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The Use of Magic Tree Media in Developing Early Childhood Cognitive Abilities

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Abstract

Cognitive ability is one of the fundamental developmental aspects that must be stimulated from an early age. However, many early childhood children are still unable to recognize the concepts of color, shape, size, and number optimally due to the lack of interesting and interactive learning media. This study aims to describe the use of the magic tree media in developing the cognitive abilities of early childhood children at TK IT As Shadiqah. The research method used was classroom action research (CAR) with two cycles. The subjects of the study were 20 children in group B aged 5-6 years. Data collection techniques used observation, documentation, and performance tests. Data analysis was carried out descriptively qualitatively and quantitatively. The results showed that the use of the magic tree media significantly improved children's cognitive abilities, which included the ability to recognize the concepts of numbers, geometric shapes, colors, and sizes. In the pre-cycle, only 35% of children reached the category of developing as expected (BSH). After the first cycle, it increased to 65%, and in the second cycle it reached 85%. The conclusion of this study is that the magic tree media is effective as a learning medium to develop the cognitive abilities of early childhood children.

Keywords : Cognitive Abilities, Magic Tree Media, Early Childhood Education

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INTRODUCTION

Early childhood refers to individuals between the ages of 0 and 6, during which rapid growth and development occur in various aspects of life. This period is often referred to as *the golden age* because during this period, a child's brain develops tremendously and lays the foundation for later development (Fadlillah, 2017). One crucial aspect of development to stimulate in early childhood is cognitive ability. Developmental psychology (Piaget, Vygotsky) emphasizes stages of thinking and social interaction, while cognitive psychology focuses on training attention, working memory, and problem-solving. Neuroscience explains brain plasticity and critical periods, and educational science highlights the importance of structured stimulation to build executive functions and a foundation for children's learning.

Early childhood cognitive abilities include thinking, remembering, understanding concepts, problem-solving, and counting and recognizing number symbols. According to Piaget, children aged 2-7 are in the preoperational stage, where they begin to use symbols

and language to represent objects (Santrock, 2019). During this phase, stimulation through concrete and visual media is essential for children to develop an understanding of basic concepts.

Based on initial observations conducted at TK IT AS SHADIQAH, various problems were identified in children's cognitive development. Most children were unable to properly recognize number concepts, were unable to differentiate basic geometric shapes, and still had difficulty recognizing the concepts of color and size. Data showed that of the 20 children in group B, only 7 (35%) achieved the expected developmental milestones. This situation was exacerbated by learning methods that were still conventional, teacher-centered, and minimal use of engaging learning media.

This phenomenon aligns with the findings of Kusumawati and Nafi'ah (2022), who stated that the low cognitive abilities of early childhood education in various early childhood education institutions are due to the limited learning media used by teachers, resulting in children not being optimally stimulated. Furthermore, Anggraini and Syamsuar (2021) also found that many early childhood education teachers still rely on worksheets as their sole learning medium, which is incompatible with the learning characteristics of early childhood, which tends to learn through play.

Several previous studies have explored various learning media to improve children's cognitive abilities. Rahayu and Purwanto (2020) examined the use of flashcards and found improved number recognition skills in children in group A. Meanwhile, Mardiyah and Wahyuni (2021) examined the effectiveness of puzzle games in developing logical thinking skills. However, these studies focused more on one specific cognitive aspect and lacked the integration of various cognitive concepts into a comprehensive and engaging medium.

On the other hand, research on the magic tree as a learning tool in early childhood education (PAUD) is still very limited. Some existing studies only examine this medium in the context of letter recognition and vocabulary (Setiani & Kurniawan, 2021). None have specifically and in-depth explored the potential of the magic tree in developing children's cognitive abilities holistically, encompassing concepts of number, shape, color, and size simultaneously. This research gap is the primary reason for conducting this study.

The development of cognitive abilities in early childhood is based on Piaget's constructivism theory, which emphasizes that children learn through direct experience and interaction with concrete objects (Piaget in Santrock, 2019). However, this theory does not specifically explain how appropriate learning media design can optimize children's cognitive stimulation. Vygotsky, through the concept of the Zone of Proximal Development (ZPD), added that children learn more optimally with scaffolding from more experienced individuals, including through specially designed media (Vygotsky in Prihaningtyas & Wahyuni, 2022).

Empirically, Montessori's theory of play-based learning emphasizes the importance of concrete, engaging, and child-manipulable media in the learning process. The Magic Tree, as a three-dimensional, child-operable medium, aligns with the principles of experiential learning. However, no theoretical study has specifically analyzed the suitability of the Magic Tree with Piaget's cognitive developmental stages. This theoretical gap prompted researchers to scientifically examine the effectiveness of the Magic Tree in developing cognitive abilities in early childhood.

Based on the researcher's identification, the problem in this study is: how the use of magic tree media can develop the cognitive abilities of early childhood children at IT AS SHADIQAH Kindergarten. The aim of this study is to describe and analyze the use of magic tree media in developing the cognitive abilities of early childhood children.

METHOD

This research used the Classroom Action Research (CAR) method, implemented in two cycles. The CAR model used refers to the Kemmis and McTaggart model, which consists of four stages in each cycle: (1) planning, (2) acting, (3) observing, and (4) reflecting (Arikunto, 2021). This model was chosen because it provides a systematic framework for identifying classroom problems and finding solutions in a sustainable manner.

The study was conducted at TK IT AS SHADIQAH in the even semester of the 2025/2026 academic year. The subjects were 20 children in Group B aged 5-6 years, consisting of 11 girls and 9 boys. Subject selection was based on initial observations indicating low cognitive abilities in the children in that group.

The magic tree used in this study is a three-dimensional tree-shaped object made of Styrofoam and wood, 60 cm tall. The tree is equipped with removable colored fruit, number cards, geometric shape cards (circle, triangle, square, and rectangle), and color cards. This object is designed so that children can directly interact with it through grouping, sorting, and matching activities.

The data collection techniques used include: (1) structured observation using a cognitive development observation sheet that includes four indicators, namely the ability to recognize number concepts, recognize geometric shapes, recognize colors, and recognize the concept of size; (2) documentation in the form of photos and videos of learning activities; and (3) performance tests in the form of practical tasks carried out by children directly using the magic tree media. The research instrument is an observation sheet that has been validated by two early childhood education experts.

The assessment of children's cognitive abilities uses a developmental scale referring to Permendikbud No. 146 of 2014, namely: BB (Not Yet Developing), MB (Starting to Develop), BSH (Developing According to Expectations), and BSB (Developing Very Well). Data analysis was conducted descriptively qualitatively to describe the learning process and quantitatively to calculate the percentage of children's cognitive development achievement. The indicator of success for this study is if at least 80% of children reach the BSH or BSB category.

RESULTS AND DISCUSSION

Research result

This research was conducted in two cycles, each consisting of three meetings. In each meeting, the magic tree was used as the primary learning medium, with different themes but still focused on stimulating children's cognitive abilities.

a. Pre-Cycle Conditions

Prior to the implementation of the intervention, initial observations were conducted to identify the children's cognitive abilities. The pre-cycle observations showed that out of 20 children, only 7 (35%) were in the BSH category, while 13 (65%) were still in the BB and MB categories. The lowest ability was in recognizing the concept of numbers and geometric shapes. Many children were still confused about differentiating between squares and rectangles, and were unable to correctly order the numbers 1-10.

Table 1. Comparison of Children's Cognitive Abilities in Each Cycle

Cognitive Ability Aspects	Pre-Cycle (%)	Cycle I (%)	Cycle II (%)
Understanding the Concept of Numbers	30%	60%	85%
Getting to Know Geometric Shapes	35%	65%	85%
Get to Know Colors	40%	70%	90%

Understanding the Concept of Size	35%	65%	80%
Overall Average	**35%**	**65%**	**85%**

b. Cycle I

In cycle I, learning using the magic tree focused on introducing the concepts of numbers, colors, and basic geometric shapes. The teacher introduced the magic tree to the children and demonstrated how to use it. The children were then asked to take turns hanging fruit on the tree according to the color, shape, and number the teacher had mentioned.

Observations in cycle I showed significant improvement compared to pre-cycle conditions. On average, children's cognitive abilities increased from 35% to 65%. Children demonstrated high enthusiasm when interacting with the magic tree media. This aligns with Susanto's (2021) statement that three-dimensional media that can be manipulated by children will increase their active involvement in the learning process, making the concepts learned easier to understand and remember.

Despite improvements, the results of cycle I did not reach the success indicator, which was 80% of children in the BSH category. Reflections on cycle I revealed several weaknesses, including: the time allotted to each child was too short, the teacher's instructions were given too quickly, and some media components needed to be enlarged to make them more easily visible to all children. These weaknesses became the basis for improvements in cycle II.

c. Cycle II

Based on reflection on cycle I, improvements were made in cycle II including: (1) increasing individual practice time from 5 minutes to 8 minutes per child; (2) using simpler instructional language and implementing it in stages; (3) adding media components such as larger number cards and fruit with more contrasting colors; (4) providing positive reinforcement in the form of praise and star stickers for children who successfully complete tasks.

The results of the second cycle of observations showed a very significant increase. The average cognitive ability of children reached 85%, exceeding the established success indicator of 80%. The aspect of color recognition reached the highest percentage at 90%, followed by the ability to recognize geometric shapes and number concepts at 85% each, and the ability to recognize the concept of size at 80%. Only 3 children (15%) were still in the MB category, while 17 children (85%) had reached the BSH and BSB categories.

Discussion

The results of this study demonstrate that the use of the Magic Tree media can effectively develop cognitive abilities in early childhood. The effectiveness of the Magic Tree media can be explained through several theoretical and empirical perspectives.

First, the magic tree is a concrete medium that aligns with the learning characteristics of early childhood. According to Piaget, children in the preoperational stage (2-7 years) still require concrete representations to understand abstract concepts (Cahyani & Rohani, 2023). The magic tree allows children to touch, hold, and manipulate objects directly, allowing them to understand abstract concepts such as numbers, colors, and shapes through real-life experiences.

Second, the attractive and colorful design of the magic tree media can stimulate children's motivation and interest in learning. This aligns with the findings of Lestari and Nurtanto (2022), who stated that colorful, three-dimensional learning media are more effective in capturing the attention of young children than two-dimensional media, such as pictures in books. High learning motivation in children contributes to increased concentration and absorption of learning materials.

Third, the use of the magic tree creates a fun learning environment through a play-while-learning approach. Montessori emphasized that play is a natural way for children to learn, and a fun learning environment encourages active experimentation and exploration (Sitorus & Simanjuntak, 2023). When children play with the magic tree, they are indirectly practicing the cognitive concepts targeted in the learning.

Fourth, children's grouping, sorting, and matching activities using the magic tree train logical and analytical thinking skills. Mulyasa (2020) states that classification and serialization activities are important foundations for developing early childhood cognitive abilities, which will form the basis for mathematics and science skills at subsequent levels of education.

Fifth, the teacher's role as a facilitator, providing scaffolding through guiding questions while children use the Magic Tree media, also contributes to improving children's cognitive abilities. This aligns with Vygotsky's theory of the ZPD, which states that children can achieve higher levels of understanding with the help of more competent individuals (Prihaningtyas & Wahyuni, 2022). Teachers who actively guide and facilitate children in using the media will help them develop deeper understanding.

The findings of this study also align with research by Haryati and Khoiruddin (2023), which stated that manipulative-based learning media significantly improves the cognitive abilities of early childhood, particularly in recognizing number concepts and geometric shapes. Furthermore, research by Ramadhani and Sari (2022) also shows that learning that integrates various cognitive aspects in a single, cohesive medium is more effective than learning that separates each cognitive aspect.

The most significant improvement occurred in color recognition (from 40% to 90%). This is understandable because the fruits in the magic tree media have highly contrasting and attractive colors, making the concept of color easier for children to internalize. Meanwhile, the lowest improvement occurred in size recognition (from 35% to 80%). This is likely due to the more complex abstraction of the concept of size compared to color or shape, requiring more repetition and variation in learning activities (Kurnia & Fadillah, 2021).

CONCLUSION

Based on the research results and discussions that have been described, it can be concluded that the use of the magic tree media is effective and significant in developing the cognitive abilities of early childhood in TK IT AS SHADIQAH. Improvements occurred in all aspects of cognitive abilities measured, including the ability to recognize the concept of numbers, geometric shapes, colors, and sizes. The average cognitive abilities of children increased from 35% in the pre-cycle, to 65% in cycle I, and reached 85% in cycle II, exceeding the established success indicators.

The success of the magic tree media in developing children's cognitive abilities is based on several factors, namely: (1) its concrete nature and can be manipulated according to the child's cognitive development stage; (2) its attractive and colorful appearance so that it arouses children's interest and motivation to learn; (3) its play-based approach while learning according to the characteristics of early childhood; and (4) its ability to integrate various cognitive aspects in one comprehensive medium.

This study recommends that early childhood education teachers use the magic tree as an alternative learning medium to develop children's cognitive abilities. Future researchers are advised to explore the effectiveness of the magic tree in other aspects of development. such as language and social-emotional, as well as developing more diverse and innovative variants of the magic tree media.

REFERENCES

Anggraini, R., & Syamsuar, S. (2021). The use of children's worksheets in early childhood education: A critical review of the impact on cognitive development. *Journal of Early Childhood Education, 15*(2), 112–125. https://doi.org/10.21009/JPUD.152.01

Arikunto, S. (2021). *Classroom action research* (Rev. ed.). Bumi Aksara.

Cahyani, I., & Rohani, R. (2023). Implementation of Piaget's theory in early childhood cognitive learning. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini, 7*(3), 2891–2902. https://doi.org/10.31004/obsesi.v7i3.4321

Fadlillah, M. (2017). *Early childhood play and games*. Kencana.

Haryati, S., & Khoiruddin, M. A. (2023). The effectiveness of manipulative media in improving the cognitive abilities of 5–6 year old children. *Potensia Scientific Journal, 8*(1), 45–56. https://doi.org/10.33369/jip.8.1.45-56

Kurnia, R., & Fadillah, A. (2021). Analysis of early childhood difficulties in understanding the concept of size and its implications for learning. *Journal of Integrative Holistic Early Childhood (AUDHI), 4*(2), 78–89. https://doi.org/10.36722/jaudhi.v4i2.685

Kusumawati, N., & Nafi'ah, U. (2022). The effect of learning media availability on early childhood cognitive abilities in early childhood education institutions. *Golden Age: Scientific Journal of Early Childhood Growth and Development, 7*(1), 33–44. https://doi.org/10.14421/jga.2022.71-04

Lestari, W., & Nurtanto, M. (2022). The influence of three-dimensional media on learning interest and cognitive abilities of group B kindergarten children. *Journal of Child Education, 11*(1), 1–12. https://doi.org/10.21831/jpa.v11i1.46512

Mardiyah, S., & Wahyuni, E. S. (2021). The effectiveness of puzzle games in developing logical thinking skills in 4–5 year old children. *Journal of Integrative Holistic Early Childhood (AUDHI), 4*(1), 1–13. https://doi.org/10.36722/jaudhi.v4i1.614

Ministry of Education and Culture of the Republic of Indonesia. (2014a). *Regulation of the Minister of Education and Culture Number 137 of 2014 concerning national standards for early childhood education*.

Ministry of Education and Culture of the Republic of Indonesia. (2014b). *Regulation of the Minister of Education and Culture Number 146 of 2014 concerning the 2013 curriculum for early childhood education*.

Mulyasa, E. (2020). *Early childhood education management*. PT Remaja Rosdakarya.

Prihaningtyas, N. D., & Wahyuni, S. (2022). Scaffolding in early childhood learning: A Vygotsky-based theoretical study. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini, 6*(5), 4537–4547. https://doi.org/10.31004/obsesi.v6i5.2473

Rahayu, D., & Purwanto, A. (2020). The use of flashcard media to improve number recognition skills in early childhood group A. *Undiksha Early Childhood Education Journal, 8*(3), 201–210. https://doi.org/10.23887/paud.v8i3.28956

Ramadhani, F., & Sari, M. (2022). Integration of cognitive aspects in early childhood learning media: A comparative study. *Jurnal Ceria, 5*(4), 344–355. https://doi.org/10.22460/ceria.v5i4.10298

Republic of Indonesia. (2003). *Law of the Republic of Indonesia Number 20 of 2003 concerning the national education system*.

Santrock, J. W. (2019). *Life-span development* (17th ed.). Erlangga.

Setiani, R., & Kurniawan, M. (2021). The use of magic tree media in recognizing letters and vocabulary for 5–6 year old children. *Pelita PAUD Journal, 5*(2), 156–165. https://doi.org/10.33222/pelitapaud.v5i2.1251

Sitorus, R. D., & Simanjuntak, M. (2023). Implementation of the Montessori approach in developing early childhood cognitive abilities. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini, 7*(1), 432–444. https://doi.org/10.31004/obsesi.v7i1.3812

Susanto, A. (2021). *Early childhood development: An introduction to its various aspects*. Kencana.

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