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Analysis Of The Application Of The Discover Learning Learning Method On Learning Outcomes Of Primary School Students In Science Learning: *A Systematic Literature Review*

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ABSTRACT

Natural Science is a field of study whose field of study examines natural conditions systematically through observation, experimentation and analysis. Natural sciences cover various scientific disciplines, for example physics, chemistry, biology and geology. An important goal of science is to master natural laws, study natural events, and use this knowledge to solve problems and improve the quality of human life. Then the research aims to analyze the application of the Discover Learning learning method on elementary school student learning outcomes in science lessons with a systematic literature review. The research method used is Systematic Literature Review (SLR), using the Scholar database. A literature search was carried out with a focus on articles published between 2019-2024. The initial stage included a search using the keywords "discovery learning," yielding 1,230 articles. Then, the search was narrowed to the 2019-2024 range, producing 14,900 articles. Adding the keyword "learning outcomes" resulted in 9,380 articles, and then the keyword "primary school science" was added, resulting in 151 articles. From these articles, data was selected that was in accordance with the objectives of the literature review, and a feasibility test was carried out to ensure the relevance and accuracy of the information. so that you can obtain 8 documents that are in accordance with the objectives of the literature review. From the research results, it was concluded that the application of the Discovery Learning method was proven to provide significant benefits in science lessons in elementary school. So, it is important for educators to recommend the use of interesting learning media in the science teaching process, one of which is by applying the Discovery Learning method, so that learning material can be delivered effectively and successfully.

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ABSTRAK

Ilmu Pengetahuan Alam (IPA) adalah sebuah pembelajaran yang bidang studi nya mempelajari fenomena alam secara sistematismelalui pengamatan, eksperimen, dan analisis. IPA mencakup berbagai disiplin ilmu seperti fisika, kimia, biologi, dan geologi.Tujuan utama IPA adalah memahami hukum-hukum alam, mengaplikasikan pengetahuan

Keywords:

Pembelajaran Discovery Learning, Hasil Belajar IPA, Siswa Sekolah Dasar.

tersebut untuk memecahkan masalah serta meningkatkan kualitas hidup manusia. Lalu penelitian ini bertujuan untuk menganalisis Penerapan Metode Pembelajaran Discover Learning Terhadap Hasil Belajar Siswa Sekolah Dasar Dalam Pembelajaran IPA melalui tinjauan literatur riview sistematis. Metode penelitian yang dipakai adalah Systematic Literature Review (SLR), menggunakan database Google Scholar. Penelusuran literatur dilakukan dengan fokus pada artikel yang diterbitkan antara tahun 2019-2024. Tahap awal mencakup pencarian dengan kata kunci "pembelajaran discovery learning," menghasilkan 1.230 artikel. Kemudian, penelusuran dipersempit dengan rentang tahun 2019-2024, menghasilkan 14.900 artikel. Penambahan kata kunci "hasil belajar" menghasilkan 9.380 artikel, dan kemudian kata kunci "IPA sekolah dasar" ditambahkan, menghasilkan 151 artikel. Dari artikel-artikel ini, dilakukan seleksi data yang sesuai dengan tujuan literature review, serta dilakukan uji kelayakan untuk memastikan relevansi dan keakuratan informasi. sehingga dapat memperoleh 8 dokumen yang sesuai dengan tujuan literature review. Berdasarkan hasil penelitian, dapat disimpulkan bahwa penerapan metode pembelajaran Discovery Learning terbukti memberikan manfaat yang signifikan dalam pembelajaran IPA di Sekolah Dasar. Oleh karena itu, penting bagi para pendidik untuk merekomendasikan penggunaan media pembelajaran yang menarik dalam proses pengajaran IPA, salah satunya dengan menerapkan metode pembelajaran Discovery Learning, sehingga materi pembelajaran dapat disampaikan dengan efektif dan berhasil.

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Introduction

Natural Sciences is not just a lesson in elementary school, but a window that opens the door to students' understanding of the world around them (Sutrisno, 2010). Through science, students are invited to explore various natural phenomena, uncover the mysteries behind them, and build solid knowledge. More than just knowledge, science also equips students with essential scientific skills (Asrizal, 2023). The ability to think critically, solve problems and find creative solutions is a valuable provision for students to face various challenges in the future.

Effective science learning is not just about memorizing formulas and concepts, but arousing students' curiosity is like igniting a spark within them. Skilled teachers act as facilitators who guide students in exploring science, like discussion starters who encourage them to exchange ideas and build mutual understanding, transforming learning into an exciting adventure exploring a universe full of mysteries (Liudmyla, 2019). In an effective science classroom, students are not just recipients of information, but explorers who uncover the secrets of nature through experimentation and observation, dig for hidden scientific treasures with great

joy, and become science detectives who solve nature's puzzles critically and creatively (Yuli et al., 2023). Through this learning, students are trained to become independent learners who are hungry for knowledge, have great curiosity, and can solve problems creatively. Science learning fosters an investigative spirit in students, encouraging them to always ask questions, look for answers, and not be easily satisfied with the information they get, as well as fostering a love of science and motivating them to continue learning (Bunyamin, 2023).

One method that is considered good for improving science learning outcomes in elementary school is the Discovery Learning Method. This method focuses on the process of discovering knowledge by students independently through experience and experimentation (Sakdiah & Reinita, 2019). With this method, students are motivated to be active and creative during learning, so that they are able to improve critical thinking skills, increase understanding and knowledge retention, and build self-confidence and learning independence. In practice, this method can be carried out through various activities, such as simple experiments, project-based investigations, and group discussions. Teachers play an important role in facilitating the learning process, guiding students in critical thinking, and providing constructive feedback to help them achieve optimal learning outcomes (Hilda, 2023).

Discovery Learning is not only a learning method, but also an educational philosophy that empowers students. With this method, students become active learning agents who are responsible for their own learning process (Demak & Sofiana, 2017). They design experiments, search for information, discuss, and collaborate to find answers to their questions. Discovery Learning fosters critical, creative and independent thinking skills in students, preparing them to become successful independent learners in the future. This philosophy has a positive impact on learning motivation and responsibility, and improves learning outcomes in a variety of teaching.

Method

This research uses the literature review method, which is an important research technique for developing a deep understanding of the research topic, identifying knowledge gaps, and building a strong theoretical foundation (Dr. & Kanchan, 2023). By conducting a systematic literature review, researchers can collect and analyze information from several relevant written sources, such as scientific journals, reference books, and research reports (Murtopo et al., 2023). A good literature review can help researchers avoid duplication of research, increase research credibility, and produce innovative and useful research findings (Mairiza & Noviarita, 2023).

The purpose of a literature review is to provide a comprehensive and accurate picture of existing knowledge in a field, and to identify research gaps that can be explored further (Hannah, 2023). Identify gaps in existing literature, and provide a basis for new research projects Systematic literature reviews, aim to summarize previous research, reduce bias, and increase understanding of a particular topic. Additionally, literature reviews help in identifying practical and theoretical issues, formulating research questions, and generating hypotheses for new studies, literature reviews help in understanding manifestations and adapting management strategies accordingly (Rohandi, 2017).

The articles reviewed in this research were based on journals relevant to the research theme, searched through the Google Scholar database. The literature search was focused initially on the keyword "discovery learning", which resulted in 1,230 articles. Then, this search was limited to articles published from 2019 to 2024, which resulted in 14,900 articles. Next, the keyword “Learning outcomes” was added, resulting in 9,380 articles. Finally, the keyword “elementary school science” was added, resulting in 151 articles. Based on these 151 articles, data selection and feasibility testing were carried out to obtain the right articles according to this literature review.

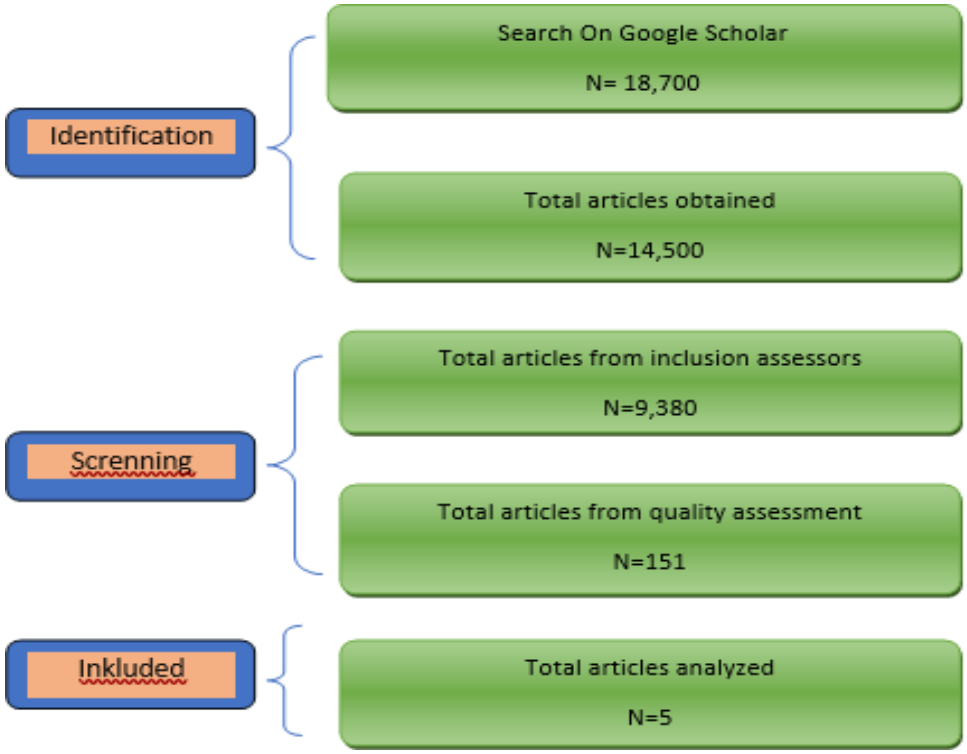
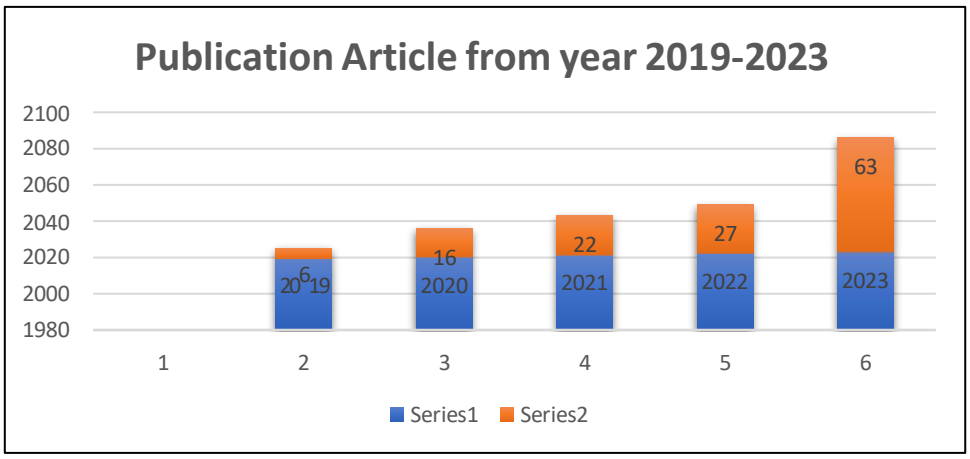


Figure 1. Inclusion criteria regarding discovery learning on the learning outcomes of science students in elementary school

Result

A literature search on Google Scholar was carried out to clarify research results, with graphs, tables, or through comments and discussions. Articles considering the influence of discovery learning on science learning outcomes in elementary school have seen an increase publication every year from 2019 to 2024. A diagram illustrating the development of this article can be seen below:



Graph 1. Development of articles in the Google Scholar database regarding the use of animated videos in science learning in elementary school.

In the graph above, it can be seen that the development of article publications regarding discovery learning on the learning outcomes of science students in elementary school on Google Scholar has increased from 2019-2024. This is shown in 2019 and 2020, there were 6 articles and 16 articles published on Google Scholar, then in 2021 22 articles were found published, and this number continued to increase in 2022 and 2023, where 27 articles were found and 63 articles published on the Google database. scholar regarding the use of animated videos in science learning in elementary schools. In 2023, the highest number of published articles will be found on Google Scholar, and in 2024, 17 published articles will be found, which number will continue to increase. The results of calculating the average number of articles published in the scholar database:

$$\tilde{x}=\frac{Number\ \ of\ \ Article}{Number\ of\ Years}$$

$$\tilde{x}=\frac{151\ articles}{5\ years}=30{,}2\ \text{Articles}$$

So, the average total of articles published in the Google Scholar database per year is rounded up to 30 articles.

Furthermore, based on researchers' searches on Google Scholar, the number of articles cited varies each year. The total number of articles cited in the 2019-2024 period reached 151 articles. The following is an overview of articles cited in the last six years regarding the use of animated videos in science learning in elementary schools:

Table 1. basic information of the article in table format

Data	Results
Year published	2019-2024
Number of articles	11
Total citations	160

Average citations per article	15

Average citations per year	27
Average author per article	2

Table 1 contains basic information for all analyzed articles. Most of the articles regarding the use of the Quizizz application are written by two or more authors, on average these articles appear 27 times each year and 15 times each.

Based on a search with the keyword "use of animated videos," 1,230 articles were found from the Scholar database consisting of various article categories. Then, the search focused on articles published in the last 6 years, namely from 2019 to 2024, and 1,120 articles were found. By adding the keyword "science learning," the number of articles was reduced to 246. Furthermore, after adding the keyword "primary school," 213 articles were found. Of the 213 articles, there were 8 articles that specifically discussed the effectiveness of using animated videos in science learning in elementary schools which were then reviewed. The following are the results of a review of the 8 articles regarding the use of animated videos in science learning in elementary school.

Table 2. Review results on the Google Scholar database regarding research topics

Title	Journal	Result
The effectiveness of discovery learning and problem solving learning models on science learning outcomes in elementary school students	basicedu journal	From the results of the pre-test and post-test analysis, it was found that students' problem solving skills increased significantly when using the Discovery Learning model during the teaching and learning process, compared to the pre-test scores without treatment. The average post-test score for Discovery Learning is 89.50, while for the problem solving model it is 82.44. This proves that the Discovery Learning model is effective in improving science learning outcomes.
Improving science learning outcomes using the discovery learning model for elementary school students.	Education journal	From the research results, the activities of educators and students as measured using observation sheets showed that in cycle one, their activities were in the good category, while in cycle two, activities increased to the very good category. Student learning outcomes also improve at each stage; In cycle one the success indicator was not achieved, but in cycle two it increased and reached the success indicator. Therefore, it was concluded that

		the application of the Discovery Learning model was able to improve the learning outcomes of class V UPTD SDN 1 Bangkaloa.
The influence of problem based learning and discovery learning models on science learning outcomes.	Journal for lesson and learning studies	The aim of this research is to analyze the differences between problem-based learning and discovery learning models on science learning outcomes for class III elementary school. The data analysis technique used is descriptive and t-test. From the results of the t-test on students' science learning abilities, the significance level obtained was 0.219 (0.219 > 0.05). From the results of this research, it can be concluded that there is no significant differentiating power between class III science learning outcomes that apply the discovery learning model and those that apply the problem-based learning model.
Discovery learning improves science learning outcomes for fourth grade elementary school students	Journal for lesson and learning studies	This research was a PTK where the subjects were fourth grade students with a total of 17. Data was collected using a multiple choice test of 20 questions and student activity observation sheets. Analysis of learning outcomes data and observation of student activities was carried out using quantitative descriptive analysis methods, which calculated the percentage of student activities and the percentage of learning completion. Data was obtained based on two activity cycles, namely cycles I and II. The research results showed an increase; In cycle I, the percentage of student activity was 57% and the percentage of classical completion was 65%. In cycle II, the percentage of student activities increased by 71% and the percentage of classical completion by 82%. From the research results, it was concluded that the discovery learning model was able to improve grade IV science learning outcomes.
Discovery method in improving science	Educational science journal	This research uses PTK through a qualitative approach consisting of four

learning outcomes for fifth grade elementary school students.	processes: planning, implementing, observing, and reflecting. The research was carried out in two cycles. The research results showed that the actions taken influenced student learning outcomes, with the average score increasing from 54 in cycle I to 84 in cycle II. Proves the success of research activities in teaching science in elementary schools. Not only that, the discovery method also helps students improve their thinking skills through discovery, and encourages students to play an active role in teaching activities.

Based on the 5 articles that have been analyzed and reviewed, the researchers found several findings as follows:

1. Research has been found on the application of animated videos in science learning in elementary schools starting from 2019-2024.
2. The use of animated videos in science learning in elementary schools has been proven to improve students' learning outcomes, motivation, interests, activities and critical thinking abilities
3. The use of animated videos has been proven to have a positive effect on elementary science lessons, students can more easily master the science material presented by teachers using animated video media.

Discussion

Based on the results of a literature review from research by Farhan Aldino Santoso and Gamaliel Septian Airlanda, the learning model of discovery and critical thinking was chosen as a solution in assessing the achievement of student learning outcomes in skin science representation content. In the survey, the aftereffects based on the main introduction of the two exploration packages showed that the initial test and control package values varied, with the initial test values totaling 0.65 > 0.05 and the posttest values totaling 0.95 > 0.05. The fundamental test results show that the two groups (test and control groups) are the same. Not only that, the pretest-posttest test results all show a value above 0.05, which is concluded if the test and control packages are given consistently. The application of various models from the experimental and control classes thus significantly influences learning outcomes. From the evaluation of the learning outcomes of the test and control packages via the independent t test, a value of > 0.05 was obtained. This supports the theory that the application of the Discovery Learning model significantly influences 5th grade elementary school learning outcomes.

Research by Nuraeni Yulistiawati, Khoimatul, and Kiki Fatkhiyani aims to determine the use of models, student activities, and student learning outcomes through the Discovery

Learning model in science lessons in class V UPTD SDN 1 Bangkaloa. The observation stage was carried out during the teaching process in cycles I and II, looking at the activities of educators in using the Discovery Learning model through observation sheets.

Observation results show an increase in teacher activities by applying the Discovery Learning model. In cycle I, teacher activities received a score of 41 with a percentage of 79%, the category was good. However, teachers still have to adapt further to guide students through this model. In cycle II, teacher activities increased with a score of 49 and a percentage of 94%, the category is very good. In cycle II, educators and students are familiar with the Discovery Learning model; teachers understand the lesson plans better and students are ready to use new teaching models. Student activities in learning activities using the Discovery Learning model in cycle I received a percentage score of 75%, which indicates they are in the good category, but follow-up must be increased to reach a success indicator of 90%.

Research by Kristi Marjias Tuti showed that from the t test carried out on science learning outcomes, there were no significant differences between the experimental group that used Discovery Learning and the control group that used Problem-Based Learning. The significance value of 0.219 (0.219 > 0.05) shows that the science learning outcomes of the two groups do not differ significantly. The Problem-Based Learning model does not show significant differentiating power compared to the Discovery Learning model in grade 3 science lessons at SDN 01 Jelimpo and SDN 05 Angan Tembawang. In this research, students have followed various stages of the Problem-Based Learning and Discovery Learning models effectively.

Research conducted by PT Sudirama, I Gst Ngurah Japa, and L. Pt Yasmiartini Yasa shows that the use of the Discovery Learning model can improve science learning outcomes. This is due to various aspects, including Discovery Learning which is based on the perception of constructivism which emphasizes students creating their insights. This model provides opportunities for student-centered classroom activities and allows students to learn based on various sources, not just by the teacher. Teaching activities also involve all students' skills maximally in order to search and assess sequentially, critically and logically, where students are able to discover their insights, personalities and skills into manifestations of changes in their behavior.

Research conducted by Era Marlini shows that the application of the discovery method in teaching can improve learning outcomes and make students active in learning activities. This is because students often find problems that are relevant to their lives, which then motivates them to be active in carrying out experiments on teams. Through the adoption of this method, students begin to show a tendency to be active in learning. Furthermore, using the discovery method, educators are able to give appreciation to teams that get high scores. The increase in student learning outcomes can be seen from the average score in cycle I of 54 which increased in cycle II to 84. This is proof of success based on the implementation of research in science lessons in elementary schools.

Conclusion

The research results concluded that the application of the Discovery Learning method had positive changes in elementary school students' learning outcomes in science lessons. This method is also able to increase students' interest, motivation and critical thinking skills, so that their understanding of science material increases. So, it is hoped that educators will use interesting and innovative teaching media during the science teaching process, such as using the Discovery Learning method. This is expected to facilitate the delivery of material effectively and efficiently.

Bibliography

Asrizal, A. (2023). Effect Of Modules In Natural Science Learning On Students' Knowledge And Critical Thinking Skills: A Meta-Analysis. In The Journal Of Science Education Research (JPPIPA. Https://Doi.Org/10.29303/Jppipa.V9i6.2685

Bunyamin, M. (2023). IPAS Implementation In Elementary Schools: How Teachers Build Student Understanding. Edunesia. Https://Doi.Org/10.51276/Edu.V4i3.533

Demak, & Sofiana, I. (2017). The Influence Of Practical Learning Methods On The Collaboration Ability Of Class

Dr., D., & Kanchan, S. (2023). Literature Review. Https://Doi.Org/10.1017/9781009010054.005

Hannah, S. (2023). Designing The Literature Review For A Strong Contribution. Journal Of Decision Systems. Https://Doi.Org/10.1080/12460125.2023.2197704

Hilda, E.M. (2023). Building Emotional Connections: The Importance Of Teacher-Student Relationships In The Learning Process. Journal Of Learning Innovation In Schools. Https://Api.Semanticscholar.Org/Corpusid:266775844

Liudmyla, B. (2019). The Conception And Significance Of Facilitation In The Studies Of Foreign Scientists. Https://Doi.Org/10.17721/2415-3699-2019-10-103

Mairiza, KT, & Noviarita, H. (2023). Improving The Capability Of The Green Economy In Promoting The Development Of Tourism Villages To Realize Sustainable Development. Revenue: Journal Of Development Economics And Islamic Economics. Https://Api.Semanticscholar.Org/Corpusid:266545858

Murtopo, D., Winarno, W., & Atmojo, IRW (2023). Preparation Of HOTS-Based Learning Tools As Teacher Competency Development. Social, Humanities, And Educational Studies (SHES): Conference Series. Https://Api.Semanticscholar.Org/Corpusid:266772357

Rohandi, MMA (2017). Effectiveness Of C2C E-Commerce Media In Bandung (Case Study At Tokopedia.Com And Bukalapak.Com). Https://Api.Semanticscholar.Org/Corpusid:192430839

Sakdiah, H., & Reinita, R. (2019). The Influence Of The Use Of The Value Clarification Technique (Vct) Approach To The Pilot Method On Student Learning Outcomes In Pkn Learning In Primary Schools. Https://Api.Semanticscholar.Org/Corpusid:226663942

Sutrisno, S. (2010). Learning Sciences Historical Study Using A Dialogue Approach (Case Study At Kauman 1 Elementary School Class V Kemusu Boyolali). Https://Api.Semanticscholar.Org/Corpusid:192456956

Yuli, T., Filindity., Y., & Tilukay. (2023). The Effectiveness Of IPA (Natural Science) Laboratory Utilization In State Senior High Schools In Southwest Moluccas Regency. Intersections Between Particles And Nuclear Physics. Https://Doi.Org/10.1063/5.0110641