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Number Play Activities as a Strategy to Strengthen Children's Cognitive Readiness to Enter Elementary School

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ABSTRACT

The cognitive readiness of preschool children to enter elementary school remains a problem because some children have difficulty understanding the concept of numbers and number symbols. This study aims to describe the activity of playing numbers using number cards as a strategy to strengthen children's cognitive readiness to enter elementary school at Dharma Wanita 02 Dayakan Kindergarten. This study applies a qualitative approach with a descriptive qualitative research type. The research subjects consisted of 8 children from Group B at Dharma Wanita 02 Dayakan Kindergarten. Data collection methods were carried out through observation, interviews, and documentation, while data analysis included data reduction, data presentation, and drawing conclusions. The study shows that playing numbers with number cards can facilitate children in understanding the concept of numbers, arranging numbers, matching number symbols with the number of objects, and increasing children's participation and enthusiasm during the learning process. Real media and play activities also improve children's concentration, social interaction and school readiness, social interaction, and children's learning preparation before starting elementary school. Therefore, number cards can be used as an interesting early numeracy learning strategy option that is appropriate to the characteristics of early childhood development.

Informasi Artikel

Kata Kunci:

Bermain Bilangan;
Media Kartu Angka;
Kesiapan Kognitif;
Numerasi Awal;
Anak Usia Dini.

ABSTRAK

Kesiapan berpikir anak-anak prasekolah untuk memasuki Sekolah Dasar masih menjadi masalah karena beberapa anak mengalami kesulitan dalam memahami konsep angka dan simbol angka. Studi ini bertujuan untuk menggambarkan aktivitas permainan angka dengan menggunakan kartu angka sebagai strategi penguatan kesiapan kognitif anak dalam memasuki Sekolah Dasar di TK Dharma Wanita 02 Dayakan. Studi ini menerapkan pendekatan kualitatif dengan jenis penelitian deskriptif kualitatif. Subjek penelitian terdiri dari 8 anak Kelompok B di TK Dharma Wanita 02 Dayakan. Metode pengumpulan data dilakukan melalui observasi, wawancara, dan dokumentasi, sementara analisis data mencakup reduksi data, penyajian data, dan penarikan kesimpulan. Penelitian menunjukkan bahwa permainan bilangan dengan kartu angka dapat memfasilitasi anak dalam memahami konsep bilangan, menyusun angka, mencocokkan simbol bilangan dengan jumlah objek, serta meningkatkan partisipasi dan semangat anak saat proses pembelajaran. Pemanfaatan media nyata dan kegiatan bermain juga mendukung peningkatan konsentrasi, interaksi sosial, dan persiapan belajar anak sebelum memulai Sekolah Dasar. Oleh karena itu, media kartu angka bisa dimanfaatkan sebagai pilihan strategi pembelajaran numerasi awal yang menarik dan sesuai dengan karakteristik perkembangan anak usia dini.

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1. Introduction

Early childhood education plays a crucial role in preparing children for elementary school, particularly in cognitive development. Kindergarten children are in a golden period of development, a time when they are highly sensitive to various environmental stimuli. At this stage, the ability to understand number concepts, number symbols, and simple counting activities is crucial in preparing children for elementary school. Therefore, learning in kindergarten must be designed through enjoyable activities that are tailored to children's developmental characteristics to make the learning process more meaningful [1], [2].

The results of observations found at Dharma Wanita 02 Dayakan Kindergarten show that there are still children who face challenges in recognizing number symbols, ordering numbers, and understanding the basic concepts of numeration before entering elementary school. This problem arises because learning often focuses more on direct academic abilities without paying attention to the principles of learning through games that are appropriate to the child's age [3]. In other research, it is explained that many early childhood education institutions still implement reading, writing and arithmetic learning in an inappropriate way so that children often feel stressed in the learning process [4], [5]. According to Piaget, children at an early age are in the concrete pre-operational stage, so learning is more effective if it uses real media and play activities that involve their direct experiences [6].

The use of learning media to improve children's counting skills at an early age that is most often done is media such as number blocks, educational games, and number cards [7], [8]. However, most research focuses on improving cognitive learning outcomes without specifically linking them to children's readiness for elementary school. Furthermore, research on number play activities involving concrete objects and children's direct experiences is still scarce. Meanwhile, according to this study, number play activities using cards and beads can help children understand number concepts, match number symbols, and recognize the quantity of objects through active and fun play.

This study presents an innovation in utilizing number play activities as a strategy to strengthen children's cognitive readiness before entering elementary school through the use of number cards and a real-life game with a mystery bean bag. This activity not only emphasizes counting skills but also trains children in classifying objects, matching number symbols, understanding the concept of totals, and developing social-emotional and language skills while playing. Number cards were chosen because they are concrete, visual, easy to use, and can increase children's active engagement during the learning process. Thus, this study offers a more relevant and appropriate method for early numeracy learning that meets the developmental needs of early childhood.

Based on the explanation, this study aims to describe the activity of playing with numbers using cards as a strategy to improve children's cognitive readiness to enter elementary school at Dharma Wanita 02 Dayakan Kindergarten. This study aims to understand how playing can help children understand the concept of numbers, sequence numbers, and match number symbols through a fun learning experience. The research findings are expected to be a reference for early childhood educators in designing basic numeracy learning strategies that are creative, innovative, and appropriate to the characteristics of child development. In addition, this study is expected to contribute to the development of early numeracy education studies to support children's readiness to enter elementary education.

2. Methods

This study uses a qualitative approach with a descriptive qualitative research type that aims to describe the activity of playing with numbers as a strategy to strengthen children's cognitive readiness to enter elementary school using number cards as a medium. This approach was chosen because this study emphasizes the learning process, children's activities, and learning experiences during play activities. The study was conducted at Dharma Wanita 02 Dayakan Kindergarten, Ponorogo Regency, with research subjects consisting of 8 children in Group B aged 5–6 years who were selected based on the children's initial condition who still had difficulty in recognizing the concept of numbers and number symbols. The class teacher also functioned as a source of supporting information because she was directly involved in the learning process. Data collection was carried out through observation, interviews, and documentation [9]. Observations were conducted to observe children's behavior while playing with number cards, such as their ability to count, recognize number symbols, sort numbers, and match the number of objects with number symbols. Interviews were conducted with class teachers to obtain information on the development of children's cognitive abilities and the effectiveness of number play activities in supporting children's readiness for elementary school. Documentation was used to supplement the research data with photographs of learning activities, child development notes, and learning tools implemented during the study. The research instruments consisted of observation guidelines, interview guidelines, and documentation sheets compiled according to early childhood cognitive growth indicators. The data analysis method applied an interactive analysis model developed by Miles and Huberman [10], This includes data reduction, data presentation, and drawing conclusions. Data validity is measured through source triangulation and technical triangulation to ensure the data collected is more valid and scientifically accountable.

3. Result and Discussion

3.1. Implementation of Number Playing Activities with Number Cards

A number card game was conducted in Group B of Dharma Wanita 02 Dayakan Kindergarten to enhance children's cognitive readiness before entering elementary school. The learning process was conducted through play and learning, using number cards and a mysterious bean bag as the primary learning tool.

Observations showed that children appeared more enthusiastic in participating in the activity because the tools used were tangible, engaging, and easy to play with peers. The class teacher stated in an interview that the use of concrete media helped children better understand number concepts compared to learning that relied solely on verbal explanations.

In the initial stage of the activity, the teacher introduced number symbols by asking children to take several beads from the mysterious bag and match them to the number cards. Observations showed that the majority of children gradually began to name the number sequence after repetition through the game. Children also appeared active in counting the beads while naming the corresponding number symbol. Based on Piaget's theory of cognitive development, children in early childhood are in the concrete preoperational stage, making learning with concrete objects easier to grasp than abstract concepts [11].

Playing with numbers also involves grouping grains by number and matching them to number symbols. Observations show that children begin to recognize the difference between larger and smaller objects through this play. Teachers explain that children grasp numbers more quickly when they are directly involved in counting and physically grouping objects. This aligns with constructivist learning theory, which emphasizes that children's knowledge develops through direct experience and active interaction with the educational environment [12].

In addition to improving number recognition skills, play activities also encourage children's social participation during the learning process. Observations showed that children collaborated when arranging number cards and helped friends who had difficulty counting items. The teacher explained that the learning environment became more enjoyable because the children felt like they were learning as if they were playing without excessive academic pressure. This situation aligns with the principles of early childhood learning, which emphasizes play as a primary means of optimizing various aspects of a child's overall development.

Using number cards during play helps children concentrate better during the learning process. Based on observations, children appeared more enthusiastic about learning when the number cards were combined with attractive colors and images. The class teacher explained that visual media makes it easier for children to remember number shapes more quickly because they can see and directly touch the media used. This view is supported by learning media theory, which suggests that tangible visual media can increase children's attention, motivation, and understanding of the subject matter [13], [14].

Overall, implementing number play activities using cards provides an interactive and enjoyable learning experience for preschoolers. Observations and interviews show that children grasp number concepts, sequence numbers, and match number symbols more quickly through hands-on play. This activity not only strengthens children's early numeracy skills but also supports their cognitive readiness before entering elementary school [15]. In this way, number game activities using cards can be an efficient teaching method and suit the developmental characteristics of children at an early age.

Figure 1. Number Playing Activity with Number Cards

3.2. Strengthening Children's Cognitive Readiness Through Number Play Activities

Observations at Dharma Wanita 02 Dayakan Kindergarten showed that playing with number cards improved Group B children's cognitive readiness in understanding basic numeracy concepts. Children began to sequence numbers, recognize number symbols, and count objects through a series of games. Most children appeared more energetic and confident when asked to match number cards to the number of beads in the game. The class teacher revealed in interviews that students who previously lacked interest in counting activities became more enthusiastic after the learning process was implemented through games using concrete tools.

Observations at Dharma Wanita 02 Dayakan Kindergarten showed that playing with numbers helped children understand the relationship between number symbols and the number of objects more clearly. Children appeared to be able to categorize beads by specific quantities and differentiate between the concepts of more and less when playing with peers. In interviews, teachers stated that using number cards and real objects helped children understand counting concepts because they could see, touch, and count the objects directly. Furthermore, the engaging learning atmosphere encouraged children to concentrate and prevent them from becoming bored quickly during the learning process.

The cognitive readiness of children at Dharma Wanita 02 Dayakan Kindergarten is also evident in their improved ability to follow directions and complete play activities independently. Observations indicate that children are beginning to sequence numbers from smallest to largest and accurately match number symbols to the number of objects. Classroom teachers revealed that number play activities not only improve digit recognition but also help develop children's focus, accuracy, and reasoning skills in completing simple tasks. This suggests that number play activities have a positive impact on children's learning readiness before entering elementary school.

The research findings at Dharma Wanita 02 Dayakan Kindergarten align with Piaget's cognitive development theory, which states that early childhood is in the concrete preoperational stage [16], Therefore, learning is more effective when using real objects and play activities. Children at this stage grasp concepts

more quickly through concrete experiences than abstract explanations. The use of number cards and beads in this study supports children in developing numeracy understanding through exploration and direct interaction with objects. Therefore, number play activities are a learning method that aligns with the developmental characteristics of early childhood.

The findings of this study also align with constructivist learning theory, which asserts that knowledge is formed through experience and active interaction with the learning environment. In number play activities at Dharma Wanita 02 Dayakan Kindergarten, children not only listen to information from the teacher but also actively participate in counting, grouping, and matching objects with number symbols. These activities provide opportunities for children to gradually develop their understanding of number concepts through enjoyable learning experiences [17]. Thus, play-oriented learning can support the improvement of children's numeracy and academic readiness before moving on to elementary school.

This study also relates to several previous studies that have shown that physical learning media can improve basic numeracy skills in young children. The use of number cards in Dharma Wanita 02 Dayakan Kindergarten is considered effective because it is visual, engaging, and can increase children's participation during the learning process. In addition to improving number recognition skills, number play activities also support children's social and emotional development through interaction and cooperation during play. Therefore, number play activities using number cards can be an efficient learning strategy to support children's cognitive readiness before entering elementary school.

3.3. The Role of Number Cards in Supporting Children's Readiness to Enter Elementary School

Observations at Dharma Wanita 02 Dayakan Kindergarten indicate that using number cards has a positive impact on children's readiness for elementary school, particularly in their ability to understand early numeracy concepts. Children recognize number symbols more quickly when learning is conducted using number cards with attractive pictures and colors. Throughout the activities, the majority of children demonstrated great enthusiasm in participating in counting games and matching numbers to objects. The class teacher stated through interviews that using number cards accelerates children's understanding of number concepts compared to lecture-based learning methods.

Observations indicate that using number cards can improve children's concentration and participation during the learning process at Dharma Wanita 02 Dayakan Kindergarten. Children enthusiastically asked questions, arranged numbers in the correct order, and collaborated with friends when playing group games using number cards. In interviews, the teacher explained that visual and tangible learning media encourages children's learning because it aligns with the characteristics of early childhood, who enjoy playing. This creates a more enjoyable learning environment and reduces academic pressure for children.

In addition to supporting basic numeracy skills, number cards also contribute to children's learning readiness in terms of concentration and ability to follow directions. Based on observations, children are beginning to independently complete simple tasks, such as sequencing numbers and matching number symbols to the appropriate number of objects. The class teacher revealed that the children felt more confident when asked to show their number cards to the class after regularly participating in play activities. Therefore, the implementation of number cards at Dharma Wanita 02 Dayakan Kindergarten not only supports children's cognitive development but also prepares them for learning before entering elementary school.

The results of this study align with Piaget's theory of cognitive development, which states that early childhood is in the concrete preoperational stage, so learning must involve real objects and visual media for easier understanding. The number cards used in this study support children in understanding number symbols through direct viewing, touching, and playing with the media. The use of real media allows children to gradually develop numeracy concepts through significant learning experiences [18], [19]. Thus, number cards serve as an effective tool in supporting children's cognitive readiness before starting elementary school.

The findings of the study at Dharma Wanita 02 Dayakan Kindergarten also support constructivist learning theory, which emphasizes that children develop knowledge through experience and interaction with their learning environment. In number play activities, children not only receive information from the teacher but also actively participate in counting, grouping, and matching number symbols with real objects. These activities provide opportunities for children to independently understand number concepts through playful experiences. In this way, number cards can support children in developing early numeracy readiness more effectively.

This study also relates to several previous studies that suggest that the use of visual learning media can increase motivation and learning participation in early childhood [20], [21]. Number cards are considered effective because they are simple, attractive, and easy to use in various games. In addition to strengthening number recognition skills, they also support children in developing social skills through collaboration and interaction during play. This demonstrates that implementing learning media appropriate to the characteristics of early childhood can help prepare children for elementary school.

Overall, the implementation of number cards at Dharma Wanita 02 Dayakan Kindergarten has had a positive impact on children's preparation for elementary school. This media not only supports children in understanding the concept of numbers and number symbols but also creates an active, enjoyable, and meaningful learning experience. Learning that utilizes games with real-life media can increase children's participation, making the learning process more effective and developmentally appropriate. Therefore, number cards can be a strategic option for early numeracy learning that supports early childhood learning readiness.

4. Conclusion

This study aims to describe the activity of playing with numbers using number cards as a strategy to strengthen the cognitive readiness of children entering elementary school at Dharma Wanita 02 Dayakan Kindergarten. The research findings indicate that the use of number cards in play activities can support children in understanding number concepts, sequencing numbers, matching number symbols with the number of objects, and increasing children's participation and enthusiasm during the learning process. In addition to strengthening basic numeracy skills, number playing activities also contribute to improving children's concentration, social interaction, and learning readiness before starting elementary school. This study contributes to the development of early numeracy learning strategies that are appropriate to the characteristics of early childhood with a play-while-learning approach. However, this study has limitations in the number of research subjects which are relatively small and the research implementation is only conducted in one educational institution, so the research findings cannot be discussed in general. On the other hand, this learning only focuses on the aspect of children's cognitive readiness without further exploring other aspects of readiness, such as language and social emotional. Therefore, it is recommended that further research involve more subjects, apply various research methods, and create other learning media that can better support children's readiness to enter elementary school.

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