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The Influence of the Jigsaw Model on Collaborative Skills, Motivation, and Learning Independence of Elementary School Students

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Abstract

This study aims to analyze the influence of the Jigsaw learning model on collaborative skills, learning motivation, and learning independence of elementary school students. The background of this research is based on the importance of developing 21st century skills, especially cooperation, motivation, and independence which are still low in students at SD Negeri Gugus 2, Gending District, Probolinggo Regency. The research uses a quantitative approach with a quasi-experimental design. The research population is all grade IV students totaling 98 people with a total sampling technique. The instrument used was in the form of a questionnaire with a Likert scale which was compiled based on the indicators of each variable. The results showed that the Jigsaw learning model had no significant effect on collaborative skills with a significance value of 0.414. The Jigsaw model had a significant effect on students' learning motivation with a significance value of 0.013, and a significant effect on learning independence with a significance value of 0.017. Simultaneous analysis showed that the Jigsaw model had a combined effect on collaborative skills, learning motivation, and learning independence with a significance value of 0.008. The study concludes that the Jigsaw model is effective in increasing students' motivation and learning independence, but has not been able to significantly strengthen collaborative skills. The implementation of Jigsaw requires additional mentoring strategies to train students' social and communication skills for optimal outcomes.

Keywords: *Jigsaw Model; Collaborative Skills; Learning Motivation; Learning Independence.*

INTRODUCTION

Basic education has a strategic role in shaping the basis of students' academic, social, and emotional abilities. The elementary school environment is a starting space for children to develop learning skills and build character. Efforts to improve the quality of learning at this level continue to be carried out through innovation in learning methods and models. The application of the appropriate model is believed to have a significant impact on the development of students' skills (Wibowo & Setyawan, 2022).

The cooperative learning model is one of the relevant approaches to answer the needs of 21st century education. Its characteristics that emphasize cooperation, communication, and collective responsibility are in line with the competencies needed in modern life (Johnson & Johnson, 2020). Jigsaw as a type of cooperative model places students as the center of learning. The learning process takes place through discussion and active interaction between group members.

Collaborative skills are one of the important skills that students must have from an early age. Students are required to be able to work together, respect opinions, and solve problems together in groups. Collaboration-based learning helps students develop a sense of mutual trust and

solidarity. The application of the Jigsaw model is believed to be an effective means of practicing this skill (Santoso & Wulandari, 2021).

Learning motivation plays a key driver in students' academic success. Students who have high motivation will be more enthusiastic about learning and strive to achieve the best results. A supportive learning environment and innovative learning strategies have a great influence on the growth of this motivation (Yuliana & Prasetyo, 2024). The Jigsaw model provides space for students to be actively involved so that it creates a sense of responsibility that increases motivation.

Learning independence is also an important indicator in assessing the success of basic education. Students need to be accustomed to managing time, taking initiative, and being responsible for the tasks given. Independent learning habits can create sustainable academic independence up to higher education levels (Sari & Nugroho, 2020; Mulyadi, 2023). Through Jigsaw, students are challenged to understand the material in depth and then explain it to their group friends.

Elementary schools in Gending District, Probolinggo Regency face challenges related to the low collaborative skills of students. Group activities tend to be dominated by a small percentage of students, while others are passive. This condition hinders the achievement of learning objectives that require the active cooperation of all members. The Jigsaw model is present as an alternative to balance the role of students in the group (Fitria & Susanti, 2020).

The learning motivation of students at this school also still needs to be improved. Some students show a lack of interest in taking lessons, especially in subjects that are considered difficult. Disinterest in learning has an impact on low involvement in classroom activities (Kurniawan & Rahmawati, 2021). The application of an interesting and participatory model such as Jigsaw is expected to be able to overcome these obstacles.

Learning independence is a weak aspect in elementary school students. The dependence on teachers in completing tasks is still quite high. Many students are not used to finding learning resources independently or setting their own learning strategies. Jigsaw allows students to have greater individual responsibility, thus encouraging the growth of independent attitudes (Hamzah & Nurdin, 2020).

Previous research has shown the effectiveness of the Jigsaw model in improving learning outcomes and social skills. The results of research by Nadrah (2023) show a significant increase in science learning outcomes through the application of Jigsaw. Arends (2019) also found an increase in students' discussion participation and communication skills after learning using Jigsaw. This fact reinforces the reason for the importance of implementing Jigsaw in elementary schools.

21st century learning demands the integration of critical thinking, communication, collaboration, and creativity skills. Teachers are not only in charge of delivering material, but also creating a challenging and fun learning atmosphere. The Jigsaw model provides a learning experience that matches these demands. Students can learn to play a dual role as learners and teachers (Gunawan & Suryadi, 2021).

The change in the learning paradigm from teacher-centered to student-centered has further encouraged the use of cooperative models. Teachers play the role of facilitators who support students to be more active. Jigsaw puts students in a position where they must be responsible for the understanding of the material (Supriyanto & Hidayah, 2019). This active involvement is believed to be able to improve the quality of learning outcomes.

The local context of elementary schools in Group 2 of Gending District provides a strong reason for conducting this research. The condition of students who are still passive, low motivation, and limited independence need to get solutions based on innovative learning models. Jigsaw is seen as able to answer these problems through a structured and collaborative strategy (Rahmawati, 2022). Teachers can leverage this model to create more lively learning.

This study focuses on the analysis of the influence of Jigsaw on three important aspects of learning. Collaborative skills, learning motivation, and learning independence were chosen because they are key skills for student development (Hidayat & Puspitasari, 2019). The analysis is carried out with a quantitative approach in order to obtain empirical evidence that can be accounted for. The results of the research are expected to make a theoretical and practical contribution.

Theoretically, this study enriches the study of the application of cooperative models, especially the Jigsaw type in elementary schools. The empirical evidence obtained can be a reference for the development of cooperative learning theories. From a practical perspective, this research provides benefits for teachers and schools in choosing more effective learning strategies. Students also benefit from being able to develop essential learning skills.

The purpose of this study is to find out the extent to which the Jigsaw model affects students' collaborative skills, motivation, and learning independence. The results of the research are expected to be the basis for designing learning policies in elementary schools. These findings can also be used as a reference for future researchers interested in cooperative learning studies. The implementation of Jigsaw is expected to provide concrete solutions to improve the quality of basic education.

METHOD

This study uses a quantitative approach with quasi-experimental design. The Jigsaw learning model is used as an independent variable, while collaborative skills, learning motivation, and student learning independence are bound variables. This approach was chosen because it is able to test the influence of a learning model on variables related to student learning outcomes in a measurable manner.

The research population is all grade IV students of SD Negeri Cluster 2, Gending District, Probolinggo Regency which totals 98 students. The sampling technique used is total sampling, so that the entire population is used as a research sample. Data collection was carried out with a questionnaire instrument compiled based on the indicators of each variable, using a Likert scale with five answer choices.

The research instrument is tested for validity and reliability before being used in the main study. Validity was tested using Pearson's product moment correlation, while reliability was tested with Cronbach's Alpha. Data were analyzed using multiple linear regression to determine the influence of the Jigsaw learning model on collaborative skills, learning motivation, and learning independence both partially and simultaneously, with a significance level of 0.05.

Table 1.
Operationalization of Research Variables

Variable	Indicators	Number of Items	Scale
Jigsaw Learning Model (X)	Student participation, individual responsibility, group interaction, peer teaching	20	Likert (1–5)
Collaborative Skills (Y_1)	Communication, cooperation, active participation, respect for opinions, joint problem-solving	20	Likert (1–5)
Learning Motivation (Y_2)	Perseverance, activeness, interest in learning, commitment, responsibility, persistence in the face of obstacles	20	Likert (1–5)
Learning Independence (Y_3)	Timing, use of learning resources, initiative, self-evaluation, individual responsibility	20	Likert (1–5)

RESULTS AND DISCUSSION

Result

Data analysis showed that the Jigsaw learning model did not have a significant influence on students' collaborative skills. The significance value obtained was 0.414 greater than 0.05. This shows that the application of Jigsaw to grade IV students of SD Negeri Cluster 2, Gending District, Probolinggo Regency has not been able to improve collaborative skills in real terms. The characteristic factor of students who still tend to be passive in discussions is suspected to be one of the causes.

Different results were found in the learning motivation variable. The Jigsaw learning model was proven to have a significant effect on student learning motivation with a significance value of 0.013. Increased motivation can be seen from students' active involvement during learning, sense of responsibility in groups, and enthusiasm in completing tasks. Student activity increases because each group member feels they have an important role in the group's success.

The findings of the study also show that there is a significant influence of the Jigsaw model on student learning independence. The significance value obtained of 0.017 shows that the application of this model encourages students to be more responsible for the tasks undertaken. Students become more independent in understanding the material, looking for additional information, and preparing themselves before delivering the material to group friends. Simultaneously, the results of regression analysis showed that the Jigsaw model had a combined effect on collaborative skills, learning motivation, and learning independence with a significance value of 0.008.

Table 2.
The Impact Test of the Jigsaw Learning Model

Bound Variables	Significance Value	Information
Collaborative Skills (Y_1)	0,414	Not Influential
Learning Motivation (Y_2)	0,013	Significant Impact
Learning Independence (Y_3)	0,017	Significant Impact
Simultaneous (Y_1, Y_2, Y_3)	0,008	Significant Impact

Discussion

The results showed that the Jigsaw learning model did not have a significant effect on students' collaborative skills. A significance value of 0.414 indicates that student collaboration has not been optimally formed through the application of this model. The condition of students who are still passive in group discussions is one of the inhibiting factors. Differences in character, experience, and communication skills between students also affect the effectiveness of collaboration (Gunawan & Suryadi, 2021).

Collaborative skills are complex abilities that depend not only on learning methods, but also on the social and emotional readiness of students. Jigsaw learning requires the active involvement of all group members in order to create a balanced cooperative dynamic (Wibowo & Setyawan, 2022). When some students are still reluctant to participate, collaborative roles cannot be formed optimally. This fact shows that Jigsaw learning requires intensive assistance from teachers so that each student plays a role according to his or her responsibilities.

This finding is in line with the opinion of Mulyadi (2023) who states that the application of Jigsaw will be effective if students have adequate basic communication skills. Without these skills, group discussions tend to be dominated by certain students. As a result, the process of sharing knowledge does not run evenly within the origin group. Teachers need to provide social skills training before applying Jigsaw for optimal results.

Students' learning motivation showed a significant improvement after the application of the Jigsaw model. The significance value of 0.013 proves that individual responsibility in the group is able to trigger the enthusiasm for learning. Every student has an important role so they are encouraged to understand the material in depth. This active involvement creates a sense of belonging to the learning process (Hamzah & Nurdin, 2020).

Learning motivation is an internal aspect that is greatly influenced by learning conditions. Jigsaw provides opportunities for students to interact, discuss, and help each other. This process creates a pleasant learning atmosphere that increases interest and enthusiasm (Yuliana & Prasetyo, 2024). Students feel valued because their contributions determine the success of the group.

The results of this study are in line with Fitria & Susanti (2020) who found that Jigsaw is able to increase student motivation through active involvement. The responsibility placed on each student fosters confidence. When students successfully explain the material to their group friends, intrinsic satisfaction arises which further strengthens motivation. This condition is very different from the conventional learning model which emphasizes the role of teachers.

Student learning independence also showed a significant increase with a significance value of 0.017. Students involved in Jigsaw are required to study parts of the material independently before presenting them to the group. This process encourages the formation of an attitude of individual responsibility towards learning. The success of the group depends on the contribution of each member, so that students are encouraged to be more serious in preparing themselves (Sari & Nugroho, 2020).

Learning independence includes the ability to manage time, find learning resources, and evaluate one's own learning outcomes. Jigsaw provides a space for students to practice these abilities because each individual must be ready to teach the material they have mastered. Independent learning habits are formed gradually through group demands (Hidayat & Puspitasari,

2019). Teachers play an important role in providing direction so that students really understand their assignments.

This research supports the findings of Rahmawati (2022) who stated that Jigsaw can increase independence through individual responsibility. Students learn not to rely entirely on teachers because they have to look for additional information on their own. The peer teaching process in Jigsaw strengthens students' independence as well as confidence. Such a learning environment is relevant to prepare students for future academic challenges (Johnson & Johnson, 2020).

Simultaneous analysis showed that the Jigsaw model had a combined effect on collaborative skills, learning motivation, and learning independence. The significance value of 0.008 confirms that these three aspects are interrelated in the context of cooperative learning. Increased motivation can encourage students to collaborate more actively. Good learning independence also strengthens students' contributions in the group (Nadrah, 2023).

The relationship between these three variables is in line with constructivist learning theory that emphasizes the importance of social interaction. Students build knowledge through active learning experiences with peers. Jigsaw provides a mechanism that supports the principle of constructivism (Kurniawan & Rahmawati, 2021). Collaboration, motivation, and independence are the expected outcomes of constructivist-based learning.

Nonetheless, collaborative skills did not increase significantly in this study. This fact indicates that the implementation of Jigsaw has not fully met the needs of students at the research site. Teachers need to modify strategies so that group interaction is more intensive. Strengthening basic communication skills is an important prerequisite for collaboration to run optimally (Arends, 2019).

The use of Jigsaw also faces a relatively long time constraint. The process of forming origin groups, expert groups, and discussions requires good time management. When time is limited, students do not have the maximum opportunity to have in-depth discussions (Supriyanto & Hidayah, 2019). This could be one of the reasons collaborative skills have not shown significant improvement.

The involvement of teachers as facilitators is a determining factor for the success of the Jigsaw model. Teachers need to ensure that every student is actively involved and responsible. Less intensive monitoring can cause role inequality in the group (Mulyadi, 2023). Consistent teacher support can improve the quality of student interaction and learning outcomes.

This research provides important implications for learning practices in elementary schools. The Jigsaw model has been shown to be effective in increasing motivation and learning independence. Teachers can use it as an alternative learning innovation. However, supporting strategies are needed to strengthen collaborative skills, such as communication training or team-based educational games (Santoso & Wulandari, 2021).

The results of this study also make a theoretical contribution to the study of cooperative learning. Jigsaw proved to be relevant for improving the affective and cognitive aspects of students. More research is needed to explore the factors that affect the effectiveness of Jigsaw in the context of collaborative skills. It is also necessary to conduct further research involving schools that have different characteristics.

The limitation of this study lies in the focus of the sample which only involves one group of elementary schools. The generalization of the results is still limited to the local context of Gending District, Probolinggo Regency. Follow-up research with a wider sample coverage can provide more representative results. The use of mixed methods can also enrich understanding of the dynamics of student collaboration in Jigsaw learning.

CONCLUSION AND RECOMMENDATIONS

This study showed that the Jigsaw learning model did not have a significant effect on students' collaborative skills with a significance value of 0.414. However, the Jigsaw model had a significant effect on learning motivation with a significance value of 0.013 and learning independence with a significance value of 0.017. Simultaneous analysis showed that the Jigsaw model had a combined effect on collaborative skills, learning motivation, and learning independence with a significance value of 0.008. These findings confirm that Jigsaw is effective in increasing motivation and independence, but requires additional support to strengthen students' collaborative skills.

Teachers are advised to apply the Jigsaw model as an alternative to learning because it is proven to increase students' motivation and learning independence. The application of this model needs to be balanced with strategies to strengthen communication and cooperation skills so that collaboration is more optimal. Schools are expected to provide support in the form of teacher training in managing cooperative learning and providing supporting facilities for group discussions. Further research is suggested to expand the sample in different contexts as well as use a blended approach to delve deeper into the dynamics of student interaction in the Jigsaw model.

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