

Teachers strategies for developing symbolic thinking skills in early childhood

Annisa Raihana Tazkiya

Raudhatul Athfal Al Wakaf, Indonesia

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Abstract

Symbolic thinking is the ability to understand concepts and imagine objects in the form of symbols that do not exist in reality. In Early Childhood Education (PAUD), symbolic thinking is the basis for understanding abstract learning concepts. However, teachers' understanding of symbolic thinking in early childhood is still limited and only focuses on aspects of general cognitive development. The purpose of this study was to determine effective teacher strategies in developing symbolic thinking in early childhood. The research method used was qualitative research with a qualitative descriptive approach. The research subjects were 20 children in group A and two teachers at RA (Raudhatul Athfal). Data were collected through observation, interviews, and documentation. Data were analyzed using data reduction, data presentation, and conclusion drawing. The results showed that teacher strategies were very influential in developing symbolic thinking in early childhood. The learning media used must be varied, interesting, and designed holistically.

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Corresponding Author:

Name Author: Annisa Raihana Tazkiya
Affiliation, Country: Raudhatul Athfal Al Wakaf, Indonesia
Email Author: annisatazkiya191@gmail.com

INTRODUCTION

Early childhood is a period known as *the "golden age,"* during which children experience rapid growth and development. During this period, children require appropriate stimulation and education to support optimal growth and development, serving as a foundation for their future lives. Early childhood education serves as the initial platform for children to receive education or stimulation for growth and development across all aspects of their development, where parents collaborate with educators in efforts related to care, nurturing, and education for the child. According to (Yusuf et al., 2023), the fundamental concept of early childhood learning is carried out with the aim of providing meaning through real-life experiences. Young children go through several developmental stages that must be stimulated through education from an early age. One aspect of development that needs to be developed and stimulated optimally is children's cognitive development.

Cognitive development is one of the most critical aspects of early childhood development. Cognitive development is often referred to as intellectual development, during which children develop the ability to think critically, solve problems, understand information, and use their imagination (Rahmaniar & Mahmudah, 2022). Regarding cognitive development, symbolic thinking ability is included within the cognitive development aspect. According to Piaget as cited in (Priyono et al., 2021), cognitive development consists of four stages: sensorimotor, preoperational, operational, and formal operational. Young children aged 2–7 years are in the preoperational stage, where they begin to think symbolically.

Symbolic thinking ability is a child's capacity to understand concepts and mentally visualize an object that is not physically present. In early childhood education (PAUD), symbolic thinking ability is linked to number recognition, early literacy, language development, and problem-solving. At this stage, children are already able to visualize numbers, letters, and objects through symbols without the presence of concrete objects in front of them (Nafiqoh & Atika, 2024). Thus, symbolic thinking skills in early childhood are considered crucial for supporting other aspects of a child's development.

In practice, teachers serve as the primary mediators who help children understand the meaning of symbols through play activities, dialogue, and the use of concrete materials. Teachers must employ effective and efficient teaching strategies so that students can absorb the learning effectively and have an enjoyable learning experience. Learning strategies are the teacher's plan for designing various activities and utilizing learning resources or media using teaching methods tailored to students' needs (Haloho & Kunci, 2022). Therefore, teachers' strategies for stimulating children's development must align with the foundational concepts of early childhood education (PAUD), namely "learning through play" and a focus on holistic learning. This will significantly influence children's development, particularly their symbolic thinking abilities.

In reality, many young children still struggle with symbolic thinking, such as difficulty recognizing and distinguishing numbers 1–10, distinguishing and naming letters that look similar, connecting or grouping the number of objects with numerical symbols, or difficulty using shape, letter, and number symbols in games. A common challenge in efforts to develop young children's symbolic abilities is the suboptimal use of teaching strategies to stimulate or provide innovative learning media that facilitate symbolic development, coupled with teachers' limited understanding of symbolic thinking.

Previous research has extensively discussed learning media that can enhance children's symbolic thinking abilities through various teaching methods. According to a study (Nafiqoh & Atika, 2024), which used PowerPoint as a learning medium to enhance symbolic thinking in young children, innovative learning media that leverage technology can help improve symbolic thinking abilities in young children. A study (Ramlah et al., 2023) indicates that the use of flashcards can improve symbolic thinking skills and linguistic intelligence in children aged 5–6 years. A study (Wikaningtyas et al., 2024) indicates that playing with letter cards has proven effective in enhancing symbolic thinking skills in children aged 5–6 years. Based on this background, engaging learning media can enhance symbolic thinking skills in young children.

The novelty of this study lies in its focus on comprehensive teacher strategies rather than just a single specific medium. This study aims to analyze and describe effective teacher strategies for stimulating indicators of symbolic thinking in young children at one Raudhatul Athfal (RA) in Padalarang. It is hoped that this research will contribute to the field of education and benefit teachers in early childhood education institutions by helping them design innovative learning strategies to develop symbolic thinking skills in young children.

METHOD

This study employs a qualitative approach using a descriptive method. The qualitative descriptive approach aims to identify and describe in depth how teachers' strategies develop symbolic thinking skills in young children. A qualitative descriptive design was chosen to explore and describe in depth the complex phenomenon of teachers' learning strategies and their influence on symbolic thinking skills in early childhood. The researcher's presence is crucial in qualitative research to collect data directly and accurately in the field (Ismawati et al., 2023).

The study was conducted at one of the RA (Raudhatul Athfal) kindergartens in Padalarang Subdistrict, West Bandung. The research subjects were 20 children in Group A and 2 teachers teaching at the RA school. Data were collected through observations conducted by the researcher at the RA institution, in-depth interviews with teachers to obtain relevant information, and documentation. The researcher was present in person to observe the obstacles in developing students' symbolic thinking skills and to understand the strategies teachers used to develop these skills in students. The data were then analyzed using the Miles & Huberman analysis model, which involves data reduction, data presentation, and drawing conclusions.

RESULTS AND DISCUSSION

Result

Based on the results of the research conducted at one of the RA institutions in Padalarang, it was found that teachers' strategies in designing a series of activities to deliver instruction or provide stimulation significantly influence children's development, particularly their symbolic thinking skills.

"Children's development varies, but that does not mean a child is unable to follow lessons or lacks the abilities of other children who have already mastered them. As facilitators, teachers must employ holistic teaching strategies that are engaging and tailored to the children's needs." (Interview with Teacher YN, November 28)

Here are some findings regarding teachers' learning strategies at one of the RA schools in Padalarang in their efforts to develop young children's symbolic thinking skills.

a. Group Block Play as a Teacher Strategy for Developing Shape Recognition Skills

The first strategy implemented by the teacher to develop children's symbolic thinking skills involves group block play. The teacher instructs each child to select five wooden geometric blocks and then discusses the specific shapes chosen by each child. The teacher then divides the children into small groups, and each group collaborates to create something using the blocks they have chosen. The children then describe the results of their block creations, such as building a house, a parking lot, a tower, and others. This demonstrates that blocks can develop children's symbolic abilities through role-playing or using blocks to represent other objects. According to an interview with Teacher Y, she explained:

"I actually still don't fully understand the specific indicators of symbolic thinking, so sometimes I focus more on general aspects of cognitive development. However, after learning more about symbolic thinking, I sometimes incorporate play activities that can develop children's symbolic abilities. For

introducing shapes and developing children's creativity or imagination, I use blocks as one of the media to stimulate those skills." (Teacher YN, November 28)

Based on this interview, the researcher realized that teachers' knowledge of symbolic thinking abilities in early childhood is crucial for designing learning strategies and providing appropriate stimulation to develop children's symbolic abilities. Building blocks are not only a safe and child-friendly play medium but also an effective learning strategy for developing various aspects of child development, including symbolic thinking. They help children develop shape recognition and use symbols to express their ideas or imagination.

b. The Game of Arranging Letters into Meaningful Words Using Letter-Shaped Bottle Caps as a Teacher's Strategy for Developing Letter Symbol Recognition Skills

Further findings regarding teachers' strategies in developing children's symbolic abilities involve using letter bottle caps as a means to foster letter symbol recognition. Teachers provide cleaned, used bottle caps with colored letter stickers attached. Each child takes a turn arranging the letter bottle caps according to example images and simple words such as "apple," "melon," "chicken," and others on a smart board made of cardboard covered with plastic and removable adhesive to facilitate the children's use.

According to field observations, this material is not limited to a single activity; instead, the teacher allows children to use it as a play tool. Children can arrange letters from A to Z or even spell out their own names. The game of arranging letters into meaningful words helps develop children's symbolic skills in the area of letter symbol recognition.

"Learning materials can be made from anything—recycled items, natural materials, pictures, or even educational videos—but they must be safe and child-friendly. For instance, I use these letter-shaped bottle caps as learning materials to stimulate children's language and cognitive development. Before the activity, I also often encourage the children to sing or engage in tracing letters and numbers using worksheets." (Interview with Teacher YN, December 3)

Based on the interview results, the letter-shaped bottle cap medium can stimulate children's symbolic thinking skills. Through this game, children are able to recognize the sounds and symbols of letters, arrange letters into words by imitating example words, and some children are even able to form their own names. In addition to symbolic abilities, the game of arranging letters into meaningful words can also develop children's language development. Learning materials are not limited to concrete objects; teachers also encourage children to sing as a strategy for introducing letters to young children.

c. Using Loose Parts Made from Natural Materials as a Teacher Strategy to Develop Children's Ability to Symbolically Represent Objects

The researcher conducted further observations regarding teachers' strategies in designing learning activities that influence the development of symbolic thinking skills in young children. There are several activities that use *loose parts* made from natural materials, such as:

1. Creating art from natural materials: Teachers invite children to pick leaves in the schoolyard and then create shapes like fish, lion heads, or other animals by arranging and gluing the leaves together; using seeds to create sunflower collages; or arranging simple patterns by utilizing the different colors of the seeds. Children follow simple patterns, such as creating a caterpillar shape using the ABAB pattern with red and green seeds.
2. Using clay or natural clay made from processed flour, which can be used to create various shapes according to the children's imagination. The teacher provides the material in small containers, and each child shapes the clay into any form they choose and describes their creation; some make animal shapes, plants, or even themselves.

“I use natural materials as a medium to stimulate children’s development. There are many types of natural materials, but it’s important that they are clean and safe for children. Natural materials can also be used to enhance symbolic skills, such as understanding simple patterns or representing objects—for example, using a leaf to form an animal shape or shaping clay into other objects. Additionally, natural materials can develop children’s sensory skills because the natural textures of these materials vary, and they also stimulate fine motor skills.” (Interview with Teacher TW, December 4)

Based on the results of interviews and observations, teachers use natural materials as a strategy to develop children’s symbolic abilities, where children can represent objects using other materials—such as creating animal shapes or other objects from clay or leaves they’ve picked themselves, imitating simple patterns using seeds—and then joyfully describe their creations. This demonstrates that the materials used provide an enjoyable experience for the children.

d. ICT-Based Learning Media (*Information and Communication Technology*) as a Teacher’s Strategy for Developing Number and Simple Symbol Recognition Skills

Another finding regarding teachers’ strategies in developing children’s symbolic thinking skills is that teachers utilize ICT-based learning media (*Information and Communication Technology*) by leveraging school facilities such as laptops, projectors, and speakers. Before beginning play-based activities, teachers encourage children to sing songs to learn numbers 1–10 and watch educational videos introducing number symbols and numerical quantities aligned with the theme—such as introducing the number 1 through audio and visual cues, followed by displaying the number of objects corresponding to the numerical value.

Teachers reinforce learning through interactive games on educational *websites*. The games are tailored to the theme and lesson content, and the difficulty level is adjusted to the children’s age. Teachers guide the children to play together by answering questions in the game, such as counting the trees in an image and then clicking the answer that matches the numerical symbol. Whether the answer is correct or incorrect, the game provides feedback that keeps the children engaged and enthusiastic about the learning process. In addition to learning numbers, children can also recognize simple symbols such as arrows, color icons, and other symbols within the interactive game. Children are more focused and enthusiastic when answering all the questions, indicating that they do not feel pressured by the learning process.

“We’re encouraging all teachers to use technology and implement digital-based learning. Teachers also participate in training sessions on this topic. After all, as times advance, teachers must adapt—especially since today’s students are part of Generation Alpha, who are already accustomed to technology. However, this doesn’t mean everything must be digital; learning activities using concrete materials or worksheets are still employed, with ICT-based media occasionally integrated.” (Interview with Teacher TW, December 4)

Based on the results of the interviews and observations above, the play-based learning activities conducted to develop symbolic abilities are also diverse. The use of concrete materials and ICT (*Information and Communication Technology*) demonstrates that teachers’ strategies for developing students’ symbolic thinking skills are designed to be engaging, holistic, and innovative. The use of ICT media in learning is an effective strategy for developing children’s symbolic thinking skills. Learning becomes more stimulating and interactive, thereby supporting children’s development to be more optimal.

Overall, the learning media used as teaching strategies at the RA institution are highly effective for developing young children’s symbolic thinking skills across all indicators. Children are able to recognize letters, recognize numbers, recognize shape symbols, recognize simple symbols with meaning, imitate simple patterns, match quantities with number symbols, and substitute objects with other meanings. Teachers’

understanding of young children's symbolic thinking abilities also influences the provision of stimulation or the planning of appropriate learning strategies for the children.

Discussion

Following a study conducted at one of the RA institutions in Padalarang regarding teachers' strategies in developing young children's symbolic thinking skills, the results of observations and interviews revealed several learning strategies implemented by teachers at the institution as efforts to develop students' symbolic thinking skills, including:

a. Group Block Play as a Teacher Strategy for Developing Shape Symbol Recognition Skills

Block media come in various shapes, including number blocks, letter blocks, and geometric shape blocks. Research findings indicate that teachers use geometric shape blocks as a learning strategy to develop symbolic thinking skills. Children recognize shapes through concrete objects and can stimulate symbolic thinking by playing with blocks to represent other objects—such as using a block as a car, building a house from a stack of blocks, and similar activities. This demonstrates that the teachers' strategy is effective in developing children's symbolic thinking skills regarding the recognition of shape symbols and the representation of other objects using blocks.

This aligns with the findings of a study (Untari et al., 2024) stating that block media can significantly enhance the ability to recognize geometric shapes. Children become more interested in participating in learning activities using block-based games, thereby effectively stimulating the development of their ability to recognize geometric shapes. However, that study focused solely on the recognition of geometric shapes. Geometric blocks can also stimulate indicators of symbolic thinking skills in young children through role-playing or using blocks to represent other objects such as cars, towers, houses, and more.

b. The Game of Arranging Letters into Meaningful Words Using Letter-Shaped Bottle Caps as a Teacher's Strategy to Develop Letter Symbol Recognition Skills

Learning strategies through play that utilize recycled materials as media have proven effective in developing children's symbolic thinking skills regarding letter recognition. Children are able to arrange letters, form meaningful words by following examples, and even create their own names. The media used to stimulate children is not limited to *worksheets* for tracing letters or singing; instead, teachers utilize modified used bottle caps as engaging learning tools that capture children's interest, enabling them to enthusiastically participate in the activity of arranging letters into meaningful words.

The use of letter bottle cap media can enhance young children's ability to recognize letter symbols. In addition to stimulating children's symbolic abilities, this media also enhances aspects of language development because arranging letters into meaningful words enriches children's vocabulary. A study (Haryono & Sari, 2024) concluded that learning media using bottle caps significantly improves letter recognition skills. Meanwhile, according to a study (Yenti & Suryana, 2022) using number bottle cap learning materials, it was found that number bottle cap materials have a significant influence on children's ability to recognize number symbols, understand numerical symbols, and grasp number sequences. Based on previous research findings, learning materials using letter bottle caps can serve as a strategy for teachers to enhance young children's ability to recognize letter symbols.

c. Using Loose Parts Made from Natural Materials as a Teacher's Strategy to Develop Children's Ability to Represent Objects Symbolically

Teachers' strategies for developing children's symbolic thinking in the ability to symbolically represent objects involve using learning media made from natural materials such as leaves, seeds, clay, or natural clay. Children are given the freedom to be creative using these natural materials. The children's work demonstrates their ability to think symbolically by representing objects through natural materials, such as creating shapes of

animals, plants, objects, or themselves. They also imitate or create simple patterns by utilizing the different colors of seeds.

This is supported by research (Aulia & Ainur, 2025) examining the implementation of *loose parts* based on local natural materials such as dry leaves, seeds, flowers, and small twigs easily found in the school environment. The research findings indicate that *loose parts* made from natural materials can enhance the creativity of children aged 4–5 years. In line with the Reggio Emilia theory, which states that young children learn through interaction with their surroundings. Exploring natural materials in the school environment is also a form of children's interaction with their surroundings (Sartika et al., 2024). Thus, *loose parts* media made from natural materials can serve as an effective learning strategy to stimulate children's development, particularly their symbolic ability in representing real objects.

d. ICT-Based Learning Media (*Information and Communication Technology*) as a Teacher's Strategy for Developing the Ability to Recognize Numbers and Simple Symbols

The learning strategies designed by teachers at the RA institution not only utilize concrete materials but also incorporate ICT-based media (*Information and Communication Technology*). The use of digital media in learning is now considered essential due to the rapidly advancing times; teachers must therefore be able to adapt and adjust their learning strategies by leveraging digital media. The findings indicate that teachers use ICT-based learning media such as websites and educational videos like *YouTube*, as well as interactive game *websites* tailored to the theme and age of the children. This ICT-based learning media has a significant impact on children's symbolic abilities. Learning becomes more enjoyable and interactive, so children do not feel pressured and remain enthusiastic throughout the learning process. Children are able to recognize number symbols, identify numerical symbols, and understand simple symbols with meanings such as arrow signs or color icons.

According to research (Yusuf et al., 2025), WordWall-based learning media can enhance young children's symbolic thinking skills, particularly in recognizing numbers and letters. Stimulation through educational games is highly effective in improving symbolic thinking skills. Additionally, learning becomes more interactive and makes it easier for children to understand the material. Meanwhile, research (Haryani & Sari, 2021) indicates that the symbolic thinking skills of 4–5-year-old children can be stimulated through educational videos, which have proven effective in improving their ability to recognize number symbols and letters. Based on these findings, ICT-based learning media can serve as an effective and efficient strategy for developing young children's symbolic skills.

The purpose of using diverse learning media in early childhood education (PAUD) is to optimally stimulate children's developmental aspects so that they can continue their education to the next level. While teaching reading, writing, and arithmetic to young children in PAUD is permitted, it must be adapted to the children's needs and age so that they do not feel pressured or burdened at school. In line with research (Wulansuci & Kurniati, 2019), which states that teaching reading, writing, and arithmetic that is not age-appropriate and the use of incorrect methods in early childhood can risk causing children to experience academic stress, which is feared to affect their growth and development.

CONCLUSION

Based on the results of the study, it can be concluded that teachers' strategies for developing children's symbolic thinking skills must be designed holistically, engagingly, and interactively. Essentially, symbolic thinking is a child's ability to understand concepts and mentally visualize an object that is not physically present. The use of learning media involving concrete objects and ICT-based media serves as an effective strategy for teachers to enhance young children's symbolic thinking skills. The learning strategies employed by teachers at the RA institution where the research was conducted utilize blocks, recycled materials, natural materials, and ICT-based media to develop children's symbolic thinking skills in recognizing number symbols,

matching quantities with numbers, recognizing letter symbols, arranging letters into meaningful words, recognizing shape symbols, imitating simple patterns, and representing objects using other objects. Thus, teachers' knowledge of symbolic thinking skills is also crucial so that they can design learning activities tailored to the needs and learning styles of young children.

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