PPSDP International Journal of Education
Volume 2 (2) (Special Issue) 05-06 July 2023, 385-390
1st PPSDP International Conference on Educational Sciences (IConEds 2023)
E-ISSN 2829-5196, P-ISSN 2830-3229

Literature Review: The Technology Problems on YouTube as a Learning Media for Math Subjects at Elementary School

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Abstract: Technological developments have an important role in increasing the progress of the use of learning media in teaching practice, this is inseparable from its problems. The researcher aims to analyze the use of learning media, especially YouTube technology. Researchers discuss the use of YouTube video learning media, but no one has explained explicitly about the use of YouTube-based technology in learning Mathematics in Elementary Schools. This study used the literature review method by collecting articles from several EBSCO and Scopus databases with a time span of 2019-2023, as many as 6 articles were analyzed according to the keyword YouTube-based technology in learning mathematics. The results of the study were then analyzed and in accordance with the research as many as 6 articles. The results of the research show that the use of YouTube-based technology as a medium for learning is found at various levels of education that the researchers reviewed.

Keywords: Math, Technology in Learning, YouTube as Learning Media

A. Introduction

At the end of the 20th century and the beginning of the 21st century, there was a relationship between learning and information and communication technology (ICT), a subject that was widely studied in the late 20th and early 21st century, the aim was to answer educational problems and communications, which deal with topics innovative topics such as adolescents' perceptions of teachers in their education and the influences they follow in their schools with regard to social networks (Gil-Quintana et al., 2020). Technological developments affect various areas of life, especially in the field of education, education develops, starting from curriculum, models, strategies, and learning environments. Along with the times, there has been a renewal of technology aimed at quality education (Ambarwati & Kurniasih, 2021). The dynamics of increasingly rapid and complex technological development correlate with an increase in internet users. The Minister of Communication and Informatics announced that the number of internet users in Indonesia will increase by 11 percent per year in 2021 to 202.6 million from users of 266.9 million Indonesians, according to data from the Central Statistics Agency (Sari, 2021). Owning a device is commonplace for everyone and media is a thing that is

very important in the world of education because it is a tool for communicating or conveying educational messages (Hidayati et al., 2021).

Also, in the context of basic education, the use of technology is highly recommended, because the characteristics of elementary school students are actually still at the concrete operational level (Ramadhina & Rohman, 2022). Students still don't know how to think abstractly but need concrete or real objects (Ramadhina & Rohman, 2022). The existence of learning media in the learning process has a significant meaning. Given that so far, the results of learning values are still lacking (Baihaqi et al., 2020). The role of the media is to help students understand the material better. In addition, the learning environment can support student learning processes so that they attract more attention and encourage student learning motivation, learning materials are clearer and easier for students to understand, and students are able to manage learning objectives well, especially in elementary school mathematics learning (Putri & Citra, 2019). Education is one of the most important aspects that everyone must have to develop their talents and skills. Everyone has the same rights and opportunities to get a decent education. Based on the findings of researchers from direct observation and interviews with class teachers. These results indicate that teachers are aware that mathematics is often considered a boring subject and is disliked by some students. Mathematics is considered a complex and difficult subject, so students' basic knowledge is incomplete. Therefore, inability often causes boredom and laziness in students. Thus, information and communication technology are a solution to the problems faced by students in the learning process, especially elementary school mathematics. Therefore, it is recommended that teachers have sufficient information about learning media to make it easier for them to study the media themselves (Suwarto et al., 2021).

One of the digital media used in the learning process is YouTube videos. Using YouTube as a learning tool is one of the most popular choices in information and communication. Development of independence in the field of information and communication technology, through the use of YouTube which is used as a learning tool in elementary schools (Pratiwi & Puspito Hapsari, 2020). YouTube is currently one of the most popular video services on the internet. YouTube is currently the most visited website and currently has the most active users watching YouTube videos (Mahardika & Soewito, 2021). The choice of YouTube videos as a learning media has the advantage of being a good teaching resource for the current generation (Baihaqi et al., 2020). In today's all-digital era, YouTube videos are very suitable as learning media because they are close to students' daily lives and the information needed is very easy to obtain and find. In addition, the current generation is more comfortable watching videos than reading. Using YouTube as a learning tool helps deliver messages and respond to current information needs (Pratiwi & Puspito Hapsari, 2020).

YouTube can be used as an interesting and fun learning tool because it contains up-to-date educational content. Teachers can also repeatedly use YouTube videos if needed (Rahmayani et al., 2019). Using the right media and updating the media used facilitates the learning process to achieve the goals of math learning in elementary school. Using the right media and updating the media used facilitates the learning process to achieve learning goals (Risky, 2019). It's not wrong if YouTube videos can be used as learning media. In fact, even though the use of YouTube video media has been widespread, teachers still face many obstacles in using YouTube videos as learning media. The different conditions faced by top teachers can affect the quality of learning. Learning from the media is an important part of learning. In general, teachers face difficulties with technical problems related to downloading YouTube videos and teachers' ignorance of YouTube video media, difficulties in selecting relevant video content, difficulties with facilities such as electricity and unstable Wi-Fi network connections at school, and time difficulties, during school management. learning process and difficulties for students to remain positive while studying (Ramadhina & Rohman, 2022).

In addition, several previous studies have found that the biggest obstacle faced by teachers and students when using YouTube media is the technical factor in the form of electricity which helps computers and the internet work. Also in other research, the teacher's ability to make educational videos, video media, video language, use of time, and video objects is an obstacle in using video media. The next obstacle faced by teachers when using YouTube is the division of time, space, internet connection, and students (Baihaqi et al., 2020). The results of some of these studies indicate that not all teachers and students know how to use YouTube media properly, whereas, in the mathematics learning process, it is certainly expected that students have the ability to use YouTube-based technology, so in this study, the researcher aims to conduct a Literature Review to find out the Problems The use of youtube-based technology in elementary school mathematics learning.

B. Methods

This study uses the literature review research method with data collection techniques in the form of collecting source information from literature that is relevant to the topic of study, namely from the Google Scholar database, the EBSCO, and Scopus English language databases resulting in 731 articles that were searched based on subject, type of source, and publication, resulting in 17 articles from 2019-2023 by subject, source type, and publication, resulting in 17 articles. From a total of 17 articles, the authors made a selection based on integration into learning and produced 6 articles that met the author's criteria. The article search method begins by determining the disbursement terminology (*search term*), and keywords for learning elementary school mathematics based on YouTube.

C. Results and Discussion

Based on a 2019–2023 limited literature review search in the English language databases EBSCO and Scopus, 731 articles were searched based on subject, source type, and publication, resulting in 17 articles. From a total of 17 articles, the authors made a selection based on integration into learning and produced 6 articles that met the author's criteria.

Table 1. Summary of Literature Review

Code	Year	level School	Learning Methods/Models	Integration Engineering
1	2020	Junior High School	Model learning LMS (Learning Management System)	YouTube-based learning with the LMS model increases knowledge of digital and social networks that are most used by teenagers (students) and teachers in the process of learning and acquiring STEM competencies (Gil-Quintana et al., 2020).
2	2020	SD	Model *E-learning*	The lesson provided is about reading and presenting data using the Google Form application and then explaining the material using a YouTube-based tutorial video which also includes an evaluation (Arfianto et al., 2020).
3	2021	SMA	Method plan explanatory sequential design	This study uses a mixed method, quantitative research design using pre experimental design in the form of a one-shot case study. As a result, the level of effectiveness of using LEMKERTAS with the help of YouTube impressions is classified as high in increasing the activeness of learning Mathematics (Setiadi, 2021).
4	2023	University	Model *E-learning*	This research relies on the use of YouTube videos which are adopted and can offer different perspectives to students to learn with the aim of improving learning outcomes (Mohammed & Mohammed, 2023).
5	2022	Junior High School	Model Problem-Based Learning (PBL)	YouTube-assisted PBL presents real-world problems. These problems are outlined through student activity sheets, using YouTube as a learning medium. PBL is divided into 5 stages which include student orientation to problems, organizing students to learn, guiding individual and group investigations, and analyzing and evaluating problem-solving processes facilitated by YouTube media so that students' learning interest increases (Ajizah et al., 2022).
6	2021	University	Survey method	The survey method used can prove that the video search platform most used by the surveyed teachers is YouTube (95.3%). This platform far exceeds Vimeo (22,4%) and Educatable (16,5%) (Pattier, 2021).

Based on the results of the 6 articles reviewed, the researcher stated that the use of YouTube-based technology was integrated into the learning process at the educational level. Each article has different integration criteria and techniques in learning, both in terms of methods and models of school-level learning, whose goal is to use a YouTube-based application to deliver learning material with a structured learning model according to the times and updates according to the year the journal was published.

D. Conclusions

Based on the results of the 6 articles that the researchers reviewed, it can be concluded that the ability of teachers and students to use YouTube-based applications can achieve goals in the math learning process at every level of education, especially in elementary school

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