



Introducing numbers to 4-5 year olds at Negeri Pembina Kindergarten using number cards

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Abstrak

Memahami bilangan adalah hal mendasar pada matematika. Anak harus paham apa makna dan konsep bilangan dan tidak sekedar hapal. Dibantu dengan media flashcard. Penelitian ini menggunakan kualitatif. Spesifik studi kasus. Subjek penelitian adalah guru dan anak kelas A1 di TK Negeri Pembina Kabupaten Kutai Timur. Objek penelitian adalah penggunaan media kartu angka. Teknik pengumpulan data adalah observasi, wawancara dan dokumentasi. Dilakukan saat pembelajaran berlangsung dengan subyek peneliti guru dan anak-anak. Teknik analisis data adalah reduksi data di lapangan saat pembelajaran berlangsung yang ditarik simpulan. Hasil penelitian ini adalah guru mengenalkan bilangan, tidak hanya berfokus pada kartu angka saja. Mengenal bilangan dilakukan secara bertahap, yakni: mengenal lambang bilangan, konsep bilangan, menyebutkan bilangan 1 sampai 10, mengurutkan bilangan 1 sampai 10 dan menunjukkan angka sesuai lambang bilangan. Keterbatasan media menjadi faktor penghambat dalam pembelajaran. Menyebabkan anak-anak berebut dan tidak teratur. Variasi kartu angka juga sangat menarik. Anak-anak tidak bosan menggunakannya. Kesimpulan dari riset ini adalah media sangat membantu dalam pemahaman anak. Mereka mudah mengenal dengan benda kongrit. Pembelajaran juga menjadi menyenangkan.

Kata Kunci: *Anak Usia 4-5 Tahun; Media Kartu Angka; Mengenal Bilangan*

Abstract

Learning to mathematical concepts is crucial to mathematics. Children need to understand the meaning and concept of numbers rather than just remembering them. Facilitated by flashcard media. The research being conducted uses qualitative methods. Particular case analysis. The participants in the research project consisted of teachers and pupils in grade A1 at TK Negeri Pembina, East Kutai Regency. The focus of the study was the utilization of numerical card media. The methods of data collecting included observation, interviews, and documentation. Executed in the context of educational interactions between the instructor and the child research participants. The data analysis method used was data reduction implemented in the classroom during the learning process, which was then concluded. The results of the research indicated that teachers incorporated numbers beyond simply using number cards. Number recognition takes place over stages: identifying numerical symbols, understanding numerical concepts, articulating numbers 1 to 10, sequencing numbers 1 to 10, and representing numbers according to their symbols. Presented media constitutes a hindrance to learning. Organizing conflict among children and promoting inconsistency. The diversity of number cards is equally curious. Children don't feel bored when using them. The research concludes that media significantly improves children's understanding. They are easily recognizable through material things. The process of learning also becomes enjoyable.

Keywords: *Children Aged 4-5 Years; Number Card Media; Introduction of Numbers*

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Introduction

Early childhood accounting entails comprehending the essential skills and strategies that children acquire during their formative years, which are vital for their subsequent academic success, especially in disciplines such as mathematics and accounting (Torres-Peña et al., 2025). Early childhood education focuses on introducing counting and mathematical concepts through engaging and relatable methods, which can significantly influence a child's capacity to understand more complex subjects in the future. This approach encompasses not only the instruction of numerical concepts but also the development of critical thinking and creativity, which are essential for sustainable learning (Alghufali, 2024).

Early childhood education does not separate accounting from mathematics but focuses on mathematical skills that are foundational for accounting. This includes fostering 21st-century skills such as collaboration and critical thinking, which are essential for future academic success in accounting (Qhosola, 2023). The concept of child accounting encompasses not only academic skills but also a comprehensive understanding of a child's life, highlighting the significance of emotional support and mental health. This approach indicates that both school and home environments are essential to a child's development (Septyan et al., 2024).

In the pre-research observation at TK Negeri Pembina in Kutai Timur Regency, the researcher identified a successful method for teaching number concepts to 4-5 years olds through the use of number cards as instructional media. Children show joyfulness and rarely experience dissatisfaction. This card displays a variety of intriguing images, shapes, and colors. Numbers are more readily accessible for children's introduction. The utilization of number cards shows specific parallels. In that kindergarten, this media is utilized individually, facilitating children's comprehensive understanding of number recognition (Handina et al., 2023). The number cards serve to maintain the child's attention and facilitate the absorption of information presented by the teacher. This card enhances children's cognitive abilities and reinforces their proficiency in mathematics, especially in number recognition.

The teacher developed a number card medium to engage learners' interest. Educators employ alternative methods. For instance, encouraging children to sing, adhering to the current topic, and participating in diverse play activities involving the numbers 1–10. Educators consider methods beyond solely card-based learning. The production of media is necessary to prevent boredom in children. Nevertheless, maintain emphasis on numerical card media. Learning materials remain essential during the child's educational development. Media serve as instruments to facilitate children's comprehension of numerical concepts (Dilah et al., 2021).

Method

This research method employs a qualitative approach, specifically case study research. Case study research is conducted to identify problems or deviations and to illustrate the uniqueness or effectiveness of the research (Moleong, 2022). This study involves teachers and all 15 children from group A1 at Pembina State Kindergarten in East Kutai Regency. This study focuses on the East Kutai Regency Pembina State Kindergarten, where the researchers investigate the use of number card media for introducing numbers to children aged 4 to 5 years. The study was carried out from March to May 2024. This data collection method employs observation to analyze how educators implement number introduction for children aged 4-5 years through the use of number card media (Warmansyah et al., 2023).

In the interview conducted with class instructors, group A1 examined the planning, implementation, and evaluation of number card media for introducing numbers to children aged 4-5 years. Documentation serves to compile various essential documents that substantiate research data, including teaching modules, RPPs, number card media utilized, and other materials pertinent to the application of number card media for introducing numbers to children aged 4-5 years. The Miles and Huberman analysis model encompasses data analysis techniques such as data collection, reduction, presentation, and conclusion formulation. This process involves gathering data from field notes and documentation, categorizing and sorting the data, and subsequently drawing conclusions. The validity of data is assessed through source triangulation, technique triangulation, and time triangulation.

Results and Discussion

Utilizing number card media for teaching numbers to children aged 4-5 years at Negeri Pembina Kindergarten. The implementation of number card media for instructing children aged 4-5 in numerical concepts involves singing the song "Knowing Numbers" prior to the main lessons, alongside various play-based learning activities that align with the theme and RPPH. Teachers employ various methods to utilize number cards for introducing numbers, including

1. Displaying the number symbols on the number card media while engaging in song.
2. The teacher demonstrates the shape of the numbers in the air using fingers while engaging in a collective singing activity.
3. The teacher incorporates it into the primary lessons aligned with the weekly theme, utilizing enjoyable activities to facilitate learning.
4. Upon the conclusion of the singing, the teacher asks the children to recognize number symbols by responding to questions. Educators at the East Kutai Regency Pembina State Kindergarten facilitated the introduction of numerical concepts to children aged 4-5 years over a three-week period utilizing number cards as a medium.

Singing offers benefits for children. Children demonstrate elevated levels of happiness. The educator presents the number card during the singing activity. Singing activities contribute to the enhancement of children's self-esteem, the improvement of memory, and the facilitation of numerical memory development in learning (Ervin et al., 2024). Children frequently encounter difficulties in numeral recognition. The incorporation of tangible objects and real-life experiences in the introduction of counting enhances engagement and comprehension. Utilizing games and common objects such as egg cartons can enhance the enjoyment and effectiveness of learning (MS, 2024). Memory is essential for retention. Early childhood is characterized by significant progress in recognition memory and episodic memory development. Recognition memory, which refers to the ability to identify stimuli that have been previously encountered, develops during infancy. In contrast, episodic memory, defined by the capacity to recall specific events, emerges later in early childhood. Improvements in brain structure and function, accompanied by environmental influences such as language and social interaction, support these developments (Guo et al., 2024). Thus, the value of learning material is clearly seen.

The utilization of number cards by educators to promote singing among children is an effective strategy. Hopscotch constitutes an additional activity. When the teacher announces a specific number, the students immediately move to the designated number boxes. Engagement with numbers improves children's cognitive abilities in recognizing numerical symbols, as play-based learning fosters active participation in educational activities. Engaging media integration improves children's learning outcomes (Zuhriyah & Sari, 2019). The teacher draws the learner to sketch numerals in the air. The style in which teachers communicate during instruction, especially using language that makes recall, impacts children's capacity to create and use strategies for memory (Perner et al., 2007).

This improves cognitive function through imaginative processes. Creativity must be developed alongside cognitive competence. Cognitive development in early childhood encompasses notable advancements in language acquisition, problem-solving skills, and memory improvement. The domains are interrelated and influenced by biological, environmental, and experiential factors. Understanding these processes is essential for fostering optimal cognitive development in young children.

The teacher employs recall through student questioning. Early childhood education emphasizes foundational skills; however, it is essential to consider the broader context of a child's development. This encompasses the contributions of educators and parents in fostering conducive learning environments, as well as the influence of educational policies on early learning results. Teacher accountability and evaluation methods, including observation and feedback, are essential for guaranteeing high-quality early learning experiences (Reinking, 2015).

Children's ability to remember accounting, particularly in the context of repeated events, is influenced by various cognitive and developmental factors. Research indicates that children's memory performance improves with age and is affected by the nature of the event

and the context in which they are asked to recall it. The following sections elaborate on key aspects of children's memory capabilities (Roberts, 2017).

Introducing numbers to 4-5 years old children through the use of number card media at Negeri Pembina kindergarten

Introducing numbers to children aged 4-5 years is a crucial step in their cognitive development, laying the foundation for future mathematical skills. Various innovative methods have been explored to make this learning process engaging and effective. These methods include game-based learning, interactive media, and open-ended learning approaches, each offering unique benefits in enhancing children's understanding of numbers (Lefevre et al., 2010). Introducing numbers to 4-5-year-old children is crucial for their cognitive development and lays the foundation for future mathematical skills. The study emphasizes using open-ended learning strategies, which enhance children's ability to recognize number concepts through active inquiry and problem-solving. Traditional methods often fall short due to inadequate resources and teaching approaches. By implementing open-ended techniques, educators can foster critical thinking and improve children's understanding of numbers, ultimately supporting their overall mathematical abilities and cognitive growth.

The introduction of numbers to children aged 4-5 years is categorized into five indicators: 1) recognition of number symbols, 2) understanding of numerical concepts, 3) pronunciation of numbers 1 until 10, 4) sequencing of numbers 1 until 10, and 5) accuracy in displaying numbers corresponding to number symbols (Handina et al., 2023). Students at TK Negeri Pembina in Kutai Timur Regency are demonstrating significant advancements in their ability to recognize numerical symbols. Children are capable of recognizing numerical symbols from 1 to 10, independent of musical context. The teacher utilizes number cards as a pedagogical tool. The children possess familiarity with the numerical range of one to ten. The children possess familiarity with the number series 1-10. Children who can recognize number symbols will engage in singing fluently with their peers, whereas those who cannot will participate hesitantly, and some may refrain from joining altogether. Singing becomes an effective approach for providing counting lessons, improving memorization and skill development in children. Singing activities boost children's thinking skills, especially in arithmetic (Rahmayani et al., 2023).

Children possess the ability to understand the concept of numbers. Utilizing educational media. Children can understand the concept of numbers. Utilizing educational resources. Children are increasingly taught to comprehend less. They possess an understanding of numerical concepts 5 exceeds 1. Media facilitates this process. Learning media serve as educational tools that effectively elucidate concepts for children. Assert that media serve as tools to aid children in comprehending numerical concepts (Dilah et al., 2021).. Children aged 5 to 6 utilize diverse counting strategies, including "counting all" and "counting on," to address mathematical problems. These strategies facilitate comprehension of the concept of addition; however, challenges emerge with larger numbers, necessitating the use of physical aids such as fingers and toes (Prayitno, 2023). Active learning that engages children and facilitates their participation in the educational process can enhance cognitive capacity. The question-and-answer method facilitates active thinking, analysis, and enhanced comprehension of concepts and their functions (Mufidah et al., 2022).

Assisted with vocal performance. Children are capable of counting from one to ten. Clapping and singing serve as teaching methods utilized by teachers to create a positive learning atmosphere. Early childhood education incorporates learning, play, and music to promote children's happiness, activity, and autonomy in decision-making. Children acquire knowledge through engagement with toys, equipment, and individuals within a conducive environment. The subsequent indicator pertains to the child's proficiency in spelling the digits 1 to 10. The use of number cards prior to main learning activities enhances cognitive development in children, facilitating recall of numbers 1-10 through group singing activities, complemented by direct evaluation via alternating question-and-answer sessions. The simplicity of counting numbers is attributed to their influence by the environment. The

primary challenge lies in retention. Cognitive abilities are essential for the process of remembering (Hanipudin, 2021).

Cognitive development in early childhood is marked by significant advancements across multiple domains, such as attention, memory, language, problem-solving, and executive functions. Advancements are shaped by biological maturation and environmental interactions, including social and cultural contexts (Clemente-Suárez et al., 2024). The preschool years represent a crucial phase for cognitive development, during which children explore their environment, engage in social interactions, and cultivate complex thinking skills (Athuman & Mlaki, 2022). The subsequent indicator pertains to the child's capacity to organize numerals 1–10. Children acquire skills in number arrangement through play activities. The educator employs cards to illustrate the numerical values from one to ten. Children acquire knowledge through supplementary activities, including number leaping, bottle cap placement, counting mangoes, and classifying numbers on fruits. Children can rapidly identify the symbols representing the numerals 1 through 10. Real items such as number cards, bottle caps, stones, seeds, ring towers, counting boards, and other materials that provide children with practical knowledge can be utilized as learning mediums to enhance number recognition (Syukri & Yuniarni, 2015).

The activity of sorting number cards from 1 to 10 enables children to independently arrange the cards, reflecting their advancement in understanding numerical concepts from previous sessions. Children are more likely to retain the lesson due to their engagement in activities. Executive functions such as working memory, inhibition, and cognitive flexibility are essential for problem-solving during early childhood. These functions allow children to plan, monitor, and modify their behavior in response to varying demands. The development of executive functions is significantly influenced by biological maturation and environmental factors, including parenting styles and educational practices (Grammer et al., 2013). Memory development is fundamental to cognitive growth during early childhood, facilitating learning, reasoning, and adaptation to the environment. Memory development evolves from fundamental recognition and recall to advanced forms of episodic and working memory (Perner et al., 2007).

The children at TK Negeri Pembina demonstrate accurate number recognition as a result of the learning media employed. Teachers utilize number cards as instructional tools and integrate them into various activities. The influence of learning media on a child's educational experience is significant. Recognizing numbers equates to their memorization. Working memory, defined as the capacity to retain and process information, is essential for cognitive development, especially in the domains of problem-solving and language acquisition. Working memory capacities are significantly associated with academic achievement and are affected by genetic and environmental factors. Interventions designed to enhance working memory, including training programs and educational strategies, have demonstrated improvements in cognitive outcomes among young children (Okur & Aksoy, 2025).

Evaluation of the implementation of number card media for introducing numbers to children aged 4-5 years in Negeri Pembina Kindergarten

The constraining factor is the limited quantity of cards within each class. There exists a singular set of numbered cards. The absence of sufficient facilities in learning media prevents the educational process. Infrastructure plays a crucial role in initiating classroom learning, facilitating children's understanding of the material presented (Doludea & Nuraeni, 2018). Consequently, educators develop instructional strategies. To prevent boredom among children. It can be effective with a single media bundle.

The limited availability of media induces anxiety in children. Their interest lies specifically in the utilization of number cards. The impatience exhibited by children while waiting for their turn hinders the advancement of their number recognition abilities. The emotional capacity of children often fluctuates, particularly between the ages of 4 and 5 years, during which they typically lack the ability to regulate their emotions. Nonetheless, children are increasingly becoming acquainted with discipline (Mufidah et al., 2022).

The constraint of time in teaching can occasionally serve as a barrier. Mastering the concept of numbers requires time and repetition; if children's available time is constrained, they may forfeit opportunities to enhance their understanding. Time constraints may hinder the effective implementation of learning, as insufficient classroom time limits the thorough engagement with materials and students (Wasik & Hindman, 2018). The domains of language acquisition, problem-solving, and memory development are intricately linked. Language functions as a mechanism for cognitive processes and problem resolution, whereas memory underpins the processes of learning and adaptation. The interconnections underscore the significance of a comprehensive approach to understanding cognitive development during early childhood (Dulaj, 2023).

Teachers should to diversify their instructional methods considering the aforementioned challenging conditions. Develop engaging variations of cards. The integration of diverse media and illustrated number cards produces an engaging and effective learning approach. The diverse range of engaging cards aids students in comprehending classroom teachings (Khusnaya, 2019). Engaging media can enhance children's curiosity in acquiring new knowledge and addressing simple challenges. Illustrated number cards enhance children's cognitive abilities, as engaging media featuring clear visuals and varied colors provides enjoyable learning content (Rahman, 2020). Illustrated number cards serve as an effective learning resource, enabling students to acquire knowledge while encouraging their curiosity and enthusiasm for diverse subjects. (Jaya & Nurliana, 2016).

Conclusion

The research findings indicate that employing number cards to introduce numerals to youngsters aged 4-5 years has led to a notable success in their recognition of numerical concepts through activities like group singing. When infants are introduced to numerical concepts through number cards, they can recognize numerical symbols, comprehend numerical ideas, memorize the numbers 1-10, sequence the numbers 1-10, and exhibit numbers corresponding to numerical symbols. There are both constraining and facilitating factors in use number cards to introduce numerals to children. The constraints encompass: (1) limited resources (2) Children exhibit diminished patience when waiting in line for cards. (3) Restricted instructional duration. meanwhile supportive factors include: (1) Intriguing card variations. (2) Students exhibit considerable enthusiasm. (3) The teacher's creativity in utilizing media is exceptional. Consequently, children's capacity to recognize numbers can markedly enhance. Future studies ought to explore the development of flashcards grounded in Montessori ideology. Since sandpaper letters are exclusively utilized for letters, no one has attempted to use them for recognizing numbers.

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