

Improving Children's Concentration Through Graded Puzzle Games in Group B at KB Nurul Huda

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Abstract

This study aims to improve the concentration skills of early childhood students through the use of graded puzzle materials at Nurul Huda Kindergarten. The research design employed was Classroom Action Research based on the Kemmis and McTaggart model, conducted systematically over multiple cyclical phases. Each cycle comprised the integrated stages of planning, implementation, observation, and reflection. The subjects in this study consisted of children in Group B aged five to six years. Data collection was conducted through structured observation and documentation. To ensure a comprehensive measurement basis from the outset, the observation instruments utilized targeted observation sheets designed to systematically track behavioral changes. The measurement was strictly anchored on key concentration indicators, which included the children's attention span, their persistence in completing tasks, their ability to follow instructions, and their overall engagement in learning activities. The intervention was guided by a predefined success criterion, which mandated that the study would be deemed successful only when a clear majority of the classroom cohort successfully reached the expected and advanced developmental categories. Data analysis used a quantitative descriptive approach to track developmental transformations across the research phases. The results of the study indicate a gradual and consistent improvement in the children's concentration skills at each stage of the intervention. From the initial pre-cycle baseline condition, the proportion of children reaching the expected developmental categories rose steadily in the first cycle and culminated in meeting the established success criteria during the final cycle. These qualitative behavioral shifts indicate that the progressive difficulty curve embedded within the graded puzzle materials effectively helped children expand their focus, follow teacher instructions more adaptively, and complete structural tasks with greater perseverance while minimizing cognitive boredom. Based on these results, it can be concluded that graded puzzle materials serve as an effective alternative learning strategy to optimize attention control and independent problem-solving skills in young children.

Keywords: Concentration, Puzzles, Early Childhood, Classroom Action Research, KB Nurul Huda



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Introduction

Concentration is a fundamental skill that plays a crucial role in the learning process of young children because it is directly related to their ability to focus attention, process information, and complete tasks effectively. During early childhood, attention control is still developing, making children more susceptible to distraction from surrounding stimuli. Therefore, concentration requires continuous stimulation through appropriate and meaningful learning experiences (Fitriyah & Suryana, 2022; Hidayat et al., 2023). Recent studies have highlighted that concentration abilities in young children are strongly influenced by learning activities that are interactive, engaging, and developmentally appropriate (Marbun et al., 2024; Yuliani et al., 2024).

In the context of early childhood education, concentration is influenced not only by internal factors within the child but also by external factors such as the learning environment, instructional methods, and the use of learning media. Learning environments that lack variety and rely heavily on teacher-centered approaches

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may cause children to lose interest quickly and demonstrate low engagement in classroom activities (Safitri & Kurniawan, 2022). Furthermore, Ningtyas et al. (2024) explained that meaningful learning environments that encourage exploration and active participation significantly improve children's sustained attention and learning persistence.

Based on the results of initial observations conducted in Group B at Nurul Huda Kindergarten, the children tended to be easily distracted, frequently switched activities, and had difficulty completing tasks independently. In addition, the learning process was still dominated by direct teacher instruction and lacked learning activities requiring active concentration. This condition resulted in low participation and limited focus during classroom activities. Similar findings were reported by Ramadhani et al. (2023), who found that monotonous learning activities negatively affect children's concentration and motivation in early childhood classrooms.

One approach that can be used to improve children's concentration is the implementation of game-based learning media. Game-based learning has been recognized as an effective strategy because it combines enjoyable learning experiences with cognitive stimulation. According to Alotaibi (2024), game-based learning significantly improves children's engagement, focus, motivation, and executive functioning skills. Similarly, Plass et al. (2023) stated that educational games can enhance cognitive engagement and attention control because children actively participate in problem-solving activities. Research conducted by Mo et al. (2024) further demonstrated that game-based learning contributes positively to the development of inhibitory control and sustained attention in young children.

Puzzles are one form of educational game that has significant potential for improving concentration skills in early childhood. Puzzle activities require children to pay attention to details, coordinate visual and motor abilities, think logically, and maintain focus until tasks are completed. According to Lufiana et al. (2025), puzzle-based learning activities effectively improve children's concentration and reduce distractive behaviors during classroom instruction. Similar findings were reported by Biidnillah and Wahyuni (2025), who found that puzzle play therapy improves children's attention span and learning participation.

In addition, puzzle activities involve simultaneous coordination between cognitive, visual, and motor skills, which contributes to children's executive function development. Research by Xin et al. (2026) indicated that puzzle-solving activities strengthen inhibitory control and support sustained attention in young children. Likewise, Darwis (2026) emphasized that educational puzzle games encourage children to remain engaged in learning activities because they stimulate curiosity and active exploration.

The use of graded puzzles provides additional advantages because the level of difficulty increases gradually according to children's developmental abilities. Progressive challenges allow children to adapt step by step, thereby increasing confidence, perseverance, and task completion abilities. According to Kurnietin and Prayogo (2025), graded puzzle media are effective in supporting cognitive flexibility and concentration because children experience learning activities in a structured and enjoyable manner. Similarly, Utami and Tawandorloh (2025) found that structured manipulative games significantly improve children's self-regulation and independent learning behavior.

From a theoretical perspective, the implementation of graded puzzles is also consistent with the constructivist learning approach, which emphasizes the importance of active learning through direct experience. Constructivist learning theory suggests that children build knowledge by interacting with objects, experimenting, and solving problems independently. Research by Nurhayati and Mahabbati (2025) explained that educational games based on exploration and manipulation improve children's critical thinking and concentration abilities. Furthermore, Hapsari et al. (2023) reported that concrete learning media positively affect children's active engagement and classroom focus because children learn more effectively through hands-on experiences.

Interactive and manipulative learning media also support the development of executive function skills, including attention control, working memory, and cognitive flexibility. According to Sari et al. (2024), early childhood learning activities involving problem-solving and object manipulation contribute significantly to concentration development and learning readiness. In addition, Pratiwi et al. (2022) emphasized that engaging educational media increase children's motivation and persistence in completing classroom tasks.

Based on the discussion above, it can be understood that children's low concentration abilities require appropriate interventions aligned with the developmental characteristics of early childhood learners. One alternative that can be implemented is the use of systematically designed and engaging graded puzzle materials. The implementation of graded puzzle activities not only supports concentration development but also encourages active participation, independence, and meaningful learning experiences. Therefore, this

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study aims to improve the concentration abilities of early childhood students through the use of graded puzzle materials at Nurul Huda Kindergarten. This study is expected to contribute to the development of more innovative, interactive, and effective learning practices in improving the quality of early childhood education.

Method

This study employs a Classroom Action Research design with a quantitative descriptive approach. Classroom Action Research was chosen as a systematic effort to improve the quality of the learning process through actions carried out repeatedly over several cycles. In this research, the entire pedagogical action is directly implemented by the classroom teacher, who design the daily lesson plans and manages the learning environment using graded puzzle media. Concurrently, the peer teachers act as professional observers who sit at the back of the classroom to systematically monitor both the children's behaviors and the implementation fidelity of the instructional steps without interfering with the learning process. The reflection stage is conducted collaboratively at the end of each session, where the implementing teacher and the peer observers thoroughly discuss the observation sheets, analyze the challenges encountered by the children, and evaluate which classroom strategies need adjustment for the subsequent cycle. Finally, the quantitative descriptive approach was used to describe improvements in children's concentration abilities based on developmental categories, which are interpreted qualitatively through an intensive narrative dialogue to track behavioral changes over time.

The research model used refers to the Kemmis and Mc Taggart model, which consists of four stages: planning, implementation of actions, observation, and reflection. These four stages are carried out repeatedly in cycles until the predetermined success indicators are achieved. The research implementation flow is presented in Figure 1.

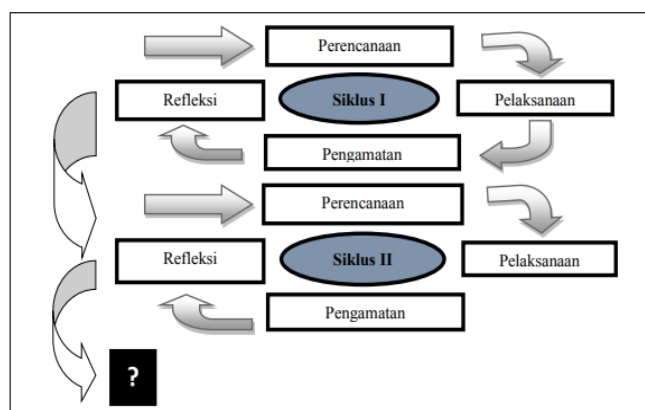


Figure 1. Classroom Action Research Cycle Based on Kemmis and McTaggart Model (Hikmawati,2017:189)

This study was conducted at Nurul Huda Kindergarten with 20 children in Group B, aged 5-6 years, as the research subjects. Total sampling was used, meaning that all children in the class were included as research subjects. The study was conducted in accordance with the school's regular learning schedule. Prior to the intervention, a pre-cycle phase was conducted to assess the children's initial concentration abilities. The pre-cycle results indicated that the majority of children were still in the "Not Yet Developed" (BB) and "Beginning to Develop" (MB) categories, necessitating corrective measures through the implementation of learning strategies that are more engaging and aligned with the characteristics of early childhood.

The implementation of the intervention in this classroom action research was systematically designed across two cycles, with each cycle consisting of two sessions lasting sixty minutes per session. The entire sequence of the intervention integrated the use of graded puzzle media directly into the core learning activities within the classroom. In the first cycle, the primary focus was directed toward the initial adaptation phase of the children to the new manipulative media, where the classroom teacher initiated activities using a clear classical instruction format to demonstrate how to match the puzzle pieces based on visual orientation. During this first cycle, the children were requested to complete simple-level puzzles consisting of five to seven large pieces featuring contrasting geometric patterns. However, based on the results of the collaborative reflection discussion between the classroom teacher and the peer observers after the conclusion of the first cycle, several significant methodological challenges were uncovered. A major portion of the children experienced rapid cognitive boredom because the puzzle pieces were too few and easily completed, while a

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small portion of the other children lost focus and began chatting with their peers due to the teacher's instructions being too dominant and failing to provide sufficient space for independent exploration.

Based on the results of that critical reflection, a radical and structured change in action was implemented in the second cycle to overcome the problems of boredom and low child persistence. The classroom teacher modified the difficulty level of the media by progressively increasing the number of puzzle pieces to ten to twelve smaller pieces featuring more complex scenery patterns. The methodological rationale for this adjustment of the difficulty level was to challenge the working memory capacity and train the executive function of five-to-six-year-old children so that their attention could be locked longer onto a challenging task. Furthermore, the format of instruction was altered from classical command-giving to a personal approach through a strategic prompt-fading strategy, where the teacher only provided minimal verbal cues when a child encountered a dead end and allowed them to perform trial-and-error independently. The children's activities in the second cycle shifted toward active and independent problem-solving, where the children were required to organize their own visual-spatial strategies without conventional dependence on the direct guidance of the classroom teacher.

The data collection process in this study relied on structured observation techniques and scientific documentation. The observation instrument utilized was a child development scale assessment sheet filled out directly in real-time by peer teachers acting as professional observers at the corner of the classroom. This observation sheet measured the children's concentration skills clearly through four complete primary indicators, namely the ability to focus attention on the media, persistence in completing tasks to the end, the ability to obey and execute teacher instructions, and active engagement throughout the entire sequence of learning activities. The evaluation of these four indicators was assessed using an assessment rubric categorized into four standard scales, namely the categories of Not Yet Developed, Beginning to Develop, Developing as Expected, and Developing Very Well. As an example of the assessment rubric for the persistence indicator, a child was categorized as Not Yet Developed if they immediately abandoned the task after a single failure in placing a piece, categorized as Beginning to Develop if they were willing to try again but only endured for two minutes before their attention was distracted, categorized as Developing as Expected if they were able to attempt to complete the puzzle despite facing difficulties with minimal assistance from the teacher, and categorized as Developing Very Well if the child demonstrated high determination to complete the entire graded puzzle independently without any external assistance at all.

Meanwhile, the documentation technique was utilized not merely as a visual complement, but functioned as a crucial instrument in performing data validation and method triangulation to minimize the potential risk of personal observation bias from both the teacher and the observers. The types of documentation collected included full-duration video recordings during the learning process, photographs of the puzzle piece placements during each phase of the children's work, and written anecdotal records regarding the children's expressions of frustration or satisfaction during play. This documentation data actively supported the observation sheets by being matched back during the collaborative reflection phase, where the video recordings were replayed to verify whether the duration of the child's attention span recorded on the observation sheet was entirely accurate or required correction. Through the process of triangulation among the observation sheet findings, authentic video recordings, and written records of the children's daily developmental progress, the validity and reliability of the data regarding the improvement of children's concentration using graded puzzles could be scientifically accounted for.

The data analysis technique used was quantitative descriptive analysis. The data were analyzed in the form of percentages to determine the level of development in the children's concentration skills in each cycle. The percentages were calculated using the following formula:

$$P = \frac{f}{N} \times 100\%$$

Notes:

P = Percentage

F = Number of children in a specific category

N = Total number of children

The research success indicator is met if at least three-quarters of the children in the classroom cohort successfully achieve the Developing as Expected and Developing Very Well categories. If these indicators

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are met, the classroom intervention is deemed successful in improving the children's concentration skills. This specific targeted success threshold is methodologically derived from a combination of the kindergarten local curriculum standards and established classroom action research literature in early childhood education. Within the school policy framework, this standard aligns with the minimum completeness criteria required for core cognitive development areas. Furthermore, pedagogical literature suggests that a threshold representing a clear majority of the student population is a reliable and realistic benchmark for cyclical action research, ensuring that the positive cognitive changes are widespread across the classroom rather than isolated to a few individuals. Therefore, this threshold serves as a rigorous yet achievable justification for ending the action cycles, balancing theoretical research standards with the practical baseline conditions of the preschool environment.

Results and Discussion

The results of this study are presented to illustrate the development of concentration skills among children in group B at Nurul Huda Kindergarten following the implementation of learning intervention using graded puzzles. The study was conducted in two cycles, beginning with a pre-cycle phase as the baseline condition during the learning process, focusing on indicators of attention span, persistence in completing tasks, ability to follow instructions, and children's engagement in learning activities. The presentation of the research results was conducted in stages, beginning with the initial conditions in the pre-cycle, followed by the results from cycle I and cycle II, and concluding with a summary of the improvement in the children's concentration abilities. Additionally, to clarify the patterns of improvement observed, the data were also pretend in the form of tables and diagrams.

A. Pre-Cycle Results

The pre-cycle phase was conducted on February 10-11 2026, to obtain an initial assessment of the children's concentration abilities prior to the implementation of instructional interventions. This activity was carried out before the start of the Ramadan learning period, ensuring that learning conditions remained normal. Data was collected through observation during the learning process, focusing on several indicators: the ability to focus attention, persistence in completing tasks, the ability to follow instructions, and the child's engagement in learning activities. The results from this phase serve as the foundation for designing interventions that better align with the children's needs and characteristics. The results regarding the children's concentration abilities during the pre-cycle phase are present in table 1.

Table 1. Results of Children's Concentration Skills in the Pre-Cycle

Category	Number of Children	Percentage
BB	8	40%
MB	7	35%
BSH	4	20%
BSB	1	5%
Total	20	100%

Based on Table 1, children's concentration abilities in the early stages remain at a relatively low level. The majority of children fall into the "Not Yet Developed" (BB) and "Beginning to Develop" (MB) categories, accounting for a total of 75%. This indicates that children are not yet able to sustain their attention optimally during learning activities. During observations, some children tended to be easily distracted by surrounding stimuli, such as classmates' conversations or other activities in the classroom, so their focus on the assigned tasks had not yet been consistently established. On the other hand, the number of children who have reached the developing as Expected (BSH) and Developing Very Well (BSB) categories remains limited, indicating that only a small proportion of children are able to participate in learning activities with sufficient focus and perseverance. These findings highlight the need to provide more engaging learning activities capable of sustaining children's attention for longer periods.

B. Results of Cycle I

The implementation of cycle I took place on february 24-25 2026, as the initial stage of introducing graded puzzles into the learning process. The learning activities were designed to provide children with hands-on experience through puzzle solving activities of a simple difficulty level. At this stage, the children began to adapt to activities that required attention, precision, and perseverance. Throughout the process, observations were conducted to monitor changes in the children's behavior, particularly regarding their focus on tasks, engagement in activities, and ability to follow instructions. The results of the observations in Cycle I are presented in Table 2.

Table 2. Results of Children's Concentration Skills in Cycle I

Category	Number of Children	Percentage
BB	4	20%
MB	6	30%
BSH	7	35%
BSB	3	15%
Total	20	100%

Based on the classroom observations in the first cycle, it can be seen that there has been a clear descriptive improvement compared to the initial baseline conditions. The decrease in the proportion of children classified within the Not Yet Developing category indicates that a substantial portion of the classroom cohort is beginning to successfully adapt to the structured learning activities provided by the teacher. However, there are still children who are not yet fully capable of sustaining their attention control for a sufficiently long period, as evidenced by the fact that the Beginning to Develop category still accounts for nearly one-third of the classroom population. On the other hand, the steady increase in the collective number of children reaching the Developing as Expected and Developing Very Well categories indicates that several children are beginning to demonstrate enhanced concentration skills. During the real-time observation sessions, the children appeared visibly more engaged in the tasks, although a few of them still required continuous individual guidance and motivational prompts from the classroom teacher. This behavioral shift indicates that the implementation of tiered puzzle media is beginning to exert a positive pedagogical impact, but it has not yet reached its optimal potential, thereby justifying the need for strategic action adjustments in the subsequent phase..

C. Results of Cycle II

The implementation of activities in cycle II took place on march 3-4 2026, as a follow up to the reflections from cycle I, with the aim of maximizing the children's ability to concentrate. At this stage, learning was designed to be more focused through adjustments to the difficulty level of the puzzles and the provision of clearer and more systematic instructions. Additionally, efforts to boost the children's motivation were further optimized so that they could actively engage in learning activities. The results of observations in Cycle II are presented in Table 3.

Table 3. Results of Children's Concentration Skills in Cycle II

Category	Number of Children	Percentage
BB	2	10%
MB	3	15%
BSH	9	45%

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BSB	6	30%
Total	20	100%

Based on Table 3, it is evident that the children's concentration skills have shown a more consistent improvement compared to the previous cycle. The number of children in the "Not Yet Developing" (BB) and "Beginning to Develop" (MB) categories has continued to decline, indicating that the majority of children have made significant progress in terms of focus and perseverance. Meanwhile, the increase in the "Developing as Expected" (BSH) and "Developing Very Well" (BSB) categories to 75% indicates that the majority of children are now able to participate in learning activities with greater focus and direction. During observations, the children appeared more independent in completing tasks, were less frequently distracted, and were able to maintain their attention for longer periods compared to the previous cycle. This indicates that the interventions implemented have had a more optimal impact on improving the children's concentration skills. To provide a comprehensive overview of the development of children's concentration skills, the results from each stage of the study are summarized in table 4.

Table 4. Summary of Improvements in Children's Concentration Skills

Stage	BB	MB	BSH	BSB	BSH+BSB
Pre-Cycle	40%	35%	20%	5%	25%
Cycle I	20%	30%	35%	15%	50%
Cycle II	10%	15%	45%	30%	75%

Based on Table 4, it can be seen that the children's concentration abilities improved gradually and consistently in each cycle. This improvement is evident not only in the increasing number of children in the BSH and BSB categories but also in the decreasing number of children in the BB and MB categories. These changes indicate a positive shift in the children's abilities as the interventions were implemented.

To provide a clearer picture of the pattern of improvement in children's concentration abilities at each stage of the study, the data are also presented in the form of a line graph in Figure 2.

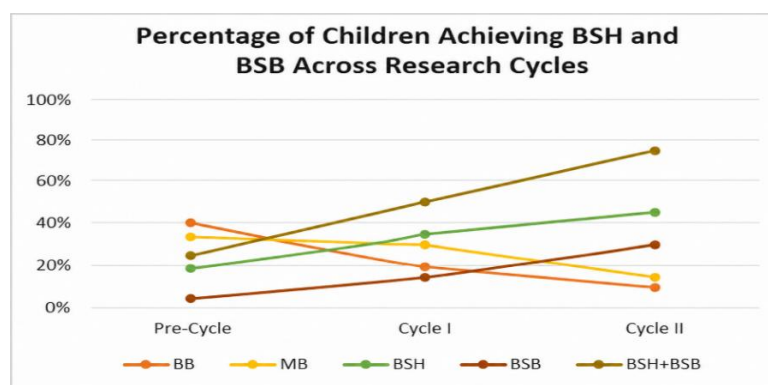


Figure 2. Percentage of Children Achieving BSH and BSB Across Research Cycles

As shown in figure 2, children's concentration skills improved gradually and consistently from the pre-cycle stage through cycle II. The percentage of children who achieved the "Developing as Expected" (BSH) and "Developing Very Well" (BSB) categories increased from 25% in the pre-cycle to 50% in Cycle I, and reached 75% in Cycle II. This pattern of improvement indicates that the interventions provided through the use of graded puzzle media have a sustained impact on the development of children's concentration skills.

The results of the study indicate that the use of graded puzzle materials has a significant impact on improving the concentration skills of children in Group B at Nurul Huda Kindergarten. This improvement was observed gradually from the pre-cycle stage through Cycle II, where the percentage of children achieving the "Developing as Expected" (BSH) and "Developing Very Well" (BSB) categories increased from 25% in the initial stage to 50% in Cycle I, and reached 75% in Cycle II. This consistent pattern of improvement

indicates that the interventions implemented not only had a short-term impact but were also capable of bringing about sustainable changes in the children's ability to focus their attention during learning activities.

When compared to the initial conditions, the children's low concentration levels during the pre-cycle stage were closely linked to learning methods that remained monotonous and lacked exploratory activities. The children tended to be easily distracted and showed little perseverance in completing tasks. Recent studies have shown that children's concentration abilities are strongly influenced by the quality of interactive and stimulating learning environments (Marbun et al., 2023; Yuliani et al., 2024). Learning activities that involve direct exploration and hands-on experiences are proven to improve attention control and learning persistence among young children (Safitri & Kurniawan, 2022).

After the implementation of the graded puzzle media, a significant change occurred, particularly in terms of the children's engagement in learning activities. In Cycle I, although the improvement was not yet optimal, children began to show interest in learning activities, as indicated by an increase in the number of children in the BSH and BSB categories to 50%. This suggests that the use of concrete and interactive media is beginning to capture children's attention. According to research conducted by Alotaibi (2024), game-based learning significantly improves children's engagement, motivation, and attention because children are actively involved in meaningful learning experiences. Similar findings were also reported by Hidayat et al. (2023), who found that interactive learning media can increase children's concentration and classroom participation.

A more significant improvement occurred in Cycle II, during which the percentage of children reaching the BSH and BSB categories increased to 75%. At this stage, children were not only able to participate in learning activities with greater focus but also demonstrated independence in completing tasks and the ability to sustain attention for longer periods. These changes indicate that learning designed in stages through the use of progressive puzzles provided children with opportunities to adapt, thereby allowing their concentration skills to develop more optimally. Research by Mo et al. (2024) explained that structured educational games contribute significantly to the development of executive functions, especially sustained attention and inhibitory control in early childhood education.

These findings align with the theory of game-based learning, which emphasizes that learning activities incorporating game elements can enhance children's engagement and focus. Play-based activities provide meaningful learning experiences because children are directly involved in the process of exploration and problem-solving. Recent studies by Plass et al. (2023) demonstrated that educational games can stimulate cognitive engagement and improve children's focus during learning activities. In addition, Fitriyah and Suryana (2022) found that play-based learning activities help children develop self-regulation and concentration skills more effectively compared to conventional teaching approaches.

Specifically, the use of puzzles in this study plays a crucial role in improving children's concentration due to their nature, which requires attention to detail, precision, and the ability to assemble pieces into a complete whole. This process indirectly trains children's cognitive functions, particularly in terms of attention control and perseverance. Research conducted by Xin et al. (2026) found that puzzle-solving activities are closely associated with inhibitory control and sustained attention in children. Similar findings were also reported by Lufiana et al. (2025), who explained that puzzle-based learning activities can reduce distractive behaviors and improve children's ability to remain focused during classroom tasks.

Furthermore, this improvement can also be explained through the constructivist learning approach, which posits that children construct knowledge through direct experience. Puzzles, as learning media, provide children with opportunities to learn actively through object manipulation, experimentation, and error correction. Research by Ningtyas et al. (2024) demonstrated that game-based problem-solving activities significantly improve children's cognitive flexibility and perseverance. Likewise, Kurnietin and Prayogo (2025) emphasized that puzzle media support children's cognitive development by encouraging active exploration and independent learning experiences.

The findings of this study are also consistent with previous studies showing that puzzle-based learning media are effective in creating enjoyable and meaningful learning environments for young children. Darwis (2026) found that puzzle activities improve children's focus and participation because they require active involvement and continuous attention. Similarly, Biidnillah and Wahyuni (2025) reported that puzzle-based play therapy significantly improves concentration abilities in kindergarten children.

Thus, the results of this study reinforce previous findings that the use of learning materials tailored to the characteristics of young children, such as progressive puzzles, can be an effective strategy for improving concentration skills in early childhood education. The success of the intervention, as evidenced by the

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increase in scores and changes in children's behavior, indicates that active, engaging, and challenging learning experiences can foster better concentration skills and improve children's participation during classroom activities.

Conclusion

Based on the implementation of the classroom action research conducted over two cycles, it can be concluded that the use of graded puzzle materials was able to improve the concentration skills of the children in Group B at Nurul Huda Kindergarten. This developmental improvement was evident gradually from the initial baseline stage to the end of the intervention, as shown by the steady shift of children moving from the lower developmental categories into the advanced classifications across the sequential research phases. These results indicate that the structured learning interventions provided had a positive impact on the children's ability to focus their attention. Beyond the general numerical trends, specific behavioral changes were verified across each observation indicator to provide a valid view of the children's concentration progress.

Regarding the attention span indicator, children in the pre-cycle phase were highly susceptible to minor peer distractions and frequently abandoned tasks, whereas by the final cycle, they demonstrated the capacity to lock their visual and cognitive focus onto the puzzle board for extended durations without looking away. For the task persistence indicator, early observations showed that children would immediately experience frustration and leave the table after a single failed attempt at placing a piece, but the final cycle revealed a profound shift where children actively engaged in systematic trial-and-error, remaining determined to manipulate the pieces until the entire puzzle configuration was successfully completed.

In terms of the instruction-following indicator, the children progressed from requiring continuous, repetitive verbal commands from the teacher to being able to independently execute multi-step directions after only a single initial prompt. Finally, the learning engagement indicator showed a clear transition from passive classroom compliance to active, self-directed problem-solving, as the progressive difficulty curve of the tiered puzzles provided a varied and challenging learning experience that successfully minimized cognitive boredom and encouraged the children to invest their full cognitive faculties in the learning process.

Based on these results, early childhood educators may consider using graded puzzles as one alternative when designing learning activities aimed at improving children's concentration. Additionally, educators are encouraged to continue developing engaging learning materials that align with children's needs and characteristics. For future research, it is recommended to explore the use of other media or approaches and to include a more diverse sample of participants in terms of both number and background, so that the research findings can provide a broader perspective.

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