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IMPROVING PATTERN CLASSIFICATION THROUGH BEADING ACTIVITIES TO DEVELOP COGNITIVE SKILLS OF CHILDREN AGED 5–6 YEARS

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Abstract:

Cognitive development in early childhood is an essential aspect related to logical thinking skills, one of which can be fostered through pattern classification activities. Children's cognitive abilities can be enhanced through interactive learning activities and the use of concrete media. This classroom action research aimed to improve pattern classification skills through beading activities for children aged 5–6 years at TK Pembina Liunggunung. The study was conducted using the Kemmis and McTaggart spiral model, which consists of planning, action, observation, and reflection stages, carried out in two cycles with two meetings in each cycle. The research subjects were 10 children from group B. Data were collected through observation, documentation, and field notes. The success indicator was determined if at least 80% of the children demonstrated an improvement in pattern classification skills. The findings showed a significant improvement: in cycle I the average achievement of indicators reached only 50%, while in cycle II it increased to 87.5%. This aligns with Sujiono's (2012) opinion that fine motor-based activities such as beading can stimulate children's logical thinking development through activities of comparing, sequencing, and classifying objects. Thus, it can be concluded that beading activities are effective in improving pattern classification skills and contribute to the cognitive development of children aged 5–6 years.

Keywords: *pattern classification, beading, cognitive development, early childhood*

Abstrak:

Perkembangan kognitif anak usia dini merupakan aspek penting yang berhubungan dengan kemampuan berpikir logis, salah satunya melalui kegiatan mengklasifikasikan pola. Perkembangan kognitif anak dapat ditingkatkan melalui aktivitas belajar yang berbasis interaksi dan penggunaan media konkret. Penelitian tindakan kelas ini bertujuan untuk meningkatkan kemampuan klasifikasi pola melalui kegiatan meronce pada anak usia 5–6 tahun di TK Pembina Liunggunung. Penelitian dilaksanakan dengan model spiral Kemmis dan McTaggart yang meliputi tahapan perencanaan, pelaksanaan tindakan, observasi, dan refleksi, yang berlangsung selama dua siklus, masing-masing dua kali pertemuan. Subjek penelitian berjumlah 10 anak kelompok B. Teknik pengumpulan data dilakukan melalui observasi, dokumentasi, dan catatan lapangan. Indikator keberhasilan ditetapkan apabila minimal 80% anak menunjukkan peningkatan kemampuan klasifikasi pola. Hasil penelitian menunjukkan adanya peningkatan yang signifikan: pada siklus I rata-rata ketercapaian indikator baru mencapai 50%, sedangkan pada siklus II meningkat menjadi 87,5%. Hal ini sesuai dengan pendapat Sujiono (2012) bahwa kegiatan berbasis motorik halus seperti meronce dapat menstimulasi perkembangan berpikir anak secara logis melalui aktivitas membandingkan, mengurutkan, dan mengelompokkan objek.

Dengan demikian, dapat disimpulkan bahwa kegiatan meronce efektif dalam meningkatkan kemampuan klasifikasi pola serta berkontribusi pada pengembangan kognitif anak usia 5–6 tahun.

Kata Kunci: *klasifikasi pola, meronce, kognitif, anak usia dini*

INTRODUCTION

Early childhood education serves as the foundation that determines the success of education at subsequent levels. According to Bredekamp and Copple (1997), education in early childhood should provide concrete, meaningful, and enjoyable learning experiences because, at this stage, children experience the fastest developmental growth. Therefore, stimulation provided to children aged 5–6 years must encompass all aspects of development, particularly cognitive development. One aspect of children's cognitive ability is their skill in classifying patterns. Piaget (1969) explained that during the preoperational stage, children begin to group objects based on certain characteristics, such as shape, size, or color. This classification activity forms the foundation for developing logical reasoning and mathematical understanding in later years. Similarly, Papalia, Olds, and Feldman (2009) emphasized that the ability to categorize objects is one of the key indicators of cognitive development in preschool-aged children.

However, field observations indicate that many children aged 5–6 still struggle with pattern classification. They often choose objects randomly without considering order or pattern consistency. This suggests that the stimulation provided has not fully supported the development of classification skills. Hurlock (1999) stated that children need learning opportunities through real experiences to effectively understand fundamental cognitive concepts. One activity that supports this is beading. Beading involves stringing small objects—such as beads or straws—into a series. According to Montessori (1964), practical life activities like beading help train hand-eye coordination, increase concentration, and foster orderly thinking. Furthermore, Frost, Wortham, and Reifel (2001) noted that play activities involving repetition of patterns and object arrangement allow children to develop both logical understanding and creativity.

Beading activities also align with Vygotsky's (1978) theory of the Zone of Proximal Development (ZPD), which states that children's cognitive development is optimized when they learn through guidance from adults or peers. In beading activities, teachers can assist children in recognizing simple patterns and gradually guide them toward independently creating more complex patterns. Santrock (2007) further emphasized that structured cognitive stimulation during the preschool years affects children's readiness for formal schooling. Therefore, beading activities integrated into pattern classification learning not only enhance fine motor skills but also play an important role in long-term cognitive development. Based on this rationale, the researcher conducted Classroom Action Research (CAR) entitled: "Improving Pattern Classification through Beading Activities to Develop the Cognitive Ability of Children Aged 5–6 Years.

RESEARCH METHOD (Written in bold capital, Cambria 12)

This study employed Classroom Action Research (CAR), as this method is appropriate for improving classroom learning processes and enhancing learning outcomes directly. The research model used was the spiral model by Kemmis and

McTaggart, consisting of four main stages: planning, action, observation, and reflection. These stages were implemented in iterative cycles, where each cycle aimed to improve upon the previous one. The study was conducted at TK Pembina Liunggunung, selected because it serves children aged 5–6 years (Group B) who are at the stage of developing concrete logical thinking. The school also supports innovative learning using creative media, facilitating the integration of beading activities in the learning process. The research was carried out over two months, from August to September. The participants were 10 children aged 5– 6 years.

Data collection methods included observation, documentation, and field notes. Observations assessed children's ability to classify patterns during beading activities based on color, size, and shape. Documentation (photos) served as supporting evidence, and teachers' field notes recorded children's responses and engagement during the process. The instrument used was an observation sheet containing indicators of logical thinking ability—distinguishing, grouping, and creating simple patterns. Assessment was conducted by marking observed behaviors during activities. The research success criterion was set at 80% of children achieving improvement in logical thinking skills, as shown through observation and documentation.

Data analysis used a percentage formula:

P=fn×100%P = \frac{f}{n} \times 100\%P=nf×100%

Where P = percentage, f = number of children achieving criteria, and n = total number of participants. The results were interpreted based on achievement criteria (Very Good, Good, Fair, Poor, Very Poor).

FINDINGS AND DISCUSSION

Cycle I Results

During the first cycle, the beading activities aimed to enhance children's pattern classification skills. Teachers guided children to distinguish beads by color and shape, group them, and arrange simple repeating patterns. While some children could perform the tasks correctly, others still required significant guidance. Most children were in the "Beginning to Develop (MB)" and "Developing as Expected (BSH)" categories.

Children showed enthusiasm and engagement, yet their logical thinking varied. Many struggled to maintain consistent pattern sequences. Thus, improvements were needed for the next cycle, including more varied examples and increased teacher assistance.

Cycle II Results

In the second cycle, the learning strategy was refined. More challenging and colorful beading materials were introduced, and children were given greater independence with minimal teacher intervention. The results showed significant improvement most children reached the BSH or even Very Well Developed (BSB) category.

• Distinguishing Objects: 100% of children reached the BSH or BSB level. • Grouping Objects: 80% reached the BSH or BSB level.

• Creating Simple Patterns: 90% reached the BSH or BSB level.

These findings indicate that beading effectively stimulated logical thinking and cognitive development through concrete, hands-on experiences.

DISCUSSION

1. Improvement in Logical Thinking
   This study revealed a significant increase in children's logical thinking after implementing beading activities as a concrete learning medium. These findings align with Piaget's theory (in Sujiono, 2019), which emphasizes that children at the preoperational stage learn best through concrete experiences. Similar results were reported by Putri & Rachmawati (2021), who found that concrete media help children transition from sensory-motor experiences to abstract reasoning.
2. Ability to Distinguish Objects by Category
   Children's ability to distinguish objects improved between cycles. Initially, many children struggled to identify differences in color or shape, but by cycle II, most could distinguish objects correctly. This finding supports Piaget's concept (in Santrock, 2018) hat concrete manipulation aids cognitive recognition. Dewi & Kurniawati (2020) also noted that tangible media enhance children's classification skills by allowing direct comparison of physical characteristics.
3. Ability to Group Objects by Characteristics
   This ability showed marked improvement as children began grouping beads accurately by size or color. Guided practice through scaffolding, as proposed by Vygotsky (in Lestari, 2021), proved essential. Teachers provided initial assistance and gradually encouraged independent problem-solving. This aligns with Pratiwi & Handayani (2022), who confirmed that concrete materials facilitate children's ability to categorize and organize objects effectively.
4. Ability to Create Simple Patterns
   Pattern creation improved most significantly. By the end of the second cycle, nearly all children could create consistent, repeating patterns. According to Piaget (in Sujiono, 2019), hands-on experiences help children internalize order and predictability. Wulandari & Sari (2020) also found that arranging tangible patterns enhances systematic thinking and cognitive structure in preschoolers.

CONCLUSION

The Classroom Action Research conducted at UPTD TK Pembina Liunggunung demonstrated a substantial improvement in children's cognitive abilities, particularly in logical thinking, distinguishing, grouping, and pattern-making through beading activities. From cycle I to cycle II, the majority of children advanced from the "Beginning to Develop" category to "Developing as Expected" and "Very Well Developed."

These results confirm that beading is an effective concrete medium for stimulating cognitive growth in children aged 5–6 years. This aligns with theories by Piaget and Vygotsky, as well as empirical studies by Putri & Rachmawati (2021), Dewi & Kurniawati (2020), and Wulandari & Sari (2020), all of which emphasize the importance of direct experience in developing logical thinking and classification skills in early childhood.

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