and the obstacles that occur in the sticks used to insert the rope into the holes of natural materials that often come off so that children have difficulty.

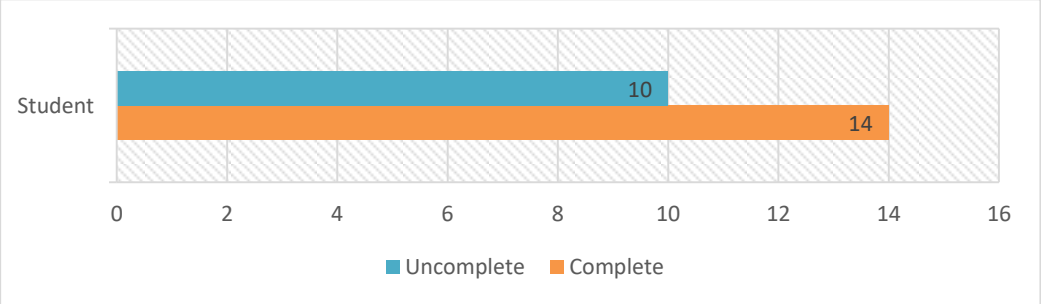

Figure 2. Learning Mastery Results in Cycle 1

Based on data analysis (Figure 2), it shows that teachers have not been able to manage learning activities optimally. This can be seen from the activities of students in learning activities to compose patterns using natural material media in the first cycle of activities, there are still children who do not pay attention when the activity takes place. From the results of data analysis, it can be obtained that the activities of students using natural media media can develop the ability to compose patterns in children. Meanwhile, the teacher's activities during the learning activities have not been maximized. This can be seen from the teacher's activities when explaining the learning objectives at the beginning of the activity.

2. Cycle II

From the results of the assessment on learning activities to compose patterns using natural material media in cycle II, it is known that the ability to compose patterns of children in group A2 is 17 children or 70.84% including the category of ability to compose patterns using natural material media completely and 7

children or 29,16% unfinished. Because children still have difficulty in sorting the arrangement of patterns that have been taught by the teacher and the obstacles that occur during learning activities. The condition of the class and its surroundings that do not support learning activities on that day.

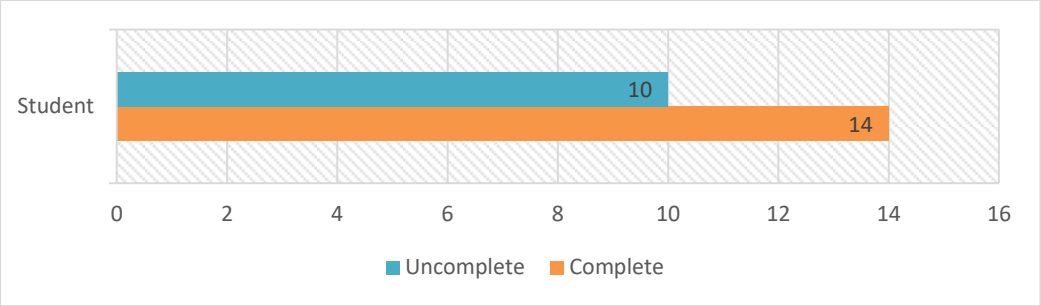

Figure 3. Learning Mastery Results in Cycle 2

Based on data analysis (Figure 3), it shows that teachers have not been able to manage learning activities optimally. This can be seen from student activities in learning activities to compose patterns using natural material media in cycle II activities there are still children who do not pay attention when the activity takes place. From the results of data analysis, it can be obtained that the activities of students using natural materials media can develop the ability to compose patterns in students. Meanwhile, the teacher's activities during the learning activities have not been maximized. This can be seen from the teacher's activities when explaining the material and introducing natural material media to students.

3. Cycle III

From the results of the assessment on learning activities to compose patterns using natural material media in cycle III, it is known that the ability to compose patterns of students is 21 students or 87.50% including the category of ability to compose patterns using natural materials media completely and 3 students or 12.50 % unfinished. Because some children still have difficulty in sorting the arrangement of patterns that have been taught by the teacher. Students have difficulty when compiling the sequence of the third and subsequent patterns.

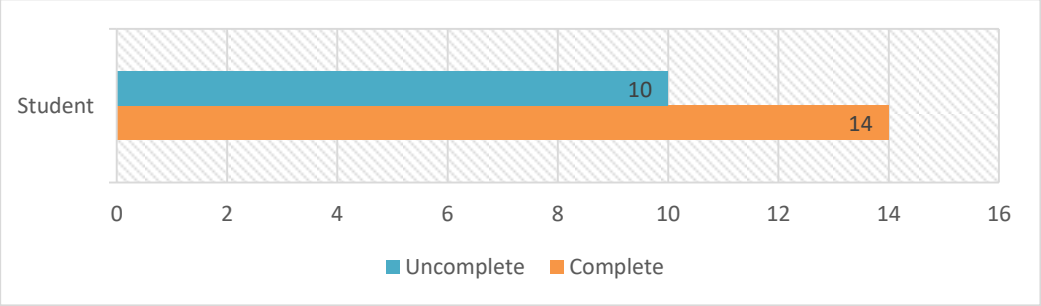

Figure 4. Learning Mastery Results in Cycle 3

Based on data analysis (Figure 4), it shows that teachers are able to manage learning activities optimally. This can be seen from the activities of students in learning activities to compose patterns using natural material media in cycle III activities that have reached 75% completeness. From the results of data analysis, it can be obtained that students' activities using natural material media can develop the ability to compose patterns in students. Meanwhile, the teacher's activities during the learning activities have been maximized. This can be seen from the teacher's activities when explaining the material and introducing natural media media to children and the activeness of inviting children in learning activities. Therefore, the researcher decided to complete the action in cycle III. Based on the results of observations made in the first cycle to the third cycle, there was a significant increase in each cycle.

Efforts to improve the quality of learning are carried out in several ways, for example, teachers increase the provision of motivation to students through awarding students who get the highest score on the evaluation of learning outcomes and actively participate in learning (Indrianto & Fatmawati, 2020). Thus students become more active and focus when participating in the learning process. In presenting the initial information, the teacher optimizes the use of learning media to clarify the learning material. Besides that, the teacher improve the provision of guidance to students who are still not able to be independent in carrying out learning activities (Powell et al., 2017). When doing reflection activities at the end of the lesson, students are given the widest opportunity to deepen the material being studied and increase their understanding of the subject. These efforts are able to help students master the material being studied so that their learning experiences are more meaningful and can last longer in students' memories. This can be seen in the table 1.

Table 1.1 Results of Cycle Pattern Cognitive Ability Assessment Using Natural Materials Media Action I to Action Cycle III

No	Score	Pre Action Research	Cycle I	Cycle II	Cycle III
1	<50	0%	0%	0-%	0%
2	51-65	67%	41%	29,1%	12,5%
3	66-75	20%	25%	29,1%	25%
4	76-100	13%	33%	41,6%	62,5%
	Sum	**100%**	**100%**	**100%**	**100%**

Based on table 1, it can be seen that the results of the cognitive ability assessment set a pattern during the first cycle of action, children who get a score of <50 reach 0%, then students who get a score of 51-65 are 41.67%, children who get 66-75 are 25% , while children who get a score of 76-100 are 33.34%. Based on the table above, a graph can be made as follows:

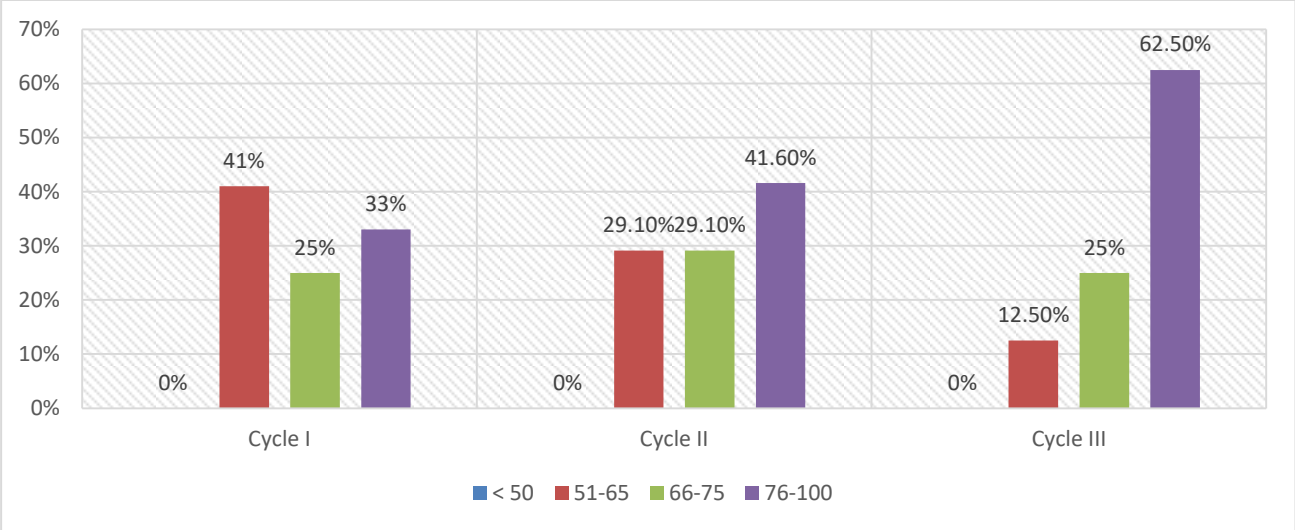

Figure 5. Results of Assessment of Cognitive Ability to Arrange Patterns Using Natural Materials Media Action Cycle I to Cycle III Action

Examining figure 5, it can be seen that the results of the cognitive ability assessment set up a pattern during the first cycle of action, children who get a score of <50 reach 0%, then children who get a score of <50 get a score of 51-65 as much as 41.67%, children who get a score of 66-75 are 25%, while children who get a score of 76-100 are 33.34%. Based on the observations that have been made in the first cycle of action, the results of which have not reached the criteria for completeness, it is necessary to carry out the second cycle of action to improve the ability to develop patterns through the use of natural media.

Fatmahanik (2018) stated, the pattern can be as a systematic arrangement of numbers or shapes which follows a given rule. The statement explains that the pattern is a systematic order of arrangement based

on objects, symbols, numbers, forms that are interconnected. This study uses three-dimensional geometric shapes in the form of cubes, tubes and balls using red, yellow and green colors. Nurmawanti et al. (2016) revealed that the activity of sequencing patterns can help children develop knowledge about the sequence of knowledge and skills connection. In addition, the ability to recognize patterns will help children develop skills used in sorting, classifying, identifying shapes and graphing. To understand patterns, children must able to identify color, shape, size, texture, position and quantity. Copley in (Yulmasita Bagou & Suking, 2020) explains many studies have proven that focusing on the concept of patterns is very effective in facilitating children's ability to make generalizations about number combinations, counting strategies, and problem solving. The characteristics of the development of logical thinking for children aged 4-5 years or group A according to Permendikbud No 137 of 2014 include; (1) classify objects based on function, shape, or color or size; (2) recognize the causal phenomena associated with him; (3) classifying objects into the same group or similar groups or paired groups with 2 variations; (4) recognize patterns (eg, AB-AB and ABC-ABC) and repeat them and; (5) sort objects based on 5 series of sizes or colors (Rahmah et al., 2020).

Early childhood is the most appropriate time to optimize all aspects development of the child. One aspect of development that needs to be developed for early childhood is cognitive development, namely the ability to solve problems problems or the ability to relate, assess and consider things. Aspect Cognitive learning in early childhood can be developed through learning to sequence patterns. According to Purnamasari, Ribka Yulista (2021), the pattern is a systematic order of arrangement based on objects, symbols, numbers, mutually relate. Relationships that occur can be based on size, color, and shape. Based on the indicators in Permendikbud No 137 of 2014 concerning National Standards Early Childhood Education, group A children must be able to recognize patterns (eg, AB-AB and ABC-ABC) and repeat it. The ability to sort patterns is very important because sequencing patterns can help children to develop thinking skills early childhood logic. Edwards et al. (2018) explain that sequencing patterns can help children to start exploring the concept of relationship in ability he thought. Relationship concepts such as the order of size, shape, number, color in the life. Meanwhile, children who have difficulty in sequencing patterns will have difficulty in understanding mathematical language related to preparation and observation.

CONCLUSION

Based on the results of research and discussion, it can be concluded that the act of learning through the use of natural media can improve the ability of fourth grade students at the elementary school level in elementary school of 26 Ampenan. In the future, research related to the ability to make this pattern can be deepened with qualitative research. This can deepen information regarding why students have difficulties and what difficulties are experienced when students make patterns.

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