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Implementation of Mind Mapping in Social Studies Learning to Improve Junior High School Students' Conceptual Understanding: A Classroom Action Study

Wa Ode Lismawati[1], Mohamad Fajar[2]
[1]Social Studies Teacher, State Junior High School 15 Bau Bau, Sulawesi Tenggara, Indonesia
[2]Faculty of Teacher Training and Education, Universitas Muslim Buton, Sulawesi Tenggara, Indonesia

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ABSTRACT

Purpose of the study: This study aims to examine the effectiveness of implementing Mind Mapping in Social Studies learning to improve junior high school students' conceptual understanding through a structured classroom action research framework conducted in iterative instructional cycles.

Methodology: This study employed Classroom Action Research based on the Kemmis and McTaggart cyclical model. The research was conducted in two cycles at State Junior High School 15 Bau Bau involving 34 Grade VII students. Instruments included observation sheets, performance assessment rubrics for mind maps, and written achievement tests. Data were analyzed using descriptive percentage and mean score comparison techniques.

Main Findings: The findings show a substantial improvement in students' conceptual understanding and participation. Mastery levels increased from 20.59% in the pretest to 85.29% in Cycle I and reached 100% in Cycle II. The mean score improved from 68.1 to 77.9. The quality of students' mind maps became more structured and conceptually coherent. Student participation in questioning, responding, presenting, and constructing visual representations increased consistently across instructional cycles.

Novelty/Originality of this study: This study integrates Mind Mapping as a central instructional strategy within a cyclical classroom action research design to systematically strengthen conceptual understanding. Unlike studies focusing primarily on achievement outcomes, this research emphasizes iterative refinement and conceptual representation quality, thereby contributing a structured model for embedding visual learning strategies into reflective Social Studies pedagogy.

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Corresponding Author:
Mohamad Fajar,
Faculty of Teacher Training and Education, Universitas Muslim Buton,
Jl. Betoambari No.146, Bone-Bone, Batupoaro, Kota Bau-Bau, Sulawesi Tenggara 93721, Indonesia
Email: mohammadfajarr67@gmail.com

1. INTRODUCTION

Social Studies education at the junior high school level holds a strategic position in fostering students' ability to understand and interpret social realities. As an integrative subject encompassing geography, history, economics, and sociology, it requires learners to construct interconnected conceptual frameworks rather than isolated factual knowledge [1]-[3]. Effective Social Studies instruction therefore emphasizes meaningful learning processes that enable students to analyze relationships among concepts [4]-[6]. Conceptual understanding becomes central to achieving these objectives, as it supports deeper cognitive processing and long-term

knowledge retention [7]-[9]. Consequently, instructional approaches that promote active engagement and structured thinking are essential in facilitating comprehensive learning.

Despite these expectations, classroom practices frequently reveal limitations in the implementation of integrative and student-centered learning. The extensive scope of Social Studies content, combined with restricted instructional time, often encourages teachers to focus primarily on material coverage [10]-[12]. Learning activities consequently tend to rely on teacher explanations and conventional note-taking practices [13]-[15]. Such approaches may limit opportunities for exploration, elaboration, and conceptual linkage among topics [16]-[18]. This condition contributes to students' passive participation and relatively low levels of conceptual mastery.

Various pedagogical innovations have been introduced to address these instructional challenges, particularly strategies that emphasize visual representation and active knowledge construction [19]. Mind Mapping has been widely recognized as a technique that organizes information through associative and hierarchical visual structures [20]-[22]. By enabling learners to connect central ideas with supporting concepts, this method aligns with cognitive theories emphasizing meaningful learning and schema development [23], [24]. Empirical findings have reported improvements in motivation, engagement, and academic performance following its implementation. Nevertheless, discussions concerning its role in systematically strengthening conceptual understanding through iterative classroom improvement remain relatively limited.

In many classroom contexts, instructional innovation is often implemented without sustained reflection or structured evaluation. As a result, the long-term influence of specific learning strategies on conceptual development is not always comprehensively documented [25]. Integrating visual learning approaches within a cyclical process of planning, action, observation, and reflection offers opportunities for more systematic pedagogical refinement. Such an approach allows instructional decisions to be continuously adjusted based on classroom evidence [26]. A structured action framework therefore provides a stronger basis for examining how learning strategies shape conceptual growth.

Strengthening conceptual understanding in Social Studies is particularly significant in preparing students to interpret social issues critically and responsibly. When learners are able to organize knowledge meaningfully, they are better equipped to connect classroom content with real-life situations [27]. Enhancing engagement through visually structured learning activities also contributes to increased participation and collaborative interaction [28], [29]. Continuous instructional reflection further supports professional growth and adaptive teaching practices. These considerations highlight the importance of integrating innovative methods with systematic classroom-based inquiry.

The implementation of Mind Mapping within a cyclical classroom action framework offers a comprehensive avenue for examining instructional transformation and conceptual development simultaneously. Rather than focusing solely on achievement scores, attention is directed toward how students construct and reorganize conceptual relationships throughout the learning process. The iterative design enables observation of progressive changes in participation and understanding across instructional cycles. Through this integration, visual learning strategies are positioned not merely as supplementary tools but as central mechanisms in fostering meaningful comprehension. Such an approach enriches the discourse on effective Social Studies pedagogy at the junior high school level.

2. RESEARCH METHOD

2.1. Research Design

This study employed a Classroom Action Research design based on the cyclical model proposed by Kemmis and McTaggart, consisting of planning, action, observation, and reflection stages [30], [31]. The action research approach was selected to facilitate systematic improvement of instructional practices within the natural classroom setting. Through iterative cycles, the design enables continuous refinement of learning strategies based on reflective evaluation [32]. The study was conducted in two cycles, with each cycle comprising four instructional meetings. The cyclical structure allowed the implementation of Mind Mapping to be progressively improved in order to enhance students' conceptual understanding in Social Studies.

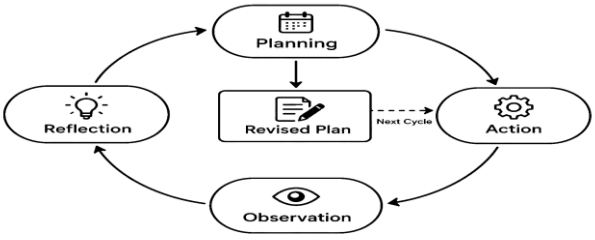


Figure 1. The Classroom Action Research Cycle Adapted from Kemmis and McTaggart

2.2. Research Setting and Duration

The research was conducted at State Junior High School 15 Bau Bau during the 2025/2026 academic year. The participants were students of Class Tujuh F, selected based on their relatively low conceptual mastery and limited classroom participation compared to other classes. Previous daily test results indicated that a significant proportion of students had not achieved the minimum mastery criterion of 67. These conditions provided a relevant context for implementing instructional intervention. The study was carried out over a three-month period from March to May 2026.

2.3. Variables and Operational Definitions

The primary variable in this study was the implementation of Mind Mapping in Social Studies learning as an instructional intervention aimed at improving conceptual understanding. Conceptual understanding was operationally defined as students' ability to explain, relate, and organize key concepts within the learning material. Indicators of the learning process included students' participation during classroom activities, engagement in constructing Mind Maps, and performance in structured tasks. Learning outcomes were measured through written tests administered at the end of each cycle. Improvement in conceptual understanding was identified through increased test scores and enhanced quality of students' conceptual representations.

2.4. Action Procedures and Research Instruments

The research procedures consisted of preparatory activities followed by two action cycles. During the planning stage, lesson plans were developed in accordance with the Social Studies curriculum, learning materials were prepared, and observation sheets were designed collaboratively with a peer teacher. The action stage involved the implementation of Mind Mapping in core learning activities, where students organized key concepts into visual maps linking central and supporting ideas. Observation was conducted collaboratively to document student participation and instructional dynamics, while reflection focused on evaluating strengths and areas for improvement before proceeding to the next cycle [33], [34]. Research instruments included observation sheets to assess participation, performance assessment rubrics for evaluating students' Mind Maps, and achievement tests to measure conceptual understanding.

2.5. Data Analysis Techniques and Success Indicators

Observation data were analyzed descriptively using percentage calculations to determine the level of student participation during learning activities [35], [36]. Student performance in constructing Mind Maps was assessed using scoring criteria emphasizing conceptual accuracy, organization, and completeness. Learning achievement data from cycle tests were analyzed by comparing mean scores and mastery levels across cycles. The implementation was considered successful if at least 65% of students demonstrated active participation during learning activities. Furthermore, improvement in conceptual understanding was determined by achieving at least 80% class mastery above the minimum mastery criterion (≥ 67).

3. RESULTS AND DISCUSSION

3.1. Baseline of Students' Conceptual Understanding

Prior to the implementation of mind mapping, students' conceptual understanding in Social Studies was relatively low. The baseline data were obtained from the pretest administered before Cycle I.

Table 1. Distribution of Pretest Scores

Score Category	Criteria	n	%
Very Good	> 80	0	0%
Good	70–80	1	2.94%
Fair	67–69.9	6	17.65%
Low	< 67	27	79.41%
Total		34	100%

Only 20.59% of students achieved the minimum mastery criterion (≥ 67), while 79.41% were below the required standard. These findings indicate that students experienced difficulties in organizing and understanding Social Studies concepts meaningfully. Classroom observations further revealed limited student participation, teacher-dominated instruction, and low engagement in questioning and discussion.

3.2. Cycle I: Initial Implementation of Mind Mapping

During Cycle I, mind mapping was implemented individually after teacher modeling. Progressive improvement in participation was observed across three meetings.

Table 2. Summary of Student Participation in Cycle I

Aspect Observed	Meeting 1 (%)	Meeting 2 (%)	Meeting 3 (%)
Asking questions	8.82	14.71	23.52
Answering questions	2.94	8.82	14.71
Producing quality mind maps	29.41	47.05	70.58
Presenting work	2.94	8.82	17.64

The data demonstrate a gradual increase in student engagement. However, some students still produced incomplete or less structured mind maps, indicating that conceptual connections were not yet fully developed.

Table 3. Distribution of Learning Outcomes in Cycle I

Score Category	n	%
Very Good (>80)	4	11.76%
Good (70–80)	19	55.88%
Fair (67–69.9)	6	17.65%
Low (<67)	5	14.71%
Mastery (≥67)	29	85.29%

Mastery increased from 20.59% (pretest) to 85.29% in Cycle I. Although improvement was significant, 14.71% of students had not yet reached mastery, indicating the need for refinement in instructional strategy. Reflection findings suggested that students needed structured collaboration to enrich conceptual content before constructing mind maps.

3.3. Cycle II: Collaborative Mind Mapping

In Cycle II, the strategy was refined by incorporating structured group discussions prior to individual mind map construction.

Table 4. Summary of Student Participation in Cycle II

Aspect Observed	Meeting 1 (%)	Meeting 2 (%)	Meeting 3 (%)	Meeting 4 (%)
Asking questions	23.5	26.5	29.4	35.3
Answering questions	17.6	17.6	20.6	29.4
Producing quality mind maps	76.4	79.4	82.3	85.3
Presenting work	17.6	23.5	50.0	58.8

Compared to Cycle I, participation increased more consistently and substantially. The percentage of students producing quality mind maps reached 85.3% in Meeting 4, indicating improved conceptual organization.

Table 5. Comparison of Learning Outcomes Across Cycles

Indicator	Pretest	Cycle I	Cycle II
Lowest Score	–	57	67
Highest Score	–	87	93
Mean Score	68.1	71.6	77.9
Mastery (%)	20.59%	85.29%	100%

By the end of Cycle II, 100% of students achieved mastery, and the mean score increased to 77.9, indicating substantial improvement in conceptual understanding.

The distribution of scores in Cycle II is shown below:

Table 6. Distribution of Learning Outcomes in Cycle II

Score Category	n	%
Very Good (>80)	11	32.35%
Good (70–80)	16	47.06%
Fair (67–69.9)	7	20.59%
Low (<67)	0	0%

No student remained below the minimum mastery criterion.

3.4. Synthesis of Findings

The findings demonstrate that the structured implementation of mind mapping increased students' active participation in classroom activities, particularly in asking questions, responding to questions, and presenting their ideas. It also improved the quality of students' conceptual representations by helping them organize and connect concepts more systematically. Furthermore, mind mapping significantly enhanced students' conceptual understanding, as evidenced by improved mastery achievement and an increase in mean scores. The transition from individual construction (Cycle I) to collaborative enrichment followed by individual synthesis (Cycle II) appears to be a critical factor in strengthening conceptual connections. Students were better able to organize geographical and atmospheric concepts hierarchically and relationally, which contributed to improved retention and understanding.

The findings indicate that the implementation of Mind Mapping contributed to a progressive improvement in students' conceptual understanding in Social Studies. The baseline data revealed that most students experienced difficulties in organizing and connecting key concepts meaningfully. Following the first cycle, a substantial increase in mastery levels was observed, accompanied by improved participation during classroom activities. Although several students still required further reinforcement in Cycle I, the shift from passive reception to active construction of knowledge became evident. By the end of Cycle II, all students achieved the minimum mastery criterion, reflecting a comprehensive enhancement in conceptual comprehension.

The improvement was not limited to test performance but also manifested in the quality of students' conceptual representations. In Cycle I, mind maps were generally less structured and contained limited conceptual linkage, indicating partial understanding. The incorporation of collaborative discussion in Cycle II enriched students' conceptual resources before constructing individual mind maps. This refinement enabled learners to develop more coherent hierarchical and relational connections among concepts. The gradual progression across cycles demonstrates that structured visual learning combined with reflective instructional adjustment can systematically strengthen conceptual mastery.

These findings correspond with cognitive learning perspectives emphasizing meaningful learning and schema development through visual organization. Mind Mapping facilitates associative thinking by positioning central ideas and extending them through interconnected branches, thereby supporting deeper information processing [37]. Previous empirical studies have reported improvements in motivation and achievement following the application of visual mapping strategies [38]. However, the present findings extend this understanding by illustrating how iterative refinement within a classroom action framework reinforces conceptual consolidation. The cyclical integration of planning, implementation, observation, and reflection appears to bridge the gap between innovative strategy adoption and sustained instructional impact.

Within the broader discourse on Social Studies pedagogy, the integration of Mind Mapping in a structured action research design offers a comprehensive instructional model. Rather than employing visual mapping as a supplementary activity, it was positioned as the central mechanism for conceptual construction across instructional cycles. The emphasis on progressive refinement allowed pedagogical decisions to be continuously aligned with observed classroom needs [39]. This approach situates conceptual understanding not merely as an outcome but as a dynamic process shaped by reflective practice. Consequently, instructional innovation becomes systematically embedded within the teaching–learning cycle rather than implemented as a one-time intervention.

The pedagogical implications of these findings are significant for Social Studies instruction at the junior high school level. Teachers may consider integrating structured visual mapping activities to promote active engagement and conceptual linkage among interdisciplinary topics [40], [41]. The combination of collaborative discussion and individual synthesis appears particularly effective in strengthening conceptual depth [42], [43]. Furthermore, the cyclical evaluation process encourages continuous instructional adaptation based on empirical classroom evidence. Such practices may contribute not only to improved learning outcomes but also to enhanced professional reflection and instructional quality.

Despite these positive outcomes, several limitations should be acknowledged. The study was conducted within a single classroom context, which may limit the generalizability of the findings to broader educational settings. The duration of the intervention was relatively short, focusing on two instructional cycles within one academic term. Additionally, conceptual understanding was primarily measured through written assessments and performance evaluation of mind maps, which may not fully capture long-term retention. Future research may consider extended implementation periods, comparative experimental designs, or mixed-method approaches to provide deeper insights. Expanding the scope across different grade levels or subject domains would further strengthen the empirical foundation of visual learning strategies in Social Studies education.

4. CONCLUSION

The findings of this classroom action research indicate that the implementation of Mind Mapping within a cyclical framework effectively achieved the objective of improving junior high school students' conceptual

understanding in Social Studies. The progressive increase in participation, quality of conceptual representations, and learning mastery from the pretest to Cycle II demonstrates that structured visual learning combined with reflective refinement can transform passive classroom conditions into active and meaningful learning environments. The incorporation of collaborative discussion prior to individual mind map construction strengthened students' ability to organize and relate concepts hierarchically and coherently. Quantitative improvements in mean scores and the attainment of full mastery in Cycle II were consistent with qualitative observations of enhanced engagement and conceptual clarity. These results suggest that Mind Mapping holds strong potential for broader application in Social Studies and other interdisciplinary subjects, while future research may further explore its long-term impact and integration with technology-based learning tools.

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