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Effectiveness of Using Youtube Videos as a Guide for Science Practicals for Elementary School Teacher Candidates

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Abstract

Practical learning activities are an important part of forming the competence of prospective elementary school teacher students. However, in its implementation there are several obstacles such as limited time and facilities needed. As time goes by, technology continues to develop, YouTube is one application that can be used as an alternative to guide practical activities for prospective elementary school teacher students. Although YouTube is widely used for learning media, the effectiveness of using YouTube in this context still needs to be studied in depth, especially from the student's perspective. Therefore, this study uses a descriptive qualitative approach to describe students' experiences and perceptions of using YouTube as a guide for practical activities. The population in this study were students of the 4th semester Madrasah Ibtidaiyah Teacher Education (PGMI) study program, who took courses related to science practicums in the even semester of 2024/2025. The sampling technique used was accidental sampling, namely students who were present and willing to fill out the instrument were distributed. The instrument used in this study was a questionnaire. From the data obtained, students stated that they felt helped by YouTube as a guide for science practicums. The reason put forward by students was that YouTube could help them understand the concepts and steps in practical activities. In addition, students also stated that they still need additional sources of information to clarify and expand their understanding. Although it can help students, there are also difficulties and obstacles experienced by students. These difficulties and obstacles are network connections that are sometimes unstable and wasteful quota consumption. In addition to these 2 difficulties, there are also obstacles experienced by students, namely the use of standard language and several new vocabularies that can confuse students. Therefore, students stated that they need additional sources of information other than YouTube.

Keywords: *YouTube, Science Practicum, Pre-service Elementary Teachers, Learning Media, Online Learning*

Introduction

The development of science and technology from time to time has increased human needs, so that humans are required to be able to meet these needs. The needs demanded are innovation and effective solutions that are increasingly numerous, so that this encourages individuals and society to adapt and realize new breakthroughs in every field. One of them is learning media, learning media itself is usually called an aid in the world of education. The learning media that will be used must be in accordance with learning needs. (Maryanti et al, 2018). Researcher said that learning media has a broad scope, including material, humans or studies can build a condition so that students are able to get 3 aspects, namely, cognitive (knowledge), affective (attitude) and psychomotor (skills).

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This means that learning media is not just pictures and electronic devices that we often see, but the scope of learning media is very broad including the environment, humans and so on (Harefa et al, 2021). The integration of innovative tools and methodologies is very important in order to improve the educational experience, creating an engaging learning environment. The solution is the use of learning media. There are several opinions about learning media, one of which is the Ministry of National Education (2003), Media comes from the word "meduim" which means introduction or intermediary. states that the meaning of learning media is a teaching resource that is a combination of physical components (learning tools) and software (learning materials) (Khubayi et al, 2024). Good learning media is technology or tools that can be used to improve and support the learning process. The following are examples of learning media that can be used effectively such as multimedia: this media involves the use of sound, images, animations and other interactive elements to present information more interestingly and interactively. Third, identify the gap between the recent studies and the current empirical and theoretical aspect of your focused study. Normally, the introduction should summarize relevant research to provide context, and explain what other authors' findings, if any, are being challenged or extended. This could be written in one or two paragraphs.

Learning videos are a learning medium that presents a combination of audio and visuals, which contain educational messages, such as concepts, theories, principles, procedures and applications of knowledge, to facilitate understanding of learning materials. The use of videos also allows students to learn at their own pace, giving them the opportunity to repeat material that is difficult to understand until they have truly mastered it. The use of videos as a learning medium also contributes to improving students' understanding during the learning process. Various analyses show that videos are a very effective educational tool in supporting learning activities. If you want a more academic, concise, or relaxed version, I can help customize it too (Putri et al, 2022). Learning video media can provide concise and engaging content that helps in understanding and developing skills. This approach allows students to control their learning pace, making it a strategic tool in modern education YouTube (Sukmawati et al, 2024).

One of the most popular applications for adults and children is YouTube (Magfirah, 2021). In the scope of learning, YouTube can be used as a learning tool so that learning takes place in an interesting way and does not involve watching. The rapid development of technology and information directly certainly affects the field of education and the teaching and learning process (Wahyuni et al., 2024). The use of YouTube media by all groups, apart from being interested in its platform which combines text, audio and video, YouTube media also offers two-way communication (Ardiansyah et al, 2022). In addition to the advantages, there are also challenges in using YouTube as a learning medium, one of which is that the effectiveness of video learning is also influenced by the quality of the content and the ability of the facilitator to integrate the media properly (Dhitya et al, 2024). For example, poor video quality can lead to misunderstandings and confusion among students, thus hindering the learning process which should be effective and enjoyable. Despite these challenges, video learning media remains a valuable tool, especially when combined with effective strategies to reduce these barriers.

Nowadays, teenagers cannot be separated from social media in their daily lives (Rahmawati, 2023). Meanwhile, most students today are millennials who understand digital, therefore social media is often used via smartphone devices. The fact that smartphones and the internet are often used shows that the internet can be used as a learning medium (Anisa, 2022). Because the YouTube application provides a lot of educational content that is easily accessible at any time, so it can make it easier for students to find material flexibly. As a digital

platform, YouTube can be a learning medium as well as a source of education. On YouTube there are many video tutorials on playing musical instruments, public speaking tutorials, making handicrafts, introducing regional culture, practical guides and so on (Luhsasi et al, 2017). Apart from being a learning medium, YouTube also allows users to share videos online.

One of the factors that supports YouTube as a learning medium is because YouTube can provide real experiences, besides that YouTube can also be used as a branding medium for institutions or organizations, the largest and most popular online video sharing media website on the internet today, flexible and easy to access, there are many adequate video sources so that it can create learning motivation for students (Yudha, 2021). Wulandari explained that the YouTube platform has many advantages when applied to the learning process. Here are some of the advantages: 1) getting information about teaching materials, 2) providing discussion facilities in carrying out video reviews obtained from YouTube, 3) helping students to learn foreign languages, 4) making it easier for students to remember learning materials, and 5) can build attitudes and personalities of students. This opinion is in line with the purpose of using YouTube media, namely to create a conducive classroom atmosphere in order to create a pleasant environment in the learning process for students. In addition, on the other hand, there are also several disadvantages when using YouTube as a learning medium, one of which is that it requires a stable internet network or internet quota and sometimes negative video content also appears (Rahmasari, 2021).

There are several previous studies that highlight the use of YouTube as a learning medium (Febriana et al, 2024). Here are some opinions that highlight the use of YouTube as a learning medium: YouTube can be used as a learning medium to help convey messages (Pratiwi et al, 2020). Then that delivering material using audio-visual media can make the delivery of information clearer (Ode et al, 2023). In addition to the advantages and benefits obtained when using YouTube as a learning medium, stated in his thesis that YouTube requires a lot of quota and sometimes if the network is unstable it only makes the video playback longer. In addition, sometimes there are also some videos that have poor content quality, causing ambiguity in the delivery of the material and also its visuals (Hidayat, 2021).

One of the subjects that emphasizes media is science. The importance of science subjects for building critical and analytical thinking skills (Musyadad et al., 2019). And also in this learning, practical activities are often carried out. The existence of a science practicum guide is a strategic solution to the limited laboratory facilities in the PGSD study program (Nevrita et al., 2020). Practical activities aim to hone basic skills in the use of tools and materials, as well as in making measurements and observations (Arini et al, 2022). The practical method in learning provides students with the opportunity to directly explore and prove the material being studied through experiments (Suryaningsih, 2018). The study revealed that practical work allows students to learn science concepts directly through observations of natural phenomena, and helps them develop problem-solving skills through the process of scientific investigation (Fyfield et al, 2021).

In practical activities, teachers or lecturers usually use books as a guide. Practical guidebooks are supporting books that contain materials and a series of procedures used to make it easier for students to carry out practical activities. The availability of practical activity guidebooks can affect the success of learning, because guidebooks are used as benchmarks or guidelines for students in carrying out practical activities (Munawwarah et al, 2025). However, after the development of technology such as YouTube, educators took advantage of this as a guide. YouTube videos can be used by students to make it easier to understand the

theory before carrying out practical activities. In addition, the existence of YouTube as a learning medium aims to form analytical skills, observations and scientific problem solving needed in the scope of science learning (Setyawati et al., 2025). In addition, science subjects are also very important for developing thinking skills in order to understand science or implement natural science in daily activities (Perdana et al, 2025). From the research above, we know that the role of learning media is very important for science practicum activities. Therefore, the focus of this research is to find out whether the use of YouTube is effective as a support for understanding and implementing science practicum activities for prospective elementary school teachers. The results of this study are expected to provide new insights into the use of digital media in education, as well as improve the quality of practicum learning for students. The results of this study are also expected to be a reference for educators and educational institutions in integrating information technology into the curriculum, so that the teaching and learning process becomes more interactive and interesting. Thus, this research is expected to encourage innovation in teaching methods and wider use of digital media, as well as provide a positive contribution to the development of education in the current digital era.

Method

This research was conducted in April 2025 at the campus of the State Islamic Institute of Sorong. The study employed a descriptive qualitative approach, which is commonly used to explore and understand social phenomena in depth through the collection of non-numerical data (Furidha et al, 2023). This approach allows researchers to delve into the lived experiences, perceptions, and perspectives of participants, making it suitable for educational research where complex human behaviors are examined. The goal of the study was to provide a detailed and systematic description of students' views regarding the research topic. In this study, the researcher acted as a non-participant observer, meaning they did not interfere with or influence the setting or responses of the participants. In addition to observing, the researcher also took on the role of planner and data collector. Responsibilities included designing the research framework, preparing the research instruments, and managing the data collection process. The dual role ensured that the data gathered aligned closely with the objectives of the study and that the findings would be valid and relevant to the research questions.

The research instrument utilized in this study was a questionnaire consisting of both open-ended and close-ended questions. The open-ended questions enabled respondents to express their thoughts freely and provide detailed explanations related to the scores or choices they made, while the close-ended questions facilitated more structured responses that could be easily categorized. The use of a questionnaire was deemed effective for gathering data from a relatively large group of students within a limited timeframe (Romdona et al., 2025). It also allowed the researcher to capture both qualitative insights and consistent response patterns. Regarding the sampling technique, the researcher applied an accidental sampling method, also known as convenience sampling. This non-probability sampling technique involves selecting subjects who happen to be available and willing to participate during the data collection period. A total of 17 PGMI sixth-semester students served as the participants in this study. This technique was chosen due to its practicality and the accessibility of the target group at the time of the study, although the researcher remains aware of its limitations in terms of generalizability.

The data analysis process was conducted using a descriptive qualitative framework. After collecting the completed questionnaires, the researcher carefully reviewed and organized the data by categorizing responses into relevant themes and patterns. The analysis focused on interpreting the qualitative content to understand the perspectives of the students in depth. This process involved identifying recurring ideas, comparing responses, and drawing inferences that could contribute to a broader understanding of the phenomenon being studied. Through this approach, the researcher aimed to uncover meaningful insights that could inform future educational practices and studies.

Results

Based on the data obtained from the instruments distributed by researchers to 17 students from the results of this study, it shows that the presence of YouTube as a guide for science practicums is quite helpful for students in understanding the material. This is a positive response that of course can make it easier for students to understand the concept of practicums. In addition to being a media that can help students understand the concept of the material taught by lecturers, YouTube is also useful for students to provide a more realistic picture, so that students can follow the steps of the practicum clearly. In this study, the distribution of the questionnaire instrument was carried out on April 28, 2025, in the PGMI class semester 4. And the number of students who received the questionnaire instrument was 17 students. In the questionnaire instrument there are 8 statements with 5 answer options, with the following descriptions: (1). Strongly disagree, (2). Disagree, (3) Sufficient, (4). Agree, and (5). Strongly Agree. In addition to the answer options, there is also an empty column so that students can explain the reasons for choosing the answer option they chose.

The results obtained from the study on the first statement related to the level of suitability of the video with the material taught in class, there were 16 students who gave 3 different scores chosen by students. There were 7 students who gave a score of 3 (Enough) with 2 different reasons. 3 students wrote the reason "Sometimes the video does not match the material". And 5 students wrote the reason "In accordance with the material because the father searched according to the material discussed". Furthermore, there were 10 students who gave a score of 4 (Agree) with 2 different reasons. 9 students wrote the reason "it is in accordance with the material". 1 student wrote the reason "Yes, because it is easy to understand".

Furthermore, the second statement about Youtube can help prospective teacher students in understanding the concept of science practicums. There were 4 different scores chosen. Namely 2 students who gave a score of 2 (Disagree) with the reason "Disagree because I myself am not helped enough if I only rely on Youtube", 4 students who gave a score of 3 (Enough) with 2 different reasons. 2 students wrote "Yes, because science learning involves a lot of practice, so YouTube videos help a lot", and 2 others wrote "Because the explanation in the video is lacking". Furthermore, there were 6 students who gave a score of 4 (Agree) with the reason "Agree because the explanation from the YouTube video is clearer" and 5 students gave a score of 5 (Strongly agree) with the reason "Yes, it is very helpful because there are complete picture descriptions". Continued by the third statement about students feeling quite helped by YouTube videos. There are 4 different scores chosen. Namely 1 student who gave a score of 2 (Disagree) with the reason "Sometimes it takes up a lot of quota", 4 students who gave a score of 3 (Enough) with 2 different reasons. 2 students wrote: "Quite helped, but still have to look for other sources", and 2 other students wrote "Makes it easier to make

learning/research practices". Furthermore, there are 7 students who gave a score of 4 (Agree) with 3 different reasons. There are 5 students who wrote "YouTube videos can help students understand the material more easily". 1 student also wrote "Because it has many references" and 1 other student wrote "Yes, because when I watch it I can repeat it". Furthermore, there are 5 students who gave a score of 5 (Strongly agree) with 2 different reasons. 4 students wrote "Helpful with the clarity of the video", 1 other student wrote "Because YouTube can add ideas and references".

The fourth statement about the video is quite clear in explaining the steps of the science practicum in detail. There are 3 different scores given by students. 1 student gave a score of 2 (Disagree) with the reason "Sometimes it is not clear enough". 5 students gave a score of 3 (Enough) with the reason "Some are quite clear and some are clear". 9 students gave a score of 4 (Agree) with the reason "Because if the video is clear in explaining the steps it is easy to understand and comprehend". And 2 other students gave a score of 5 (Strongly Agree) with the reason "Very clear". Next is the fifth statement about students feeling the need to find additional sources other than YouTube to complete their understanding. There are 3 different scores chosen. 2 students gave a score of 3 (Enough) with the reason "To increase knowledge". Furthermore, 13 students gave a score of 4 (Agree) with 2 different reasons. 12 students wrote "Because there are many additional sources besides YouTube". And 1 student wrote the reason "Yes, because the videos given are sometimes boring". Furthermore, 3 students gave a score of 5 (Strongly agree) with 2 different reasons. 1 student wrote "Because so that students can deepen and broaden their horizons". 2 students wrote the reason "Because the videos provided are sometimes lacking in explanation".

The sixth statement is about the obstacles experienced by students when using YouTube as a guide for science practicums. There are 3 different scores given by students. 7 students gave a score of 2 (Disagree) with 3 different reasons, namely: 1 student wrote the reason "for now, there are no obstacles". 1 other student wrote "disagree, because there is wifi on campus, although it lags a little". and 5 students wrote "no because with YouTube the material is easier to understand". 6 students gave a score of 3 (Enough) with 3 different reasons. 4 students wrote "the obstacles often experienced by students are quotas and unstable internet networks". and 1 other student wrote "Although there are many useful sources for science practicum guides, they still need to be balanced with direct interaction". The next 4 students gave a score of 4 (Agree) with 3 different reasons. 2 students wrote "constrained by quota". 1 student wrote "maybe the obstacle is in the package and drowsiness". and 1 other student wrote "yes there is, sometimes the video is unclear and not appropriate".

Continued for the seventh statement about students having difficulty in replicating the experiment shown in the video. There are 3 different scores chosen. 7 students gave a score of 2 (Disagree) with 2 different reasons. Here are 2 reasons written by students who gave a score of 2 (Disagree) "No difficulty, because the video shown is appropriate. And the reason of other students "videos on YouTube have more detailed explanations and are easy to understand". Furthermore, there are 9 students who gave a score of 3 (Enough) with 3 different reasons. 1 student wrote the reason "Yes, because sometimes the video is intermittent due to the network", 2 students wrote "No" and 7 students wrote the reason "There are some experiments that are sometimes difficult to implement but there are also some experiments that I feel able to replicate". And 1 other student gave a score of 4 (Agree), with the reason "because I don't understand".

The eighth statement is about the difficulty in understanding the concept due to differences in language or delivery methods in YouTube videos. There are 3 different scores given by students. 7 students gave a score of 2 (Disagree) with 2 different reasons. 2 students wrote: "Not really because there are also many YouTubers from Indonesia". and 5 other students wrote "No difficulty". There are also 8 students who gave a score of 3 (Enough) with 3 different reasons. 2 students wrote "there are some languages that are not understood or even languages that we have just heard". 3 students wrote "No, everything is appropriate". And 3 other students wrote "Maybe the language used is too formal so it is difficult to understand". And 2 students gave a score of 4 with the reason "Agree, sometimes there are videos that are not clear in taking and the explanation is too fast".

Discussion

From the results of the questionnaire distributed to 17 students of the 4th semester elementary madrasah teacher education study program, various responses and scores were obtained. From the first statement regarding the level of suitability of the video with the material taught in class. Some of the students stated that the learning videos shown were sufficient to match the material taught. From the results of the study related to the level of suitability of the video with the material taught in class, it can be concluded that there is a suitability and a mismatch. This is very natural and very common. The results of the study obtained by the majority of students of the 4th semester elementary madrasah teacher education study program stated that the YouTube videos presented in class were in accordance with the material taught. Because with the presence of YouTube videos as a guide for practical activities, it can make it easier for students to understand the material. This statement is in line with the opinion of (Pratiwi et al, 2020) that YouTube is used as a learning medium to help convey messages. The media must be relevant to the material being taught so as not to hinder understanding. Although some students also stated that sometimes the videos shown did not match the material. But even so, the lecturer has tried to adjust the material presented with the video shown, we can see this effort from the role of the lecturer in selecting videos that are carried out when learning activities take place.

In addition, students stated that YouTube videos can help understand the concept of science practicums. This is because the video explanations are easy to understand, easy access for students and visualizations that provide direct practical experience for the majority of students. In addition to helping to facilitate understanding of the concept of practicums, students also feel helped because there are many references that are very helpful in explaining the steps of science practicum activities in detail. This opinion is in line with (Tris & Akhlis, 2019) who stated that there are benefits when using YouTube as a medium, namely, YouTube has many references that can be used to clarify understanding. Students also stated that when they did not understand the steps of the practicum, the video could be played repeatedly.

Although students stated that they were helped by YouTube as a guide for practicums, there were also students who stated that they were quite or even not helped. YouTube videos are quite helpful for carrying out practicum activities, but students still need other sources to clarify understanding. This opinion is also supported by the opinion of the majority of students in the fifth statement regarding students feeling the need to find additional sources other than YouTube to complete their understanding. The majority of students stated that the explanations in the YouTube videos were easy to understand, easy access for students and visualizations that provided direct practical experience for the majority of students. This

opinion was also expressed by (Ode et al, 2023) that delivering material using audio-visual media can make the delivery of information clearer. In addition, several other student opinions implied that there were limitations in the content of YouTube videos, which made students not fully understand the explanation. The limitations of this content can be a motivator for them to look for broader and deeper sources of information. Furthermore, students also expressed that the limitations of YouTube video content in conveying information comprehensively, especially in practical activities, require a deep understanding of scientific procedures and concepts.

Although YouTube videos have many benefits and can facilitate practical activities, there are also several obstacles experienced by students when using YouTube as a guide for science practicums. The obstacles often experienced by students are wasting quota and networks that are sometimes unstable. These two things are the main obstacles that often occur. An unstable connection causes the video displayed to be intermittent, which makes students feel bored and tired. This opinion was also expressed by (Hidayat, 2021). In his thesis that YouTube requires a lot of quota and sometimes if the network is unstable it only makes the video playback longer. In addition, sometimes there are also some videos that have poor content quality, causing ambiguity in the delivery of material and also its visuals. This will have an impact on students, so that students find it difficult when they are going to replicate the video. In addition to the obstacles in using YouTube videos as a guide for science practicums, both in terms of quota, network and even content quality, there are also other difficulties such as language. Some students argue that they sometimes do not understand some of the languages used to explain the material in YouTube videos. There are some languages used that are too formal so that they are sometimes difficult to understand. Therefore, no matter how much or how sophisticated the media used, students still need explanations from lecturers to clarify the material presented.

Conclusion

This study aims to determine the effectiveness of using YouTube as a media to guide practicums for prospective elementary school teachers. The results of this study indicate that the use of YouTube as a media can be useful for helping prospective elementary school teachers to more easily understand theoretical concepts or steps visually and concretely. In the YouTube application, there are many sources of information and references that can be used as a guide for practicum activities. By implementing YouTube as a learning medium, students feel that they have gained real experience in learning activities. In addition, students also gave a positive response because lecturers have innovated in learning by integrating educational technology through the use of educational software media and technology-based learning applications to increase the effectiveness of the teaching and learning process. However, there are several limitations in the application of this media, such as unstable internet networks and high data consumption by students when accessing online learning media. As a solution, lecturers can choose relevant videos and avoid long videos to be more efficient. This study shows that YouTube media can be an alternative effective practicum guide in the digital era. For further research, it is recommended to examine the use of other video platforms or compare the effectiveness of various digital media in elementary and higher education practices.

Acknowledgment

References

Anisa, Y. (2022). Peran Channel Youtube Sebagai Media Alternatif untuk Membantu Proses Pembelajaran Matematika dan Media Informasi pada Tingkat Perguruan Tinggi. Jurnal Pendidikan Matematika Raflesia, 7(1), 13-21. https://doi.org/10.33369/jpmr.v7i1.20966

Arini, N. K. M., & Darmayanti, N. W. S. (2022). Analisis kebutuhan guru terhadap panduan praktikum IPA. Jurnal Pendidikan Dan Pembelajaran Sains Indonesia (JPPSI), 5(1), 12-19. https://doi.org/10.23887/jppsi.v5i1.45463

Dhitya, G., & Setiyowati, A. J. (2024). Upaya Meningkatkan Motivasi Belajar Melalui Bimbingan Klasikal Dengan Media Audio Visual: Literatur Review. Jurnal Pembelajaran, Bimbingan, dan Pengelolaan Pendidikan, 4(7), 4-4. https://doi.org/10.17977/um065.v4.i7.2024.4

Furidha, B. W. (2023). Comprehension of the descriptive qualitative research method: A critical assessment of the literature. Acitya Wisesa: Journal Of Multidisciplinary Research, 1-8. https://doi.org/https://doi.org/10.56943/jmr.v2i4.443

Harefa, D., & La'ia, H. T. (2021). Media pembelajaran audio video terhadap kemampuan pemecahan masalah matematika siswa. Aksara: Jurnal Ilmu Pendidikan Nonformal, 7(2), 327-338. https://doi.org/10.37905/aksara.7.2.327-338.2021

Hidayat, A. (2021). *Persepsi Siswa Terhadap Penggunaan Youtube Sebagai Sumber Belajar Siswa Di Sman 1 Satui*. Universitas Lambung Mangkurat.

Fyfield, M., Henderson, M., & Phillips, M. (2021). Navigating four billion videos: teacher search strategies and the YouTube algorithm. Learning, Media and Technology, 46(1), 47-59. https://doi.org/10.1080/17439884.2020.1781890

Luhsasi, D. I., & Sadjiarto, A. (2017). Youtube: trobosan media pembelajaran ekonomi bagi mahasiswa. Jurnal Ekonomi Pendidikan Dan Kewirausahaan, 5(2), 219-229. https://doi.org/10.26740/jepk.v5n2.p219-229

Magfirah, N. (2021). Peranan video youtube sebagai alternatif media pembelajaran di masapa pandemi. Jurnal Riset dan Inovasi Pembelajaran, 1(2), 51-58. https://doi.org/10.51574/jrip.v1i2.29

Maryanti, S., & trie Kurniawan, D. (2018). Pengembangan media pembelajaran video animasi stop motion untuk pembelajaran biologi dengan aplikasi picpac. Jurnal Bioeduin, 8(1), 26-33. https://doi.org/10.15575/bioeduin.v8i1.2922

Munawwarah, M., & Cahyani, V. P. . (2025). Comparing The Effectiveness of Mind Mapping and Summarizing in Enhancing Student Learning Outcomes in Flipped Classroom Model . Jurnal Studi Guru Dan Pembelajaran, 8(1), 260–270. https://doi.org/10.30605/jsgp.8.1.2025.5552

Nevrita, N., Asikin, N., & Amelia, T. (2020). Analisis kompetensi TPACK pada media pembelajaran guru Biologi SMA. Jurnal Pendidikan Sains Indonesia (Indonesian Journal of Science Education), 8(2), 203-217. https://doi.org/10.24815/jpsi.v8i2.16709

Rahmawati, N. (2023). Pemanfaatan sosial media sebagai media pembelajaran bahasa Indonesia di perguruan tinggi. Jurnal Kajian dan Penelitian Umum, 1(2), 13-19. https://doi.org/10.47861/jkpu-nalanda.v1i2.149

Perdana, A. I., Sutiarso, S., & Triana, M. (2025). Pengaruh Model Problem Based Learning Terhadap Kemampuan Berpikir Kritis Matematis Siswa. Mandalika Mathematics and Educations Journal, 7(2), 660-673. https://doi.org/10.29303/jm.v7i2.7447

Ode, I., & Alfredo, R. (2023). Pemanfaatan Youtube Sebagai Penunjang Pembelajaran Daring Oleh Guru SMA Negeri 9 Ambon. Jurnal Ilmu Komunikasi Pattimura, 2(1), 306-319. https://doi.org/10.30598/jikpvol2iss1pp297-305

Pratiwi, B., & Hapsari, K. P. (2020). Kemampuan berpikir tingkat tinggi dalam pemanfaatan youtube sebagai media pembelajaran bahasa Indonesia. Jurnal Ilmiah Sekolah Dasar, 4(2), 282-289. https://doi.org/10.23887/jisd.v4i2.24238

Putri, V. M. (2022). Pengembangan Vidio Pembelajaran Fisika Sebagai Alternatif Media Pembelajaran Online Pada Materi Optik. UPEJ Unnes Physics Education Journal, 11(2), 17-26. https://doi.org/10.15294/upej.v12i2.61155

Rahmasari, H. (2020). Penggunaan media YouTube sebagai solusi media pembelajaran bahasa Arab di masa pandemi. Maharaat: Jurnal Pendidikan Bahasa Arab, 3(1), 23-41. https://doi.org/10.18196/mht.v3i1.11362

Romdona, S., Junista, S. S., & Gunawan, A. (2025). Teknik Pengumpulan Data. *Jurnal Ilmu Sosial Ekonomi Dan Politik*, *3*(1), 39–47. https://doi.org/https://doi.org/10.61787/taceee75

Khubayi, F. L., Ncisana, L., & Mtshali, T. I. (2024). Investigating the Effectiveness of using YouTube Videos as an Alternative Learning Media for Grade 11 Life Sciences Learners. E-Journal of Humanities, Arts and Social Sciences, 5(6), 1001-1014. http://dx.doi.org/10.38159/ehass.20245616

Setyawati, G. A. D., Asta Jaya, I. G. M., & Witraguna, K. Y. (2025). *Edusaintek: Jurnal Pendidikan, Sains dan Teknologi*. *12*(1), 273–288. https://doi.org/https://doi.org/10.47668/edusaintek.v12i1.1460

Febriana, A. R. K., Kariadi, M. T., & Asriyama, W. F. (2024). Improving the Students' Vocabulary Mastery through Youtube-based English Children Songs. Jurnal Vokasia, 4(1), 22-39. https://doi.org/10.20884/1.vokasia.2024.4.1.12142

Sukmawati, S., Sufyadi, S., Utama, A. H., & Mastur, M. (2024). Pemanfaatan Media Short Video Learning untuk Mendukung Pembelajaran Metode Self-Paced Learning. Journal of Education Research, 5(4), 6255-6265. https://doi.org/10.37985/jer.v5i4.1935

Suryaningsih, Y. (2017). Pembelajaran berbasis praktikum sebagai sarana siswa untuk berlatih menerapkan keterampilan proses sains dalam materi biologi. BIO EDUCATIO:(The Journal of Science and Biology Education), 2(2). https://doi.org/10.24014/konfigurasi.v1i2.4537

Wahyuni, W., Helmi, H., Irmawati, I., & Fitri, F. (2024). Efektivitas Penggunaan YouTube Sebagai Media Pembelajaran Matematika. Jurnal Konatif: Jurnal Ilmiah Pendidikan, 2(1), 1-14. https://doi.org/10.62203/jkjip.v2i1.21

Yudha, S. S. (2021). Manfaat Media Pembelajaraan Youtube Terhadap Capaian Kopetensi Mahasiswa. *Journal of Telenursing (JOTING)*, *3*, 538–545.https://doi.org/https://doi.org/10.31539/joting.v3i2.2561

Ardiansyah, M. A. M., & Nugraha, M. L. (2022, January). Analisis Pemanfaatan Media Pembelajaran Youtube Dalam Meningkatkan Pemahaman Konsep Matematika Peserta Didik. In Seminar Nasional Riset dan Inovasi Teknologi (SEMNAS RISTEK) (Vol. 6, No. 1). https://doi.org/10.30998/semnasristek.v6i1.5828