

STRATEGY FOR ENHANCING MATHEMATICAL SKILLS THROUGH THE SMART CORNER IN EARLY CHILDHOOD EDUCATION

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ABSTRACT

This study aims to describe the use of the "Smart Corner" (Pojok Cerdas) as a learning strategy to enhance mathematical abilities in children aged 5–6 years at TK IT Nada Ashobah. The research employed a descriptive qualitative method, focusing on naturalistic observation, interviews with teachers, and documentation of learning activities. Data were analyzed through data reduction, data display, and drawing conclusions. The findings reveal that the Smart Corner encourages active participation, exploration, and independent problem-solving in early numeracy skills such as counting, sorting, and recognizing patterns. Teachers play a crucial role in guiding and facilitating meaningful interactions through carefully selected materials and structured learning spaces. The learning environment supports children's curiosity and builds a foundation for mathematical thinking through play-based experiences. The study concludes that integrating a Smart Corner in early childhood classrooms effectively supports the development of basic mathematical skills and fosters a positive attitude toward learning. These findings suggest that similar strategies could be implemented in other early childhood education settings to promote active and engaging mathematics learning.

Keywords: Smart Corner, early childhood, mathematics, learning environment, descriptive qualitative

INTRODUCTION

Early childhood education (ECE) plays a crucial role in shaping children's cognitive, social-emotional, and character development. A high-quality ECE program should not only promote academic readiness but also provide developmentally appropriate learning experiences that align with children's interests and needs. Among various domains of early learning, mathematical skills are particularly important for developing logical thinking and problem-solving abilities in daily life (Wardhani, 2017). However, mathematics is often perceived as abstract and challenging by young children, particularly when learning methods are monotonous or not adapted to their developmental stage. Traditional instruction that lacks interactivity or creativity can hinder children's understanding of basic mathematical concepts. Therefore, it is essential to develop engaging and meaningful learning strategies that stimulate children's curiosity and participation.

This descriptive qualitative research aimed to explore how Smart Corner activities can enhance the mathematical skills of children aged 5–6 years at TK Islam Terpadu Nada Ashobah in Surabaya. The Smart Corner was designed as a thematic, play-based learning space containing five structured games: number recognition, geometric shape identification, addition, subtraction, and number sequencing. Each game was developed to support children's understanding through hands-on activities and visual aids.

Data collection techniques included observation, interviews with teachers, and documentation. The qualitative approach enabled the researcher to describe the learning process in-depth and examine how children interacted with the Smart Corner media. Thematic analysis was used to interpret the data, focusing on children's responses, learning outcomes, and teacher facilitation. The results indicated that children showed improved engagement and comprehension in early math concepts when interacting with the Smart Corner. They were able to spell numbers, count objects sequentially, identify geometric shapes and their attributes, perform simple addition and subtraction, and recognize numerical order. Teachers reported that the media helped make abstract concepts more accessible and enjoyable for the learners.

The implementation of the Smart Corner is grounded in the constructivist theory of learning, which emphasizes that children build knowledge actively through hands-on experiences and social interactions. Learning through play allows young children to internalize abstract mathematical ideas by manipulating concrete objects, engaging in dialogue, and making connections with real-life situations (Piaget, 1972; Vygotsky, 1978). In this context, the Smart Corner serves as both a physical and cognitive space where children can experiment, solve problems, and reflect on their mathematical thinking in a low-pressure environment.

From observations and interviews, it was evident that the Smart Corner activities contributed to children's enthusiasm and motivation to learn mathematics. For example, during the number sequencing game, children showed increased attention span and collaboration as they helped each other arrange numbers in the correct order. Teachers noted that students who were initially hesitant in mathematics became more confident and expressive when using the media. This aligns with recent findings suggesting that playful, child-centered approaches enhance engagement and comprehension in early mathematics learning (Sarama & Clements, 2021).

Furthermore, this study underscores the importance of teacher facilitation in maximizing the impact of learning media. While the Smart Corner provided structured tasks, the teacher's role in guiding, questioning, and scaffolding was essential in deepening the children's understanding. Teachers adapted the games based on individual needs, allowing for differentiation and personalized learning experiences. This finding highlights the need for professional development that equips early childhood educators with the skills to implement innovative, interactive learning strategies that are both pedagogically sound and aligned with national curriculum standards.

METHOD

This study employed a descriptive qualitative approach to explore the implementation of the Smart Corner (Pojok Cerdas) in enhancing mathematical skills among children aged 5–6 years at TK IT Nada Ashobah. The qualitative method was selected to provide a rich and contextual understanding of learning practices in early childhood settings (Creswell, 2012; Miles, Huberman, & Saldaña, 2014).

The subjects of this study were the class B kindergarten teachers and students aged 5–6 years. Purposive sampling was used to select participants who were directly involved in implementing and experiencing Smart Corner activities (Moleong, 2019). Data were collected through three main techniques: observation, semi-structured interviews, and documentation. Observations aimed to capture real-time interactions and engagement during mathematics activities. Interviews with teachers explored their planning, implementation strategies, and perceptions of children's development. Documentation such as lesson plans, photos, and children's work served to strengthen the validity of the findings.

Data were analyzed using Miles and Huberman's interactive model involving three stages: data reduction, data display, and conclusion drawing (Miles et al., 2014). Triangulation of data sources and methods was applied to ensure the credibility and trustworthiness of the findings (Patton, 2002; Lincoln & Guba, 1985). This methodological framework enabled the researcher to present a holistic and in-depth analysis of the Smart Corner's role in supporting early mathematical development.

RESULT AND DISCUSSION

Result

Mathematics learning at TK IT Nada Ashobah begins with simple approaches that are closely related to children's everyday life experiences. Through real-life contexts, children are more likely to develop positive feelings toward mathematics, as they can construct knowledge through exploratory play. Therefore, it is essential to create a cheerful, non-monotonous classroom atmosphere supported by enjoyable mathematical tools and media (Lubis & Umar, 2022). When children engage in learning that feels familiar and playful, their motivation and interest in understanding mathematical concepts increase significantly.

One effective method of introducing mathematics to young children is through educational games. According to Mayke Sugianto T., as cited in Firdaus & Ghonim (2023), Educational Play Tools (Alat Permainan Edukatif or APE) are specially and systematically designed tools intended to support the learning process. APEs are not merely toys for entertainment but hold distinct educational value. The use of learning media enhances the effectiveness of delivering educational content, especially when the media involve children directly in the learning process. This interactive nature captures their attention and stimulates enthusiasm in learning mathematics.

The implementation of the Smart Corner, a math-focused educational play area, involves a cube-shaped tool with multiple sides, each presenting different math-related games. Before introducing the Smart Corner activities, the teacher begins by encouraging

students to count forward and backward from 1 to 10 and 10 to 1. This warm-up activity helps activate prior knowledge. The teacher then conducts a “number fishing” game, where children catch fish-shaped cards featuring simple addition problems, encouraging them to calculate the correct answers. Following this introduction, the teacher explains the Smart Corner box and demonstrates each game before allowing the children to interact with the media independently. The educational games introduced in this activity include the following:



The first game introduced in the Smart Corner activity focuses on number recognition. In this activity, children are presented with number cards ranging from 1 to 10. The teacher begins by guiding the students to trace each numeral according to the given instructions. After tracing the numbers, children are then asked to trace the corresponding number words (e.g., s-a-t-u for "one").

Following this step, students engage in a concrete counting task in which they are asked to match the chosen number with real objects—such as placing three paper apples if the selected number is 3, based on written instructions provided on a worksheet. As a final step, the children are asked to identify and circle all numerals that match the number they previously selected. This activity integrates visual, kinesthetic, and linguistic learning modalities, helping to reinforce the relationship between symbols, quantities, and their verbal representations.



The second activity focuses on introducing geometric shapes. In this stage, the teacher introduces and displays various basic geometric figures, such as circles, squares,

rectangles, and triangles. Alongside the visual demonstration, the teacher explains the defining characteristics of each shape, such as the number of sides and corners—for example, emphasizing that a square has four equal sides.

To enhance children's understanding of how geometric shapes can be combined to form new figures, the teacher provides shape composition cards that display different objects formed by assembling various geometric shapes. The students are then encouraged to recreate these compositions using cut-out shapes. During the process, they are guided to identify and name each individual shape used in their construction. This activity aims to develop children's spatial awareness, shape recognition, and analytical thinking by actively engaging them in hands-on exploration and verbal expression.



The third activity introduces the concept of subtraction. In this session, the teacher uses a visual aid in the form of foldable finger images to help students understand the idea of "taking away." Each child is provided with a task card (or tab) displaying a simple subtraction problem.

The teacher demonstrates how to solve the problem by folding down the appropriate number of fingers on the image to represent the quantity being subtracted. Students then replicate the process by folding the fingers and counting how many remain. After completing the physical action, they write the final result on the task tab. This interactive approach allows children to visualize the process of subtraction concretely, making abstract concepts more accessible and easier to grasp through physical manipulation and active involvement.



The fourth activity introduces the concept of addition using a spin-roll number game. The media consists of two number spinners, each displaying numerals that the children can randomly select through spinning. Each student takes turns spinning both rollers and observes the numbers that appear. They are then guided to count the total by

adding the two numbers together. After calculating the sum, students write the result in the space provided beneath the spin-roll device. This activity supports the development of early arithmetic skills by encouraging number recognition, counting, and addition in a playful and engaging manner. It also promotes independent thinking and active participation, which are crucial in fostering a positive attitude toward learning mathematics.



The fifth and final game focuses on introducing the concept of number sequencing, titled “Find Me.” In this activity, children are presented with a series of scattered numbers, which they are required to arrange in the correct ascending order. For example, one version of the game features a picture of a zebra attempting to reach a patch of grass, with a number trail leading toward a police station. Children are tasked with placing the numbers in the correct sequence to complete the zebra’s journey. The media includes several sheets with different sequencing tasks that must be completed by the students.

All 22 students from TK B participated in the learning-through-play session. After a clear explanation, demonstration, and modeling by the teacher, students took turns engaging with each activity. The implementation of this Smart Corner media showed highly positive results. The majority of children expressed strong interest and enthusiasm toward the mathematical games. The Smart Corner successfully created a joyful and interactive learning environment, allowing children to learn basic mathematical concepts more easily through play.

This aligns well with the characteristics of early childhood learning, which are concrete, visual, and active. Game-based learning not only supports cognitive development but also fosters problem-solving abilities and social skills, as children collaborate and help one another throughout the activities. The experience highlights the effectiveness of integrating educational play into mathematics instruction for young learners

Discussion

The findings of this study demonstrate that the implementation of Smart Corner activities can significantly support the development of mathematical abilities in early childhood. The integration of educational games into classroom learning creates a more engaging and meaningful experience, aligning with the principles of developmentally appropriate practice (DAP). According to Bredekamp and Copple (2009), early childhood learning should emphasize active, hands-on experiences that are relevant to children's daily lives. The Smart Corner media, which includes activities such as number tracing, shape construction, and interactive games with spinners and puzzles, offers precisely such experiences.

Moreover, the use of manipulatives such as number cards, geometric shape cutouts, and spinners facilitates the transition from concrete to abstract thinking. According to Charlesworth & Lind (2012), the use of concrete objects in early math instruction helps children internalize concepts before progressing to symbolic representations. This aligns with Piaget's theory of cognitive development, which emphasizes the importance of sensory and motor activities in the preoperational stage (ages 2–7) (Piaget, 1973).

The findings of this descriptive qualitative study emphasize that the Smart Corner media significantly contributes to the enhancement of early childhood mathematical abilities. This media encourages children to engage actively through play-based learning experiences, which are effective in fostering number recognition, counting, operations, and geometric understanding. Such an approach aligns with current pedagogical research highlighting the importance of integrating guided play to improve early numeracy (Louw & Claassens, 2021).

Smart Corner activities promote structured exploration where children are guided to manipulate numbers, identify shapes, and understand sequencing in ways that are developmentally appropriate. These experiences are supported by recent findings that affirm how interactive and embodied learning practices can improve mathematical thinking among preschool-aged children (Ancog et al., 2024; Sun et al., 2023). Children in this study demonstrated greater enthusiasm and retention when participating in physical and game-based activities involving number spinners, shape cards, and interactive puzzles.

Furthermore, teacher involvement through scaffolding during Smart Corner sessions played a key role in extending children's learning. Research shows that the teacher's presence during guided play improves focus, supports the development of problem-solving strategies, and helps children transition from concrete to abstract reasoning (Tan & Jamil, 2024). The classroom observations confirmed that the children were more willing to take cognitive risks and try new strategies when the teacher provided verbal encouragement and timely feedback.

In addition to cognitive development, the Smart Corner encourages emotional engagement and social interaction—two components that are essential in early learning. Schultz Volden and Burelli (2024) observed that positive emotions such as excitement and curiosity during guided play are strong predictors of deeper learning outcomes. This was also evident in this study, where students displayed high levels of motivation and collaborative behavior while engaging in the Smart Corner games. Collectively, these findings support the conclusion that Smart Corner is a practical and evidence-informed approach to teaching mathematics in early childhood. It supports a balanced development of foundational math skills while simultaneously fostering positive emotional and social growth.

CONCLUSION

Early childhood education plays a crucial role in a child's overall development. Therefore, prospective teachers are expected to serve as mentors, role models, and effective planners in designing the best possible learning experiences for their students. The findings of this study indicate that the Smart Corner media is effective in enhancing early childhood mathematical abilities, particularly in number recognition, geometric shape identification, and basic operations such as addition and subtraction. The play-based activities designed within the Smart Corner successfully created an active and joyful learning environment that aligns with the developmental stages of young children. In

addition to fostering cognitive understanding, the use of this media also contributed positively to children's social and emotional skills through group interaction and collaboration. Thus, the Smart Corner can serve as an alternative, enjoyable, and educational strategy for teaching mathematics in early childhood education.

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