International Journal of Education and Learning Assessment
Vol. 01, No. 01, Tahun 2024, Hal. 13 – 22

# Analysis of the Effectiveness of Using YouTube Applications in Science Learning in Elementary Schools: A Systematic Literature Review

**Berlianti Eka Putri[1], Nurhaliza[2], Siti Anisa Putri[3]**
[1,2,3]*Universitas Muhammadiyah Kotabumi*
*Berli.2186206004@umko.ac.id*

**Article Info**

***Article history:***

Received February 10, 2024
Revised February 20, 2024
Accepted February 25, 2024

***Keywords:***

*Youtube Application, Science Learning, Elementary School, Literature Study*

**ABSTRACT**

Natural Sciences is one of the important subjects in elementary schools which aims to provide students with knowledge and understanding of natural phenomena and their interactions with humans. This research aims to evaluate the effectiveness of using the YouTube application in science learning in elementary schools through a systematic literature review. The method used in this research is Systematic Literature Review (SLR) with a database from Google Scholar. The article search process was carried out in three stages, namely initial identification with the keyword "YouTube application" which was limited by year, resulting in 4,440 articles. Next, the articles were filtered by adding the keywords "science learning" and "primary school" resulting in 208 and 164 articles. In the final stage, the articles were analyzed according to the inclusion criteria so that 7 articles were reviewed. Based on the analysis of previous research articles, it was concluded that the use of YouTube media has proven to be effective in learning science in elementary schools. Therefore, it is recommended for teachers to choose appropriate and interesting learning media, one of which is using YouTube.



***Corresponding Author:***

Author's name: Berlianti Eka Putri
Author's agency : Universitas Muhammadiyah Kotabumi
Email: *Berli.2186206004@umko.ac.id*

## Introduction

Natural Sciences is one of the important subjects in elementary schools which aims to provide students with knowledge and understanding of natural phenomena and their interactions with humans (Ilmi et al., 2022). Through interesting and interactive science learning, students are encouraged to become little explorers who not only understand science concepts but can also apply them in everyday life (Khoirun, 2022). Effective science learning can foster students' interest, critical thinking, and curiosity about natural phenomena (Anggun & Zaidatul, 2022). Therefore, it is hoped that science learning in elementary schools will take place effectively and interactively, and teachers will use interesting learning media.

However, in practice, teachers often face challenges in conveying complex and abstract science material to students, so that science learning becomes less interesting and meaningful for students (Miftahul et al., 2022). Chapter 27 paragraph (3) of the 1945 Constitution states

that every citizen has the right to education. However, in reality there are still many elementary schools in Indonesia that lack adequate infrastructure to support quality science learning (Depi et al., 2021), for example, limited science learning media. Therefore, teachers need to have the ability and provide appropriate learning media so that students can obtain maximum knowledge, one of which is by utilizing the YouTube application in learning.

YouTube is an online video platform that allows users to watch, upload and share videos (Marsia et al., 2023). In the current digital era, information and communication technology (ICT) such as YouTube has become an integral part of people's lives (Ambar & Gunawan, 2022). YouTube, as a popular video sharing platform, provides various kinds of educational video content that can be used as a learning tool in elementary schools, one of which is for Natural Sciences (Science) subjects (Evi et al., 2022).

The use of YouTube in science learning in elementary schools has several potentials, such as presenting science material in an interesting and interactive way, increasing students' interest in learning and motivation, enriching students' learning resources, and supporting student-centered learning (Alvira et al., 2022).Videos on YouTube can display science material with moving images and sound, making it easier for students to understand and remember than plain text (Khofifah & Parawansa, 2022). YouTube media has great potential to make elementary school students enthusiastic about learning science (Amalia et al., 2021)and YouTube provides a variety of science videos with varying formats and delivery styles (Mohammad et al., 2021), and Most elementary school students are familiar with YouTube (Estin, 2019). Research regarding YouTube application media is still limited, therefore researchers want to study it in depth.

This research aims to analyze the effectiveness of using YouTube applications in science learning in elementary schools through a systematic literature review. The literature review will discuss the concept and benefits of YouTube applications in learning, previous research examining the effectiveness of YouTube applications in science learning in elementary schools, and the methodology of a systematic literature review. It is hoped that the results of this SLR will provide a comprehensive picture of the potential and challenges of using YouTube in science learning, as well as provide recommendations for more effective learning practices.

## Method

In this research, researchers applied the Systematic Literature Review (SLR) method. This method is used to evaluate, identify, and interpret all research that is appropriate and relevant to the question based on a particular topic, particular research, or phenomenon in focus (Lanxin et al., 2021). The approach used is descriptive qualitative. The research stages carried out include: First, planning, namely identifying the general picture through reading scientific articles to determine questions that will form the basis of the literature study. Second, Implementation, namely the process of searching for references and sources for literature studies using the "Searching" feature on the Google Scholar web page. Third, Reporting, namely the stage where researchers sort the articles that have been obtained.

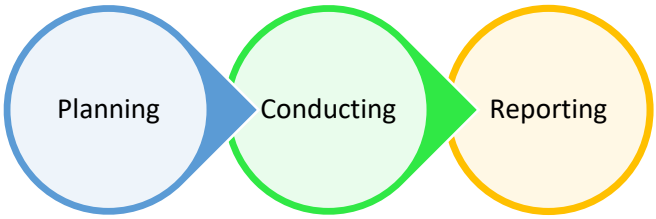


Figure 1. Chart of research stages in the systematic literature review method.

A literature search focused on the keyword "YouTube Application" yielded 4,440 articles. When limited to the time period from 2019 to 2023, the number of articles found decreases to 3,800 articles. With the addition of the second keyword, namely "Science Learning," the number of relevant articles shrank to 208 articles. Furthermore, when the keyword “elementary school” was added, the search results were further narrowed to 164 articles. Of these 164 articles, a data selection process and feasibility test were carried out to ensure relevance and quality, so that in the end 7 articles were obtained that truly met the desired objectives of the literature review. Feasibility testing is carried out by assessing aspects such as data reliability, suitability to the research context, and potential impact on educational practice. Thus, it is hoped that the 7 selected articles can provide in-depth and comprehensive insight into the topics studied.

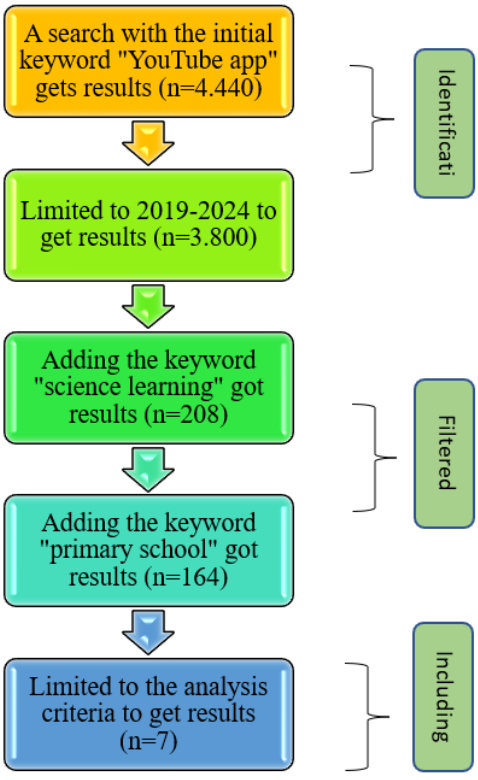


Figure 2. Inclusion chart for the use of YouTube applications in science learning in elementary school on the Google Scholar database.

## Research Result

Results Searching in the Google Scholar Database aims to clarify research results, both in graphical and tabular form.These graphs and tables not only help in visualizing data, but also make it easier for readers to understand and analyze the information presented.These results were obtained by searching for keywords containing research titles in the Google Scholar database. Articles regarding the use of YouTube applications in science learning in elementary schools have developed every year starting from 2019-2024. The following is publication data on the development of articles regarding the use of YouTube applications in science learning which is presented in the form.

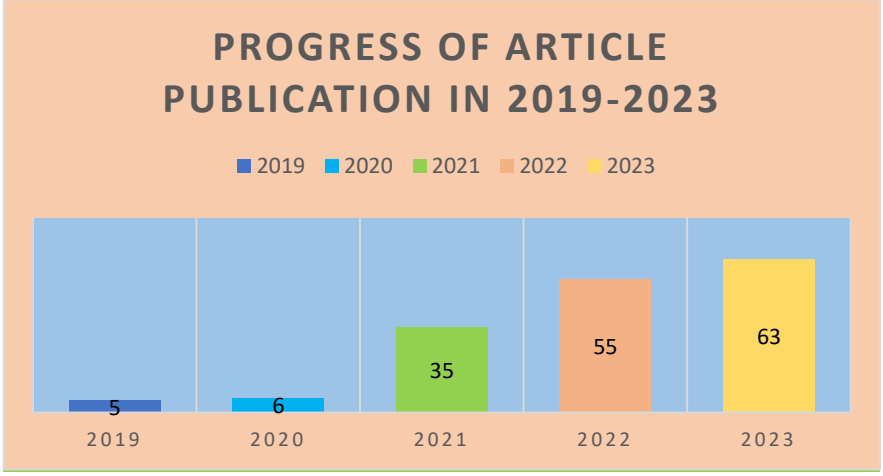


Diagram 1. Google Scholar publication data for 2019 – 2023 with keywords for using the YouTube application in science learning in elementary schools.

Based on Diagram 1, it can be seen that research related to the use of YouTube applications in science learning in elementary schools has increased. This can be seen from the number of articles published, where in 2019 there were 5 articles, then increased to 6 articles in 2020. In this article there will continue to be an increase from year to year, with 35 articles in 2021, 55 articles in 2022, and reach 63 articles in 2023. The following are the results of calculating the average articles published each year.

$$\tilde{x}=\frac{number\ of\ article}{number\ of\ years}$$

$$\tilde{x}=\frac{164}{5} = 32.8 \text{ Articles}$$

So, the average number of articles published in the Google Scholar database is rounded to 33 articles. The following are research results from the Google Scholar database which show variations in the number of articles cited each year. In the last six years, a total of 72 articles were cited. The number of articles cited is visualized in the following pie chart.

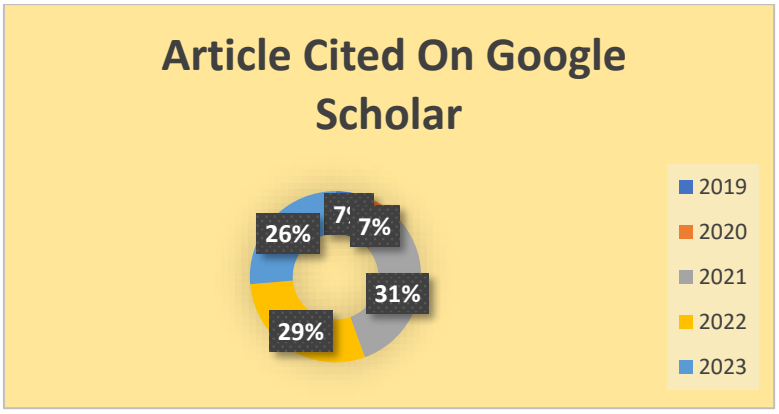


Diagram 2. Percentage data on the number of article citations for 2019-2023 in the Google Scholar database.

Based on the pie chart displayed, it can be seen that the percentage of article citations per year shows that in 2019 and 2020 there was the same percentage of citations, namely 7% Furthermore, in 2021 the number of cited articles increased to 31%, this number is the highest number of article citations found on Google Scholar related to research themes. Then in 2022 there will be 29% of articles cited and in 2023 articles cited will decrease to 26%.

Based on a search using the keyword "YouTube application," 4,440 articles were obtained from the Google Scholar database. The search then focused on articles within the last 5 years, namely from 2019 to 2023, which resulted in 3,800 articles. By adding the keyword "science learning," the number of articles found was reduced to 208 articles. After adding the keyword "elementary school," the search results shrank to 164 articles. Of the 164 articles, 7 articles were selected that met the inclusion criteria and were relevant to the topic of the effectiveness of using YouTube in science learning in elementary schools for review. The following are the results of a review of the 7 articles regarding the effectiveness of using the YouTube application in science learning in elementary schools.

Table 1. Results of review and analysis of articles related to the use of YouTube applications in science learning in elementary school.

| Article Title | Method | Research result |
|---|---|---|
| Youtube Media on Science Learning Results on Earth's Gravity Material for Class IV Elementary Schools (Aisyah et al., 2023) | This study is included in the quasi-experimental category with a posttest only control group design and adapts a quantitative approach. | ResultsThe analysis shows that the calculated t value from the experimental class post-test and control class post-test data on student learning outcomes has a significance of <0.05, with a sig (2-tailed) value of 0.019. This shows that there is a significant influence on the use of YouTube media on science learning outcomes in earth's gravity material in grade IV elementary schools. |

| | | |
|---|---|---|
| The Influence of Problem Based Learning with YouTube on Science Learning Motivation in Class VI Students (Bramasti et al., 2023) | This research uses a Classroom Action Research design. | Research shows that the application of the Problem Based Learning (PBL) method which utilizes YouTube videos as a learning medium can motivate students to study science in class VI of SD Negeri Plampang, especially in the subject of plants adapting to the environment in the 2022/2023 academic year. |
| The Influence of Using YouTube Social Media on Learning Outcomes in Natural Science Material Temperature and Heat in Class V Students at Mi Ma'arif NU 01 Samarinda (Hidayah et al., 2022) | This type of research uses quantitative (quasi-experimental). The design used is a two control group pretest-posttest design | Based on the results of the analysis, the hypothesis test in the t test shows that the posttest results of the independent t-test between the experimental group and the control group have a significance value of 0.018, which is smaller than 0.05. Therefore, it can be said that Ha is accepted and Ho is rejected. So there is an influence of the use of YouTube social media on science learning outcomes in temperature and heat material in class V MI Ma'arif NU 01 Samarinda. |
| The Influence of YouTube-Based Learning Media on Students' Science Learning Outcomes in Elementary Schools (Wulandari et al., 2021) | In this research, the Quasi Experimental Design method was used with the Nonequivalent pretest-posttest control-group research design. | Research shows that the average science learning result in the experimental class is 84.23, while the average post-test score in the control class is 79.92. Based on these data, it can be concluded that the experimental class has a higher average science learning outcome compared to the control class. This proves that there is an influence of YouTube-based learning media on the science learning outcomes of fifth grade elementary school students on theme 7 of heat material. |
| Utilization of YouTube Media in Learning Natural Science Material on the Solar System in Elementary/MI (Mahmudah et al., 2023) | The research method used is the library research method | The research results show that using YouTube as a learning medium, especially in science learning, can help students improve critical thinking skills such as solving problems, making decisions, and collaborating via social media. Material about the Solar System that is real but |

| | | |
|---|---|---|
| | | abstract is very suitable to be conveyed through video media |
| The Influence of Youtube Videos on Symbiosis Material on Motivation and Learning Outcomes for Class V at SDN Siasem 02 (Sari et.,al 2023) | This research uses quantitative experimental methods | The findings of this research point to that YouTube videos have a positive impact on motivation and learning outcomes. Based on the results of the t test in the experimental class and control class with a value of 2.637 which is greater than 0.05, YouTube videos have a positive effect on learning outcomes. |
| The Effectiveness of YouTube Videos as a Learning Resource on Cognitive Science Learning Outcomes for Class IV Elementary School Students (Fatmah & Atmojo, 2023) | This type of research is an experiment in the form of a Quasi Experimental Design Type Nonequivalent Control Group Design which uses an experimental class and a control class | The research results showed that the average post test score for the experimental class was 84.33, higher than the control class, namely 77.55. Based on data analysis, the calculated t value is 3.737, which is greater than the t table of 2.021. This proves that there is a significant difference in post-test results between the experimental class which uses YouTube video media and the control class which uses image media. |

Based on the analysis of the seven articles that have been reviewed, several research results were found as follows:

1. Research regarding the use of the YouTube application in elementary schools in the last five years (2019-2023) has been carried out by various researchers.
2. The use of YouTube media has proven to be effective in elementary schools, especially in science learning. With YouTube, students' learning outcomes, motivation and critical thinking abilities increase.
3. The use of YouTube media makes students more active and enthusiastic in learning science.

## Discussion

Based on research conducted by (Aisyah et al., 2023), it was found that the results of the analysis showed that the calculated t value from the experimental class post-test and control class post-test data on student learning outcomes had a significance of <0.05, with a sig (2-tailed) value of 0.019. This shows that there was a significant influence of the use of YouTube media on science learning outcomes on earth's gravity material in grade IV elementary schools. According to (Bramasti et al., 2023) also stated that the application of the Problem Based Learning (PBL) method which utilizes YouTube videos as learning media can increase motivation to learn science in class VI students at Plampang State Elementary School,

especially in the subject of plants adapting to the environment in the 2022/2023 academic year. Besides that, (Hidayah et al., 2022.)revealed that the research results showed that the experimental class that used YouTube social media was more effective compared to the control class that used the conventional learning model (lecture).

According to (Wulandari et al., 2021) in his research also stated that the experimental class had a higher average science learning outcome compared to the control class. This shows the influence of YouTube-based learning media on the science learning outcomes of fifth grade elementary school students on theme 7 of heat material. Research by (Mahmudah et al., 2023) supports these findings by stating that the use of YouTube as a learning medium, especially in science learning, can help students improve critical thinking skills such as solving problems, making decisions, and collaborating via social media (Sari et.,al 2023) also revealed that based on tests in the experimental class and control class with a value of 2.637 which is greater than 0.05, YouTube videos have a positive impact on science learning outcomes in elementary school (Fatmah & Atmojo, 2023) shows that there is a significant difference in post-test results between the experimental class which uses YouTube video media and the control class which uses image media.

Based on the expert opinions that have been presented, it can be concluded that the use of YouTube as a science learning medium in elementary schools has proven to be effective. This is reinforced by various studies which show that YouTube media can improve student learning outcomes and their critical thinking skills in science subjects. However, it is important to continue to use appropriate methods in the teaching and learning process. The use of YouTube media also has a positive impact on students' science learning outcomes, as can be seen from their increased enthusiasm in participating in the learning process.

## Conclusions

Based on the analysis of previous research articles, it can be concluded that the use of YouTube as a learning medium has proven to be effective in teaching science in elementary schools. YouTube media has a positive impact on elementary school students' science learning outcomes. Students become more enthusiastic and active in the learning process when using YouTube as media. Therefore, it is recommended that teachers choose appropriate and interesting media, one of which is using YouTube as a learning medium.

## Bibliography

Aisyah, F., Srinana Wardani, I., & Juniarso, T. (2023). Media Youtube Terhadap Hasil Belajar Ipa Materi Gravitasi Bumi Kelas Iv Sekolah Dasar. Edustream: Jurnal Pendidikan Dasar, 7(2), 197–207. Https://Doi.Org/10.26740/Eds.V7n2.P197-207

Alvira, O., Safitri., P., Ayu, H., & Tin, R. (2022). Pengaruh Penggunaan Media Video Untuk Meningkatkan Hasil Belajar Siswa Pada Pembelajaran Ips Di Sd. Journal On Education. Https://Doi.Org/10.31004/Joe.V5i1.672

Amalia, R., Wulandari., M., Masturi., F., & Fakhriyah. (2021). Dalam Pengaruh Media Pembelajaran Berbasis Youtube Terhadap Hasil Belajar Ipa Siswa Di Sekolah Dasar. Https://Doi.Org/10.31004/Edukatif.V3i6.1251

Ambar, A. & Gunawan. (2022). Pengaruh Literasi Digital Pada Media Online Youtube Terhadap Perilaku Generasi Z Dalam Mencari Informasi Kesetaraan Gender Pada Lingkup Mahasiswa. Bandung Conference Series Journalism. Https://Doi.Org/10.29313/Bcsj.V2i2.4345

Anggun, Z., & Zaidatul, M. (2022). Efektivitas Model Project Based Learning Dengan Pendekatan Inkuiri Berbasis Lingkungan Terhadap Hasil Belajar Ipa. Jurnal Ipa Dan Pembelajaran Ipa. Https://Doi.Org/10.24815/Jipi.V6i2.24440

Bramasti, J. R., Hendracipta, N., & Andriana, E. (2023). Pengaruh Pembelajaran Berbasis Masalah Dengan Youtube Terhadap Motivasi Belajar Ipa Pada Siswa Kelas Vi. Pendas : Jurnal Ilmiah Pendidikan Dasar, 8(2), 3709–3718. Https://Doi.Org/10.23969/Jp.V8i2.10232

Depi, E., R., M., Rusdinal, R., & Nurhizrah, G. (2021). Analysis Of Education Management Policies In The Standard Field Of Facilities And Infrastructure In Indonesian Elementary Schools. European Journal Of Education Studies. Https://Doi.Org/10.46827/Ejes.V8i6.3812

Estin, F. (2019). Media Pembelajaran Teknologi Digital Untuk Meningkatan Efektivitas Belajar Siswa Pada (Hlm. 21).

Evi, H., Setyarini., A., Mudiono., C., & Utama. (2022). Analisis Pentingnya Media Dalam Pembelajaran Untuk Meningkatkan Hasil Belajar Ipa Di Sekolah Dasar. Dalam Jurnal Ilmiah Global Education. Https://Doi.Org/10.55681/Jige.V3i2.390

Fatmah, R. A., & Atmojo, S. E. (2023). Efektivitas Video Youtube Sebagai Sumber Belajar Terhadap Hasil Belajar Kognitif"Ipa Siswa Kelas Iv Sekolah Dasar. 7.

Hidayah, M. U., Kadir, M., & Budianti, K. (T.T.). Pengaruh Penggunaan Media Sosial Youtube Terhadap Hasil Belajar Ilmu Pengetahuan Alam Materi Suhu Dan Kalor Pada Siswa Kelas V Di Mi Ma'arif Nu 01 Samarinda.

Ilmi, N., Rahmad., M., & Budiyanti. (2022). Upaya Meningkatkan Hasil Belajar Ipa Materi Perubahan Sifat Benda Menggunakan Metode Inkuiri. Prima Magistra. Https://Doi.Org/10.37478/Jpm.V3i3.1915

Khofifah, I. & Parawansa. (2022). Pelaksanaan Pembelajaran Daring Berbantuan Video Youtube Siswa Kelas 3 Sd. Https://Doi.Org/10.55904/Nautical.V1i1.97

Khoirun, N. (2022). Inovasi Pembelajaran Ipa Sd Dengan Pemanfaatan Media Kit Alat Sederhana Yang Berasal Dari Lingkungan Sekitar Untuk Meningkatkan Kompetensi Dan Kreativitas Siswa. Formosa Journal Of Science And Technology. Https://Doi.Org/10.55927/Fjst.V1i2.693

Lanxin, Y., He, Z., Haifeng, S., Xin, H., Xin, Z., Guoping, R., & Dong, S. (2021). Quality Assessment In Systematic Literature Reviews: A Software Engineering Perspective. Information & Software Technology. Https://Doi.Org/10.1016/J.Infsof.2020.106397

Mahmudah, A. F., Indriani, F. F., Aliyah, M., & Sulthoniyah, L. (2023). Pemanfaatan Media Youtube Dalam Pembelajaran Ipa Materi Tata Surya Di Sd/Mi. Limas Pendidikan Guru Madrasah Ibtidaiyah, 4(1), 21–34. Https://Doi.Org/10.19109/Limas_Pgmi.V4i1.14909

Marsia, S., Genggong., S., Utami, R., & Kamil. (2023). Penggunaan Youtube (Sebagai Media Pembelajaran (Studi Khalayak Mahasiswa Perpustakaan Dan Ilmu Informasi Fisip Universitas Halu Oleo. Jurnal Literasi Perpustakaan Dan Informasi Uho. Https://Doi.Org/10.52423/Jlpi.V2i1.24109

Miftahul, K., Diana, E., Handayani., F., & Prima, A. (2022a). Analisis Faktor-Faktor Kesulitan Belajar Materi Ipa Semester I Kelas V Sekolah Dasar. Dikdas Matappa. Https://Doi.Org/10.31100/Dikdas.V5i2.1594

Mohammad, F., Nugraha., A., Sya., S., Sunaryo., A., Husen., B., Hendrawan., A., & Purwanto. (2021). Dalam Implementasi Media Video Pembelajaran Pendidikan Lingkungan Hidup Terintegrasi Ipa Untuk Siswa Sekolah Dasar Pada Platform Youtube. Https://Doi.Org/10.35568/Naturalistic.V5i2b.1284

Wulandari, A. R., Masturi, M., & Fakhriyah, F. (2021). Pengaruh Media Pembelajaran Berbasis Youtube Terhadap Hasil Belajar Ipa Siswa Di Sekolah Dasar. Edukatif : Jurnal Ilmu Pendidikan, 3(6), 3779–3785. Https://Doi.Org/10.31004/Edukatif.V3i6.1251