JOURNAL OF INNOVATION AND RESEARCH IN PRIMARY EDUCATION | ISSN 2829-775X
Vol. 4, No. 4, 2025, 3752-3760
https://doi.org/10.56916/jirpe.v4i4.2483

Implementing Jigsaw Cooperative Learning to Improve Fourth-Grade Indonesian Language Outcomes

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Keywords
Jigsaw model
cooperative learning
Indonesian language
learning outcomes
action research

Article History
Received 2025-09-03
Accepted 2025-11-17

Abstract
Elementary Indonesian language instruction faces persistent challenges including passive learning environments, limited student engagement, and suboptimal academic achievement. This study investigated the effectiveness of the Jigsaw cooperative learning model in enhancing teacher instructional skills, student learning activities, and academic outcomes in fourth-grade Indonesian language learning. A Classroom Action Research design following Kemmis and McTaggart's cyclical model was implemented across two cycles at SD Negeri Ambesia involving 27 fourth-grade students. Data were collected through achievement tests, structured observation sheets, and semi-structured interviews, then analyzed using descriptive statistics and thematic analysis. Teacher instructional performance improved significantly from fair (66%) in Cycle I to very good (82.5%) in Cycle II. Student learning activities increased from fair (66%) to very good (87%), demonstrating enhanced engagement and collaborative behaviors. Academic achievement showed substantial improvement, with classical mastery rising from 70.4% to 92.5%, exceeding the 85% target criterion. The mean score increased from 69.2 to 75.1 between cycles. The Jigsaw cooperative learning model effectively enhances teacher competence, student engagement, and learning outcomes in elementary Indonesian language instruction. These findings support broader implementation of cooperative learning strategies in rural educational contexts with appropriate professional development support.

INTRODUCTION

The quality of elementary education is fundamentally contingent upon teachers' capacity to design and implement instructional models that foster active student engagement and meaningful learning experiences (Darling-Hammond et al., 2017; Pianta et al., 2012). Indonesian language instruction, as a core component of the elementary curriculum, plays a pivotal role in developing students' communicative competence, literacy skills, and cognitive abilities. However, classroom observations reveal persistent challenges in Indonesian language teaching, including diminished student interest, comprehension difficulties, and minimal interactive participation during learning activities (Baker et al., 2014; Spear-Swerling, 2015). These issues are frequently attributed to the prevalence of conventional teacher-centered pedagogical approaches that position students as passive

recipients of knowledge rather than active constructors of understanding (Freeman et al., 2014; Prince, 2004). Such instructional practices not only limit student engagement but also adversely affect academic performance and learning motivation (Cornelius-White, 2007).

The need for pedagogical innovation in elementary Indonesian language instruction has become increasingly urgent. Traditional teaching methods, characterized by unidirectional knowledge transmission and limited opportunities for collaborative learning, have proven inadequate in addressing the diverse learning needs of contemporary students (Hattie, 2009; Schwerdt & Wuppermann, 2011). Research indicates that passive learning environments fail to develop critical thinking skills, collaborative competencies, and autonomous learning behaviors essential for academic success.

Cooperative learning has emerged as a promising pedagogical framework to address these instructional challenges (Johnson & Johnson, 2009; Slavin, 2015). This approach emphasizes collaborative knowledge construction, shared responsibility, and mutual interdependence among learners, thereby transforming the traditional classroom dynamic (Roseth et al., 2008; Gillies, 2016). Among various cooperative learning strategies, the Jigsaw model has garnered substantial empirical support for its effectiveness in enhancing student engagement, promoting deeper comprehension, and fostering positive interdependence (Mengduo & Xiaoling, 2010; Azmin, 2016). The Jigsaw technique operates through a structured process wherein students are assigned specific learning materials to master individually before teaching their designated content to peers within reorganized groups (Aronson & Patnoe, 2011). This reciprocal teaching mechanism not only reinforces individual understanding but also cultivates communication skills, accountability, and collaborative problem-solving abilities (Doymus et al., 2010). Recent meta-analyses confirm the significant positive effects of Jigsaw implementation on academic achievement across diverse educational contexts (Sahin, 2021; Vives et al., 2025).

Empirical evidence supporting the efficacy of the Jigsaw model in Indonesian language instruction has been documented across multiple studies. Asryani (2019) demonstrated significant improvements in Indonesian language learning outcomes among first-grade students through Jigsaw implementation. Similarly, Darmita (2022) reported enhanced academic achievement in fifth-grade Indonesian language instruction following the adoption of the Jigsaw cooperative model. Gatini (2023) documented notable gains in learning performance among third-grade students utilizing this instructional approach. Intan (2019) further validated the model's effectiveness when integrated with local cultural wisdom in elementary Indonesian language teaching. Additional research by Tahulending, Anas, and Hurint (2021) confirmed positive learning outcomes among fifth-grade students through Jigsaw application, while Tuasela (2024) established a significant correlation between Jigsaw implementation and improved academic performance in fifth-grade Indonesian language instruction. Hastyanti and Damayanti (2023) reinforced these findings by documenting enhanced learning outcomes through Jigsaw methodology. Furthermore, Desyolina, Hafifa, Rezki, Wahyuni, and Apfani (2025) conducted a systematic literature review that substantiated the Jigsaw model as an effective strategy for improving Indonesian language learning outcomes across elementary education contexts.

Despite this growing body of evidence, several gaps remain in the existing literature. First, limited research has examined the implementation process of the Jigsaw model within specific contextual settings, particularly in rural or underserved educational environments (Buchs et al., 2017; Sharan, 2010). Second, few studies have systematically analyzed both teacher performance and student activity patterns during Jigsaw implementation across multiple instructional cycles using action research methodology (Kemmis & McTaggart, 2005; Mertler, 2017). Third, there is insufficient documentation of the practical challenges and adaptive strategies required for successful model implementation in diverse classroom contexts, especially in rural schools where educational innovation faces unique obstacles (Azano & Stewart, 2015; Roberts & Green, 2013).

This study addresses these gaps by investigating the implementation of the Jigsaw cooperative learning model at SD Negeri Ambesia, where preliminary observations revealed low student participation, minimal collaborative behaviors, and individualistic learning orientations during Indonesian language instruction. The research employs a Classroom Action Research design (Stringer, 2014) to systematically examine how the Jigsaw model influences teacher instructional skills, student learning activities, and academic achievement across two iterative implementation cycles. The significance of this research extends beyond its immediate institutional context by providing detailed documentation of implementation processes, challenges, and outcomes, thereby contributing practical knowledge for educators seeking to adopt cooperative learning strategies in similar rural educational settings.

METHODS

This study employed a Classroom Action Research (CAR) design following the cyclical model proposed by Kemmis and McTaggart (2005), which comprises four interconnected stages: planning, action, observation, and reflection. This methodological approach was selected to systematically investigate the implementation of the Jigsaw cooperative learning model and its effects on teacher performance, student activity, and learning outcomes in Indonesian language instruction. The iterative nature of CAR enabled continuous refinement of instructional strategies based on empirical evidence gathered during each cycle, thereby facilitating progressive improvement in teaching practices and student achievement.

The research was conducted at SD Negeri Ambesia, a rural elementary school located in Tomini District, Parigi Moutong Regency, during the 2023/2024 academic year. The study involved 27 fourth-grade students (14 males and 13 females) who participated in Indonesian language learning activities. This intact class was purposively selected based on preliminary observations indicating low participation rates, minimal collaborative behaviors, and suboptimal learning outcomes. All students participated voluntarily with informed consent obtained from parents and school administration.

Data collection utilized multiple instruments to ensure triangulation and comprehensive assessment. First, learning achievement tests were developed based on curriculum competency standards and validated through expert judgment by two Indonesian language education specialists and one assessment expert, yielding a content validity index of 0.89. The tests demonstrated adequate reliability with Cronbach's alpha coefficient of 0.82, indicating consistent measurement across items. Second, structured observation sheets were employed to assess teacher instructional skills across eight dimensions: delivering apperception, explaining learning objectives, using instructional media, organizing group work, facilitating discussions, posing challenging questions, providing feedback, and conducting closure activities. Each dimension was rated on a four-point scale ranging from poor to excellent. Third, student activity observation sheets evaluated six behavioral indicators: asking questions, responding to questions, collaborating in groups, presenting discussion results, demonstrating tolerance, and maintaining attention during instruction. Fourth, semi-structured interviews were conducted with the classroom teacher after each cycle to gather qualitative insights regarding implementation challenges and instructional adjustments.

Data analysis employed both quantitative and qualitative approaches. Achievement test scores were analyzed descriptively to calculate mean scores and classical mastery percentages, with the success criterion defined as a minimum of 85% of students achieving scores equal to or exceeding the Minimum Mastery Criterion of 70. Observation data were analyzed using percentage formulas to determine performance levels categorized as poor (0-59%), fair (60-69%), good (70-84%), or very good (85-100%). Qualitative data from interviews were analyzed thematically to identify recurring patterns and inform instructional modifications for subsequent cycles. The research was conducted across two complete cycles, with each cycle consisting of two 70-minute learning sessions, allowing sufficient time for pattern stabilization and meaningful comparison of outcomes.

RESULTS AND DISCUSSION

Results

The implementation of the Jigsaw cooperative learning model was conducted over two complete cycles, with each cycle systematically evaluated through multiple data sources. This section presents the findings related to teacher instructional skills, student learning activities, and academic achievement outcomes across both implementation cycles.

Teacher Instructional Skills

The assessment of teacher performance revealed substantial improvement from Cycle I to Cycle II across all evaluated dimensions. Table 1 presents the comprehensive analysis of teacher instructional skills throughout the implementation phases.

Table 1. Teacher Instructional Skills Assessment

Indicator	Cycle I (%)	Category	Cycle II (%)	Category
Delivering apperception	75	Good	87.5	Very Good
Explaining learning objectives	75	Good	87.5	Very Good
Using instructional media	75	Good	87.5	Very Good
Organizing group work	62.5	Fair	87.5	Very Good
Facilitating discussions	50	Poor	75	Good
Posing challenging questions	50	Poor	75	Good
Providing feedback	50	Poor	87.5	Very Good
Conducting closure activities	87.5	Very Good	87.5	Very Good
Average	66	Fair	82.5	Very Good

As shown in Table 1, the initial implementation in Cycle I demonstrated considerable variability in teacher performance, with an overall average of 66%, categorized as fair. Three critical dimensions—facilitating discussions, posing challenging questions, and providing feedback—scored only 50%, indicating substantial challenges in implementing interactive pedagogical strategies. Conversely, conducting closure activities achieved the highest score (87.5%), suggesting teacher proficiency in lesson conclusion procedures. Following reflective analysis and strategic adjustments, Cycle II exhibited marked improvement, with the average performance increasing to 82.5%, reaching the very good category. Notably, five of the eight indicators achieved scores of 87.5%, demonstrating enhanced teacher capacity in implementing the Jigsaw model effectively.

Student Learning Activities

Student engagement and participation patterns were systematically observed throughout both cycles, with findings presented in Table 2.

Table 2. Student Learning Activities Assessment

Indicator	Cycle I (%)	Category	Cycle II (%)	Category
Asking questions	58	Poor	83	Good
Responding to questions	67	Fair	92	Very Good
Collaborating in groups	75	Good	92	Very Good
Presenting discussion results	58	Poor	83	Good
Demonstrating tolerance	67	Fair	92	Very Good
Maintaining attention	71	Good	83	Good
Average	66	Fair	87	Very Good

The data in Table 2 reveal significant enhancement in student learning activities between cycles. In Cycle I, student engagement averaged 66% (fair category), with particularly low performance in asking questions and presenting discussion results (both 58%). This indicated student hesitancy in verbal participation and collaborative knowledge sharing. However, Cycle II demonstrated substantial progress, with the average increasing to 87% (very good category). Responding to questions,

collaborating in groups, and demonstrating tolerance all achieved 92%, reflecting the development of cooperative learning behaviors and peer interaction skills. The improvement in asking questions and presenting discussion results (both rising to 83%) indicated growing student confidence and active participation in the learning process.

Learning Achievement Outcomes

Student academic performance was assessed through standardized achievement tests administered at the conclusion of each cycle. Table 3 summarizes the learning outcomes across both implementation phases.

Table 3. Student Learning Achievement Outcomes

Cycle	Mean Score	Students Achieving Mastery (n)	Classical Mastery (%)	Category
Cycle I	69.2	19	70.4	Not Achieved
Cycle II	75.1	25	92.5	Achieved
Target	≥70	-	≥85	-

Table 3 demonstrates progressive improvement in student learning outcomes. In Cycle I, the class achieved a mean score of 69.2, with 19 students (70.4%) meeting the minimum mastery criterion of 70. This indicated that approximately 30% of students had not yet achieved the required competency level, falling short of the 85% classical mastery target. Following instructional modifications implemented in Cycle II, academic performance improved substantially, with the mean score increasing to 75.1. Furthermore, 25 students (92.5%) achieved mastery, exceeding the target criterion of 85%. This represented a 22.1 percentage point increase in classical mastery, with only two students (7.5%) failing to meet the minimum standard. The consistent upward trajectory in both mean scores and mastery percentages validates the effectiveness of the refined Jigsaw implementation strategy.

Discussion

The findings of this study provide compelling evidence that the Jigsaw cooperative learning model significantly enhances teacher instructional competence, student engagement, and academic achievement in elementary Indonesian language learning. The progressive improvements observed across both cycles demonstrate the model's effectiveness when implemented through systematic action research methodology, supporting the theoretical frameworks established by Johnson and Johnson (2009) and Slavin (2015) regarding the pedagogical value of cooperative learning structures.

The substantial improvement in teacher instructional skills from fair (66%) in Cycle I to very good (82.5%) in Cycle II aligns with Darling-Hammond et al.'s (2017) assertion that iterative implementation and reflective practice enhance pedagogical competence. The initial challenges in facilitating discussions, posing challenging questions, and providing feedback reflect the implementation difficulties documented by Buchs et al. (2017) and Sharan (2010), who noted that transitioning from traditional to cooperative teaching approaches requires significant pedagogical adaptation. The successful resolution of these challenges in Cycle II demonstrates that sustained practice, combined with reflective adjustment, enables teachers to develop the facilitation skills necessary for effective cooperative learning environments. This finding is particularly significant for rural educational contexts like SD Negeri Ambesia, where teachers may have limited prior exposure to student-centered pedagogical approaches (Azano & Stewart, 2015).

The transformation in student learning activities from fair (66%) to very good (87%) substantiates the theoretical premise that cooperative learning structures promote active engagement and social interaction (Roseth et al., 2008; Gillies, 2016). The marked increase in questioning behaviors, collaborative participation, and peer tolerance indicates that the Jigsaw model successfully fostered the positive interdependence and individual accountability that characterize effective

cooperative learning (Aronson & Patnoe, 2011). These behavioral changes address the passive learning patterns and individualistic orientations identified in the preliminary observations, supporting Prince's (2004) and Freeman et al.'s (2014) findings that active learning strategies significantly enhance student engagement compared to traditional instruction.

The academic achievement results demonstrate outcomes consistent with recent meta-analytic evidence. The improvement from 70.4% to 92.5% classical mastery aligns with Sahin's (2021) meta-analysis showing significant positive effects of Jigsaw implementation on student performance, and Vives et al.'s (2025) systematic review confirming the model's effectiveness across diverse educational contexts. Moreover, these findings corroborate the Indonesian context-specific studies reviewed in the introduction. Asryani (2019) and Darmita (2022) similarly reported enhanced learning outcomes following Jigsaw implementation in elementary Indonesian language instruction, while Gatini (2023) and Intan (2019) documented comparable improvements in student achievement. The present study extends these findings by providing detailed documentation of the iterative implementation process and systematic analysis of both teacher and student behaviors across multiple cycles, addressing the research gaps identified by Kemmis and McTaggart (2005) regarding the need for comprehensive action research in educational innovation.

Furthermore, the results support Desyolina et al.'s (2025) systematic literature review conclusion that Jigsaw represents an effective strategy for improving Indonesian language learning outcomes in elementary education. The consistency between the current findings and those reported by Tahulending et al. (2021), Tuasela (2024), and Hastyanti and Damayanti (2023) strengthens the evidence base for Jigsaw adoption in Indonesian elementary schools. However, this study uniquely contributes by demonstrating implementation feasibility in rural educational settings where resources and teacher preparation may be limited, thereby addressing the contextual gaps noted by Roberts and Green (2013) regarding educational innovation in underserved communities.

The reciprocal teaching mechanism inherent in the Jigsaw structure appears particularly effective in developing both cognitive and social competencies. Students' progression from hesitant participation to confident presentation of ideas suggests that the model successfully created what Mengduo and Xiaoling (2010) described as a low-anxiety, high-support learning environment. The development of collaborative behaviors and peer tolerance observed in this study reflects the social learning benefits documented by Doymus et al. (2010), who noted that Jigsaw implementation cultivates communication skills and mutual respect among learners.

The success of this implementation can be attributed to several factors aligned with best practices in cooperative learning research. First, the structured nature of the Jigsaw model provided clear role definitions and accountability mechanisms, addressing Azmin's (2016) observation that explicit cooperative structures enhance student participation. Second, the iterative refinement process enabled through action research methodology allowed for responsive adjustment to contextual challenges, consistent with Mertler's (2017) recommendations for classroom-based inquiry. Third, the focus on developing both teacher facilitation skills and student cooperative behaviors created mutually reinforcing improvements, supporting Pianta et al.'s (2012) framework emphasizing the importance of classroom interaction quality.

These findings carry important implications for educational practice and policy in Indonesian elementary education. The demonstrated effectiveness of the Jigsaw model in improving learning outcomes while fostering collaborative competencies suggests its potential for broader implementation across diverse school contexts. However, the initial implementation challenges observed in Cycle I underscore the importance of adequate teacher professional development, echoing the recommendations of Intan (2019) regarding the need for instructional support when introducing cooperative learning strategies. The successful implementation in a rural school setting is particularly encouraging, suggesting that with appropriate preparation and iterative refinement, evidence-based pedagogical innovations can be effectively adapted to resource-limited contexts.

CONCLUSION

This study demonstrates that the Jigsaw cooperative learning model significantly enhances teacher instructional competence, student engagement, and academic achievement in elementary Indonesian language instruction. Through systematic implementation across two action research cycles, teacher performance improved from fair (66%) to very good (82.5%), student learning activities increased from fair (66%) to very good (87%), and classical mastery rose from 70.4% to 92.5%, exceeding the established target of 85%. These findings substantiate the model's effectiveness in transforming passive, teacher-centered learning environments into active, collaborative educational experiences.

This research contributes to the existing literature by providing comprehensive documentation of the Jigsaw implementation process in a rural Indonesian elementary school context, addressing gaps identified in previous research regarding context-specific pedagogical innovation in underserved educational settings. The study extends current knowledge by systematically analyzing the iterative refinement process required for successful cooperative learning implementation, demonstrating that initial implementation challenges can be effectively resolved through reflective practice and strategic adjustment.

The findings carry important implications for educational practice and policy development. Elementary school teachers should receive adequate professional development training in cooperative learning strategies to facilitate effective implementation. School administrators and education policymakers should consider integrating the Jigsaw model into curriculum frameworks and teacher preparation programs, particularly in rural contexts where traditional instruction predominates. However, this study's limitations must be acknowledged, including its single-site focus, limited sample size, and two-cycle duration, which may affect generalizability. Future research should investigate Jigsaw implementation across multiple schools and grade levels, examine long-term retention effects, explore integration with technology-enhanced learning, and conduct comparative studies across diverse socioeconomic and cultural contexts to establish broader applicability and identify context-specific adaptation strategies necessary for optimal implementation outcomes.

ACKNOWLEDGEMENT

The authors express sincere gratitude to all individuals and institutions who contributed to the successful completion of this research. Special appreciation is extended to Muhammad Aqil, S.Pd., M.Pd., for his invaluable guidance and constructive feedback throughout the research process. We acknowledge Dr. Rizal, S.Ag., M.Pd., Coordinator of the Primary School Teacher Education Program at the Faculty of Teacher Training and Education, Tadulako University, for his administrative support. Our gratitude extends to the faculty members and staff of FKIP Tadulako University for their scholarly contributions and assistance. We are deeply grateful to the principal, teachers, and administrative staff of SD Negeri Ambesia for granting permission and providing support during the data collection phase. Finally, we thank the fourth-grade students of SD Negeri Ambesia, whose active participation and cooperation were essential to this study's success.

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