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Implementation of Picture Guessing Games as a Stimulation for Concentration and Memory in Early Childhood at RA Ar-Ruhama A Neuroscience Perspective

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ABSTRACT

This study examines the implementation of picture guessing games as a stimulation strategy to improve concentration and memory in early childhood at RA Ar-Ruhama. The research is grounded in the importance of cognitive stimulation during the golden age, a period when children's attention and memory develop rapidly and are strongly influenced by concrete, visual, and enjoyable learning experiences. A descriptive qualitative method was employed, utilizing observation, interviews, and documentation to describe the implementation process of the game and the children's responses throughout the activities. The findings indicate that the picture guessing game effectively enhances children's

attention focus and visual memory, as demonstrated by their improved ability to respond to instructions, maintain concentration, and accurately recall the displayed images. Additionally, the game increased children's learning motivation and created a more enjoyable learning atmosphere. These results highlight that picture-guessing games serve as an effective and relevant learning medium for stimulating early childhood cognitive abilities through visual, verbal, and interactive approaches. Therefore, the study recommends the regular and varied use of picture-guessing games as an alternative instructional strategy in early childhood education settings.

Introduction

Early childhood education (ECE) serves as an essential foundation for children's physical, cognitive, socioemotional, and character development. During this developmental stage, learning processes and rich interactions provide a strong basis for shaping future behavior, language, and learning abilities. Educational intervention in the early years can influence the development of fundamental and long-term capacities; therefore, ECE should be regarded not merely as childcare but as a systematic and well-planned educational effort (Harjanty et al., 2020). Early childhood development encompasses both quantitative and qualitative changes in various aspects physical, cognitive, language, socio-emotional, and moral that progress rapidly from birth to approximately six years of age. Development is not limited to physical

growth, but also represents a gradual process that marks an increase in psychological maturity and behavioral abilities. Understanding this concept is therefore important for planning appropriate age related educational stimulation (Dina et al., 2022).

Early childhood development plays a fundamental role in the formation of basic abilities, including concentration, memory, and learning readiness. During preschool years, children's neural structures and cognitive connections develop rapidly, making appropriate stimulation at this stage a crucial long-term investment (Kementerian Pendidikan dan Kebudayaan, 2017). Research shows that children who experience challenges in attention and memory during early childhood are more likely to encounter difficulties upon entering primary school (Siregar, 2021). This period represents a critical phase that strongly influences future cognitive, affective, and social development. At this stage, children's brains undergo rapid synaptic formation and high plasticity, making the stimulation they receive significantly impactful on their concentration and memory skills. According to educational neuroscience theories, a child's brain is highly responsive to enjoyable multisensory experiences, as such activities stimulate the limbic system, which plays a role in emotion and memory processing (Pohan, Sofiah, & Lestari, 2024). Thus, play based learning becomes an appropriate approach aligned with children's brain development.

Early brain development in children is a biological and experience

dependent process that progresses most rapidly during the first years of life, often referred to as the golden age. During this period, neural structures and connectivity including synaptogenesis, myelination, and the strengthening of frequently used neural networks develop at an accelerated rate. Thus, appropriate stimulation nutrition, social interaction, safe environments, and stimulating activities plays a crucial role in shaping children's cognitive, emotional, and behavioral capacities. National studies emphasize the importance of early intervention for optimizing children's brain potential (Agustina et al., 2020). Brain development is not only determined by genetics but is strongly influenced by environmental conditions and early experiences. Chronic stress, neglect, or unsafe environments can disrupt brain architecture and adaptive capacity, while warm, stimulating, and consistent environments support the development of basic skills such as attention, memory, language, and emotion regulation. Thus, efforts in education and caregiving should prioritize supportive psychosocial conditions and adequate nutrition as essential components for promoting optimal early brain development (Hawa & Susanti, 2022).

One of the strategies commonly used to support brain development in early childhood is the use of visual media particularly pictures as learning stimuli. Through these activities, children are encouraged to observe visual objects, recognize them, store information, and recall the images they have seen. This process involves short-term visual memory

and selective attention functions centered in the prefrontal cortex and parietal lobes. Picture-based games that demand visual focus can strengthen executive functions in early childhood (Nasa et al., 2022). These activities not only enhance visual memory but also train children to control attention and impulses, thus supporting the development of sustained concentration skills.

Play based learning aligns well with children's brain development patterns. Visual media act as cognitive and visual stimuli that help children focus on learning objects, reduce external distractions, and encourage mental activities such as identification, comparison, and visual judgment. This aligns with the view that "concentration is essential in human life because it relates to human effort toward any objective" (Khotimah et al., 2021). The use of visual media in early childhood learning helps improve memory retention and learning focus because children learn through concrete representations that are processed effectively by the right hemisphere of the brain (Dewi, 2022). Neuroscience-based approaches also emphasize the importance of repeated enjoyable stimulation to strengthen synaptic pathways that support cognitive abilities (Khafiyya, 2022). Therefore, implementing picture-guessing games can be viewed as a strategy that is both enjoyable and scientifically aligned with principles of early brain development.

In addition to visual stimulation, the use of timed and varied

activities adds another dimension to children's learning processes. Games that involve presenting two different images, alternated between the right and left hands at increasing speeds, engage visual focus, speed adaptation, and visual memory simultaneously. Such activities help children process information alternately and quickly, ultimately enhancing cognitive flexibility and working memory. Studies on visual media show that combined motor visual stimulation significantly improves short-term memory and concentration in early childhood.

Through the application of picture-guessing games with gradually increasing speeds from slow to fast it is expected that learning becomes active, enjoyable, and meaningful while simultaneously stimulating concentration and memory. This study aims to explore how the implementation process unfolds, how children respond, and how learning gains emerge from the activity. Based on this rationale, the present study examines the "Implementation of Picture Guessing Games as Stimulation for Concentration and Memory in Early Childhood at RA Ar-Ruhama." The primary focus is to understand how picture-guessing activities stimulate children's cognitive abilities through a neuroscience-based approach aligned with brain development and learning experiences.

Methods

This study employed a descriptive qualitative method designed to provide a direct and detailed account of how the picture guessing game

was implemented to stimulate concentration and memory in early childhood at RA Ar-Ruhama. This approach enables researchers to observe learning activities occurring naturally in the classroom and describe the findings in verbal form. Descriptive qualitative research aims to understand the phenomena experienced by research subjects such as behaviors, perceptions, and actions comprehensively by presenting them in detailed narrative descriptions.

Data collection techniques used in this study included observation, interviews, and documentation (Qomaruddin, 2024). First, direct observation was conducted to examine how teachers and children carried out the picture-guessing game. Observation focused on how children paid attention, identified the images, and recalled the visual stimuli shown to them. Such observation is essential for understanding how children behave naturally during classroom play (Fitri, 2024). Second, qualitative interviews were used to collect more in-depth insights through direct interaction between researchers and respondents. Interviews help explore respondents' experiences, perspectives, and interpretations regarding the picture-guessing activity (Rivaldi et al., n.d.). Third, documentation was conducted using questionnaires as structured instruments containing a list of questions designed to assess children's progress. Questionnaires serve as a means for researchers to obtain information from a large number of participants in a relatively short time, while also offering data that can

be processed using statistical techniques (Daruhadi & Sopiati, 2024).

Results and Discussions

The findings revealed that the implementation of picture guessing games at RA Ar-Ruhama effectively improved children's cognitive development, particularly in concentration and memory. Observations, questionnaires, and documentation showed that a structured, engaging, and repetitive picture guessing activity enhanced children's attention span, ability to recall visual stimuli, and accuracy in naming images. Learning activities at RA Ar-Ruhama adopt a learning through play approach supported by various creative methods and media. One of the media used is the picture guessing game, designed to stimulate cognitive development, especially concentration and memory. The indicators targeted in this study included the child's ability to (1) focus attention on the images shown (concentration indicator), (2) recall and name the images previously seen (memory indicator), and (3) answer simple questions related to the images (comprehension indicator). The game was conducted in small groups for about 30-40 minutes. Activities began with warm up sessions, such as singing and apperception, to prepare children for learning.

No.	Procedure of the Game
1.	The teacher shows an image while naming the object.
2.	Children are instructed to observe the picture for a few seconds.

3.	The teacher then displays another image for several seconds.
4.	The teacher increases the level of difficulty by showing images more quickly, and the children must name them immediately.

During the activity, the teacher provided positive reinforcement such as praise and applause to increase motivation. After several sessions, the teacher recorded each child's progress. Improvements included faster responses to instructions, longer attention spans, and more accurate recall of images. Teacher reflections conducted with researchers confirmed the effectiveness of the media.

- Increased Concentration

  Before the intervention, several children were easily distracted. After consistent implementation of the picture guessing game, children demonstrated, improved attention toward visual stimuli, better ability to follow instructions without repetition, ability to listen and wait for their turn. Teachers noted that children were "more focused and less easily distracted when looking at pictures."
- Improved Memory

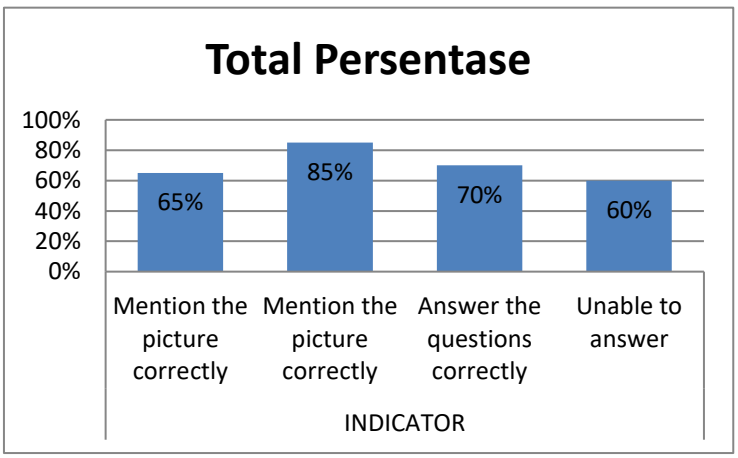
  Children showed progress in remembering object names and forms. Initially, some children struggled to recall images due to limited focus. Over time, they demonstrated stronger visual memory and better recall.

- Higher Motivation and Enthusiasm

  Children participated actively, responded cheerfully, and waited eagerly for their turns. The overall learning atmosphere became more enjoyable and dynamic.

- Crucial Teacher Role

  The success of the game was strongly influenced by the teacher's ability to manage the class, deliver clear instructions, and choose appropriate images. Effective communication helped establish positive interactions and learning outcomes.



Quantitative analysis indicated that most children achieved the Developing as Expected (BSH) category, with scores ranging from 66.66% to 79.16%, while one child reached Very Well Developed (BSB) with a score of 83.33%. A high score of 82.5% on the focus indicator aligns with Dewi (2022), who stated that attractive and concrete visual media significantly improve attention. The ability to answer questions

accurately received the highest score (85%), indicating strong comprehension and memory retrieval. However, the indicator for naming images (65%) revealed that some children needed more repeated practice to strengthen memory consistency, aligning with Khafiyya's (2022) assertion on the importance of repeated real world stimulation. Some children scored 60% in the "unable to answer" category (Mulai Berkembang/MB), which is considered normal due to developmental variability in early childhood.

Teacher interviews confirmed improvements in, instruction following, attention control, patience during turns and courage to answer. This demonstrates that the picture-guessing game improves not only cognitive development but also socio emotional skills related to turn taking, self control, and communication. Studies by Nasa et al. (2022) support that rule based games improve executive functions, including cognitive inhibition and impulse control. The game also triggers positive emotions, which strengthen memory through activation of the limbic system a principle widely supported in educational neuroscience. Piaget's Preoperational Theory, which emphasizes the effectiveness of concrete and visual learning for ages 2–7. Research highlighting the benefits of visual media for attention and memory (Dewi, 2022). Neuroscience principles regarding repeated, enjoyable stimulation for strengthening synaptic pathways (Khafiyya, 2022). The picture guessing game trains the cognitive processes of

attention, visual working memory, and executive function through repeated exposure to visual stimuli and rule based interaction.

Conclusion

The implementation of the picture-guessing game proved to be an effective learning strategy for enhancing concentration and memory in early childhood at RA Ar-Ruhama. The activity enabled children to observe visual stimuli attentively, recall information more accurately, and comprehend teacher instructions more effectively. It also helped foster motivation, confidence, and social skills through interactive classroom activities. Teacher involvement particularly in providing engaging media, managing the class, and offering positive reinforcement played a crucial role in the success of the learning process. The findings support Piaget's view that physical and visual activities are the most effective learning methods for children in the preoperational stage. Thus, picture-guessing games not only stimulate cognitive development but also contribute holistically to children's early development. Given their ability to enhance attention, visual memory, and self-regulation in enjoyable and developmentally appropriate ways, picture guessing games are recommended as an alternative learning medium in early childhood education.

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