Jurnal Kreativitas Pendidikan Modern

Vol. 6, No. 2 April 2024 https://journalversa.com/s/index.php/jkpm

THE EFFECTIVENESS OF TIKTOK SHORT VIDEO MICRO-LEARNING IN LEARNING PHYSICS

Jaja Jamaludin[1], Muriati[2], Burhan[3]
[1,2,3]Universitas Bosowa
Email : jaja.jamaludin@universitasbosowa.ac.id

ABSTRAK: Artikel ini mengkaji integrasi teknologi ke dalam pembelajaran fisika sekolah menengah dan mengevaluasi efektivitas video pembelajaran mikro pendek Tiktok. Tujuan utama penelitian ini adalah untuk mengevaluasi dampak pemanfaatan teknologi informasi dengan video microlearning pendek Tiktok saat pembelajaran fisika di SMA Bakti Mulia terhadap materi dinamika gerak. Metode yang digunakan adalah penelitian kuantitatif dengan desain pre-test-post-test dengan menggunakan sampel siswa. Pengumpulan data dilakukan dengan menggunakan tes, observasi, dan angket untuk mengukur hasil belajar siswa, keaktifan belajar, dan sikap siswa terhadap pembelajaran berbasis teknologi informasi. Hasil penelitian menunjukkan bahwa hasil belajar kelas eksperimen belum memenuhi standar dan syarat homogenitas data sebelum dan sesudah tes. Apabila uji non parametrik dilanjutkan dengan p-value = 0,000 berarti signifikan, dimana p-value 0,30 maka hasil belajar kelas eksperimen meningkat. Artinya, hasil penelitian menunjukkan bahwa pemanfaatan video pendek microlearning ICT Tiktok dalam pembelajaran fisika di SMA Bakti Mulia merupakan bagian penting yang memberikan dampak positif. Hasil belajar siswa meningkat secara signifikan setelah mengikuti pembelajaran berbasis teknologi informasi. Siswa juga lebih menunjukkan partisipasi aktif dan sikap positif terhadap pembelajaran menggunakan teknologi informasi. Mengintegrasikan teknologi informasi ke dalam pembelajaran fisik SMA Bakti Mulia memberikan banyak manfaat. Siswa mempunyai akses yang lebih luas terhadap sumber belajar sehingga pembelajaran menjadi lebih menyenangkan dan interaktif, serta keterampilan teknologi siswa dikembangkan dengan menggunakan teknologi informasi menggunakan video microlearning pendek TikTok dalam pembelajaran. Namun penelitian ini juga mengidentifikasi sejumlah tantangan, seperti terbatasnya akses terhadap perangkat dan infrastruktur, serta kesenjangan teknologi di kalangan siswa.

Kata Kunci: Microlearning, Video Pendek Tiktok, Pembelajaran Berbasis Teknologi, Pembelajaran Fisika, Pembelajaran Efektif

ABSTRACT: *This article examines the integration of technology into secondary school physics learning and evaluates the effectiveness of short Tiktok micro-learning videos. The main objective of this study was to evaluate the impact of using information technology with short Tiktok microlearning videos while studying physics at Bakti Mulia High School on the dynamics of motion material. The method used is quantitative research with a pre-test-post-test design using a sample of students. Data collection was carried out using tests, observations, and questionnaires to measure student learning outcomes, learning activeness, and student attitudes towards information technology-*

based learning. The results showed that the learning outcomes of the experimental class did not meet the standards and requirements for data homogeneity before and after the test. If the non-parametric test is continued with a p-value = 0.000, it means it is significant, where the p-value is 0.30, the learning outcomes of the experimental class increase. That is, the results of the study show that the use of ICT Tiktok microlearning short videos in physics learning at Bakti Mulia High School is an important part that has a positive impact. Student learning outcomes increased significantly after participating in information technology-based learning. Students also show more active participation and positive attitudes towards learning using information technology. Integrating information technology into the physical learning of SMA Bakti Mulia offers many benefits. Students have wider access to learning resources that make learning more fun and interactive, and students' technology skills are developed using information technology using short TikTok microlearning videos in learning. However, this study also identified a number of challenges, such as limited access to devices and infrastructure, as well as technological gaps among students.

***Keywords**: Microlearning, Tiktok Short Videos, Technology-Based Learning, Physics Learning, Effective Learning*

INTRODUCTION

Technology in education is becoming an increasingly relevant topic in today's digital era. This article aims to explore the effectiveness of Tiktok Short Video microlearning at Bakti Mulia High School. This introduction will provide an overview of the topic and explain why it is important to use information technology using short Tiktok micro learning videos in Bakti Mulia High School learning. In addition, this introduction will also be the goal of this study. Modern ICT facilities must be provided by the government, non-governmental organizations (NGOs) and some private individuals who have the facilities to donate ICT facilities to schools. In addition, the government through the Ministry of Education must develop ICT policies that integrate ICT as part of the teaching and learning process. non-governmental organizations (NGOs) and some individuals can sponsor ICT equipment for schools. (Avwiri & Okwelle, 2010) The use of information technology in learning is very important. This introduction will explain why it is important to use information technology using short Tiktok micro learning videos during learning will form the aims of this study (Moncada & Reyes, 2021).

The use of information technology in learning is important for the following reasons. First, increase student engagement. Information technology can make learning more fun and interactive for students. The use of educational devices and applications such as computers, tablets, and educational games can make learning more fun and interesting for students. With higher participation, students become more active in the learning process and have greater motivation to learn. (Joshua O. Adeleke, 2018.) Second, it facilitates personalized learning. Information technology allows learning to be more personalized and tailored to the individual needs of students. Through technological devices, teachers can convey learning material according to students' understanding and interests. This increases learning efficiency and ensures that every student can reach their full potential. (Kola, 2020.) Third, increasing access to learning resources. Utilization of information technology with Tiktok short video microlearning in learning also provides access to broader learning resources. Through the internet, students can access various sources, such as learning materials, educational videos, digital libraries, and other sources of information. This helps students get more complete and in-depth information about the subjects they are studying. (Yunusa and Zumunta, 2016). In an increasingly developing digital era, the application of information technology with short Tiktok microlearning videos in learning helps students develop technology skills from an early age. They become familiar with the use of technology devices, understand the basics of technology, and learn to interact with educational software and applications. This will give them an edge to face future technological challenges. (Alfi Mufidah1, 2020.)

A study found that IT resources are not available in most science schools and most physics teachers do not use them, even some IT resources are available in physics education. Therefore, the government and NGOs should work hard to help provide ICT resources, including internet connectivity, for the effective teaching and learning of physics. Finally, it is advisable to conduct mass training of physics teachers from time to time to make effective use of IT resources. (Doguwa & Dele, 2021)

The integration of technology in education, in the context of the new normal, is very helpful and helps science teachers fill gaps and overcome the weaknesses of traditional teaching with digital teaching and learning tools. (Mann, 2014). Communication technology (ICT) is developing very rapidly. Today, there are modern and new perspectives on information and communication technology skills. Every civil society in

the world increasingly needs *Commuter Literacy, Technological Literacy and Digital Literacy*. IT professionals, advanced computer users, and basic computer users have increased significantly in recent years, but labor markets around the world still need them. Overall, higher education plays the most important role in preparing this type of employer. If before tertiary education we started to introduce it formally to produce IT-savvy people, then the results in terms of quality and quantity would be much better (Berati, 2013).

The purpose of this study was to evaluate the effect of Tiktok Short Video micro learning at Bakti Mulia High School. This study will analyze the impact of using information technology with short Tiktok microlearning videos on student learning outcomes, student engagement, and changes in student attitudes towards learning. Another goal is to find out the benefits that can be obtained from the use of information technology using short Tiktok micro learning videos during the learning process at Bakti Mulia High School, and to identify challenges and obstacles that may be encountered in its application. By understanding the importance of using information technology using short Tiktok microlearning videos in learning at Bakti Mulia High School and formulating the objectives of this research, we can better understand the impact of this research on students and the learning process at Bakti Mulia High School.

LITERATURE VIEW

Globally, the number of computers and internet connections in secondary schools has increased rapidly in recent years. This initiative includes an extensive training plan for all teachers on the use of ICT in teaching and learning subjects. The document also shows that although information and communication technology is generally available, it is underutilized and has not been integrated into the classroom. It has been found that teacher training is necessary for teachers to use ICT effectively in teaching and learning. (Afunde, 2015. Technological progress and globalization are accelerating. The rapid advancement of science and technology requires a skilled workforce to keep up with changing work environments. In a rapidly developing economy, knowledge becomes a strategic asset for economic development. For countries that take benefit from new ideas, innovations and technologies that develop in a knowledge-based economy, there will be a lot of wealth and opportunities for all citizens (Yunusa & Zumunta, 2018).

Increase creativity and productivity in the classroom by enabling teachers to integrate classroom use of technology into their lesson plans. Teaching and learning processes that incorporate technology are more effective than conventional methods. Indeed, the use of ICT tools and devices really helps prepare for more active learning, which is beneficial for both teachers and students, because students will be able to perform better when lessons are structured more interesting and interesting. In addition, it is believed that most subjects such as math, science, languages, arts and humanities are better studied. (Moncada & Reyes, 2021.)

Information and communication technology-based learning is divided into: (1) the computer as a learning medium, (2) the internet as a learning medium. ICT-based learning often uses hardware and software in its application, besides that it is also supported by the internet. The results of this study indicate that the ICT-based learning model has an effect on student learning outcomes and motivation. (Suratman et al., 2019). In a world moving towards digital communications, the role of IT in education is becoming increasingly important. Students who are not proficient in ICT are perceived as overwhelmed, lacking in knowledge, and have poor academic performance. This period is known as the Information Age with many communication channels such as Email, SMS, Internet Browsing, Social Media, Web Meetings, Viber, BBM, Google Talk, Skype. Web 2.0 technologies such as YouTube, blogs, Twitter and Facebook. (Shanmugam & Balakrishnan, 2019).

ICT has become, in a very short time, one of the basic elements of modern society. Many countries are now considering understanding IT and mastering basic IT concepts and skills as an important part of education, in addition to reading, writing, and numeracy. This review examines ICT in high schools and the changing needs of students and teachers if they are to function effectively in today's society. It defines the ICT curriculum for secondary schools and describes a teacher development support program for implementing the curriculum. (Adisa & Peniel, n.2012).

Bright et al., in 2012 found that there were five main findings related to integrated learning research and information technology. First, teachers of mathematics, science, and technology exhibit certain contradictions in their ontological and epistemological orientations towards the use of ICT. Some rely on Physics models and use ICT as a tool for knowledge transmission; others lean towards learning models, expressing an

awareness of the need for discovery through IT. Second, lecturers' understanding of IT integration is directed at teaching and learning technology, from physics to technology. Third, an ongoing process of “educational change”, in which gradual but substantive changes occur in the way students and teachers teach and learn. Fourth, there is no evidence that teachers use ICT to promote innovative and creative teaching; in fact, students seem to be more creative in using IT resources than teachers. Fifth, and finally, the instructor does not give ICT-based assignments but prioritizes understanding concepts. They provide exercises that require students to extract and reconstruct information from a computer without demonstrating understanding. When used in this way, ICT can really lead to table situations. From these observations, it can be concluded that ICT integration cannot be understood without exploring the ontological and epistemological orientations, as well as the theoretical orientations that play a role in the problem of this teaching and learning situation. On this basis, people, namely teachers and students, use IT to achieve the desired goals. Therefore, for better integration, more emphasis is placed on developing and sharing pedagogical experiences in using IT in the teaching and learning process. He recommended conducting a national research survey, based on probability sampling and focusing on pedagogical issues related to ICT integration in teaching and learning. (Morning et al., 2014)

One of the goals of education is the use or use of technology in the world of education and the learning process. The learning technology used today is the use of information and communication technology products and processes to solve educational problems and learning problems, which have many advantages or advantages. By utilizing the benefits of learning technology, appropriate and optimal use strategies can be formed in the learning process. The development of technology and communication is too fast, reaching all levels of society. In fact, the construction is expected to be faster than the original plan (Farah, 2020).

To be able to keep up with the pace of technological development, it is necessary to make changes in the field of education. People who grew up with technology have different learning needs and preferences than digital immigrants who didn't grow up with technology. He suggests that educators need to adapt their teaching methods to better engage digital natives (Limone et al., 2022). Explaining this according to the OECD report (2015) on Students, Computing and Learning: making the connection is that we

are not good enough in pedagogy to take advantage of technology and simply adding 21st century technology to 21st century teaching and learning practices will reduce the effectiveness of the practice. At the moment. However, the document presents a series of case studies that describe models of teaching, learning, and professional learning of prospective teachers with and through technology which are described as quality not necessarily quantity. (Bitch, 2017)

The increase in participant performance with a survey-based approach with the integration of information and technology outperforming the conventional approach was confirmed by a differential test. Therefore, an approach based on the integration of technology and information is considered effective in increasing the operational efficiency of scientific research. The challenges faced in implementing a survey-based approach by integrating information and technology are limited internet connectivity, so there is no internet connection at home, and limited memory space. This study reveals that factors contribute to the challenges associated with ICT teacher competency development. Most of the new teachers introduced IT as a light subject when they were in junior high school. They are not taught to integrate it into their teaching because it is an education system centered on the program set by the Ministry of Education. Teachers are also technophobic; They are afraid to use technology because it is foreign to them and therefore prefer to use what they know. The problem of limited funds is also a concern and the main factor hindering the development of teachers' IT skills. Teachers often have little time to complete demanding courses, thereby wasting time and neglecting the use of IT, not to mention the benefits that come with it. There are no proper IT resources for teachers to use. The results of this study provide good pedagogy and the best teaching methods, as well as ways to overcome and overcome the problems teachers face when using technology peacefully for the benefit of the majority of the population (Mafa & Govender, 2022)

The learning outcomes of students who use the interactive multimedia curriculum model are superior to those of students who use the LKS-assisted assignment method. The learning process by applying interactive multimedia learning models is more interesting, more interactive, so that teaching time can be shortened and the learning process can be done anywhere and anytime. Interactive multimedia learning allows students to carry out learning activities independently, not limited by space and time and

not too dependent on the teacher's presence as a source of student learning (Yami N, 2021).

RESEARCH METHODS

This study uses quantitative and qualitative methods in data collection. The research method uses the sampling method, data collection tools and data collection methods. This research is a semi-experimental study with a non-equivalent control group design. This research consists of an experimental class and a control class, where the effectiveness of learning in understanding the concept can be measured by determining the average normalized reinforcement. The statistical tests carried out in this study were the normality test, homogeneity test and hypothesis testing with two different average tests. Experimental motives arise because of the difficulty of controlling other variables in the social sciences, especially class. In such circumstances it is not possible to fully apply the principles of pure empirical research, because it is impossible to fully control the variables related to the research object, so that the research is carried out with the whole group. (Maciejewski, 2020) ipant devices (Libo-On et al., 2021).

RESULTS AND DISCUSSION

Results

First, the average posttest score of the experimental class is 68.27 which represents 78% of students, while the posttest score is 89.80 which represents 84% of students. Based on the results of the normality test it is known that the significance value of the pretest score on the learning outcomes of the experimental class is p-value = 0.200, so that the p-value > α, then based on the results: It was decided that the sample came from a normally distributed population. In the post test with a significance value of p-value = 0.008, then the p-value <; α, so that the existing sample does not come from a normally distributed population and a posttest homogeneity test is carried out.

The significance value of the p-value test = 0.013 so that the p-value <; α, so that the sample does not come from a homogeneous population. Because the learning outcomes of the experimental class using short Tiktok videos did not meet the standards and requirements for data homogeneity before and after testing, the test was continued with a non-parametric test with a p-value = 0.000 which was significant, where the p-

value was <0.000. α and this means that H0 is rejected, which means that the results after testing are better than the results before testing. N-gain learning outcomes in the experimental class with a normalized gain of 0.39. Compared with the confirmation index g> 0.30, the increase in learning success in the experimental class is high.

Discussion

In this discussion section, the results of the study and analysis of the collected data are presented. The effectiveness of information technology-based learning in elementary schools is evaluated based on the results of student achievement, student participation in learning and the level of student participation. This data is analyzed to find out how information technology contributes to student learning outcomes and increases their participation in the learning process.

The results of the data presentation show that based on the results of the study it can be concluded that there are differences in the learning outcomes of experimental class students using ICT-based information technology before and after being given treatment. Based on the results of the pre and post tests, it is known that the increase in learning outcomes in the experimental class is relatively low. Based on the results of descriptive statistical tests, the learning outcomes of the control class were obtained from the results of the pre-test and post-test. The average value of learning outcomes before the test and after the same class test is 68.27. which corresponds to 78%. Whereas 84% of students represent the average score before the exam, while the average score after the exam is 89.80.

Discussion on the benefits and challenges of information technology-based learning in elementary schools. Benefits include increased student motivation, ease of use of learning resources and development of technical skills. Challenges that can be faced at the same time include the limited availability of facilities and infrastructure as well as student technology deficits.

Regarding the influence of the ICT-based learning environment using short Tiktok videos on student learning motivation, various functions such as video, images, audio, text, graphics and other functions must be used as effectively as possible to be effective and efficient. Based on observations made during a survey of ICT-based learning environments using short Tiktok videos made in the PBM experimental class, researchers

found several problems related to efforts to increase student motivation using ICT-based media using short Tiktok videos.

CONCLUSION

The final section summarizes the results of the previous research and discussion. Based on the research results, it can be concluded about the effectiveness of Tiktok Short Video microlearning at Bakti Mulia High School. Important benefits have been observed, such as: Improved student learning outcomes and more active participation in learning. Challenges must also be considered to successfully apply information technology to learning using short Tiktok videos.

Learning media using short Tiktok videos is an important part of implementing the learning process, so teachers must know how to choose and plan media according to learning needs. Information technology is a means to support learning. Due to the ease of design and use, ICT-based media using short Tiktok videos can be an option for teachers. These resources are simple environments and the functions they contain are the same as those that can be used in other media such as interactive multimedia content. Learning Effectiveness Using Information Technology Using Short Tiktok Videos,

Utilization of the media would be better if special training was held on creative and innovative information technology design for trainers, which could be held under the MGMP, so that the training specifications could be branch specific. It is important to highlight the importance of integrating information technology in SMA Bakti Mulia learning and provide recommendations to increase its effectiveness. Recommendations could include training teachers to use information technology, increasing the availability of infrastructure and equipment, and developing curricula that integrate technology well.

REFERENCE

Adisa, by, & Peniel, O. (nd). *Correlation Between Information And Communication Technology (ICT) With Political Science Learning at Emmanuel Alayaande College of Education, Oyo*.

Avwiri, E., & Okwelle, P. (2010). *Application of Information and Communication Technology in Science Teaching and Learning at Rivers State Secondary Schools Funding for Higher Education in Nigeria View project Capacity building of*

teachers for the development of quality skills. View projects. https://www.researchgate.net/publication/276917658

Berati, G. (2013). The teaching and learning process of Information and Communication Technologies and Computer Science subjects in secondary schools in Albania in front of international facts and trends. *CSEDU 2013 - Proceedings of the 5th International Conference on Computer Supported Education*, 381–385. https://doi.org/10.5220/0004228203810385

Bright, B., Addam, K., Moyo, G., & Mtose, X. (2014). *Integrating Information and Communication Technology (ICT) into the teaching and learning process: The Case of Mathematics, Science and Technology Education in one Higher Education*.

Bitch, M. (n.d.). *DOCTOR OF PHILOSOPHY A Study on Implementing Strengthening Innovation and Practice in Secondary Education Initiative for the preparation of Science, Technology, English and Mathematics (STEM) Teachers in Kenya to integrate Information and Communication Technology (ICT) in Teaching and Learning*.

Kola, J. (n.d.). *Effective Teaching and Learning in Science Education through Information and Communication Technology [ICT]* (Vol. 2, Issue 5). www.iosrjournals.org www.iosrjournals.org43|Page

Libo-On, JT, Dolyn, M., & Doromal, D. (2021). Information Technology in Inquiry-Based Learning: An Alternative Approach to Improve Student Performance in Science. *International Journal of Advance Study and Research Work* , *4* (2), 16. https://doi.org/10.5281/zenodo.4564311

Limone, P., Di Fuccio, R., & Toto, GA (Eds.). (2022). *Psychology, Learning, Technology* (Vol. 1606). Springer International Publishing. https://doi.org/10.1007/978-3-031-15845-2

Mafa, RK, & Govender, DW (2022). Perceptions of In-Service Science Teachers on the Use of Communication Information Technology Devices in the Teaching and Learning Process in the COVID-19 Environment. *E-Journal of Humanities, Arts and Social Science*, 310–322. https://doi.org/10.38159/ehass.2022383

Mann, United States (2014). *Teacher Experience With Science ICT Integration Teacher Experience in Integrating Information and Communication Technology (ICT) into Teaching Practice*.

Moncada, PD, & Reyes, EP (nd). Integration of Information and Communication Technology (ICT) in Teacher Performance Teaching Elementary Science in the New Normal ISSN 2063-5346 Section A-Research paper Eur. In *Chemistry. The Bull* (Vol. 2023, Issue 4).

Shanmugam, K., & Balakrishnan, B. (2019). Motivation in science learning based on information communication and technology in tamil schools. *Indonesian Journal of Science Education*, *8* (1), 141–152. https://doi.org/10.15294/jpii.v8i1.16564

Suratman, A., Afyaman, D., & Rakhmasari, R. (2019). ICT-based learning on mathematics learning outcomes and students' motivation to learn mathematics. *Journal of Analysis*, *5* (1), 41–50. https://doi.org/10.15575/ja.v5i1.4828

Yunusa, M., & Zumunta, JD (nd). Emergence of Teaching Techniques: Implications for Pre-service Teacher Readiness to Integrate Information and Communication Technology in Teaching Basic Sciences. *Journal of Contemporary Educational Research African Scholars.*