

The Use of CROWD Techniques in Reading Comprehension and Critical Thinking Skills in Children Aged 5-6 Years

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Abstract

Reading comprehension and critical thinking are essential foundations for developing reflective, problem-solving, and effective communication skills. However, national and international studies consistently reveal that Indonesian children remain weak in both aspects, particularly in early childhood—a critical period for literacy and cognitive development. This study examines the effectiveness of the CROWD technique (Completion, Recall, Open-ended questions, Wh-questions, and Distancing) in dialogic reading to enhance reading comprehension and critical thinking among children aged 5–6 years. Employing a mixed-method embedded design, the study combined quantitative data from non-equivalent control group experiments with qualitative data from classroom observations, teacher interviews, and child responses. Validated instruments were applied through expert judgment, Aiken's V, Cronbach's Alpha, and Cohen's Kappa ($\kappa = 0.7$), ensuring strong validity and reliability. The results of the Shapiro-Wilk test indicated normally distributed data ($W = 0.957$, $p > 0.05$), while Mann-Whitney U tests revealed significant differences between treatment and control groups. Children in the treatment group demonstrated substantially higher scores in CROWD responses ($U = 139.33$ vs. 39.33), reading comprehension ($U = 122$ vs. 22), and critical thinking ($U = 120.66$ vs. 20.66). Qualitative findings further highlighted that CROWD fostered reflective and associative thinking, though implementation required more time (22 minutes vs. 15 minutes). Overall, the study concludes that CROWD questions significantly improve children's reading comprehension and critical thinking when integrated into read-aloud sessions. Future research should explore longitudinal impacts, optimize the number of CROWD items for efficiency, and extend applications to diverse literacy contexts such as home, libraries, or digital environments.

Keywords: CROWD, Read Aloud, Reading comprehension, Critical thinking, Dialogic reading, Early Childhood Education



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INTRODUCTION

Reading comprehension and critical thinking are essential foundations in shaping a generation capable of reflective thinking, problem-solving, and effective communication. Unfortunately, various national and international studies indicate

that Indonesian children continue to struggle in both areas. This challenge is particularly complex in early childhood, which should serve as a crucial stage for building literacy and cognitive foundations. Reading comprehension extends beyond technical reading skills, encompassing higher-order thinking processes such as drawing conclusions, connecting meanings, and evaluating information. Similarly, critical thinking involves the ability to analyze and respond logically to situations.

Previous research has demonstrated a close relationship between reading comprehension and critical thinking (Rico-Juan et al., 2024; Yani, 2024). However, effective interventions to improve both aspects in early childhood remain limited. One promising strategy from dialogic reading is the CROWD technique (Completion, Recall, Open-ended questions, Wh-questions, and Distancing), which has been shown to foster active and reflective engagement in reading (Huebner & Meltzoff, 2005; Hargrave & Sénéchal, 2000). Yet, this approach has not been studied among children aged 5–6 years in Indonesia. This represents both a research gap and a novel contribution, offering an innovative approach to early literacy instruction by applying the CROWD technique in the Indonesian early childhood education (PAUD) context.

Based on this problem, the present study aims to examine the effectiveness of the CROWD technique in improving reading comprehension and critical thinking in early childhood. If proven effective, this technique could serve as a practical strategy for early childhood teachers to create active and meaningful literacy learning while fostering critical thinking skills from an early age. Additionally, the study contributes theoretically to the field of critical literacy in children. A mixed-method embedded design was employed to capture both quantitative outcomes and qualitative insights.

Children aged 5–6 years represent a developmental window of opportunity to stimulate literacy and critical thinking skills, as they are in the preconceptual stage characterized by symbolic reasoning, meaning-making, and the emergence of reflective thinking (Elder & Elder, 2004). Curiosity develops rapidly during this stage and is reflected in children's active questioning, which serves as an important foundation for critical thinking. Unfortunately, classroom practices in some early childhood education settings in Indonesia still rely on rote memorization, drilling, and repetitive word recognition (Suaini et al., 2019), which do not adequately support meaning-making or deeper exploration of children's thinking.

When children are given opportunities to ask questions, share opinions, discuss, and connect new information to prior experiences, their critical thinking and reading comprehension can significantly improve. Studies by Hargrave and Sénéchal (2000) and Lever and Sénéchal (2011) demonstrate that dialogic reading with CROWD questions enables children to engage actively with texts, comprehend

stories more deeply, and develop critical reasoning. However, no contextual studies of CROWD implementation have been conducted in Indonesia.

Therefore, this study is guided by the following research questions:

1. How does the CROWD technique affect reading comprehension in children aged 5–6 years?
2. How does the CROWD technique enhance critical thinking in children aged 5–6 years?
3. What are children’s and teachers’ perceptions of using the CROWD technique during shared reading activities?

This study is expected to contribute practically to early childhood education by offering meaningful literacy strategies that also strengthen higher-order thinking skills.

METHOD

This study employed a mixed-method embedded design. The quantitative strand was used to measure children’s reading comprehension and critical thinking, while the qualitative strand provided deeper insights into classroom interactions, teacher practices, and children’s responses during CROWD implementation.

According to Zhang (2011), the embedded design can be used to analyze diverse forms of data to explain certain outcomes. This design is especially useful for studies that require measurable evidence (quantitative) alongside in-depth contextual understanding (qualitative). By integrating both strands, the design allows for more comprehensive interpretations while maintaining methodological neutrality between applied and basic research (Yu & Khazanchi, 2017).

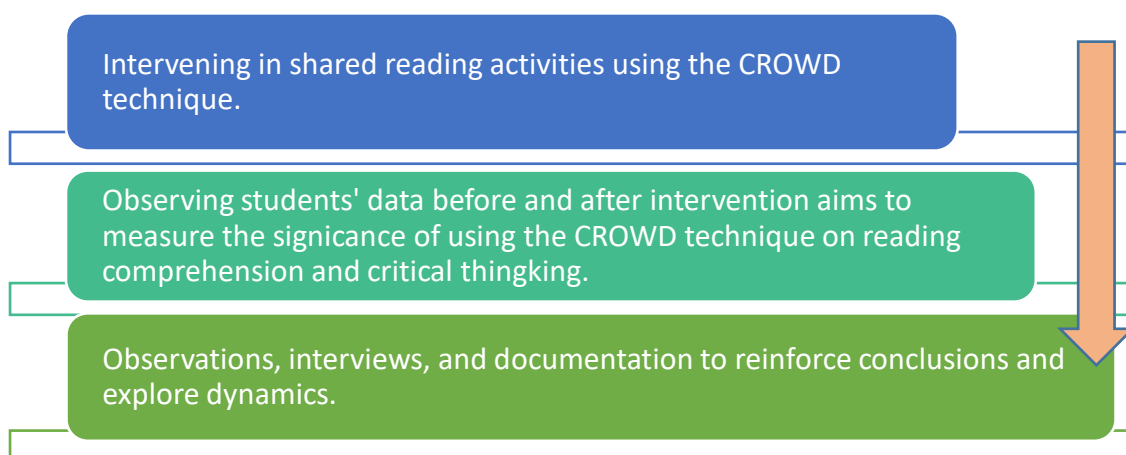


Figure 1. Problem Solving Scheme with a Mixed Method Approach, Embedded Design

Data were collected through experimental activities in treatment and control classrooms. In addition, classroom observations and teacher interviews were conducted to capture qualitative dimensions of CROWD application. The study proceeded in two main phases, each consisting of several activities, as detailed in the research flowchart (see Figure 2).

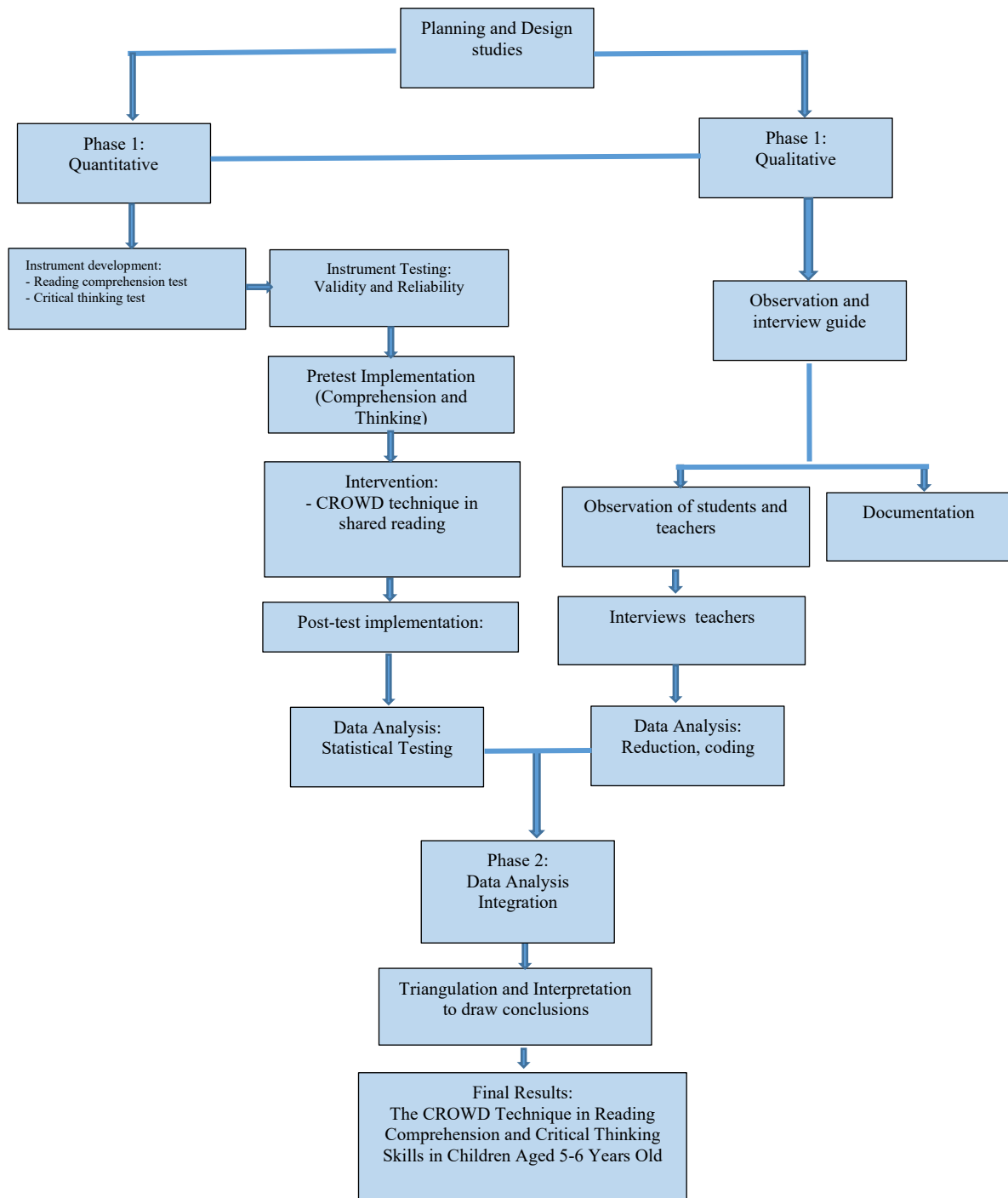


Figure 2. Flowchart of Research Strengthening Basic Research on CROWD Techniques in Reading Comprehension and Critical Thinking Skills

RESULTS AND DISCUSSION

To ensure accuracy and trustworthiness, multiple validation steps were conducted. Expert review (content and construct validity) confirmed the appropriateness of the CROWD protocol and observation rubrics for children aged 5–6 years. Empirical validation was further performed through Aiken’s V analysis, which confirmed relevance and clarity of items. Reliability testing using Cronbach’s alpha showed high internal consistency. For qualitative observation, interrater reliability was assessed using Cohen’s Kappa, yielding $\kappa = .70$, which indicates substantial agreement (Landis & Koch, 1977). These results strengthen the credibility of the instruments used in this study.

$$\kappa = \frac{P_o - P_e}{1 - P_e} = \frac{0,85 - 0,50}{1 - 0,50} = 0,70$$

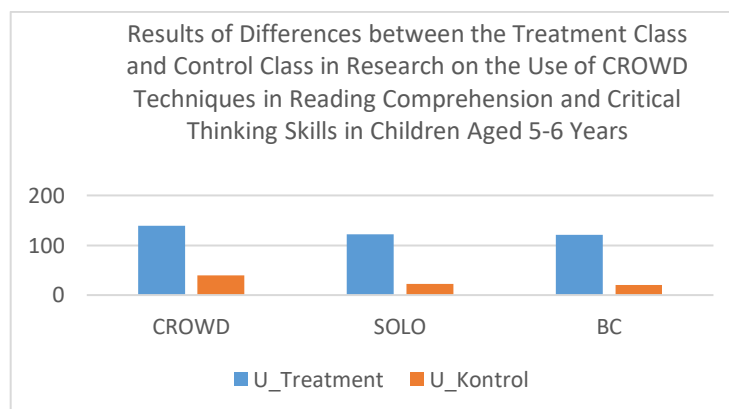
Figure 3 - Cohen's Kappa Test Formula

Quantitative Findings

Normality testing with the Shapiro–Wilk test indicated that the data were normally distributed ($W = 0.957$, $p = .235$). Due to the small sample size ($n = 10$ per group), the Mann–Whitney U test was employed for group comparisons. Results demonstrated significant differences between the treatment and control groups:

- CROWD responses: $U_{\text{treatment}} = 139.33$; $U_{\text{control}} = 39.33$
- Reading comprehension (SOLO taxonomy): $U_{\text{treatment}} = 122$; $U_{\text{control}} = 22$
- Critical thinking (Facione & Taggart framework): $U_{\text{treatment}} = 120.67$; $U_{\text{control}} = 20.67$

These findings indicate that children in the treatment group, who were engaged in CROWD-based dialogic reading, significantly outperformed peers in the control group in all measured domains.



Picture 4 - Graph showing the difference between the treatment class and the control class

Source: research results, year 2025

Qualitative Findings

Observation and interview data revealed stark differences in instructional practices. In the control classroom, teachers emphasized phonics awareness, repetitive word drills, and rote memorization. This approach provided limited opportunities for meaning-making or critical exploration. In contrast, in the treatment classroom, CROWD questioning encouraged reflective and associative thinking. Children were more actively engaged, able to connect story elements to personal experiences, and demonstrated higher levels of reasoning, such as making inferences, identifying cause-effect relationships, and expressing empathy.

Teachers also reported that CROWD implementation required additional time (approximately 22 minutes compared to 15 minutes without CROWD) due to the interactive nature of questioning and feedback. However, they emphasized that the additional time was worthwhile, as children displayed deeper comprehension and more complex reasoning.

DISCUSSION

The significant quantitative gains, supported by rich qualitative evidence, affirm the effectiveness of CROWD in enhancing early literacy and critical thinking. These findings are consistent with prior international research on dialogic reading (Hargrave & Sénéchal, 2000; Lever & Sénéchal, 2011) and extend the evidence base by demonstrating effectiveness in the Indonesian PAUD context. Importantly, the study highlights that when teachers shift from rote-driven practices to interactive and child-centered questioning, children's literacy and cognitive outcomes improve substantially.

CONCLUSION

This study demonstrates that the CROWD technique, when embedded in read-aloud activities, significantly improves reading comprehension and critical thinking skills among children aged 5–6 years. Through 23 structured questions representing Completion, Recall, Open-ended, Wh-questions, and Distancing, children engaged more actively, made meaningful connections, and developed higher-order reasoning.

Practical implications suggest that early childhood teachers can adopt CROWD as a feasible classroom strategy, provided they receive adequate preparation and practice through simulation. Although implementation requires more instructional time, the cognitive and literacy benefits justify the investment.

Future research should expand to larger and more diverse samples to examine the consistency of CROWD's impact. Longitudinal studies are also needed to explore sustained effects on later literacy development (ages 7–8) and other cognitive domains, such as problem-solving, creativity, and socio-emotional skills.

Additionally, optimizing the number of CROWD questions could help balance efficiency and effectiveness in classroom practice.

Overall, this study provides empirical evidence that dialogic reading with CROWD can serve as an innovative and contextually relevant strategy to strengthen early literacy and critical thinking in Indonesian early childhood education.

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