

Analysis of the Use of Mind Mapping Learning Media on Science and Social Studies Learning Outcomes in Elementary Schools

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Abstract

This study aims to analyze the use of mind mapping learning media on the learning outcomes of Natural Sciences (IPA) and Social Sciences (IPS) in elementary schools. By adopting a literature research method, data is collected through a literature review from various relevant scientific journals. The results of the study show that the application of mind mapping significantly improves student learning outcomes, both in the cognitive and psychomotor domains. This medium assists students in organizing information visually, which facilitates the understanding of concepts and increases creativity. The urgency of the analysis of the use of mind mapping learning media on science and social studies learning outcomes in elementary schools is to find innovative solutions in increasing learning effectiveness. The results of the analysis of ten literature showed that students who used mind mapping had better learning outcomes compared to conventional methods. This study concludes that mind mapping is an effective tool in the learning process to achieve optimal learning outcomes.

1. Introduction

Natural Sciences (IPA) and Social Sciences (IPS) have a very vital role in the educational curriculum. Both aim not only to hone the logical, critical, and creative thinking skills of students, but also to engage them in a more in-depth learning process. In science and social studies learning, students are encouraged to discover and understand concepts through observation and hands-on experience, so that they can build a more contextual understanding of the environment around them.

However, science and social studies learning at the elementary school level still faces various challenges. One of the main challenges is the low learning outcomes of students, which is often caused by a teacher-focused approach to teaching. As a result, many students tend to be passive and less motivated. In addition, the limited variety in learning media makes the learning process feel monotonous, which negatively impacts their motivation and learning outcomes.

Learning media has a very important role as a tool in the teaching and learning process. The existence of this media can encourage the development of students' thoughts, feelings, attention, and skills, thereby creating a more effective learning experience (Teguh and Putra, 2021). Innovation in the proper use of learning media has the potential to increase students' active participation and stimulate their brains in a balanced way. One of the promising learning methods is mind mapping. With mind mapping, information can be presented and organized in the form of visually appealing and interactive mind maps, making it easier for students to understand and connecting different concepts.

The use of mind mapping in science and social studies learning in elementary school has been proven to be effective in improving student learning outcomes, both in terms of cognitive and psychomotor. Previous research has shown that students who use mind mapping media experience a significant improvement in learning outcomes compared to students who follow conventional learning methods. This emphasizes how vital the role of learning media is in achieving optimal educational goals.

Therefore, the development of mind mapping media is expected to make it easier for students to understand the material being taught. By combining visual elements such as images and colors, as well as involving students in the process of creating mind mapping, their understanding of the subject matter will be better. According to Tika (2012:9), "Mind mapping is a way of taking notes that is creative, effective, and maps our thoughts in an interesting, easy, and useful way."

This research will focus on the use of the mind mapping method to analyze student learning outcomes at the elementary/middle school level. The formulation of the problem that wants to be answered is, "Can mind mapping learning media improve student learning outcomes in science and social studies subjects?" The purpose of this study is to find out the extent to which the use of mind mapping

learning media can contribute to improving student learning outcomes in science and social studies lessons.

2. Method

This type of research is library research, which is research that uses the method of collecting ten library data, or research whose object is explored through literature information (books, encyclopedias, scientific journals, newspapers, magazines, and documents). This literature research focuses on finding various theories, principles, and ideas that are used to analyze and solve questions in the formulation of problems in research. The nature of this research is descriptive analysis, namely the regular decomposition of the data that has been obtained, then it is given an understanding and explanation so that it can be well understood by the reader. Nana Syaodih. (2009:52)

The data used in this study is secondary data, namely data obtained not through data collection directly from the research object. However, the data was obtained from the results of previous research that had been conducted by other researchers. The secondary data source in this study was taken from scientific journals accessed online through google scholar, then processed by the researcher in a concise and structured manner that discussed the learning media of mind mapping and student learning outcomes.

3. Results and Discussion

This research is based on scientific journal articles derived from research findings that have been tested and validated previously. These sources were successfully collected, selected, and searched through a carefully selected Google Scholar. Mind mapping, as one of the learning methods, has proven to be very effective in improving student learning achievement. This evidence can be seen from several literature that has been summarized by researchers, as follows:

Table 1. List of Literature Summaries

No.	Writer	Research Title	Year	Result research
1.	Sri Sunanti	Mind Mapping Method to Improve Social Studies Learning Outcomes in Elementary Schools	2016	In this study, the mind mapping learning media experienced a process of improving student learning outcomes. It can be seen from the student learning results in the first cycle that the completeness reached 13 people out of 21 people who got a score above the KKM, while in the second cycle the completeness reached 20 people out of 21 people who got a score above the KKM, with a percentage from (61.90%) to (95.23%).
2.	Fajrin, S.N., and Rahman, S.A	The Effect of the Mind Mapping Learning Model on Social Studies Learning Outcomes of Grade V Students of SDN 79 Cenrana Bone Regency	2020	Data 1 in the table of results of this study shows that students in the control class experienced an increase in learning outcomes which obtained a total of 670 and had an average of 31.90 in the initial test, while in the final test there was an increase of 950 with an average of 45.2. Data 2 in the table of results of this study shows that students in the experimental class experienced an increase in learning outcomes which obtained a total of 775 with an average of 38.75 in the initial test, while in the final test there was an increase of 1505 with an average of 75.25.

3.	Priyandana, I. W. P., Dibia, I. K., & Ujianti, P. R.	Efforts to Improve Science Learning Outcomes through Mind Mapping Learning Media Assisted by the Edraw Mindmaster Application	2021	Based on the assessment of experts, the media that has been developed, namely mind mapping with the help of the Edraw Mindmaster application, obtained a very satisfactory score. Subject matter experts gave an assessment with a score of 3.75, while learning media experts gave a score of 3.41, and lesson media experts gave a score of 3.76. These three assessments show that this media has excellent qualifications.
4.	Variani, N. L. D., & Agung, A. A. G.	Discovery Learning Model Assisted by Media Mind Mapping on Science Learning Outcomes of Grade V Students	2020	Based on the results of the study, descriptive statistical analysis showed that the experimental group received a very high predicate. Meanwhile, the control group obtained a good predicate. In addition, the results of inferential analysis using the t-test also showed a significant influence.
5.	Pas, E. G., & Wardani, K. W.	Development of Mind Mapping-Based Pocket Books to Improve Social Studies Learning Outcomes of Elementary School Students	2022	From the material validity test table, the percentage result was 72.7% with a high category From the media validity test table, the percentage results were 78.5 with a high category
6.	Winarni, W.	Application of the Direct Learning Model with Mind Map to Improve Social Studies Learning Outcomes of Technological Development Subject Matter at Elementary School IV Karen Bantul.	2015	Based on the analysis of student learning outcomes, it shows an increase in the percentage of student learning completeness. From the results of cycle 1, the demand rate shows a figure of 62.50%, and cycle 2 shows a figure of 87.50%, it can be concluded that the target indicator of success has been achieved.
7.	I Gst. Agung Oka Negara, N. P. D. suwitri, I. K. A.	The Effect of Mind Mapping Learning Assisted by Concrete Media on Science Learning Outcomes of Grade V Students of SD Cluster III Banjar Anyar Kediri.	2013	The difference in learning outcomes between students who participated in science learning with the mind mapping model and those who used conventional methods can be analyzed through the average of post-test scores. The experimental group that applied the mind mapping model obtained an average score of 71.37, while the control group that used the conventional method only achieved an average of 59.60. Thus, it can be concluded that the application of the mind mapping learning model supported by concrete media has a significant impact on the science learning outcomes of grade V students at SD Gugus III Banjar Anyar Kediri, when compared to conventional methods.

8.	Nurhayati, N., Utami, I. W. P., & Anoffa, E. R. L.	Application of Mind Mapping Learning Model to Improve Science Learning Outcomes in Grade 5	2020	The application of the Mind Mapping learning model in science subjects, especially regarding the ecosystem component in theme 5 subtheme 1 in grade 5 of SDN 2 Basuhan, showed very encouraging results. During the learning process, students are given the opportunity to interact and communicate with their peers in an effort to solve problems that arise. In addition, they can also develop creativity through cooperation in designing mind maps based on the material they have learned.
9.	Helmi. Hermuttaqien, B. P. F., & Nuriyah, St. B	Implementation Influence Mind Mapping Method on Student Learning Outcomes in Science Subject Class IV SD Negeri 35 Tajuncu Donri District -Donri Kabupaten Soppeng	2022	<ol style="list-style-type: none"> <li>1. The application of the mind mapping method in grade IV of SD Negeri 35 Tajuncu, Donri-Donri District, Soppeng Regency, has proven successful in improving student learning outcomes in science subjects. This can be seen from the results of observations made at each meeting, where the level of effectiveness increased from the effective category to very effective. <li>2. After the mind mapping method was applied, student learning outcomes in science subjects in grade IV of SD Negeri 35 Tajuncu showed a significant increase compared to the results before the application of this method. This increase can be seen from the average pretest score that increases when the posttest is carried out in the experimental class, compared to the control class. <li>3. There is a significant influence of the application of the mind mapping method on improving student learning outcomes in science subjects in grade IV of SD Negeri 35 Tajuncu, Donri-Donri District, Soppeng Regency.
10.	Supriatna, A. Kuswandi, S., & Aenul Quthbi, A.	Application of the Mind Mapping Method in Improving Student Learning Outcomes in Science Subjects	2021	Science learning that applies the Mind Mapping Method has proven to be effective in improving student learning outcomes. This can be seen from a significant increase in the average score of learning outcomes from the 1st cycle, which reached 58.89, then increased to 65.18 in the 2nd cycle, and continued to jump to 80.74 in the 3rd cycle. In addition, the increase in learning

outcomes can also be seen from the percentage of classical completeness that has progressed, starting from 55.56% in the 1st cycle, increasing to 74% in the 2nd cycle, and finally reaching 96.30% in the 3rd cycle.

The results of the research analysis related to Mind Mapping learning media on science and social studies learning outcomes. Conclusions can be drawn according to:

1. Sri Susanti: By applying the Mind Mapping method to the learning process, students experience an increase in their learning outcomes.
2. Fajrin, S.N., and Rahman, S. A: The average increase was more significant in the experimental class and showed that mind mapping was effective compared to conventional learning.
3. Priyandana, I. W. P., Dibia, I. K., & Ujianti, P. R : Ratings from material and media experts scored above 3.4 and showed a very good category
4. Variansi, N. L. D., & Agung, A. A. G.: From the results of the t-test of mind mapping learning media, it has a great impact on student learning outcomes.
5. Pas, E. G., & Wardani, K. W.: Pocket books based on mind mapping are considered effective in helping students' understanding and have a high category
6. Winarni, W.: The percentage of completeness increased from 62.5% to 87.5%, and achieved success in student learning outcomes
7. I Gst. Agung Oka Negara, N. P. D. suwitri, I. K. A. : Average post-test experiment 71.37 > control: 59.60. There are significant differences that show the effectiveness of the mind mapping method
8. Nurhayati, N., Utami, I. W. P., & Anoffa, E. R. L. : the application of mind mapping learning media for students to be more active in communicating, cooperating, and being creative in compiling mind maps.
9. Helmi. Hermuttaqien, B. P. F., & Nuriah, St. B: the application of mind mapping shows an increase in learning to be more effective
10. Supriatna, A. ., Kuswandi, S. ., & Aenul Quthbi, A. : The application of mind mapping shows consistency by looking at the average and completeness.

Based on the results of data analysis and discussion, it can be concluded that the application of mind mapping learning media can improve student learning outcomes which can be proven from the 10 literature described above.

3.1. Discussion

Mind mapping is a learning method designed to develop students' knowledge through creative activities. This method involves compiling the main ideas of a concept into an easy-to-understand mind map. By using mind mapping, students can understand mindsets in a systematic and structured manner (Maria et al., 2021). In the process of creating mind mapping, educators can add an element of creativity to the notes by using colored ballpoint pens. The main purpose of mind mapping is to make it easier for students to remember information as well as help record important things using keywords.

Learning outcomes refer to the achievements that students have achieved as a form of ability, skills, and attitudes after participating in the learning process. This achievement can be observed and measured through various research activities. The research aims to assess the extent to which instructional goals can be achieved and the extent to which students master the material taught (Nisa et al., 2018; Prayitno, 2011). Therefore, attention to learning outcomes is essential for educators. Various factors affect the success of students in absorbing learning materials, both internal and external factors. Internal factors include student discipline, response, and motivation, while external factors include the learning environment, creativity in the choice of media by teachers, and learning methods applied.

The use of learning media such as mind mapping has been proven to be effective in improving student learning outcomes. This can be seen from the significant differences between learning outcomes before and after the application of mind mapping media, as revealed in the literature review and analysis that has been carried out. Based on the results of the analysis that the use of affective mind mapping learning media in improving science and social studies learning outcomes in elementary schools, the author recommends that educators consistently use mind mapping in the learning process. The school also needs to support this implementation through a sustainable program, while for future research to conduct field trials so that the influence of mind mapping on creativity ability can be studied more comprehensively.

3.2. Conclusion

Based on the analysis and discussion carried out, it can be concluded that the application of mind mapping learning media is effective in improving student learning outcomes in the fields of science and social studies. Mind mapping not only assists students in understanding the material, but also encourages active participation and creativity. The learning outcomes of students who use mind mapping show a significant improvement compared to students who learn through conventional methods. Therefore, it is recommended that teachers consider the use of mind mapping as one of the strategies in the learning process to achieve more optimal results.

Suggestion

Educators should be more active in integrating mindmapping learning media into the science and social studies learning process to increase understanding and creativity of student learning outcomes. Further research is expected to be carried out with a hands-on trial method in the classroom to test the effectiveness of Ming Mapping on various aspects of students' abilities in depth.

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