PROCEEDING
International Conference in Education and Vocation: Multicultural and Inclusive Approaches
ICEV-MIA 2026

EFFECTIVENESS OF PICTURE STORY–BASED MINDFUL LEARNING IN IMPROVING CRITICAL THINKING SKILLS OF 5–6-YEAR-OLD CHILDREN

Azlin Atika Putri[1*], Siti Fadillah[2]
Universitas Lancang Kuning, Pekanbaru, Indonesia
*Corresponding email: azlin@unilak.ac.id

Abstract

This study aims to examine the effectiveness of mindful learning based on picture stories in improving the critical thinking skills of children aged 5–6 years. The research employed a true experimental design with a pretest–posttest control group design. Participants consisted of 60 kindergarten children in Pekanbaru, divided into an experimental group (n = 30) and a control group (n = 30) using simple random assignment. Data were collected using an observation sheet of critical thinking skills covering four indicators: questioning, reasoning, cause–effect connection, and concluding. The instrument's content validity index (CVI) was 0.89. Data were analyzed using an independent samples t-test after meeting normality and homogeneity assumptions. Results revealed a significant difference between the experimental and control groups ($t(58) = 4.92$, $p < .001$) with a large effect size (Cohen's $d = 0.85$). The findings indicate that mindful learning based on picture stories effectively enhances young children's critical thinking skills.

Keywords: mindful learning, picture story, critical thinking, early childhood

1. INTRODUCTION

Early childhood cognitive development is built on critical thinking abilities, which facilitate higher-order thinking abilities. Peter A. Facione (2015) asserts that critical thinking includes the capacity for logical analysis, development, and conclusion-making. These abilities start to emerge in kids between the ages of five and six through activities that promote investigation, introspection, and cause-and-effect connections (Lai, 2011). Early childhood education practices are still primarily focused on memorizing and one-way instruction, which leaves little room for children to acquire reflective awareness (Yuliani, 2021). This is evident in the reality of PAUD. This scenario offers a novel way to learning that combines cognitive and self-regulation elements. receptivity to new ideas, and actively noticing and comprehending context. This method motivates kids to actively participate in educational activities. According to Zelazo and Lyons (2012), mindfulness exercises are linked to improving executive functions including inhibitory control and cognitive flexibility, which support the growth of critical thinking. Children's imaginations and thinking can be stimulated by picture stories, which are a powerful visual literacy tool. Children can create greater meaning through their interactions with language and imagery, according to Sipe (2008). Children can be encouraged to make predictions, make connections between facts, and draw conclusions through interactive tale reading (Wasik & Bond, 2019). While there has been an increase in research on mindfulness in primary education, there is still a dearth of experimental studies that combine mindful learning with picture tales to enhance critical thinking abilities in children between the ages of five and six, especially when it comes to Indonesian early childhood education. Thus, the purpose of this study was to evaluate this strategy's efficacy. According to Langer (1989), mindful learning emphasizes awareness, openness, flexibility, and reflection. This strategy can be applied in the early childhood setting through post-learning reflection, mindful breathing exercises, and attentive listening. According to research, children's self-regulation and learning readiness are enhanced by mindfulness activities (Napoli et al., 2005). Picture stories use both narrative and pictures to help children comprehend symbolic meaning (Sipe, 2008). Children's comprehension of cause and effect and analytical abilities are improved through dialogic interactions between teachers and students during tale reading (Wasik & Bond, 2019). Children's critical thinking skills include asking questions, giving

explanations, making connections between causes and effects, and drawing conclusions (Lai, 2011). Learning that allows for active investigation and introspection is necessary to stimulate critical thinking.

2. METHODOLOGY

With a pretest–posttest control group design, the study employed a proper experimental design. Sixty children from "Pelita Hati" Kindergarten in Pekanbaru, ages five to six, served as the research subjects. Simple class-based random assignment was used to assign participants to the experimental and control groups. A critical thinking skills observation sheet with four primary indicators served as the tool. posing queries, providing justifications, tying causes and consequences together, and summarizing. With a CVI value of 0.89, expert judgment was used to test the validity of the instrument's content. Eight 30-minute bouts of treatment were administered:

a. Picture-based mindful learning (mindful breathing, mindful storytelling, and reflection) was given to the experimental group.
b. Conventional storytelling was given to the control group. The Kolmogorov-Smirnov test was used to assess normality, whereas Levene's test was used to assess homogeneity. An independent samples t-test was used to analyze the data.

3. RESULTS

The results of this study indicate that picture story–based mindful learning had a significant positive effect on the critical thinking skills of children aged 5–6 years. Before the intervention was implemented, both the experimental and control groups demonstrated relatively similar levels of critical thinking ability. The experimental group obtained an average pretest score of 65.4 (SD = 7.2), while the control group obtained an average score of 64.9 (SD = 6.8). These results suggest that there was no substantial difference between the two groups at the beginning of the study.

After eight treatment sessions, differences between the groups became more apparent. The experimental group, which received picture story–based mindful learning activities, showed a remarkable increase in performance with an average posttest score of 82.1 (SD = 5.6). In contrast, the control group, which participated in conventional storytelling activities without mindfulness components, only achieved an average posttest score of 73.4 (SD = 6.8). The increase in scores in the experimental group indicates that the intervention effectively stimulated children’s higher-order thinking abilities.

The improvement was observed across all indicators of critical thinking skills assessed in this study. Children in the experimental group demonstrated greater curiosity by asking more relevant and reflective questions during storytelling sessions. They were also more capable of explaining reasons for their answers, identifying relationships between causes and effects in the stories, and drawing logical conclusions from the events presented in the picture stories. In addition, children became more confident in expressing their opinions and participating actively in classroom discussions.

Observational findings during the intervention further revealed behavioral differences between the two groups. Children in the experimental group appeared more focused, calm, and attentive during learning activities. The mindful breathing exercises conducted before storytelling sessions helped children regulate their emotions and maintain concentration throughout the activities. During reflective discussions, children were able to connect story situations with their own daily experiences, indicating deeper comprehension and analytical thinking.

Meanwhile, children in the control group tended to respond passively during storytelling activities. Most responses were limited to short answers, and fewer children were able to elaborate on

their reasoning or connect events logically. Although some improvement was identified in the control group, the progress was not as substantial as that shown by the experimental group.

The statistical analysis supported these findings. The independent samples t-test showed a statistically significant difference between the posttest scores of the experimental and control groups, $t(58) = 4.92$, $p < .001$. This result indicates that the intervention contributed significantly to the enhancement of critical thinking skills. Furthermore, the effect size analysis showed Cohen's $d = 0.85$, which is categorized as a large effect size. This suggests that picture story–based mindful learning not only produced statistically significant outcomes but also had strong practical implications for early childhood education.

Overall, the results confirm that combining mindfulness practices with interactive picture storytelling creates a learning environment that encourages active participation, reflective thinking, and cognitive engagement among young children. The intervention successfully facilitated children's ability to think critically through enjoyable and meaningful learning experiences.

4. DISCUSSION

The findings of this study demonstrate that picture story–based mindful learning effectively improves the critical thinking skills of children aged 5–6 years. Children who participated in the mindful learning intervention showed significantly better outcomes than those who experienced conventional storytelling methods. These findings support the theoretical framework proposed by Langer (1989), which emphasizes that mindful learning encourages individuals to become actively aware of their environment, open to new perspectives, and flexible in processing information. In early childhood education, these characteristics are essential for stimulating critical and reflective thinking.

One of the main factors contributing to the success of the intervention was the integration of mindfulness activities with picture storytelling. Mindfulness practices such as mindful breathing, attentive listening, and reflective pauses helped children regulate their attention and emotions before engaging in learning activities. As explained by Zelazo and Lyons (2012), mindfulness practices strengthen executive functions, including inhibitory control, working memory, and cognitive flexibility. These cognitive functions are closely related to children's ability to analyze information, solve problems, and make logical decisions.

The use of picture stories also played a crucial role in stimulating children's critical thinking abilities. Visual narratives provide concrete representations that are easier for young children to understand and interpret. Through illustrations and story sequences, children were encouraged to predict events, identify problems, analyze character behavior, and connect story situations with their personal experiences. These activities align with Sipe's (2008) view that picture books serve as powerful tools for promoting meaning-making and analytical thinking in children.

Furthermore, the dialogic interactions implemented during storytelling sessions contributed significantly to the development of children's reasoning abilities. Teachers encouraged children to ask questions, explain their opinions, and discuss possible solutions to problems presented in the stories. This interactive learning environment enabled children to become active participants rather than passive listeners. According to Wasik and Bond (2019), interactive storytelling activities enhance language development, reasoning, and higher-order thinking skills by encouraging children to communicate and reflect on ideas.

Another important finding in this study was the improvement in children's emotional readiness and learning engagement. Children in the experimental group appeared calmer, more attentive, and more confident during classroom discussions. The mindful breathing activities conducted before storytelling sessions likely helped children reduce distractions and improve concentration. This finding

is consistent with previous studies conducted by Napoli et al. (2005), which found that mindfulness training positively influences children's attention, emotional regulation, and learning readiness.

The findings also highlight the importance of child-centered learning approaches in early childhood education. In many educational settings, particularly in Indonesia, learning activities are still dominated by teacher-centered instruction and memorization-based methods. Such approaches often limit opportunities for children to explore ideas, ask questions, and engage in reflective thinking. Picture story–based mindful learning offers an alternative pedagogical approach that supports active exploration, collaboration, and reflection. Through meaningful interactions and enjoyable learning experiences, children become more motivated to participate and express their ideas freely.

In addition, this study contributes to the growing body of research regarding mindfulness in education. While previous studies have mainly focused on mindfulness interventions in primary and secondary education, this study demonstrates that mindfulness can also be effectively implemented in early childhood learning environments. The combination of mindfulness practices with visual literacy activities creates a holistic educational experience that supports both cognitive and emotional development.

However, this study also has several limitations. The research was conducted within a relatively short intervention period and involved participants from only one kindergarten institution. Therefore, the findings may not fully represent broader early childhood populations. Future studies are recommended to involve larger samples, longer intervention durations, and different educational settings to obtain more comprehensive findings. Researchers may also explore the effects of mindful learning on other developmental aspects such as creativity, empathy, communication skills, and emotional intelligence.

Overall, the findings suggest that picture story–based mindful learning is an innovative and effective strategy for fostering critical thinking skills in early childhood education. By integrating mindfulness, reflection, and visual literacy, this approach provides children with meaningful opportunities to develop cognitive flexibility, reasoning abilities, and active engagement in learning.

5. CONCLUSION

This study concludes that picture story–based mindful learning is highly effective in improving the critical thinking skills of children aged 5–6 years. The intervention significantly enhanced children's abilities to ask meaningful questions, provide logical explanations, identify cause–effect relationships, and draw conclusions from learning experiences. The findings indicate that the integration of mindfulness practices with picture storytelling creates a supportive and engaging learning environment that stimulates reflective and analytical thinking.

The statistical analysis demonstrated a significant difference between the experimental and control groups, supported by a large effect size. This result confirms that the intervention not only produced statistically significant outcomes but also had strong practical implications for classroom learning in early childhood education settings. Children who participated in mindful learning activities showed higher levels of concentration, confidence, participation, and cognitive engagement compared to children who received conventional storytelling instruction.

The implementation of mindful breathing and reflective activities also contributed positively to children's emotional regulation and learning readiness. By helping children focus their attention and become more aware of their thoughts and feelings, mindfulness practices created conditions that supported deeper understanding and more meaningful interactions during storytelling sessions. This demonstrates that cognitive development in early childhood can be strengthened through learning approaches that integrate both intellectual and emotional aspects.

In addition, the use of picture stories as learning media proved to be highly beneficial for young children. Visual narratives enabled children to understand abstract concepts more concretely, interpret information meaningfully, and connect story events with real-life experiences. Through interactive discussions and reflective questioning, children became more active learners who were capable of expressing ideas and reasoning independently.

The findings of this study also provide important implications for educational practice. Early childhood educators are encouraged to adopt more reflective and child-centered teaching approaches that actively involve children in the learning process. Picture story–based mindful learning can serve as an innovative strategy to promote not only critical thinking skills but also communication, creativity, and social-emotional development in young children.

Suggestions

1. Early childhood teachers are encouraged to implement mindful storytelling activities regularly to foster children's critical thinking and reflective abilities.
2. Schools and curriculum developers may integrate mindfulness-based visual literacy activities into early childhood education programs to create more meaningful and engaging learning experiences.
3. Teacher training programs should provide professional development related to mindfulness practices and interactive storytelling techniques for classroom implementation.
4. Future researchers are recommended to conduct longitudinal studies to examine the long-term effects of mindful learning on children's cognitive, emotional, and social development.
5. Further studies may also explore the effectiveness of mindful learning in different cultural and educational contexts as well as its impact on other higher-order thinking skills such as creativity and problem-solving abilities.

REFERENCES

Facione, P. A. (2015). *Critical thinking: What it is and why it counts*. Insight Assessment.Fisher, R. (2018). *Teaching thinking: Philosophical enquiry in the classroom*. Bloomsbury.

Jalongo, M. R. (2014). *Early childhood language arts*. Pearson.

Lai, E. R. (2011). *Critical thinking: A literature review*. Pearson.

Langer, E. J. (1989). *Mindfulness*. Addison-Wesley.

Meiklejohn, J., et al. (2012). Integrating mindfulness training into K–12 education. *Mindfulness*, 3(4), 291–307.

Napoli, M., Krech, P. R., & Holley, L. C. (2005). Mindfulness training for elementary school students. *Journal of Applied School Psychology*, 21(1), 99–125.

Sipe, L. R. (2008). *Storytime: Young children's literary understanding in the classroom*. Teachers College Press.

Wasik, B. A., & Bond, M. A. (2019). Beyond the pages of a book: Interactive book reading and language development in preschool classrooms. *Journal of Educational Psychology*, 111(2), 323–338.

Yuliani, N. (2021). Implementasi pembelajaran reflektif dalam pengembangan berpikir kritis anak usia dini. *Jurnal Pendidikan Anak Usia Dini Indonesia*, 6(2), 77–88.

Zelazo, P. D., & Lyons, K. E. (2012). The potential benefits of mindfulness training in early childhood. *Mindfulness*, 3(1), 68–78.