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APPLICATION OF COLLABORATIVE LEARNING WITH MIND MAPPING METHOD ON ECOSYSTEM MATERIAL FOR SCIENCE SUBJECTS

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Abstract: Teachers are encouraged to have the ability to develop learning strategies and models that are in accordance with the curriculum and student learning styles. Teachers who deliver material with a lecture model will dominate the learning process, so students will tend to behave passively by only listening to the explanation of the material presented. Combining the collaborative learning model with the mind mapping method is expected to improve students' activeness and social relationships. The purpose of this study was to determine how the application of collaborative learning with the mind mapping method affects ecosystem material in science subjects. This research was conducted on March 23, 2024, with the 35 7th grade students of SMPN 1 Plosoklaten. The method used in this research is descriptive analysis with a qualitative approach. The learning model applied can improve personal relationships between students and increase creativity. Therefore, the collaborative learning model with the mind mapping method can be applied in the learning process of science subjects on ecosystem material in grade 7 SMPN 1 Plosoklaten.

Keywords: Collaborative Learning, Mind Mapping, Science

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INTRODUCTION

A school is one of the formal educational institutions, one of whose functions is to provide human development and guidance. School functions are not only limited to providing knowledge and skills but also shaping character, morals, and values that are important for individual development. At school, students not only learn subject matter but are also taught about the importance of cooperation.

Responsibility, discipline, and other values that will shape their personalities as members of society. In accordance with the Law on National Education Article 3, which states that: national education functions to develop abilities and shape the character and civilization of a dignified nation in order to educate the nation's life it, aims to develop the potential of students to become human beings who are faithful and devoted to God, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens.

To achieve the goals of national education, the content of subjects that must be given to students is needed, one of which is natural science. Science is not just the mastery of knowledge about concepts, facts, or principles, but also the process of searching about nature systematically, so that in natural science there is also a discovery process (BSNP, 2006). Science is a compulsory subject in the education curriculum because it has a crucial role in the intellectual development of students towards natural phenomena and science. In science subjects, students not only learn about physics, chemistry, and biology materials but also teach students how to analyze, develop thinking skills and stimulate curiosity.

The process of learning science, especially about ecosystem material, should be easily understood because students can see and relate directly to everyday life. But in reality, understanding science concepts, especially ecosystem material, still cannot be maximally captured. The material is too much and interrelated, causing students to have difficulty memorizing. In addition, the teacher-centered learning process makes it difficult for students to concentrate and lose focus during learning (Kuroru & Rahmah, 2023). Teachers are educators who are required to have four competencies: pedagogical competence, professional competence, personality competence and social competence (Febriana, 2019). Teachers are encouraged to have the ability to develop learning strategies and models that are in accordance with the curriculum and student learning styles.

Teachers who deliver material with a lecture model will dominate the learning process, so students will tend to behave passively by only listening to the explanation of the material presented. Based on the design thinking framework, through distributing questionnaires and in-

depth interviews in one of the junior high schools in Bandung City, it was found that teachers still use the lecture method to deliver subject matter, especially in science material. Students only listen to what the teacher explains without any variation in learning. This can cause students to be bored and less motivated to learn, and the material is difficult to understand, causing student learning outcomes to be low or decreased. Therefore, a way to overcome this is needed. What can be done by teachers is to develop media in the form of teaching materials and learning models that can encourage student motivation to learn (Astuti & Farida, 2021). The importance of analyzing the learning process becomes a very significant impetus when it is considered a process of changing student behavior. Some students are still unable to understand the material due to the lack of precise selection of learning methods and media applied by teachers in the learning process (Jumrodah et al., 2024).

The application of the right learning model can make students have high motivation in the learning process. One of the models that can be used to encourage student activeness is collaborative learning. Collaborative learning is a learning process that is carried out together (in small groups), and each group is ensured to be able to help each other, interact, and cooperate to achieve the desired goals or tasks (Rahmaniati, 2024). This learning encourages students to work together to complete tasks together and improve interpersonal relationships between individuals. Collaborative learning emphasizes collaboration and interaction between students. Students work in small groups to achieve shared learning goals. Each group member has a specific role and responsibility, and the successful achievement of learning objectives depends on the cooperation and collaboration between them (Vega et al., 2024).

The method that can be combined with the collaborative learning model is mind mapping. Mind mapping is a note-taking method that requires creativity. This method makes it easier to remember a lot of information (Hasibuan, 2022). The implementation of learning by using mind mapping can make it easier for students to capture and understand the material. The use of mind mapping can make complex and complicated material simpler. Mind mapping is a very effective learning model for putting information into the brain as well as taking it out of the brain and aims to hone skills in presenting the content of the material by using mind mapping techniques that allow one to process all information visually. In this way, one's mind can be opened to develop a more creative and innovative approach to thinking (Sulaiman et al., 2024).

Research relevant to the collaborative learning model with the mind mapping method is research from Syamsul Bahri with the title “The Effect of Mind Mapping Type Cooperative Learning Model on Science Learning Outcomes in Class V Students of SD Negeri Lariang Bangi Ii Makassar City” which states that there is an increase in learning outcomes in the

experimental class, judging from the p-value or sig count which is smaller than 0.05 and the difference in the average value (mean) of the pretest and posttest results. These results can be concluded that there is an effect of the mind mapping learning method on student learning outcomes in science subjects of class V SD Negeri Lariang Bangi II Makassar Subdistrict Makassar City. The results of this study are also in line with research conducted by Rizki Nur Istiqomah with the title "The Effect of Mind Mapping Learning Model on Student Learning Outcomes in Science Class V SDN 2 Sidoharjo Pringsewu" which states that the learning outcomes in the experimental group obtained an average = 82.2 and in the control group obtained an average = 74.9. So it can be concluded that there is an effect of the Mind Mapping learning model on the learning outcomes of students in the fifth grade science subject SDN 2 Sidoharjo Pringsewu. The combination of a collaborative learning model with a mind-mapping method is expected to improve students' activeness and social relationships.

METHOD

The research method used in this research is a descriptive method with a qualitative approach. Qualitative research methods are research methods based on the philosophy of postpositivism, used to research on natural object conditions, (as opposed to experiments) where the researcher is the key instrument, data collection techniques are triangulated (combined), data analysis is inductive/qualitative, and qualitative research results emphasize meaning rather than generalization (Sugiyono, 2013). In this study, the authors will describe and analyze matters related to the application of collaborative learning with the mind mapping method to ecosystem material in science subjects. The approach used is a qualitative approach with descriptive methods.

This research was conducted on March 23, 2024, at SMPN 1 Plosoklaten which is located at Jl. Mastrip Kawedusan Village, Plosoklaten District, Kediri Regency. The subjects of this study were 35 students of class 7D of SMPN 1 Plosoklaten. Data was through by observation, interviews and filling out questionnaires. The research flow used is that researchers use direct observation methods by observing and recording phenomena that they want to study and study further. In this case, the phenomenon studied is the learning process activities. Furthermore, researchers used the interview method to 3 students to obtain information related to the issues discussed and studied. The criteria for determining informants are the activeness of students such as: asking questions, expressing opinions and responsibility during the learning process. The last method used is filling out a questionnaire. Questionnaires were given to all students of

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class 7D SMPN 1 Plosoklaten to collect opinions and ask the same questions with the aim that the results of filling out the questionnaire could be easily compared.

FINDING AND DISCUSSION

Researchers make observation indicators with the aim of limiting, narrowing and focusing on what will be observed, namely the application of collaborative learning with the mind mapping method on ecosystem material in science subjects. There are 3 indicators observed, namely cooperation in groups, communication between students and mastery of material. The observation results can be seen in **Table 1**.

Table 1. Observation Data

No.	Indicator	Observation Results
1.	Cooperation in the group	- Learners are able to work together in group management - Learners are able to cooperate with other learners in task completion - Learners are able to cooperate with other learners in understanding the subject matter
2.	Communication between learners	- Learners can accept their groupmates' opinions - Learners can help group members who are struggling - Learners are able to face difficulties / obstacles in working on tasks together
3.	Material Mastery	- Learners can understand the material that has been learned - Students can answer questions according to the material studied

In addition to using the observation method, the researcher also used the questionnaire method. The results of the questionnaire filling by 35 students of class 7D students of SMPN 1 Plosoklaten can be seen in **Figure 1**.

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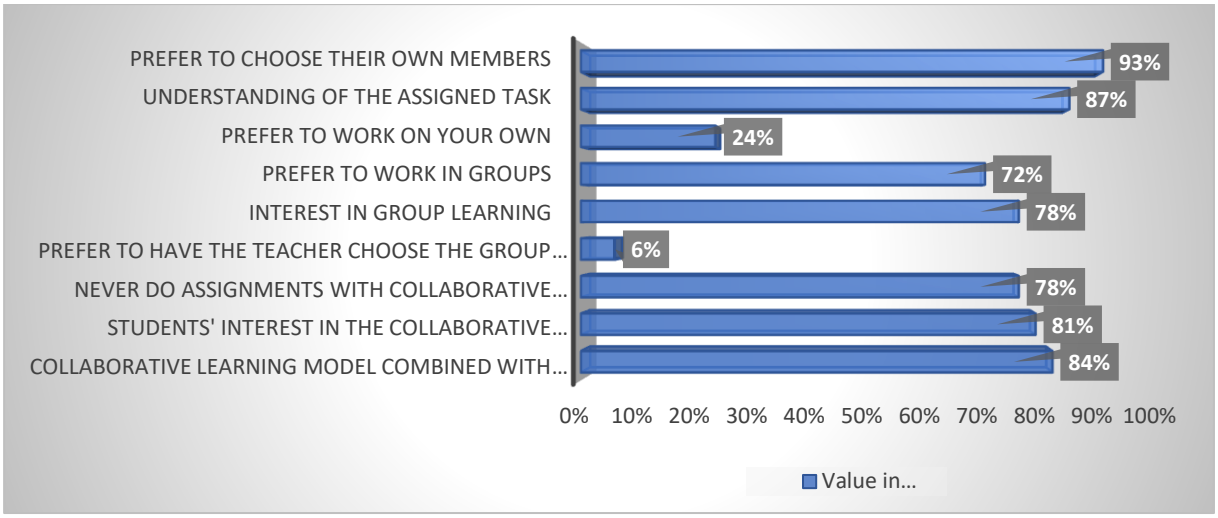


Figure 1. Percentage of Questionaire data from the 35 7th grade students of SMPN 1 Plosoklaten

Figure 1 states that:

1. Increased student understanding: 84% of students agreed that the collaborative learning model combined with the mind mapping method on ecosystem material can improve their understanding. This indicates that this method is effective in helping students understand the material taught.
2. Students' interest in the learning method: 81% of students showed interest in the collaborative learning model combined with mind mapping method on ecosystem material. This high interest indicates that students find this method interesting and possibly more fun than traditional learning methods.
3. Frequency of use of the learning model: 78% of students indicated that they had never done an assignment with this model. This suggests a gap between the potential benefits of the learning method and its application in practice. There may be several reasons why this method is rarely used, such as lack of training for teachers, time constraints, or resources needed to implement this method.
4. Preference for self-selection of group members: 93% of students preferred to choose their own group members. This suggests that students feel more comfortable and perhaps more effective in working with peers of their own choosing. This preference also reflects the importance of social factors in collaborative learning, where comfort and trust between group members can affect learning outcomes.

5. Preference for teacher selection of group members: 6% of students prefer that the teacher selects the group members. This shows that the majority of students are more comfortable and confident when they can choose their own group members.
6. Preference for working on tasks in groups: 72% of students prefer to work in groups. This preference is consistent with the high interest in group learning.
7. Preference for doing assignments individually: 24% of students prefer to work alone. This suggests that there are some students who may feel more effective and comfortable learning individually.
8. Understanding of the assignment: 87% of students felt that they understood the assignment. This high level of understanding indicates that combining collaborative learning model with mind mapping method is effective in encouraging students to understand the material taught.

The learning model is a design of learning activities to make the implementation of Teaching and Learning Activities (KBM) run well, interesting, easy to understands, and in a clear sequence (Octavia, 2020). A good learning model is systematic, meaning it has a clear sequence of procedures. The right learning model will also increase students' active involvement in the classroom, encourage critical thinking, and improve students' personal and social skills.

Collaborative learning is learning that requires cooperation between students in the teaching and learning process activities to achieve learning goals, so that in completing their group assignments, each group member must work together and help each other understand the subject matter and provide opinions to each other, so that each student, in addition to having individual responsibility, also has responsibility in the group (Putra, 2021). The collaborative learning model emphasizes cooperation and interaction between students to achieve common goals.

Learning is not focused on individual processes, but rather involves social activities where students support and learn from each other. Each student in the group also has their own role, contribution and responsibility. Collaborative learning model can be combined with various methods, such as: group discussion, group assignments and collaborative projects. In this learning model, the teacher does not have a dominant role in the classroom. Students not only learn from the teacher but can also learn from a group of friends. The cooperation carried out in the application of collaborative learning causes knowledge to be built because students have the opportunity to correct previous incorrect knowledge and/or increase their knowledge

through mutual interaction and exchange of ideas carried out in their groups so that a mutual agreement is obtained (Yusal et al., 2023).

Group learning and working on assignments is a familiar learning model for students at SMPN 1 Plosoklaten. This is known from the statement of one of the students when asked in the interview who said that "I have studied and done assignments in groups, but not often." "I am happy with the group method because the work gets done quickly." The statement came out when students were asked about the benefits of group learning. Group learning turns out to be able to attract students' interest and enthusiasm for learning because learning in this way makes work get done quickly. "It is an unpleasant thing if you are not in the same group as a friend who is not in the same group". This statement was made when students were asked about the obstacles/difficulties they felt when learning in groups.

The collaborative learning model makes learners more familiar with each other, thus strengthening social skills and improving personal relationships. Although initially there was displeasure and discomfort when having to group with unwanted friends, but it can be overcome and put aside by students, because what becomes their focus is no longer about "who is a member of the group", but "how to get this task done on time". This indirectly also makes students learn to adjust and focus on a common goal, which is to complete the task effectively and on time. In this learning model, there is also a transfer of knowledge between learners.

Learners with a low ability to grasp the material can ask their group members who already understand. This not only makes the spread of knowledge uneven, but also indirectly improves the ability of learners to speak in public because they feel they have to explain to understand their group members who have difficulty capturing the material. In addition, in the process there is an increase in interpersonal relationships between learners from the communication that occurs, such as: learners who were previously not familiar began to form new friendships as a result of closer interaction in group work projects and an increased sense of togetherness as a result of the positive experiences they had together.

Science learning is a systematic collection of theories, its application is generally limited to natural phenomena, born and developed through scientific methods and demands a scientific attitude. The determining factors in science subjects are in terms of process, product and scientific attitude (Adilah, 2017). Students are required to have a high level of focus/concentration to receive and capture material in science learning in general and ecosystem material in particular. Ecosystem material consists of various complex structures and concepts, such as food chains, biotic and abiotic factors and ecological relationships. This will make it difficult for students to understand and memorize the material (Kuroru & Rahmah, 2023).

The learning process of only reading books containing written material and listening to the teacher will make students tend to get bored so that the material cannot be understood properly. The mind mapping method is one method that can be used to minimize boredom in students. Mind Mapping is a technique of utilizing the whole brain by using visual images and other graphic infrastructure to form an impression (Swadarma, 2013). In mind mapping, the main concept is placed in the center and there are branches that connect concepts that are closely related to the main concept. Each branch can also have sub-branches that will provide a more systematic explanation.

Based on statements from students, the experience in making mind mapping is very limited, they have only made mind mapping once, and even then in PAI subjects. Indirectly, it can be said that they have never made mind mapping, especially ecosystem material in science subjects. This is what makes students more interested in this method because they have never done it before.

Learners revealed that they quite liked "how to summarize" with the mind mapping method because it is rarely applied so as to minimize boredom in the learning process. The mind mapping method can also improve learners' understanding of complex material because basically the function of mind mapping is to simplify the material through points written in an outline in graphic/visual form.

The mind mapping method can also enhance learners' creativity. In the learning process, mind mapping allows learners to organize and connect their ideas visually, thus enabling them to see patterns and relationships that may not be apparent in conventional learning approaches. In this way, learners can explore new ideas. Mind mapping also stimulates the brain to think creatively and hone association skills, which are important skills in the mind mapping process. In addition, by utilizing visual elements and colors, mind mapping can help learners remember information better, thus reinforcing learning and improving their long-term memory. Thus, the use of mind mapping in learning not only makes learners understand a concept in a material but also stimulates their creativity and enriches their learning experience.

The results of this study are in line with research conducted by Syamsul Bahri with the title “The Effect of Mind Mapping Type Cooperative Learning Model on Science Learning Outcomes in Class V Students of SD Negeri Lariang Bangi Ii Makassar City” which states that there is a positive effect of mind mapping learning method on student learning outcomes in science subjects of class V SD Negeri Lariang Bangi II Makassar District Makassar City. The results of other studies that are also in line with this research are research conducted by Rizki Nur Istiqomah with the title “The Effect of Mind Mapping Learning Model on Student Learning

Outcomes in Science Class V SDN 2 Sidoharjo Pringsewu" which states that there is a positive effect of the Mind Mapping learning model on student learning outcomes in science class V SDN 2 Sidoharjo Pringsewu.

Based on the results of the research that has been done, it can be concluded that the application of collaborative learning with the mind mapping method on ecosystem material in science subjects makes it easier for students to understand ecosystem material, improve aspects of cooperation and interpersonal relationships between students and increase creativity.

CONCLUSION

From the results of the research, it can be concluded that the use of *collaborative learning* models with *mind mapping* methods on ecosystem material in science lessons can be applied in the teaching and learning process. This conclusion is based on the results of observations, interviews, questionnaires, and documentation conducted by researchers on students who stated:

a) *The collaborative learning* model with the *mind mapping* method makes it easier for students to understand ecosystem material.
b) *The collaborative leaning* learning model can increase the value of cooperation and interpersonal relationships between students.
c) Making *mind mapping* can improve the creativity of students.

Based on the description above, the application of *collaborative learning* with the *mind mapping* method to ecosystem material in science subjects can be used in the learning process of class VII at SMPN 1 Plosoklaten.

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