

Effectiveness of Shared Dialogic Reading Activities In Improving Language Competences, Story Comprehension, and Causal Reasoning Abilities In Early Childhood

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Abstract

This study aims to investigate the role of joint book reading activities on language skills, story comprehension, and causal reasoning abilities of young children. The joint book reading activity in this research used two approaches, namely the traditional dialogic reading approach and the dialogic reading of mind maps. The method used in this research was a quasi-experiment by dividing groups between children who received traditional dialogic reading intervention and interactive reading mind maps. The research method used in this research is a quasi-experimental method with a pretest-intervention-posttest design. The participants in this research were 350 kindergarten children and 100 teachers spread across several early childhood education institutions. Research findings showed that children's language competence (vocabulary, critical listening), story comprehension, and causal reasoning improved better in the group of children who received intervention with traditional dialogic shared reading activities rather than dialogic reading activities with mind maps. Dialogic scaffolding is able to encourage children to continue thinking and actively express their ideas. The implication of this research is that dialogic scaffolding in both traditional dialogic shared book reading activities and mind maps is a very important component and determines children's success in improving their language competence.

Keywords : *dialogic reading, reading books together, language skills, causal reasoning abilities*

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Introduction

Most early childhood students experience language difficulties early in their education due to limited language skills, an inability to tell stories, and a lack of strong causal reasoning skills. This condition causes students to become passive and struggle to access and express various pieces of knowledge (Claes et al., 2024; F. Zhang et al., 2024). To overcome these problems, learning approaches are needed that can develop all of these core competencies. One such method is the shared dialogic reading approach. Through this dialogic reading activity, students' language competency, story comprehension, and causal reasoning skills will be trained (Koshy et al., 2024; Wang et al., 2025). Language competencies at an early age include vocabulary mastery, storytelling skills, and critical listening skills. Story comprehension is the ability of students to understand the content of a story until they can identify the main elements in the story. Causal reasoning competency includes the ability to observe, elaborate, infer, predict, and explain causal relationships in a story (McNally et al., 2024; Mulyati & Hadiananto, 2022). To optimize all these basic competencies, a reading learning approach is needed that encourages all these competencies, one of which is the dialogic reading approach with students.

The activity of reading books together is one of the literacy activities that is of concern in family literacy practices. This joint book reading activity can be carried out by parents or older individuals with children at home while inviting them to be interactive while reading. In early childhood classes, reading together is the main activity in the classroom (Amendum & Liebfreund, 2019; Hadiananto et al., 2022). There are several benefits provided by the activity of reading books together on children's language competence. There are several approaches used in carrying out this joint book reading activity, one of which is interactive book reading or dialogical reading. The characteristic of this approach is that there is intense interaction before, during and after the activity of reading books together (O'Sullivan, 2021; Okayay & Kandir, 2021). Teachers or parents usually carry out several activities such as explaining, providing comments on the story, asking questions so that children apply their thoughts and ideas to the content of the story during interactive reading activities. There are several previous studies that provide evidence of the positive contribution of this interactive

book reading activity. Extra-textual dialogical activities that occur during reading activities, including talking about book topics, inferential meaning, print, or phonology, can improve vocabulary and other literacy skills in children (Boerma et al., 2022; Cabell et al., 2019).

The impact of reading books together really depends on the approach used. Previous research has proven that the use of scaffolding questions asked during reading activities has a significant impact on children's vocabulary competence (Kim et al., 2022; Satriana et al., 2022; van der Wilt et al., 2019). Some types of scaffolding for asking questions are questions that require less complex thinking activities are asked first, then questions that require less complex thinking activities are used. Furthermore, previous research shows that the use of questions is more effective in improving vocabulary skills compared to asking questions. A new approach to reading activities is an interactive reading approach that uses mind maps (Boerma et al., 2022; McNally et al., 2024; O'Sullivan, 2021). Mind maps are graphics for organizing information through visual and structured graphics to explain main topics and topic sections. Graphic organization can facilitate students to understand information more easily. The first love mind map reading approach was developed in the Netherlands to support literacy practice activities in early childhood (Boardman, 2022; Reikerås & Dahle, 2022). The interactive reading approach with mind maps consists of three parts that focus on several points of information, namely stories about the subject of the story, place or location of the story, problems or solutions (Bergman Deitcher et al., 2021; Hayden et al., 2019). From these studies, it can be concluded that interactive shared reading activities can optimize all the language competencies that are the main foundation of early childhood students.

The urgency of this research is to investigate how the use of shared dialogue reading approaches can optimize all the competencies that are the main foundation of early childhood students' language abilities. Language competencies, storytelling, and causal reasoning significantly contribute to the active participation of early childhood students and serve as primary tools for acquiring and expressing information and knowledge. Furthermore, this research also significantly contributes to alternative reading approaches that teachers can use to improve language skills, storytelling skills, and causal reasoning skills, which are essential for early childhood students. Dialogic scaffolding is a dialogue approach to facilitate children to deepen their understanding of the story in the book. This dialogical method can use open questions and closed questions. Open-ended questions have a different impact on the

conversation and encourage the child's contribution to speaking than using closed-ended questions (Boardman, 2022; Hadiano et al., 2021). So, during this dialogic reading activity, various types of questions are recommended to be used, especially open questions. In dialogic reading activities with mind maps, the questions asked focus on four types of questions, namely the character of the story subject, location, problem and solution. So, the difference between this study and previous studies is that this study attempts to investigate the comparative effectiveness of traditional dialogic reading approaches and dialogic reading approaches with mind maps. The competencies studied are more complex, namely language skills (vocabulary mastery, critical listening skills), story comprehension skills, and causal reasoning skills in early childhood. Therefore, the purpose of this study is to investigate the comparative effectiveness of reading activities together with traditional dialogic reading approaches and dialogic reading activities with mind maps on language competencies in (thematic vocabulary mastery, critical listening skills), story comprehension skills, and causal reasoning skills in early childhood. Based on this explanation, the researcher formulated several research questions, namely:

- a) What is the impact of the traditional shared dialogue reading approach and the shared dialogue reading approach with mind maps on language competence?
- b) What is the impact of the traditional shared dialogue reading approach and the shared dialogue reading approach with mind maps on story comprehension?
- c) What is the impact of the traditional shared dialogue reading approach and the shared dialogue reading approach with mind maps on causal reasoning?

Literature Review

Shared Dialogic Reading Traditional and With Mind Maps

The approach of share dialogues reading is a reading approach that emphasizes the interactive reading process. This shared dialogue reading activity emphasizes the teacher's scaffolding of dialogue to improve students' comprehension of the reading. Various questions that trigger dialogue occur between the teacher and students, including open-ended questions

(Hayes & Berthelsen, 2020; Joseph et al., 2023). This dialogue reading approach has two types: the traditional dialogue reading approach and the mind-mapping dialogue reading approach (O'Sullivan, 2021). The traditional dialogue reading approach relies solely on questions to stimulate dialogue. However, the mind-mapping dialogue reading approach uses mind-mapping scaffolding to map the content of the reading to help improve student comprehension and is assisted by various types of questions. Dialogic reading activities are proven to be more significant in improving students' language competence than regular reading activities (Gunnerud et al., 2022; Hoel & Jernes, 2023; Piasta et al., 2018). Implementation of dialogic reading activities using mind maps is still rarely done.

There was previous research examining traditional interactive reading in early childhood, the results of which showed an increase in vocabulary skills and good storytelling abilities. The majority of previous research still focuses on traditional dialogic reading activities, not many studies have investigated the impact of dialogic reading activities on children's language abilities. From other research, the use of mind maps in the learning process is an effective approach to facilitate students to easily understand the material (Boerma et al., 2022; Satriana et al., 2022). Mind maps are also an effective approach in helping students to summarize the material after the learning process. The contribution of this mind map can be explained based on cognitive load theory. Based on cognitive load theory, a child's working memory will be overloaded if they receive too much information without regularity, which will result in the child having difficulty concentrating, having difficulty remembering, and having difficulty following the flow of the learning process (Bouck et al., 2021; Hayden et al., 2019). This method of visualizing information using mind maps will be able to minimize children's cognitive load and make it easier for children to digest and understand new information and make the learning process more effective (Korinth & Fiebach, 2018; Li & Yang, 2015).

Language Competence, Story Comprehension, and Causal Reasoning

Language competence is a student's language skills, which include mastery of thematic vocabulary, storytelling skills, and critical listening skills. Mastery of thematic vocabulary is students' knowledge of vocabulary that refers to a particular topic (Mulyati & Hadianito, 2023;

C. Zhang et al., 2020). Storytelling ability is the ability to retell a story or the contents of a book that has been read in a structured and accurate manner. This competency requires the integration of a child's linguistic, cognitive, and social skills (Piasta et al., 2018; Satriana et al., 2022). Furthermore, critical listening ability is a child's ability to listen to a story about the contents of a book until the child understands and is able to provide comments or conclusions about the contents of the book. Critical listening ability is a complex listening skill because it integrates the abilities of identifying, understanding, and remembering simultaneously (Villanueva, 2022; Wu & Hindman, 2025). This ability can be trained from an early age through interactive reading activities. Language competence in this study is the ability to receive and express understanding after receiving intervention in the form of a shared dialogue reading activity. Language competence plays a crucial role in supporting the academic competence of early childhood students (Koshy et al., 2024; Liu et al., 2025). Students with good language competence demonstrate better learning participation than those with less.

This language competence can be improved through interactive learning methods that can encourage receptive and expressive language skills, one of which is the shared dialogue reading activity. Several previous studies have shown that interactive learning methods can improve early childhood students' language competency (Paynter et al., 2023; Satriana et al., 2022; Stocker et al., 2023). The language competency significantly contributes to their story comprehension and causal reasoning abilities, which also play a crucial role in supporting early childhood academic competency. The ability to understand stories is the child's ability to understand different elements in the story and be able to connect these elements. Causal reasoning ability is the ability to explain, provide predictions, and draw conclusions about cause and effect relationships for every event that occurs in the story (Kim et al., 2022; van der Wilt et al., 2019). This ability to understand and reason is very dependent on the child's ability to connect story elements and identify each cause and effect relationship for an event that occurs in the story. The relationship between story elements can be explained by mind maps during dialogic reading activities which can make a positive contribution to children's ability to understand stories and children's causal reasoning abilities (Vaknin-Nusbaum et al., 2021; Wissinger et al., 2024).

Method

Research participants

The research involved 350 early childhood children and 100 teachers from several early childhood education institutions. The sample was divided into two groups, 50 teachers and 175 children were included in the group that received traditional shared reading activity intervention and 50 teachers, 175 children received joint reading activity intervention with mind maps. The age range of participating children is 3-6 years. This age is the age that is usually applied in early childhood education. Each class is filled with around 20-25 children ($M = 22.15$, $SD = 2.25$). percentage of girls ($n = 175$, 50%) and percentage of boys ($n = 175$, 50%). The background of most of the children was born in Bandung with 90% Sundanese as their mother tongue, the rest were children from outside West Java with 10% as Indonesian as their mother tongue. The percentage of parental educational background is high 40%, medium 50, low 10%.

Research design

The research method used in this research is a quasi-experimental method with a pretest-intervention-posttest design which is explained in table 1. Class observations during the joint book reading activity in class were recorded. Starting with the activity of reading books together according to students' interests to represent the books they read every day. The teacher uses a five-point scale to observe these activities with 5 points = representative, 0 points = not representative. The score for the joint book reading activity in the pretest phase showed a score of 4-5 with an average of 4.45 ($SD = 0.54$). Next, after the pretest phase the teacher teaches students to do book reading activities together with a teacher getting three children to do reading activities together. The activity of reading books together is carried out by each group according to the division of roles, namely traditional dialogic joint reading activities and dialogic reading activities with mind maps. The book chosen is a picture book that tells a fairy tale acted out by animals. This joint book reading activity was carried out for

Table 1. *Overview of research design*

Group	1	2	3	4	5	6	7	8	9
Traditional dialogic reading	pretests phase	Workshop for traditional dialogic reading teachers	activity 1 (Book 1) dialogic reading focuses on the prediction aspect	activity 2 (Book 1) dialogic reading focuses on aspects of understanding	Activity 3 (Book 1) dialogic reading focuses on children's feelings	activity 4 (book 2) dialogic reading focuses on the predictive aspect	activity 5 (book 2) dialogic reading focuses on understanding	activity 6 (book 2) dialogic reading focuses on aspects of feelings (post-observation data)	Posttests phase
Dialogic reading with mind maps	pretests phase	Workshop for teachers of dialogic reading of mind maps	activity 1 (Book 1) read dialogically using questions that focus on the main story and create branches in the storyline	activity 2 (Book 1) reading with questions focusing on the place of events and creating story branches	Activity 3 (Book 1) reads using problem-focusing questions, solutions, and creating branches	activity 4 (book 2) dialogic reading using questions on the place of events and making branches	activity 5 (book 2) dialogic reading uses questions focusing on the place of events and making branches	activity 6 (book 2) dialogic reading uses questions focusing on problem solutions, and creating branches (post-observation data)	Posttests phase

8 weeks. Teachers receive workshops to get training in traditional dialogic shared book reading activities and dialogic collaborative reading activities with mind maps. All teachers receive detailed instructions in carrying out this dialogic collaborative book reading activity. Teachers receive instructions to ask questions before, during, and after the dialogic reading activity takes place. An example of a question used is "what will happen after this?" The focus of questions on different reading activities can be seen in table 1. The dialogic book reading activity group with mind maps carried out reading activities with a focus on conveying information with mind maps. During the reading activity, the teacher asks the child questions so that the child's attention is focused on each aspect of the story, for example,

when changing stories, for example, so that the child focuses on the location of the story, he is given the question "where is the scene?". The questions are discussed with the children and the teacher provides visuals by making a simple mind map that the children can read.

Research consistency

The experimental research design used was adapted to the reading curriculum used in early childhood education institutions. All teachers who will enter the group with the traditional dialogic shared reading approach and shared reading with mind maps receive the same workshop to equalize perceptions of the intervention. In addition, during the intervention, the researcher communicated with the teacher every two weeks to hold discussions and reflect to ensure that the practice of reading activities was still on the right research track. Teachers also fill out questionnaires to ensure the conformity of reading activity practices with research guidelines. Observations in the posttest phase were also carried out by paying attention to compliance with research guidelines.

Ethical considerations

This research was conducted after obtaining approval from several parties and stakeholders involved. The research procedures were communicated to all parties involved so that they could consider whether to take part or not. This research has received approval from several early childhood education institutions, children's parents, and the author's university. Every parent has the right to withdraw their child at any time if they have objections. The data used and analyzed is anonymous so as to protect the privacy of research participants. Data can only be accessed by researchers and is only used for research.

Evaluation

Children's language competence

Children's language competencies assessed are mastery of thematic vocabulary, ability to

tell stories, ability to listen critically. Vocabulary mastery is assessed using a thematic vocabulary assessment test adapted from Kim et al., (2022). Children are instructed to explain the meaning of 25 words in the story book. The vocabulary assessment test was carried out independently by the researcher by asking for a brief meaning of the vocabulary. Recordings are used to help researchers so that assessments are carried out objectively and authentically. Each child's answer is described by the researcher and compared with the answers of other children. Correct answers get a score of 1 point, wrong answers get 0 points. The child's total score for thematic vocabulary mastery is in the range 0-20. The results of checking the internal consistency of the scale show the value (Cronbach's $\alpha = 0.67$ in the pretest phase and Cronbach's $\alpha = 0.80$ in the posttest phase). Furthermore, based on the results of the inter-rater reliability test, Cohen's Kappa value showed a value of 0.64, which means that inter-rater reliability met the reliability value criteria. Storytelling competence was assessed using a narrative test scale with a standard test for early childhood adapted from Hindman, (2025). This test is used in the pretest and posttest phases. Assessment is carried out in terms of content, structure and level of difficulty. In this test, students are given a series of pictures that form a story. The child is instructed to retell the series of pictures until someone who does not know the pictures understands the story.

Tests are also recorded for accuracy of assessment. Children's stories are assessed by looking at the comparison of the story with an assessment with 16 aspects that describe each story event and the causal relationship between events in the story. Scoring is done with 1 point for stories that match the item explanation, 0 points for stories that do not. The total score for this aspect is calculated by adding up the scores on all items. So, children's storytelling abilities are in the score range 0-16. This test has been tested for reliability, producing a Cronbach's α value of 0.90. This value shows that the storytelling ability test meets the reliability criteria. In addition, the inter-rater reliability value also met the reliability criteria with a Cohen's kappa value of 0.75. Critical listening skills were assessed using the critical listening scale for preschool children adapted from Wang et al., (2025). This test is carried out by the teacher by providing an answer sheet with pictures of 14 statements. Children are asked to indicate which picture matches the story read by the teacher by underlining one of the pictures. For example, the statement "Doni plays soccer with his father.

Children must choose the picture "Doni and his father kicking the ball and catching the ball. 1 point for the correct answer, and 0 for the wrong answer. The total score is the sum of all statement items. The score range is 0-14. The results of this assessment test meet the reliability criteria with a Cronbach's value of 0.61 in the pretest phase and a Cronbach's alpha of 0.60 in the posttest phase.

Story comprehension ability

To assess children's storytelling abilities, children are asked to answer comprehension questions to check whether the child understands the content of the story. There are two books that will be used to check children's understanding with different levels of complexity, from easy to medium. Assessment of story comprehension ability using various types of questions at different levels adapted from Stocker et al., (2023). The questions used focus on assessing children's understanding of the contents of the book. The purpose of the question is to measure the child's level of understanding of the events in the book which cover what events and why the events occurred. Assessment of story understanding is only carried out in the posttest phase. The total score for the comprehension assessment is in the range 0-5. The results of the inter-rater reliability test show a Cohen's Kappa value of 0.70, which means the test shows quite high inter-rater reliability and meets the research criteria.

Causal reasoning abilities

The recorded observations of joint book reading activities were transcribed and analyzed. The results of the analysis show that the average activity duration is $M = 23.45$ minutes ($SD = 5.30$, $min = 17$, $max = 32$). Coding was carried out on causal reasoning and dialogic scaffolding in each reading activity. Analytical reasoning abilities during reading activities were researched using Reed's (2015) framework. Based on this framework, there are three categories of causal and non-causal respectively. The non-causal categories are labeling, elaboration, and observation, while the causal categories are inference, predication, and explanation. The results of the inter-rater reliability test on coding showed a Cohen's kappa value of 0.81, which means this value meets the research criteria.

Table 2. *Explanation of causal and non-causal categories*

Category	Definition	Examples
Labeling ability	The ability to give non-causal names or be able to identify perceived stimuli without other explanations	He climbed a coconut tree
Ability to observe	Non-causal explanation or the ability to interpret perceptual features beyond labeling	He looked like he was scared
Ability to elaborate	The ability to provide non-causal information about stimuli that represents prior knowledge	He is afraid of heights
Ability to make inferences	The ability to provide causal statements that explain the relationship between events, subject characters, or psychological aspects based on stimuli	A squirrel jumped from a tree and then broke its leg
predictive ability	The ability to provide causal statements from the actions or events depicted in the story	They thought the rabbit would win
Ability to explain	Ability to provide causal references to explain depicted actions, events, psychological factors	He won because he wasn't distracted

Table 3. *Overview of dialogic teacher scaffolds of the LIDO*

Category	Definition	Examples
Ask for feedback	Children are asked to respond to the contents of the book's story	What did the Rabbit say as he climbed?
Ask to explain	Children are asked to explain or give reasons for an event to occur	It's not clear, please say it again?
Ask to continue the story	Children are encouraged to continue thinking through various methods	Why did this incident happen?
Ask open questions	The teacher asks open questions	In the story, who is the strongest? Can you tell me more about that?
Ask semi-open questions	The teacher asks semi-open questions	What did the rabbit do?
Ask closed questions	The teacher asks closed questions with yes or no answer options	Who won the race? Rabbit or turtle?

Teacher dialogic scaffolding

The assessment of dialogic scaffolding in traditional group reading activities and mind maps was carried out using codes using the Inference Discourse Observation method from

O'Connor & LaRusso, (2014). The code used in the discussion of class activities uses three low inference codes on dialogical scaffolding and three categories of general types of content which are presented in table 3. Teachers who do not fit all of these categories are not given a code. The results of the inter-rater reliability test for this assessment used independent assessment. The results of the moderate reliability test show a Cohen's kappa value of 0.72, which means this assessment is in accordance with the assessment criteria.

Data analysis

Transcription of recordings was carried out using the Atlas application. Teacher and child dialogue is differentiated using codes. The child's dialogue uses Reed's (2015) framework code, while the teacher's dialogue uses the O'Connor & LaRusso, (2014) Inference Discourse Observation code. The exchange of dialogue between children and teachers uses a calculation of the total activity time so that there is not too much difference in the duration of time used. The resulting data was analyzed using the SPSS application. There is missing data due to only 5% of student absences in the posttest phase which does not interfere with the analysis calculations. Values that are not involved in the analysis are calculated using the Expectation-Maximization method using SPSS version 29. The results of these calculations found no deviations that could interfere with the statistical results of the research using Little's MCAR test $X^2(762) = 735.12$, $p = .921$ in the pretest phase and $X^2(732) = 645.70$, $p = 0.452$ posttest phase). The analysis results show that the scores on the main variables show a normal distribution. Data analysis of children's language competence and story comprehension abilities used parametric methods because the sample was sufficient and met the criteria. It is hoped that the overall analysis will show valid and comprehensive research results.

Results

Results of descriptive statistical analysis

The research results are presented in the form of descriptive statistics in the pretest and

posttest phases for each main variable in table 4. Descriptive analysis contains the average and standard deviation. Scores that were not standardized are presented to facilitate the interpretation of descriptive statistics.

Table 4. *Results of descriptive analysis of children's language competence*

	Pretest			Posttest		
	Total group	Traditional group	Mindmap group	Total group	Traditional group	Mindmap Group
Children's language competence						
Thematic Vocabulary Mastery	5.24 (3.50)	6.12 (3.50)	4.53 (3.56)	8.30 (4.45)	9.50 (4.56)	7.51 (4.71)
Storytelling competency	9.20 (3.70)	9.60 (3.64)	8.89 (3.71)	9.11 (3.62)	9.41 (3.50)	9.67 (3.57)
Critical listening skills	12.34 (3.30)	12.31 (3.61)	12.42 (3.12)	13.78 (2.78)	13.81 (2.42)	12.76 (3.12)
Ability to understand stories				4.81 (1.13)	4.89 (1.11)	4.62 (1.12)
Children's causal reasoning abilities						
Labeling abilities	42.12 (32.80)	28.42 (6.78)	52.31 (42.70)	28.25 (14.31)	23.45 (20.72)	31.82 (8.42)
Ability to observe	23.14 (13.88)	14.14 (4.72)	29.82 (14.72)	15.60 (8.21)	33.42 (7.21)	12.34 (5.51)
Ability to elaborate	7.12 (5.72)	6.24 (5.46)	7.42 (6.12)	7.62 (5.31)	7.82 (4.25)	7.46 (6.48)
Ability to make inferences	4.82 (4.52)	4.14 (6.31)	5.34 (4.42)	7.36 (3.35)	6.21 (1.14)	8.34 (3.80)
predictive ability	10.31 (7.52)	13.42 (7.21)	8.12 (7.52)	3.51 (3.12)	3.72 (3.82)	3.42 (3.12)
Ability to explain	13.23 (8.67)	14.46 (7.81)	12.34 (11.42)	7.45 (4.12)	9.72 (1.62)	6.13 (3.24)
Scaffolding teachers' dialogic reading						
Ask for feedback	0.82 (1.63)	1.74 (2.10)	0.00 (0.00)	0.82 (1.13)	1.45 (1.64)	0.32 (0.62)
Ask to explain	3.54 (3.62)	4.82 (6.34)	1.62 (1.34)	3.62 (1.67)	4.52 (3.10)	3.12 (1.78)
Ask to continue the story	1.60 (1.62)	1.02 (1.02)	2.14 (1.92)	8.82 (6.73)	8.42 (6.72)	7.32 (7.82)
Ask open questions	6.56 (5.31)	7.72 (5.82)	5.62 (5.31)	5.30 (5.23)	8.42 (5.78)	2.14 (1.52)
Ask semi-open questions	14.04 (8.52)	15.73 (5.62)	12.83 (11.10)	21.02 (8.70)	31.73 (7.41)	14.31 (5.52)
Ask closed questions	28.82 (13.12)	31.04 (13.62)	28.82 (13.45)	33.41 (19.15)	41.03 (29.12)	28.31 (8.42)

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Table 5. *Test of variable interaction effects, internal effects, and effects between each competency*

		Wilks' Lambda	F	df	<i>p</i>	Partial Eta Squared
Thematic Vocabulary Mastery	Interaction	1.05	0.89	1, 182	.346	.006
	Within	.52	341.21	1, 182	<.001	.542
	Between		23.21	1, 182	<.001	.112
Storytelling competency	Interaction	1.05	.524	1, 182	.541	.004
	Within	.94	14.22	1, 182	<.001	.072
	Between		3.24	1, 182	.115	.015
Critical listening skills	Interaction	1.05	2.12	1, 182	.162	.013
	Within	.72	75.64	1, 182	<.001	.424
	Between		1.72	1, 182	.189	.010
Ability to understand stories	Thematic vocabulary (pre)		15.83	1, 181	<.001	.083
	Between		5.84	1, 181	.456	.005

Hypothesis test

Mixed analysis of variance was used to test the hypothesis of the effect of traditional dialogic reading activities and mind map dialogic reading activities on children's language abilities. Score analysis in the pretest and posttest phases was used as an internal factor and the two reading approaches were used as interfactores. An independent t test was also carried out to see group differences in story comprehension abilities in the posttest phase. The results of the analysis show that the interaction effect between internal factors and intermediate factors is not very significant on almost all aspects of children's language competence which are presented in table 5. From these findings, the traditional dialogic reading approach and mind maps provide contributions that are not much different to children's language competence. Furthermore, the between-subjects effect on aspects of thematic vocabulary mastery appeared to be significant and higher in the group of children who received traditional dialogic reading activity intervention than children who received mind map dialogic reading activity intervention. The internal effects of the subjects of the two approaches to dialogical reading activities also appeared significant in all aspects of children's language. Children's language ability scores showed a higher and more significant increase in scores in the posttest than in the pretest phase. The results of the independent t test analysis showed that the story comprehension abilities of children in the traditional group

were different from the group of children who received intervention in dialogic reading activities with mind maps. Children's story comprehension ability scores using traditional dialogic reading activities were better than those in the mind map dialogic reading group with a value of $t(174) = 2.23$, $p = 0.027$. Next, analysis of variance was used to see differences in mastery of thematic vocabulary in the two groups. Analysis of variance was used as a PSTHOC test on story comprehension ability (dependent variable), traditional group and mind map as fixed factors, and thematic vocabulary ability was used as a covariate. The findings showed that there were no significant differences between the two traditional and mind map groups on story comprehension abilities which were used as a control for the pretest phase of thematic vocabulary mastery. The analysis results are presented in table 5.

Table 6. *Wilcoxon test results in both phases*

	Pretest <i>Md*</i>	Posttest <i>Md*</i>	<i>Z</i>	<i>p</i>	Effect size <i>r</i>
Children's causal reasoning abilities					
Labeling abilities	1.82	1.07	-1.92	.072	0.62
Ability to observe	0.99	0.57	-1.70	.093	0.52
Ability to elaborate	0.32	0.42	-0.72	.541	0.21
Ability to make inferences	0.22	0.30	-0.92	.482	0.25
predictive ability	0.42	0.16	-2.31	.031	0.62
Ability to explain	0.61	0.27	-1.24	.345	0.41
Scaffolding teachers' dialogic reading					
Ask for feedback	0.00	0.00	-0.81	.531	0.23
Ask to explain	0.06	0.08	-0.62	.724	0.15
Ask to continue the story	0.07	0.32	-1.81	.082	0.52
Ask open questions	0.20	0.13	-1.62	.135	0.53
Ask semi-open questions	0.72	0.74	-1.03	.424	0.31
Ask closed questions	1.45	0.98	-0.91	.478	0.34

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Table 7. *Correlation test between teacher dialogical scaffolding and children's causal reasoning abilities*

	Children's causal reasoning											
	Labeling		Observation		Elaboration		Inference		Prediction		Explanation	
	<i>rho</i>	<i>p</i>	<i>rho</i>	<i>p</i>	<i>rho</i>	<i>p</i>	<i>rho</i>	<i>p</i>	<i>rho</i>	<i>p</i>	<i>rho</i>	<i>p</i>
Scaffolding teachers' dialogic reading												
Ask for feedback	−0.34	.742	−0.63	.196	0.42	.572	0.16	.845	0.05	.940	0.31	.743
Ask to explain	−0.22	.812	−0.20	.813	0.61	.362	0.53	.361	0.15	.872	0.72	.150
Ask to continue the story	0.13	.820	0.51	.383	0.20	.813	0.82	.061	0.08	.882	0.63	.152
Ask open questions	−0.30	.674	0.45	.442	0.73	.120	0.92	.008	0.55	.445	0.97	<.001
Ask semi-open questions	−0.23	.757	0.62	.192	0.63	.150	0.65	.120	−0.05	.943	0.84	.032
Ask closed questions	0.31	.645	0.62	.191	−0.42	.545	−0.01	.880	−0.26	.645	−0.16	.872

Note. Correlations between standardized difference scores on children's causal reasoning and teachers' dialogic scaffolding.

The Wilcoxon Signed Rank test was carried out to see the comparison of children's causal abilities and the teacher's dialogical scaffolding before and after the intervention which is presented in table 6. The findings show that children's causal improvements were seen in the posttest phase. Dialogic scaffolding has a significant effect on children's causal abilities. Next, correlation coefficients using Spearman rankings were used to explore the correlation between changes in the dialogic scaffolding teachers used and improvements in children's causal reasoning abilities. The research findings show that changes in teacher dialogue and open-ended question methods have a positive correlation with changes in children's use of inference which can be seen in table 7. These findings mean that teachers' efforts to instruct children to continue the story and the use of open-ended questions which are increasingly lower in intensity have a significant correlation. with children's increasingly intense use of inference (can be seen in table 6). The relationship between the use of open and semi-open questions also has a positive correlation with children's use of explanations. Apart from that, it was also found that the teacher's open questions and the intensity of the use of semi-open questions had a significant correlation with the decrease in the intensity of children's use of explanations which can be seen in table 6. Apart from these findings, no other significant correlations were found.

Discussion

This research aims to investigate the effectiveness of traditional dialogic reading activities and dialogic reading with mind maps in improving children's language skills, story comprehension abilities, and children's causal reasoning abilities. The researcher also explored the role of the teacher's dialogic scaffolding during traditional dialogic reading activities and mind maps and the correlation between the teacher's dialogic scaffolding and children's causal reasoning abilities. The research findings indicate that both dialogic reading approaches significantly improved language skills. However, children's causal reasoning skills showed lower improvement in the post-test phase compared to the pre-test phase. A comparison of the effectiveness of traditional reading activities and mind mapping activities showed that traditional dialogic reading activities contributed more significantly to children's story comprehension than mind mapping dialogic reading activities. This occurred because traditional dialogic reading activities were more intensive in using dialogic scaffolding with various types of questions, resulting in more comprehensive student understanding. However, this difference in impact was not significant when thematic vocabulary pre-test scores were controlled. This finding is in line with previous research which proves that children's ability to understand stories is greatly influenced by the story style and language of the teacher in explaining the book, especially the teacher using the right intonation when telling the contents of the book (Cabell et al., 2019; Hagans & Good, 2013; Okyay & Kandir, 2021). This will make it easier for young children to remember and understand the contents of the story.

Further findings in the correlational analysis found that a shift in the use of dialogic scaffolding by teachers, for example from using semi-open-ended questions to shifting instructions to continue the story with children, was positively correlated with improvements in children's causal reasoning abilities in the aspects of inference and explanation. Improved causal reasoning occurred because students were encouraged to connect between story elements through questions and instructions to continue the story, resulting in a better understanding of the storyline and the relationships between components. This process contributed significantly to the improvement in causal reasoning. This finding is supported by previous studies that demonstrated that open-ended questions and instructions to continue

the story contribute significantly to causal reasoning (Bergman Deitcher et al., 2021; Bippert, 2020; Chung et al., 2022). In general, both approaches to traditional dialogic reading activities and mind maps can significantly improve mastery of thematic vocabulary, storytelling ability and critical listening ability. This finding is in line with the theory that collaborative reading activities carried out in a dialogue manner will not only be able to increase understanding of the contents of the book, but will also be accompanied by an increase in children's language skills, which include vocabulary, storytelling abilities, as well as improving children's listening abilities (Beucher et al., 2020; Boerma et al., 2022).

Research findings also indicate that both approaches, traditional dialogic reading and mind mapping, contribute equally significantly to language competency. This is because both approaches optimize intensive dialogue scaffolding, which fosters language competencies such as vocabulary mastery, storytelling, and critical listening skills. Dialogic scaffolding in reading activities encourages students to utilize both receptive and expressive language skills. This finding is in line with findings in previous research which found that dialogic reading activities had a significant influence on young children's language abilities regardless of the approach used (Bouck et al., 2021; McNally et al., 2024). The findings of this research and the findings of previous research generally show that dialogic reading activities make a positive contribution to children's language abilities and are not dependent on the reading approach they use (Kang & Shin, 2019; Kiuru et al., 2017).

The impact of reading books together on language skills is not influenced by the content of the books used. Although thematic vocabulary is assessed using words that are still related to the content of the book, other language competencies, such as storytelling ability and critical listening ability are assessed using different instruments to the content of the book. Improving children's language skills is very dependent on the dialogic scaffolding the teacher uses. Teachers must be clever in using scaffolding so that children are motivated and encouraged to be more active in dialogue to understand the contents of the book. This finding is in accordance with the theory that the teacher's dialogical scaffolding greatly influences the level of children's understanding in learning anything (Korinth & Fiebach, 2018; Villanueva, 2022). This finding is also in line with previous research which found that teachers' dialogic scaffolding becomes an intermediary that facilitates mastery of subject

matter for both young children and adult students (Paige et al., 2019; Piasta et al., 2018). The next finding was that the story comprehension ability of children who received traditional dialogic reading activity intervention showed a better improvement than the ability of students who received dialogic reading activity intervention with mind maps. These findings refute the researcher's hypothesis which predicts that children's story comprehension abilities with mind maps outperform the traditional dialogic reading group (Hoel & Jernes, 2023; Sukovieff & Kruk, 2021).

Verbal explanations are still considered more effective if the delivery is precise and easy to understand compared to just relying on visualization of objects. Furthermore, the findings of this research reveal that dialogic reading activities do not have a significant impact on children's causal reasoning abilities. This is because the dialogical scaffolding teachers use does not experience many changes or shifts in the type of scaffolding (Boardman, 2022; Hadiananto et al., 2022). Children's causal reasoning abilities can be said to be fairly stable language competencies that did not experience significant changes during the research period. This finding is in line with previous research which examined the role of teachers' narrative style on children's causal reasoning abilities, which showed that children's causal reasoning abilities did not experience significant changes (Satriana et al., 2022; Shahaieian et al., 2018). Children's causal reasoning abilities are greatly influenced by the ability to identify each event in the story. A child may be able to identify each event enough so that the child's causal abilities are quite stable from the pretest to the posttest phase. The stable dialogic scaffolding seen in interventions is not specific to the type of dialogic scaffolding used. Teachers are given the freedom to use dialogical scaffolding according to comfort and conditions.

Conclusions, Limitations, Recommendations

The two approaches to traditional dialogical joint book reading activities and mind maps generally contribute equally significantly to children's language abilities, which include mastery of thematic vocabulary, storytelling abilities, and children's causal reasoning abilities. Traditional dialogic reading activities that emphasize interactive communication during

reading activities with children can improve children's language competencies, including vocabulary mastery, ability to understand stories, causal reasoning abilities, and critical listening abilities. The process that is able to improve all of these language competencies is the teacher's use of dialogic scaffolding, starting from the use of open, semi-open questions, and asking to continue. This dialogic scaffolding encourages children to continue thinking and actively express their ideas. Dialogic collaborative reading activities using a mind map approach provide the same significant impact as traditional dialogic reading activities. However, the child's language ability that is most stable among other language abilities from both the pretest and posttest phases is the child's causal reasoning ability. Children's causal reasoning abilities improved better in the group of children who received intervention with traditional dialogic shared reading activities rather than dialogic reading activities with mind maps. So, the main key in this dialogic shared reading activity is the quality of the discussion presented by the teacher during the shared reading activity with the children. The quality of the discussion is largely determined by the quality of the use of dialogic scaffolding used by the teacher. Teachers must be clever at using dialogical scaffolding that is appropriate to the situation during shared reading activities.

The implication of this study is that dialogic scaffolding in traditional dialogic book reading activities and mind mapping is a very important component and determines children's success in improving their language competence. Furthermore, this study implies that language learning activities for early childhood students should use interactive learning approaches that promote language competence. This study contributes to early childhood student pedagogy, which must use scaffolding that encourages receptive and expressive language skills. Stakeholders should design early childhood education curricula by promoting interactive language teaching approaches, both traditional and with the assistance of technology. This research has several limitations, including the research not being too focused on the dialogic scaffolding teachers use, not considering the gender variable in the research, the absence of a control group as a comparison, the intervention period for dialogic shared reading activities being short, and the absence of reflection sessions for each activity. read a book together. Based on the limitations of this research, the researcher recommends several suggestions for future research, including that research on dialogical scaffolding must

be deepened, students' gender needs to be considered which may influence the effectiveness of shared reading activities, there is a need for a control group as a comparison with the two groups of reading approaches used, the intervention period needs to be extended, and there needs to be reflection on each dialogic joint reading activity in both reading approaches.

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