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Jigsaw Strategy on Learning Outcomes and Higher Order Thinking Skills of Students in Social Science at Madrasah Tsanawiyah

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ABSTRACT

Innovative teaching strategies are essential for improving student learning outcomes and developing Higher Order Thinking Skills (HOTS). This study examines the effectiveness of the Jigsaw learning strategy in enhancing students' critical thinking, analytical abilities, and problem-solving skills in Social Science at MTsS Ashhabul Yamin Lasi. A quasi-experimental design was used, involving two groups: an experimental group that implemented the Jigsaw strategy and a control group that followed conventional teaching methods. Data were collected through pretests and posttests, incorporating multiple-choice and descriptive tests to assess both learning outcomes and HOTS. Statistical analysis included correlation techniques and simple regression, processed using SPSS version 2.6. The study sample comprised eighth-grade students, selected from the total student population at the school. The research process included three phases: pretest, Jigsaw strategy implementation, and posttest. The findings indicate that students in the Jigsaw group demonstrated significant improvements in learning outcomes and HOTS compared to those in the control group. The strategy fostered collaborative learning, enhancing students' ability to think critically, analyze concepts, and solve problems more effectively. The results suggest that the Jigsaw learning strategy is a valuable pedagogical tool for promoting student engagement and cognitive development. Its application in Social Science education provides insights into improving teaching effectiveness in secondary schools. This study highlights the positive impact of collaborative learning on student performance and supports the broader implementation of student-centered teaching approaches. The findings offer practical implications for enhancing educational strategies globally.

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1. INTRODUCTION

Education in the 21st century emphasizes the development of students' cognitive abilities, critical thinking, and collaborative learning. At MTsS Ashhabul Yamin, the implementation of the 2013 Curriculum serves as a foundation for fostering these competencies, particularly in Social Science learning. The 2013 Curriculum, introduced by the Ministry of Education and Culture of Indonesia, aims to develop students holistically by integrating knowledge, skills, attitudes, and values necessary for navigating a rapidly changing world. In this framework, teachers play a crucial role as facilitators, guiding students in constructing knowledge, strengthening problem-solving skills, and fostering intellectual curiosity. One of the key aspects of this curriculum is its emphasis on Higher Order Thinking Skills (HOTS), which enables students to analyze, evaluate, and create solutions to real-world problems (Widiyatmoko & Shimizu, 2018).

To achieve these educational goals, MTsS Ashhabul Yamin implements learner-centered teaching approaches that encourage student engagement and active participation. In eighth-grade Social Science learning, selecting appropriate instructional models is essential to accommodate students' needs and characteristics. One such model is the Jigsaw learning strategy, which emphasizes cooperation, interdependence, and knowledge-sharing among students. In the Jigsaw method, students work in small groups, each responsible for different aspects of the material, fostering peer teaching and collaborative problem-solving. This approach not only enhances learning outcomes but also promotes essential skills such as communication, teamwork, and analytical reasoning (Wahono et al., 2020).

Social Science education at MTsS Ashhabul Yamin is designed to provide students with a comprehensive understanding of society, culture, geography, history, and global issues. By integrating Jigsaw learning into Social Science instruction, the school aligns with the 2013 Curriculum's objective of enhancing student autonomy and higher-order thinking. The Jigsaw strategy offers a dynamic learning experience where students actively construct their knowledge, relate concepts to real-world applications, and engage in meaningful discussions. This model is particularly effective in hybrid and interactive learning environments, where students develop analytical and problem-solving skills while working collaboratively.

The implementation of the Jigsaw strategy in Social Science learning at MTsS Ashhabul Yamin aims to bridge the gap between traditional and student-centred learning approaches. By fostering active engagement, promoting peer learning, and encouraging independent thinking, the Jigsaw strategy serves as a practical solution to improving learning outcomes and HOTS among eighth-grade students. The success of this strategy depends on teachers' ability to create an interactive classroom atmosphere where students can freely exchange ideas, build on each other's knowledge, and apply their learning to real-world contexts. Thus, selecting the right instructional approach and ensuring systematic teacher preparedness is critical to achieving optimal educational outcomes.

Cooperative learning is a method to teach students in the context of everyday life and provide relevant training. Cooperative learning, also known as Cooperative Learning, can be explained as a group learning activity that is directed, integrated, effective, and efficient, aiming to explore or investigate something through collaboration and mutual assistance, thus achieving productive learning processes and outcomes. In addition to academic aspects, Social science learning also aims to develop students' understanding of social, political, and economic issues (Dharmawan et al., 2022). The Jigsaw learning model, with its emphasis on collaboration and mutual teaching among students, can help enhance their understanding of complex Social Science content and broaden their insights into social realities around them. On the other hand, conventional learning may tend to provide shallow and limited understanding of theoretical aspects without expanding students' perspectives on real-world issues. MTsS Ashhabul Yamin Lasi, as an educational institution, aims to create an inclusive learning environment that empowers students. In this context, selecting the appropriate teaching model can promote the inclusion and active participation of all students, regardless of their social background or abilities.

The Jigsaw learning model, with its emphasis on collaboration and mutual understanding, creates an inclusive learning environment where each student actively contributes to the learning process (Shammout, 2020). This model encourages students to express their thoughts and opinions, fostering critical thinking and engagement. As a form of cooperative learning, the Jigsaw model promotes peer-to-peer interaction, allowing students to exchange ideas, share experiences, and build collective knowledge (Lestari et al., 2019). Cooperative learning strategies, such as Jigsaw, are grounded in the idea that students learn more effectively when they discuss and solve problems with their peers (Binti Misrom et al., 2020).

In the Jigsaw learning model, students work in small groups, with each group member responsible for mastering a specific portion of the learning material. They then teach their assigned content to other group members, ensuring that all students contribute to and benefit from the collaborative learning experience (Lu et al., 2021). In Social Science education, this strategy not only enhances students' higher-order thinking skills (HOTS) but also strengthens social interaction, making students more active and engaged in learning (Lazer et al., 2020). The Jigsaw approach challenges students to analyze, evaluate, and apply knowledge, fostering critical thinking, problem-solving, and communication skills—all essential competencies in 21st-century education.

One of the key strengths of the Jigsaw learning model is its ability to engage all students by providing them with opportunities to both teach and learn from one another. This active participation broadens students' perspectives on social, political, and economic issues, enabling them to develop a deeper and more meaningful understanding of the subject matter (Li & Li, 2019). Given its effectiveness, the Jigsaw model is particularly useful for teaching complex and multifaceted content that can be divided into smaller, interdependent components. By integrating Jigsaw into Social Science learning, students are expected to improve their learning outcomes and enhance their HOTS, fostering critical analysis, problem-solving, and independent thinking (Lee Perry et al., 2018).

Considering these advantages, the Jigsaw Cooperative learning model has been widely explored as a method to improve student learning outcomes. Research findings indicate that Jigsaw enhances students' engagement and comprehension, making it particularly effective in interactive reading and text analysis. The Jigsaw method ensures that each group member plays an active role, reinforcing collaborative problem-solving and independent learning. In cooperative learning settings, students take ownership of their learning, while teachers facilitate discussions and guide students toward deeper understanding.

Empirical studies have demonstrated the effectiveness of the Jigsaw model in fostering HOTS and improving learning outcomes. Sinaga et al. (2023) found that HOTS-integrated Project-Based Learning (PBL)-based learning modules were significantly more effective in enhancing students' Social Science learning outcomes than conventional learning materials. The study's findings revealed that material expert, learning design, and media expert evaluations all received high ratings, suggesting that the Jigsaw-based approach aligns well with modern educational best practices.

Additionally, Ritonga et al. (2022) reported that 88% of students successfully completed HOTS-related material after implementing the Jigsaw model alongside the Numbered Heads Together (NHT) strategy. The study showed that student participation during learning activities reached 81.75%, demonstrating a high level of engagement. Teacher activity was rated positively, with an average score of 4.0, and students responded favorably to the model, with a 77.6% approval rating.

However, challenges remain in fully integrating HOTS-oriented assessment methods into Jigsaw-based learning. Dikdas (2021) found that 31 assessment items failed to meet HOTS criteria, with 100% of the items classified as measuring only Lower Order Thinking Skills (LOTS). This finding highlights the need for further refinement in assessment strategies to ensure that Jigsaw learning fully supports HOTS development.

The Jigsaw learning model is a collaborative and student-centered approach that enhances learning engagement, critical thinking, and Social Science comprehension. Research findings consistently support its effectiveness in improving HOTS and fostering meaningful peer interactions.

However, for optimal results, it is essential to integrate HOTS-oriented assessments into Jigsaw-based learning to maximize student learning outcomes and ensure deeper cognitive engagement.

This study aimed to evaluate the effectiveness of the Jigsaw learning model in improving learning outcomes and higher-order thinking skills (HOTS) of students at MTsS Ashhabul Yamin Lasi. This study aims to assess the extent to which the Jigsaw model can positively impact students' academic achievement and cognitive abilities in a collaborative learning context. In addition, this study aims to identify the weaknesses and advantages of the Jigsaw model in the local curriculum and explore how the application of this model can be adapted to address more complex learning challenges in the modern education era. The results of this study are expected to provide a deep insight into how to effectively improve the quality of learning at MTsS Ashhabul Yamin Lasi and develop students' critical thinking skills that are needed in today's education. The implications of this research are not only limited to improving the quality of education at the local level, but also have significant global relevance. With the increasing need for 21st century skills, such as critical thinking, collaboration and problem-solving, this research can inspire educational institutions around the world to adopt more innovative and adaptive teaching methods.

2. METHODS

This study employed a quasi-experimental design using a Nonequivalent Control Group design, involving two groups: an experimental class and a control class. The experimental class was taught using the Jigsaw learning strategy, while the control class followed conventional teaching methods. The objective of the study was to examine the impact of the Jigsaw strategy on students' learning outcomes and Higher-Order Thinking Skills (HOTS) in Social Science subjects in eighth-grade classes (VIII.1 and VIII.2) at MTsS Ashhabul Yamin.

The experiment was conducted using pre-tests and post-tests in both groups. The pre-test assessed students' initial competencies, while the post-test measured their learning outcomes and HOTS after the intervention. The experimental class engaged in HOTS-based group work using the Jigsaw strategy, whereas the control class relied on lecture-based and question-answer methods. The study lasted for four weeks, with each class receiving treatment for 90 minutes per session.

The population of the study consisted of 239 eighth-grade students at MTsS Ashhabul Yamin, from which two classes were selected as the sample. Class VIII.1 was assigned as the experimental class, and Class VIII.2 served as the control class, totaling 54 students. The sample was selected based on homogeneous characteristics, ensuring similarity in learning achievement, teachers, and educational facilities.

The experimental method was used to assess the effect of the independent variable (Jigsaw learning strategy) on the dependent variable (learning outcomes and HOTS). The research procedure included three main phases:

- Pre-test phase: Assessing students' initial abilities.
- Implementation phase: Applying the Jigsaw learning strategy in the experimental class while maintaining conventional methods in the control class.
- Post-test phase: Evaluating students' learning outcomes and HOTS after the intervention.

Data collection was conducted using learning outcome tests and HOTS assessments, which included multiple-choice questions and essay-based tests. The instruments were designed based on a competency grid, incorporating basic learning indicators aligned with Social Science curriculum standards. Data analysis was performed using statistical techniques and SPSS software version 2.6.

This study aimed to evaluate the effectiveness of the Jigsaw learning strategy in improving students' learning outcomes and HOTS at MTsS Ashhabul Yamin. The findings provide insights into the practical benefits of student-centered learning models, offering a clearer understanding of how collaborative learning strategies like Jigsaw can enhance cognitive engagement and academic performance in secondary education.

3. FINDINGS AND DISCUSSION

3.1. The Effect of Jigsaw Learning Strategy on Learning Outcomes in Social Science

To determine the effect of Jigsaw learning strategy on student learning outcomes and higher order thinking skills (HOTS) in social studies class VIII at MTsS Ashhabul Yamin Lasi. This research was conducted 4 times a meeting, both for the experimental class and the control class, this is based on the semester programme that has been made by the subject teacher who teaches in class VIII. The data processed in this study are data obtained from the recapitulation of the implementation of Pretests and Posttests from the initial meeting to the end. Before the first meeting was held, pretests were carried out first both experimental and control classes, with the same questions. After the pretest was carried out in both the experimental and control classes, the posttest was given with the same questions. The questions given totalled 25 questions and had been validated beforehand. This study provides different treatments between the experimental class and the control class. The experimental class was given treatment with the application of the Jigsaw learning strategy while the control class applied the conventional learning model.

Data collection was carried out through a pre-test at the beginning of the session and a post-test at the end, aimed at measuring the differences in student learning outcomes and higher-order thinking skills (HOTS) between the experimental class and the control class (Ichsan et al., 2019). The pre-test was conducted to assess the students' initial abilities before the intervention, while the post-test was used to evaluate the improvement after the applied teaching methods (Lagorce et al., 2017). The experimental class used the Jigsaw learning strategy, where students worked collaboratively in small groups, sharing information and teaching one another to understand the material. This approach was designed to increase student engagement in the learning process, allowing them not only to gain a deeper understanding of the material but also to practice critical and analytical thinking (Wilson & A/l Narasuman, 2020). In contrast, the control class used the conventional teaching model (Wu et al., 2024), where the teacher played the primary role in delivering the material, and the students acted more passively as listeners (Abdullah et al., 2016). By comparing the post-test results of both classes, the researcher aimed to identify how significantly the Jigsaw strategy impacted student learning outcomes and the development of their HOTS. This comparative analysis is expected to provide a clear understanding of the advantages of the Jigsaw method in creating a more dynamic learning environment that fosters the development of higher-order thinking skills compared to traditional, less interactive teaching models.

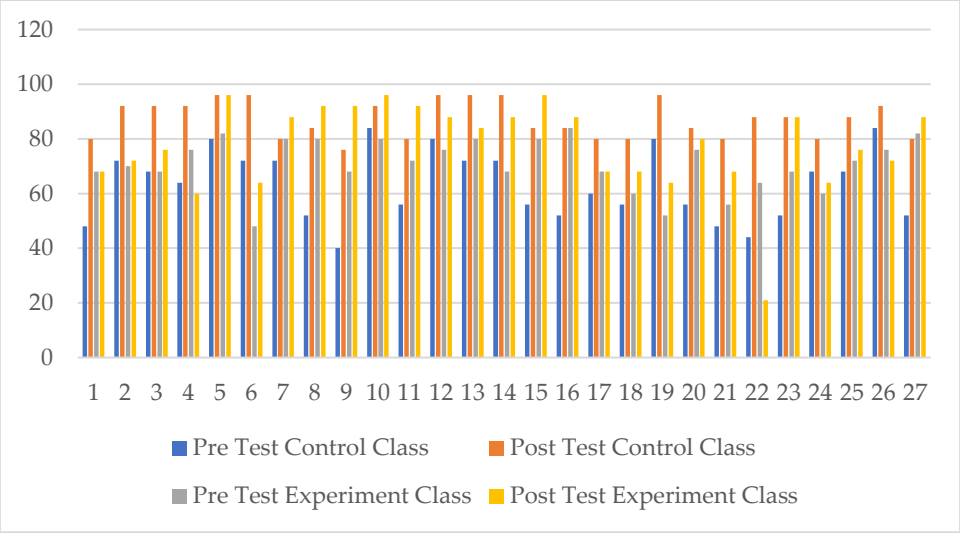

Figure 1. Comparison of Experimental and Control Class Grades

The diagram above illustrates the comparison of pre-test and post-test results between the control class and the experimental class that applied the Jigsaw method. From the graph, it can be seen that the pre-test scores for both the control class and the experimental class are relatively uniform, with some individual variations, indicating that before the implementation of the method, both groups had comparable foundational knowledge. However, after the implementation of the Jigsaw method, the post-test results in the experimental class showed a significant increase compared to the post-test results in the control class, which tended to show no substantial change. This improvement reflects the success of the Jigsaw method in enhancing student engagement and higher-order thinking skills (HOTS) in the experimental class, as previously indicated in the analysis. Overall, this diagram supports the findings that the implementation of innovative learning strategies, such as Jigsaw, positively contributes to student learning achievements in Social Studies for grade VIII at MTsS Ashhabul Yamin during the first semester of the 2023/2024 academic year. It indicates that the Jigsaw method is not only effective in improving learning outcomes in one subject but also has the potential to be applied across various other disciplines, thereby providing broad implications for the development of more effective and inclusive educational practices at different educational levels. In the future, it is essential for researchers and educators to continue exploring the application of this method in different contexts and disciplines to gain a deeper understanding of its impact on student learning outcomes and the best ways to adapt and implement this strategy effectively in various learning situations.

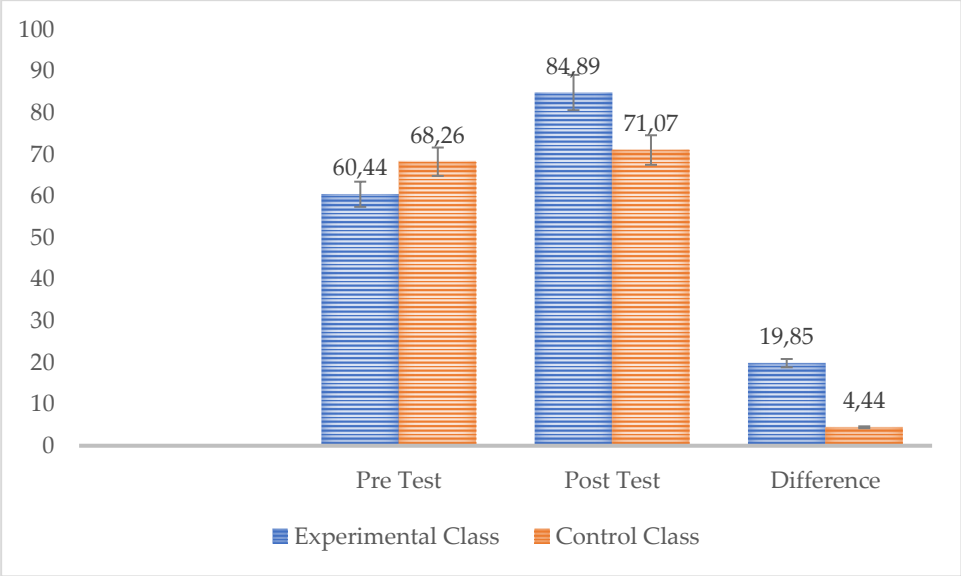

Figure 2. Comparison of Average Scores between the Control Class and Experimental Class

The diagram illustrates a significant improvement in the average score of the experimental class, indicating the effectiveness of the Jigsaw learning strategy in enhancing student learning outcomes. The integration of the Higher-Order Thinking Skills (HOTS) approach in the experimental class contributed to a notable increase in students' understanding and application of learning materials. Specifically, the average score of the experimental class rose from 60.44 to 84.89, reflecting an increase of 19.85 points. In contrast, while the control class also showed an improvement, the increase was less pronounced, with the average score rising from 68.26 to 71.07, an increase of 4.44 points. These results demonstrate that the experimental class experienced a more substantial improvement compared to the control group. Thus, it can be concluded that the Jigsaw learning strategy, combined with HOTS-based activities, significantly enhanced student performance, making it a more effective approach than conventional teaching methods.

3.2. The Role of Jigsaw Learning Strategy in Improving Students' Higher Level Thinking Skills in Social Science

The Jigsaw learning model plays a pivotal role in aligning the learning process with the theory of multiple intelligences, which emphasizes that each student possesses unique strengths in different areas, such as the arts, literacy, mathematics, or natural sciences (Wartono et al., 2017). By recognizing individual differences in abilities and learning styles, the Jigsaw model fosters motivation and engagement, making students feel valued in the learning process. This contrasts sharply with traditional teaching methods, which often assume a one-size-fits-all approach and fail to accommodate diverse learning needs (Lee, 2023).

The implementation of the Jigsaw model in the experimental class has led to a significant improvement in learning outcomes, as it enables students to fully develop their potential by actively engaging in peer learning and group discussions. Tailoring the learning process to individual strengths not only enhances students' comprehension of the subject matter but also cultivates essential life skills such as communication, collaboration, and problem-solving. These skills are not only critical for academic success but also highly relevant in professional and real-world contexts, equipping students with the necessary competencies to thrive in the modern workforce.

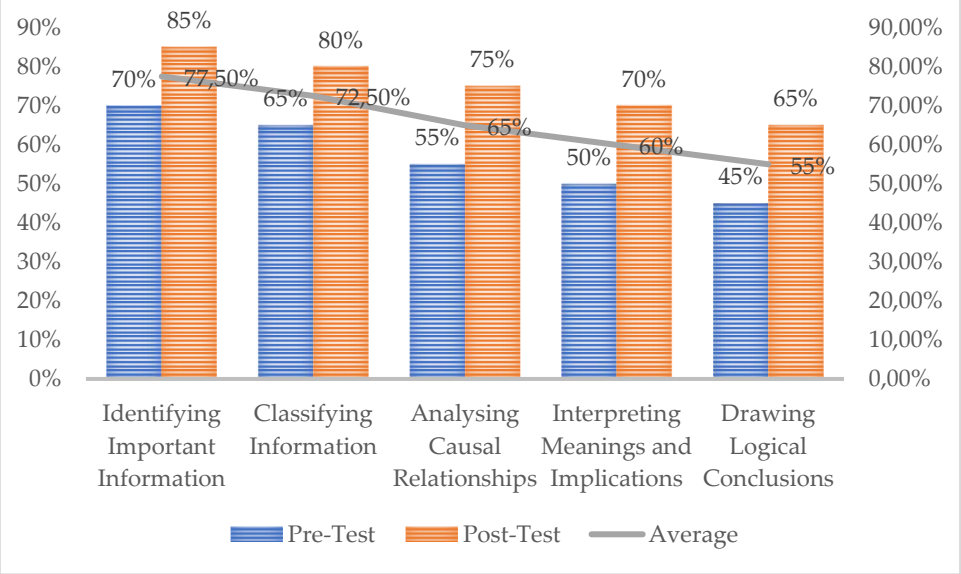

Figure 3. Comparison of Pre-Test and Post-Test Results of Analytical Ability

The diagram presents a comprehensive overview of students' performance improvements across five key aspects of learning after the implementation of the Jigsaw strategy. In the first aspect, "Identifying Important Information," students exhibited significant progress, with pre-test scores averaging 70% and post-test scores reaching 85%, resulting in a notable average improvement to 77.5%. This indicates a heightened ability to recognize and select critical details from texts, graphs, or diagrams. Similarly, in "Classifying Information," students demonstrated a substantial enhancement in their ability to categorize information into relevant categories and subcategories, with scores increasing from 65% to 80%, yielding an average of 72.5%. In the third aspect, "Analysing Causal Relationships," students improved from a pre-test score of 55% to a post-test score of 75%, indicating better comprehension of cause-and-effect relationships, with an overall average of 65%. Regarding "Interpreting Meanings and Implications," there was an improvement from 50% to 70%, averaging 60%, showing that students became more adept at understanding implicit meanings and the broader implications of information. Lastly, in "Drawing Logical Conclusions," students' scores rose from 45% to 65%, achieving an average of 55%, reflecting their enhanced ability to draw logical and evidence-

based conclusions. Collectively, these improvements highlight the effectiveness of the Jigsaw strategy in fostering critical thinking and higher-order cognitive skills among students, providing them with a stronger foundation for analytical and interpretative tasks.

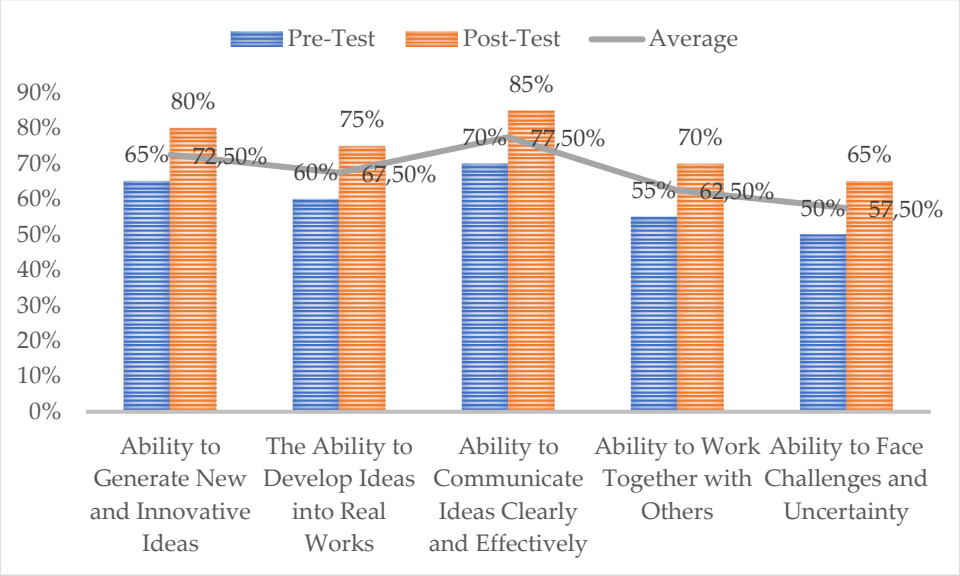

Figure 4. Comparison of Pre-Test and Post-Test Results of Creative Ability

The data in the diagram clearly demonstrates a significant improvement across various aspects of students' abilities related to creativity and collaboration after the implementation of a new learning strategy. In terms of generating new and innovative ideas, students improved from a pre-test score of 65% to a post-test score of 80%, with an average of 72.5%, indicating a notable enhancement in their capability to think creatively and produce original ideas. Similarly, the ability to develop these ideas into real, tangible works also saw progress, rising from 60% to 75%, with an average of 67.5%. This shows that students not only became more creative in their thinking but also more effective in turning their concepts into practical outcomes. Furthermore, students' ability to communicate their ideas clearly and effectively improved from 70% in the pre-test to 85% in the post-test, achieving an average score of 77.5%, demonstrating a significant increase in their presentation and communication skills. Collaborative skills also saw an improvement, with students' ability to work with others increasing from 55% to 70%, indicating better teamwork and cooperation with an average of 62.5%. Lastly, students showed enhanced resilience and adaptability when facing challenges and uncertainty during the creation process, with scores improving from 50% to 65%, averaging at 57.5%. This comprehensive improvement across all measured aspects suggests that students not only developed better cognitive and creative skills but also grew in their ability to work collaboratively and handle obstacles, preparing them for more complex problem-solving and creative endeavors.

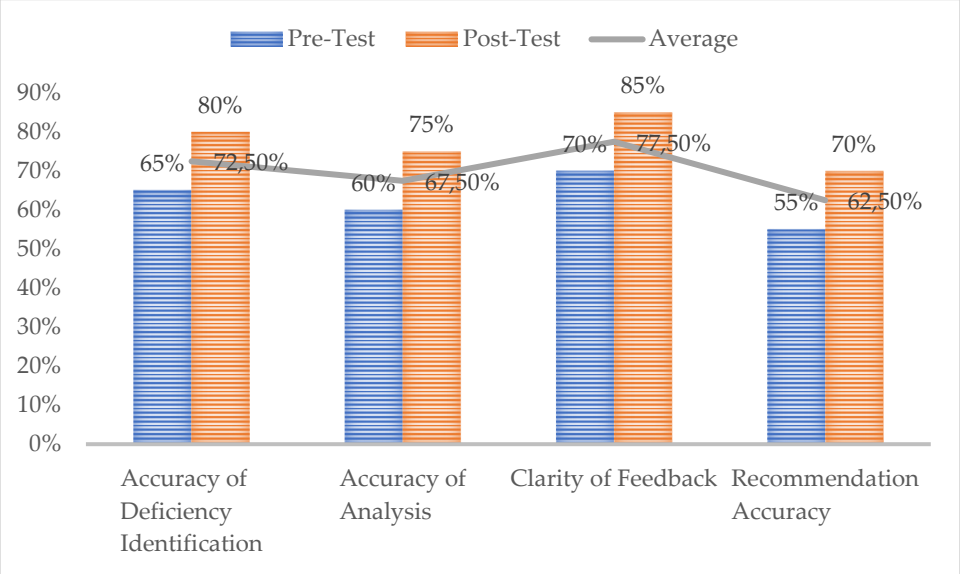

Figure 5. Comparison of Pre-Test and Post-Test Results of Evaluation Ability

The table highlights significant improvements in students' abilities to critically assess and provide constructive feedback on various works or ideas after the learning intervention. In the area of accurately identifying deficiencies, students' performance increased from a pre-test score of 65% to a post-test score of 80%, with an average of 72.5%, indicating their growing proficiency in recognizing flaws and weaknesses in a given work or idea. This suggests a more refined ability to detect problems, a critical skill in both academic and real-world contexts. Similarly, the accuracy of their analysis improved from 60% to 75%, averaging at 67.5%, reflecting that students became more objective and thorough in their approach to evaluating deficiencies. Their feedback delivery also saw a marked improvement, with clarity of feedback scores rising from 70% to 85%, resulting in an average of 77.5%. This demonstrates that students became more capable of offering feedback that is not only clear but also constructive and actionable, an important aspect of collaborative work and peer evaluation. Finally, the students' ability to offer accurate and effective recommendations for addressing identified weaknesses improved from 55% to 70%, with an average of 62.5%, showcasing their enhanced capability in problem-solving and in providing practical solutions to improve upon identified flaws. Overall, the data reflects a holistic growth in students' critical thinking, analytical accuracy, and their ability to contribute meaningfully to the improvement of ideas and projects. These skills are essential for higher-level cognitive development and real-world application, underscoring the value of the implemented teaching strategy.

3.3. Science Analysis Prerequisite Testing

3.1.1 Normality Test

The normality test was conducted to see whether the samples were normally distributed or not. The normality test was carried out using Levene's test. The results of the normality test of the research variables can be seen in the following table:

Table 1. Normality Test and Learning Outcomes

Research Variable	Sig	Description
Experimental Class Learning Outcomes	0.129	Normal
Class Learning Outcomes Control Class	0.167	Normal
Experimental Class High Level Thinking Skills (HOTS)	0.200	Normal
Control Class High Level Thinking Skills (HOTS)	0.200	Normal

Based on the data analysis of the table above regarding the normality test, it is found that the significance value for learning outcomes in the experimental class is 0.129 while for the control group is 0.167. When comparing the significance value of each class with alpha (α = 0.05), where the significance value exceeds the alpha value, it can be concluded that the learning outcome data has a normal distribution. This also applies to students' higher order thinking skills (HOTS), both in the experimental and control classes, where the significance value for the experimental class is 0.200 and for the control class is 0.200, it can be concluded that the learning outcomes data are normally distributed.

3.3.2 Variance Homogeneity Test

The Homogeneity test aims to show whether two or more groups of sample data come from populations with similar variations. The purpose of this test is to ascertain whether learning outcomes and higher order thinking skills (HOTS) have commensurate variations. The test applied is Levene's test. The following table displays the results of the homogeneity test on learning outcomes and higher order thinking skills (HOTS) in the experimental and control classes. The results of homogeneity testing of the research variables can be seen in the following table:

Table 2. Homogeneity Test Results

Variable	Levene Statistic	Sig	Description
Learning Outcomes	0,279	0,600	Homogeneous
Higher Level Thinking Skills (HOTS)	0,173	0,679	Homogeneous

Based on the data analysis in the table above regarding the homogeneity test, it can be seen that the Sig value for Learning Outcomes is 0.600 and high-level thinking skills (HOTS) is 0.679 When comparing the significance value with alpha (α = 0.05), the significance value is higher than alpha. Therefore, it can be concluded that the research data have homogeneous or similar variances.

3.4. Integration of Jigsaw in the Context of Social Science

The use of the Jigsaw learning strategy offers a unique opportunity to integrate a collaborative approach with Social Science content. This strategy, which places students in small groups to

understand and master specific content, enables learning focused on interaction and cooperation (Susanti & Subekti, 2020). In the Social Science context, material integrity becomes a critical factor in the success of the Jigsaw strategy (Er, 2017). The selection of topics relevant to the Social Science curriculum and considering group dynamics is an essential initial step. The implementation of Jigsaw strategy should be directed towards creating a strong connection between Social Science material and group activities. Effective group dynamics can enrich the learning process, ensuring that each group member not only understands concepts individually but also contributes collaboratively to the formation of holistic understanding. The integration of the Jigsaw strategy with Social Science content also plays a crucial role in the development of higher-order thinking skills. Group discussions, joint analysis, and information synthesis processes not only reinforce the understanding of concepts but also stimulate students to think critically and creatively. Therefore, a good connection between the Jigsaw strategy and Social Science material can serve as the foundation for achieving comprehensive learning goals, maximizing students' potential in developing deep conceptual understanding and higher-order thinking skills (Gobo, 2021).

Jigsaw in the context of Social Science subjects has a significant positive impact on the development of students' higher-order thinking skills (Sholissafitri, 2022). By emphasizing group work and implementing the principle of positive interdependence, the Jigsaw strategy creates a learning environment that effectively stimulates the development of higher-order thinking skills. One striking impact is the improvement in students' ability to critically analyze information (Avcı & Aksu, 2019). Through group discussions, where each member is responsible for understanding and presenting a specific part of the material, students are trained to engage in reading, understanding, and dissecting information deeply, stimulating analytical thinking. The integration of the Jigsaw strategy also significantly contributes to the development of students' synthesis skills (Shammout, 2020). In the dynamics of the group, where each member is responsible for different information, students are tasked with organizing and combining this information into a coherent whole. This process encourages students to synthesize information from various sources, creating an integrated understanding of the learning topic.

The integration of the Jigsaw strategy influences the improvement of students' evaluation skills. In this group learning framework, students are naturally involved in assessing each group member's contribution to overall understanding. This assessment includes not only conceptual understanding but also evaluations of presentation skills and understanding of different perspectives. The implementation of the Jigsaw strategy in Social Science learning has a positive impact on the development of students' higher-order thinking skills (Johnson & Johnson, 2017). Analytical, synthesis, and evaluation skills honed through this collaboration make a significant contribution to shaping students as critical, reflective learners capable of facing complex intellectual challenges (Baena-Morales et al., 2020). The alignment between Jigsaw implementation steps and the characteristics of Social Science material creates a relevant learning context that supports students' conceptual understanding. The positive impact of the Jigsaw strategy integration is not limited to conceptual understanding but also involves the enhancement of students' higher-order thinking skills (HOTS). Through collaboration and interaction among students, the Jigsaw strategy stimulates the development of analytical, synthesis, and evaluation skills (Limniou et al., 2018), opening opportunities for holistic learning goal achievement (Yoshida, 2018). Careful integration between the learning strategy and Social Science teaching material provides a solid foundation for student progress (Cochon Drouet et al., 2023). The use of the Jigsaw strategy in Social Science learning can make a significant contribution to students' conceptual understanding and the development of higher-order thinking skills, creating a dynamic and effective learning environment.

4. CONCLUSION

This study concludes that the Jigsaw learning strategy has a significant positive impact on student learning outcomes and Higher-Order Thinking Skills (HOTS) in Social Science for eighth-grade students at MTsS Ashhabul Yamin Lasi. The experimental class, which applied the Jigsaw strategy, demonstrated a substantial improvement, with post-test scores increasing from 60.44 to 84.89, compared to the control class, which only increased from 68.26 to 71.07. These findings suggest that the Jigsaw model is more effective than conventional teaching methods, as it actively engages students in peer learning, discussion, and collaborative problem-solving. Additionally, statistical analysis confirmed a significant difference in HOTS development, with a calculated t-value of 0.744 (df = 54) being smaller than the t-table value of 1.673, supporting the claim that Jigsaw fosters deeper analytical and critical thinking skills. Despite its benefits, this study has certain limitations, including a relatively small sample size and limited generalizability beyond the selected institution. Moreover, factors such as teacher familiarity with cooperative learning methods and student adaptability to group-based strategies may have influenced the outcomes. Future research should expand the scope of Jigsaw implementation across different subjects, educational levels, and learning environments, while also exploring long-term impacts on student motivation, engagement, and real-world problem-solving abilities. A broader investigation into technology-assisted Jigsaw learning could also provide insights into hybrid and digital learning applications for a rapidly evolving educational landscape.

REFERENCES

Abdullah, A. H., Mokhtar, M., Abd Halim, N. D., Ali, D. F., Mohd Tahir, L., & Abdul Kohar, U. H. (2016). Mathematics Teachers' Level of Knowledge and Practice on the Implementation of Higher-Order Thinking Skills (HOTS). *EURASIA Journal of Mathematics, Science and Technology Education*, *13*(1). https://doi.org/10.12973/eurasia.2017.00601a

Avcı, N., & Aksu, M. (2019). The effect of cooperative learning on primary-elementary pre-service teachers' academic achievement in Turkey: A systematic review. *International Journal of Social Sciences and Education Research*, *5*(2), 122–141. https://doi.org/10.24289/ijsser.512133

Baena-Morales, S., Jerez-Mayorga, D., Fernández-González, F. T., & López-Morales, J. (2020). The Use of a Cooperative-Learning Activity with University Students: A Gender Experience. *Sustainability*, *12*(21), 9292. https://doi.org/10.3390/su12219292

Binti Misrom, N. S., Muhammad, A. S., Abdullah, A. H., Osman, S., Hamzah, M. H., & Fauzan, A. (2020). Enhancing Students' Higher-Order Thinking Skills (HOTS) Through an Inductive Reasoning Strategy Using Geogebra. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(03), 156. https://doi.org/10.3991/ijet.v15i03.9839

Cochon Drouet, O., Lentillon-Kaestner, V., & Margas, N. (2023). Effects of the Jigsaw method on student educational outcomes: Systematic review and meta-analyses. *Frontiers in Psychology*, *14*, 1216437. https://doi.org/10.3389/fpsyg.2023.1216437

Dharmawan, D., Trisnamansyah, S., Mulyasana, D., & Fiah, H. (2022). Management Of Character Education Strengthening Program In Building The National Soul Of Vocational School Students In Bandung City (Case Study at SMKN 9 and SMKN 13 Bandung). *International Journal of Educational Research & Social Sciences*, *3*(1), 351–359. https://doi.org/10.51601/ijersc.v3i1.271

Dikdas, H. (2021). Analisis Hots Pada Soal Penilaian Tengah Semester Dalam Mata Pelajaran Ilmu Pengetahuan Sosial Di Kelas IV. *JURNAL PAJAR (Pendidikan Dan Pengajaran)*, *5*(4). https://doi.org/10.33578/pjr.v5i4.8218

Er, H. (2017). The Impact of Teaching the Subjects under "Science in Time" Unit in the Social Studies Class in the 7th Grade Using Jigsaw Technique on the Academic Success of the Students. *Universal Journal of Educational Research*, *5*(5), 838–847. https://doi.org/10.13189/ujer.2017.050516

Gobo, G. (2021). Replicability. Politics and Poetics of Accountability, Validation and Legitimation. *Frontiers in Psychology*, *11*, 608451. https://doi.org/10.3389/fpsyg.2020.608451

Ichsan, I. Z., Sigit, D. V., Miarsyah, M., Ali, A., Arif, W. P., & Prayitno, T. A. (2019). HOTS-AEP: Higher Order Thinking Skills from Elementary to Master Students in Environmental Learning. *European Journal of Educational Research*, *volume–8–2019*(volume8-issue4.html), 935–942. https://doi.org/10.12973/eu-jer.8.4.935

Johnson, D. W., & Johnson, R. T. (2017). The use of cooperative procedures in teacher education and professional development. *Journal of Education for Teaching*, *43*(3), 284–295. https://doi.org/10.1080/02607476.2017.1328023

Lagorce, X., Orchard, G., Galluppi, F., Shi, B. E., & Benosman, R. B. (2017). HOTS: A Hierarchy of Event-Based Time-Surfaces for Pattern Recognition. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, *39*(7), 1346–1359. https://doi.org/10.1109/TPAMI.2016.2574707

Lazer, D. M. J., Pentland, A., Watts, D. J., Aral, S., Athey, S., Contractor, N., Freelon, D., Gonzalez-Bailon, S., King, G., Margetts, H., Nelson, A., Salganik, M. J., Strohmaier, M., Vespignani, A., & Wagner, C. (2020). Computational social science: Obstacles and opportunities. *Science*, *369*(6507), 1060–1062. https://doi.org/10.1126/science.aaz8170

Lee, K.-W. (2023). Effectiveness of gamification and selection of appropriate teaching methods of creativity: Students' perspectives. *Heliyon*, *9*(10), e20420. https://doi.org/10.1016/j.heliyon.2023.e20420

Lee Perry, W., Clements, B., Ma, X., & Mang, J. T. (2018). Relating microstructure, temperature, and chemistry to explosive ignition and shock sensitivity. *Combustion and Flame*, *190*, 171–176. https://doi.org/10.1016/j.combustflame.2017.11.017

Lestari, F., Saryantono, B., Syazali, M., Saregar, A., Madiyo, M., Jauhariyah, D., & Umam, R. (2019). Cooperative Learning Application with the Method of "Network Tree Concept Map": Based on Japanese Learning System Approach. *Journal for the Education of Gifted Young Scientists*, *7*(1), 15–32. https://doi.org/10.17478/jegys.471466

Li, J., & Li, J. (2019). Educational Policy Development in China in the 21st Century: A Multi-Flows Approach. *Beijing International Review of Education*, *1*(1), 196–220. https://doi.org/10.1163/25902547-00101014

Limniou, M., Schermbrucker, I., & Lyons, M. (2018). Traditional and flipped classroom approaches delivered by two different teachers: The student perspective. *Education and Information Technologies*, *23*(2), 797–817. https://doi.org/10.1007/s10639-017-9636-8

Lu, K., Yang, H. H., Shi, Y., & Wang, X. (2021). Examining the key influencing factors on college students' higher-order thinking skills in the smart classroom environment. *International Journal of Educational Technology in Higher Education*, *18*(1), 1. https://doi.org/10.1186/s41239-020-00238-7

Ritonga, D. C. M., Faisal, F., & Husna, R. (2022). Efektivitas Model Pembelajaran Jigsaw dan Numbered Head Together (NHT) dalam Pemecahan Soal-Soal HOTS Materi Pokok Fungsi Komposisi. *Jurnal Ilmiah Pendidikan Matematika Al Qalasadi*, *6*(2), 185–194. https://doi.org/10.32505/qalasadi.v6i2.4982

Shammout, M. (2020). The Effect of Cooperative Learning Activities on Enhancing the Writing Skills of Syrian EFL Learners at Arab International University. *Theory and Practice in Language Studies*, *10*(7), 791. https://doi.org/10.17507/tpls.1007.10

Sholissafitri, E. (2022). Application of Cooperative Learning Model Jigsaw in Increasing Students Learning Achievement Of Social Science Subject. *PROGRES PENDIDIKAN*, *3*(1), 33–44. https://doi.org/10.29303/prospek.v3i1.195

Sinaga, M., Mursid, R., & . S. (2023). Development of Student Worksheets Based on Problem-Based Learning Integrated HOTS Social Science Subjects. *International Journal of Computer Applications Technology and Research*, 13–18. https://doi.org/10.7753/IJCATR1201.1003

Susanti, Y. P., & Subekti, A. S. (2020). Jigsaw Strategy for Cooperative Learning in an English Reading Class: Teacher's and Students' Beliefs. *Pedagogy : Journal of English Language Teaching*, *8*(2), 102. https://doi.org/10.32332/pedagogy.v8i2.2274

Wahono, B., Lin, P.-L., & Chang, C.-Y. (2020). Evidence of STEM enactment effectiveness in Asian student learning outcomes. *International Journal of STEM Education*, *7*(1), 36. https://doi.org/10.1186/s40594-020-00236-1

Wartono, W., Hudha, M. N., & Batlolona, J. R. (2017). How Are The Physics Critical Thinking Skills of The Students Taught by Using Inquiry-Discovery Through Empirical and Theorethical Overview? *EURASIA Journal of Mathematics, Science and Technology Education*, *14*(2). https://doi.org/10.12973/ejmste/80632

Widiyatmoko, A., & Shimizu, K. (2018). An overview of conceptual understanding in science education curriculum in Indonesia. *Journal of Physics: Conference Series*, *983*, 012044. https://doi.org/10.1088/1742-6596/983/1/012044

Wilson, D. M., & A/l Narasuman, S. (2020). Investigating Teachers' Implementation and Strategies on Higher Order Thinking Skills in School Based Assessment Instruments. *Asian Journal of University Education*, *16*(1), 70. https://doi.org/10.24191/ajue.v16i1.8991

Wu, T.-T., Sari, N. A. R. M., & Huang, Y.-M. (2024). Integrating extended formative assessment in flipped jigsaw learning: Promoting learning engagement and higher-order thinking skills in international business education context. *The International Journal of Management Education*, *22*(1), 100930. https://doi.org/10.1016/j.ijme.2024.100930

Yoshida, M. (2018). Communication Jigsaw: A Teaching Method that Promotes Scholarly Communication. *International Journal of Emerging Technologies in Learning (iJET)*, *13*(10), 208. https://doi.org/10.3991/ijet.v13i10.8850