

Artikel JTP_Septi et al_2023.pdf

by Perpustakaan Umsida

Submission date: 27-Apr-2024 07:59AM (UTC+0700)

Submission ID: 2363168653

File name: Artikel_JTP_Septi_et_al_2023.pdf (377.95K)

Word count: 8565

Character count: 48865



The Analysis of Students Needed in Digital Teaching Media

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Received:

Revised:

Accepted:

Abstract

Digital teaching media has become an integral part of education in the industrial era 4.0, but most schools have not facilitated it properly. This study aims to analyze students' needs for digital learning media. This study is a cross-sectional survey research, where 661 junior high school students in East Java were invited in filling out a digital teaching media needs survey questionnaire. Based on the analysis, it can be said that digital learning media is very important to be implemented at the education level.

Keywords:

Analysis, Students Needed,

Digital Teaching Media

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How to Cite: XXXXX. (2022). XXXX. *Jurnal Teknologi Pendidikan*, XX (x): x-xx.

INTRODUCTION

The development of multimedia has great potential in changing the way a person learns, obtains information, adapts information, and so on (Kuchai et al., 2022); (Rahmatullah, Mulyasa, Syahrani, Pongpalilu, & Putri, 2022). Technology also provides opportunities for educators to develop learning techniques to produce maximum results (Afikah, Rohaeti, & Jumadi, 2022). The current condition is urgent to make innovations and adaptations related to the use of available technology to support the learning process (Muñoz et al., 2022). Its practice requires educators as well as students or students to interact and transfer knowledge online (Lin, Wan, Gan, Chen, & Chao, 2022). Technology in learning will benefit all parties and support student learning goals ((Sanova, Bakar, Aldila, Kurniawan, & Aldila, 2022); (Susilawati, Lubis, Kesuma, & Pratama, 2022). These platforms can be used to support knowledge transfer supported by various discussion techniques and others (Deng, Duan, & Wibowo, 2023). Teacher creativity is needed to create interesting learning materials and facilities (Sailer, Schultz-Pernice, & Fischer, 2021). Therefore, technology plays an important role in the process of classroom learning activities carried out by students and teachers (Abel, Tondeur, & Sang, 2022); (Muthmainnah, Luis Cardoso, & Ahmed J. Obaid, 2023).

In the industry 4.0 area, information technology develops fast and learning resources are easy to obtain (Molino, Cortese, & Ghislieri, 2020); (Zizic, Mladineo, Gjeldum, & Celent, 2022). However, the role of teachers as educators cannot be replaced by technological advances, and this can be realized if teachers do not stop learning and developing themselves (Afikah et al., 2022); (Kotiash et al., 2022). The role of the teacher as an educator is to instill the basic values of character



development of students in life (Hidayat & Rozak, 2022); including the wise use of advances in information technology and as an inspiration for students. In the learning process, the teacher must build interactions that can meet the psychological needs of students (Rahmatullah et al., 2022). A teacher must be able to make students feel able and give appreciation for their learning outcomes (Kustyarini, Utami, & Koesmijati, 2020). Students are state assets that are the spearhead of the next generation. Therefore, the government should help them achieve the ideals of the nation. One effort is to motivate students to be able to learn optimally. So to be human intelligent and efficient for the nation and state (Abdulrahman et al., 2020).

The effective implementation of any information technology or information system depends on user acceptance (Duggineni, 2023). Users in the field of education are none other than educators and students (Cohen, Soffer, & Henderson, 2022). The implementation of information technology has been applied at various levels of education ranging from elementary, junior high and senior high school. Junior high school is the level of education after elementary school that requires learning media. Students in level of primary school, students usually begin to be taught to identify problems and solve simple problems while the level of secondary school students begin to be required to be able to identify problems that are a bit complicated (Zajuli et al., 2019). Learning at the junior high school level has begun to use learning media in every subject, one of which is science (Bulkani, Fatchurahman, Adella, & Setiawan, 2022); (Silalahi, Siallagan, Munthe, Herman, & Sihombing, 2022).

Measurement, weighing, counting, and other activities that serve as fundamental science must be thoroughly learned by pupils starting at the primary school level because there are numerous problems and activities in life that must be solved (Hamna & Ummah Bk, 2022). However, despite the teacher's best efforts, the students' learning experiences particularly those related to science have not yielded the expected improvements in IPA knowledge competency. This means that students or classes taught using learning media, students will have the opportunity to master the theory of lessons taught by science teachers compared to students or classes taught without using learning media. Related to this, every teacher should be able to use learning media to the demands of the curriculum. As is the case in the field of science studies in junior high school, if the learning media is by the demands of the curriculum, as is the case in the field of science studies in junior high school, and if the learning media cannot be provided by the school, then the subject teacher can make it himself in a simple form according to the ability of students to receive theoretical lessons related to the learning media used (Nadrah, 2023; Rahim et al., 2022).

In an academic context, learning media and ICT platforms are considered fundamental for their potential in knowledge creation (Akour & Alenezi, 2022); (Alismaiel, Cifuentes-Faura, & Al-Rahmi, 2022); (Silalahi et al., 2022). Collaboration is a distinctive and necessary approach for learning in any modality, and, in particular, for learning processes in virtual environments (Drey, 2022). Situationally shared or distributed cognition, social constructivism, activity theory and sociocultural approaches have demonstrated the benefits of a non-individualistic concept of learning, linked to cognitive and socio-emotional levels. Teachers can facilitate the creation of learning communities aligned with the

emerging educational paradigm of today's social and technological environment where participants can alternate between the roles of student, designer, and active contributor (Jafar, Mohd Yaakob, Awang, Mohamad Zain, & Kasim, 2022); (Muñoz et al., 2022) (Palioura & Dimoulas, 2022).

This condition creates a big demand for teachers and lecturers to develop the ability to master technology and learning media. Learning media is one of the factors that influence the learning process (Afikah et al., 2022). The role of learning media in the process of learning and teaching is very important to be carried out by educators nowadays. Learning media can be used to deliver messages to recipients and help explain something simpler (Mulyati, Indri Astuti, & Eny Ernawaty, 2022); (Rahim, Sari, Sundari, Aulia, & Fauza, 2022). The learning process will run effectively and efficiently if supporting media is available (Istyadji, Yulinda, Amalina, & Fahmi, 2022). One of the factors causing the low quality of learning is the maximum use of learning resources, both by teachers and students. Good learning media must be suitable for the stages of cognitive development of students. There are many learning media applied in the learning process, one of them is games. The game is a fun activity, inviting players to always try to be a winner in completing the game and going up to a higher level (Supandi & Senam, 2019).

Games are an omnipresent part of everyday life. The use of game concepts has increased at an astonishing rate and has inspired trends, such as gamification and serious games. Along with the growing popularity of the concept of games, various established research fields have utilized games, including human-computer interaction, information systems and psychology. Considering concepts from games is particularly relevant for the digital learning domain, which has been recognized by many high-impact publications and has grown in importance over the past decade. In digital learning environments, learners have to self-organize and monitor their learning process. The idea in this context is that the game element in digital learning supports learners to engage in their learning activities more regularly to achieve higher learning outcomes with the various digital innovations available today (Pařová & Vejačka, 2022); (Schöbel, Saqr, & Janson, 2021).

Digital innovation in modern education is ahead in the advanced era (Akour & Alenezi, 2022). In the modern era, schools will become laboratories for civilization and change supported by various learning aids in a practical bureaucratic atmosphere (Zubaidi & Ridlo, 2023). Materials are no longer in traditional forms with paper and blackboard; there will still be times when there will be an era of technological innovation, all midwives in science and change. In other words, in the school of the future, with technological developments, students can study anywhere, and teachers can become facilitators and moderators of learning without being tied to physical space (Zubaidi & Ridlo, 2023) (Sudarmo, Arifin, Jacob Pattiasina, Wirawan, & Aslan, 2021).

The advantages of using digital and electronic learning media are as follows: (1) Easily accessible; The use of digital media greatly facilitates teachers and students in accessing all information related to learning. Therefore, the knowledge of students will greatly develop with the existence of this digital media. In addition, the information provided by digital media can be accessed anytime and anywhere as long as there is an internet network. (2) Improve students' cognitive abilities and creativity; Digital and electronic media can help improve students' understanding

and absorption of the subject matter being studied. Learning media in digital form is stated to be able to improve students' cognitive abilities and creativity in the distance learning process. Therefore, the use of digital media is a solution for students in understanding the subject matter and increasing creativity in students. (3) The learning process becomes interesting and effective during the pandemic; For students the learning process becomes clear and interesting, more interactive, time and energy efficient, allows the learning process to be carried out anywhere and changes the teacher's role in a more positive and productive direction ((Alismaiel et al., 2022); (Antara & Dewantara, 2022) ;(Dinda Habba Kamaliya, Tukiran, & Sifak Indiana, 2022).

Facts that occur in schools in Indonesia in general about the use of digital-based learning media in which students can choose their educational programs, pedagogy, learning experiences and equipment in line with their specific needs and tendencies towards a learning curve. To create a conducive learning environment, an independent learning environment is needed. The use of the internet is a form of effort to improve digital technology, thus creating a big challenge, namely the application of digital technology to answer the challenges of learning today. One of them is the use of technology, for subjects related to technology, namely natural science. This is because the learning of Natural Sciences not only emphasizes the mastery of knowledge but also emphasizes the discovery process so that Natural Sciences can help students understand the surrounding nature. In addition, Natural Knowledge also has several aspects, namely products, processes, scientific attitudes, and applications. The application aspect is the application of abstract concepts in concrete forms in the form of technology (Ulyawati & Sugito, 2022).

Meanwhile, the results of relevant research on digital-based junior high school science learning media include (1) (Ernest & Putra M, 2023) concluded that the digital literacy skills of experimental class students were higher than the control class. As for the results of the independent t-test analysis, it shows that there is a difference in the digital literacy of junior high school students who use electronic modules based on Google Sites learning science. The use of technology in learning needs to be applied. Teachers must be able to integrate technology with learning instruments to bring out other students' abilities. One of them is with electronic modules to bring up digital literacy skills for students. This digital literacy will support students in seeking broader insights through the internet and this can be in line with improving student learning outcomes. In addition, learning instruments based on digital literacy also need to be developed. (2) according to (Hasanah & Sudira, 2021) explained that the science learning outcomes of Class VII A MTs YPUI Al-Ikhwan Topoyo students using visual-based interactive media can be said to be effective with several supporting factors in designing and designing visual media that is more prototaif and fun for students, where students who were bored with the lecture method delivered by the teacher when explaining the material, students can divert their attention from various directions so that what the teacher says is not absorbed properly. Therefore, to overcome this, researchers are trying to design teaching materials in the form of prototype images so that students can play an active role in solving some of the problems they find during the provision of teaching materials, and (3) research conducted by (Mete & Daud, 2023) based on

data analysis, research results, and discussion can be concluded that the use of used goods as learning media can ¹³prove students' science process skills.

The Urgency of Using Digital Learning Media is a learning media that works with digital data or can produce a digital image that can be processed, accessed, and distributed using digital devices. Examples of digital learning media are YouTube, e-learning, digital cartoons, and podcasts that are used to increase the effectiveness of the learning process. The use of appropriate learning media is very useful for increasing motivation in learning, allowing direct interaction, and allowing students to learn independently. Digital learning media aims to facilitate learning at ³⁶teaching activities. Therefore, the use of digital learning media is expected ³⁴to improve the quality of the learning process and outcomes. The reasons for the importance of using learning media are as follows: 1) Improve teachers' abilities, because teachers proactively learn various digital media by using various information contained in the media or learning resources. 2) Improve the quality of learning, through learning media teachers can improve the quality of their learning by developing media that is by the learning conditions that will be implemented to activate students in the learning process; 3) Meeting student needs, can be interpreted that learning media is needed to stimulate students' thoughts and emotions. Thus, increasing student attention. Simplify complex material, and increase the imagination of students' critical thinking power; 4) Meet the demands of the new paradigm, meaning that teachers are required to provide opportunities for students to actively experience and interpret their learning activities; 5) Meet long-term needs, it can be interpreted that the use of digital learning media provides learning experiences for teachers and students in exploring how to use the technology needed (Moonti & Gani, 2023).

This research aims to answer the question of how much digital learning media is needed as a tool to help the process of teaching subject matter to students. The goal is that through a systematic study, and the findings of experts, researchers can gain a fundamental understanding of the presence of digital media in education today and in the future. the future. By reviewing the literature cited by publications, we will find analysis and confirm the importance of digital learning media in the implementation of teaching and learning activities in the classroom.

METHODS

The research method used a cross-sectional survey with a population of junior high school students in East Java, a random sample obtained 661 students. The data collection technique used a questionnaire with 21 questions about the use of gadgets as a medium for junior high school science learning. The questionnaire instrument was validated by experts and declared valid. The data analysis technique uses quantitative descriptive ⁶analysis of criteria indicators. Descriptive analysis techniques are known as the first type of data analysis, known as the method with the least amount of effort. As such, it can be used for large volumes of data. Here data is used to perform data sets. This method summarizes the data to achieve a simple presentation as a result (Taherdoost, 2022). This study uses a statistical ¹⁷quency test used to calculate how much students need digital learning media. Microsoft Excel (2007) software was used to record data on the computer, and IBM

SPSS Statistics for Windows, Version 22.0. Armonk, NY: The IBM Corp. program package was used for statistical analysis (Özcan, Yeniçeri, & Çekiç, 2019).

RESULTS & DISCUSSION

Result

In the industrial era 4.0; the utilization of Android in science learning still raises pros and cons in some schools. The results of the response analysis regarding the utilization of Android as a learning media in schools can be seen in Table 1 and Figure 1.

Table 1. Criteria "Do you agree that there is an Android-based learning media in the learning process to help in mastering the material in science subjects?"

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	24	3.6	3.6	3.6
No	50	7.6	7.6	11.2
Yes	587	88.8	88.8	100.0
Total	661	100.0	100.0	

Figure 1. Criteria "If ever, your teacher often uses Android-based learning media in what subjects"? (You can choose more than 1 answer)

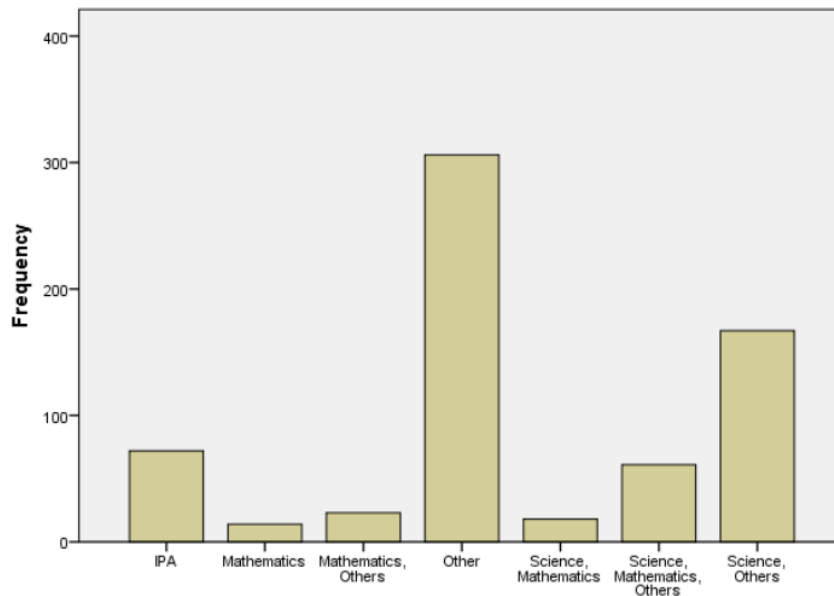


Table 1, it states that 88.8% of respondents (students from classes VII, VIII and IX) answered yes to the criterion "If Android-based learning media is held in the learning process to help in mastering the material in science subjects". Considering this answer is because students have received material from various subjects using Android-based learning media. This is shown in Figure 1. which explains that students chose other options. The respondents in this study were students belonging to Generation Z. Generation Z is a transitional generation after the millennial generation and before the alpha generation. This generation is the generation born between 1996-2011. Generation Z is also known as Gen Z, Internet Generation, Net Generation, or Generation I. A generation that was born amid a rapidly developing technological era. A generation that is very thick with the internet. No wonder this generation is very easy to get and absorb everything from the internet. They prefer to do almost everything online. Interest in reading in bookstores has shifted to e-books, shopping for tickets, studying, and everything else is done online, because they don't want to bother or spend time going to bookstores, markets, etc. It is the internet that plays a very important role in the survival of this generation. This generation is also the generation that is very active on social media such as Facebook, Twitter, Instagram, TikTok, etc (Wahyuni, Carolina, Puspita, & Effendi, 2023). For the Z generation, learning is more effective when using interactive learning, demonstration, and social networking, so increasing learning through technology adoption must remain the goal of educators (Sholihin, Sari, Yuniarti, & Ilyana, 2020). This is to the results of the student questionnaire where answering the "yes" option means that students agree that the use of android-based learning media in the learning process will make learning more enjoyable as shown in figure 2.

Figure 2. The use of Android-based learning media in the learning process will make learning more fun (not boring)

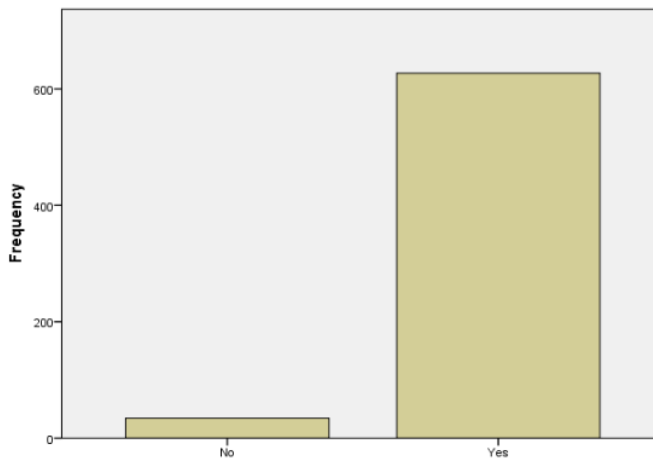


Table 2. Criteria "If so, how often do your teachers use Android-based learning media in the learning process?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	563	85.2	85.2	85.2
	Often	98	14.8	14.8	100.0
	Total	661	100.0	100.0	

Most respondents thought that using Android-based learning media was more fun. This opinion is based on the previous criteria, related to whether or not teachers have used android-based learning media in learning activities as evidenced by 563 respondents answering "sometimes" their teachers apply android-based learning media and only 98 respondents answering "often" their teachers apply android-based learning media in the teaching and learning process in the classroom as evidenced in table 2. Learning media tend to be used in various learning strategies and models in the classroom. The learning media used must be able to assist students in achieving the learning objectives of the learning objectives that the teacher has developed, for example increasing science literacy, critical thinking, and creative and innovative thinking. The learning media used must be interactive so that students are more active in learning. This Android-based learning media has succeeded in improving student understanding, student motivation, and student cognitive learning outcomes of the material, as well as student skills in mastering technology. That way, android-based learning media is more optimized (Darwin, Rafli, & Setiadi, 2022).

Table 3. Criteria "In this era, is the use of Smartphones a necessity and makes it easier for you to fulfil your needs, especially in learning."

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	17	2.6	2.6	2.6
	Yes	644	97.4	97.4	100.0
	Total	661	100.0	100.0	

Table 3. Above proves that a total of 644 respondents chose the "Yes" option for the criteria for using a Smartphone as a necessity and making it easier for you to fulfil your needs, especially in learning. Meanwhile, 17 other respondents chose the "no" option. This means that students as respondents in this study agree that in classroom learning activities they need smartphones to make it easier to understand the subject matter delivered by the teacher. The growing importance of digital learning media in science education has brought consideration to various mobile devices. These devices offer quick access to simulations, databases and other tools that are essential in the science classroom. All uses of smartphones suggest that they can facilitate learning in science education, either directly, by facilitating improved learning achievement or indirectly, by improving motivation or attitudes. Although many studies have been conducted on different types of smartphone use, it was found that the use of smartphones to support learners in improving learning outcomes and understanding the content of the subject matter through applications regarding educational content, videos and video conferencing (Ubben, Kremer, Heinicke, Marohn, & Heusler, 2023)

Figure 3. Criteria “How long have you been using your Android Smartphone? (Answer in Hours/Days)”

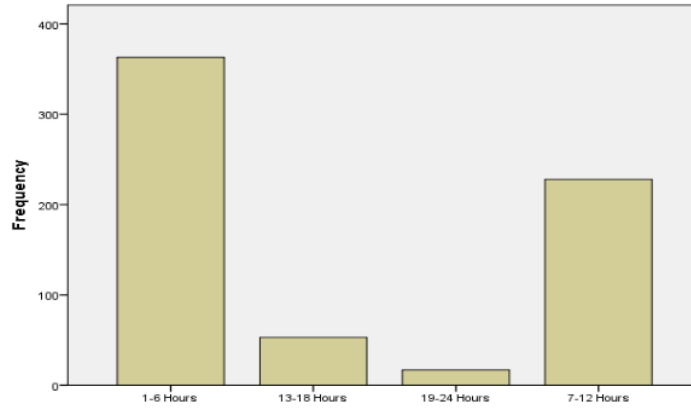
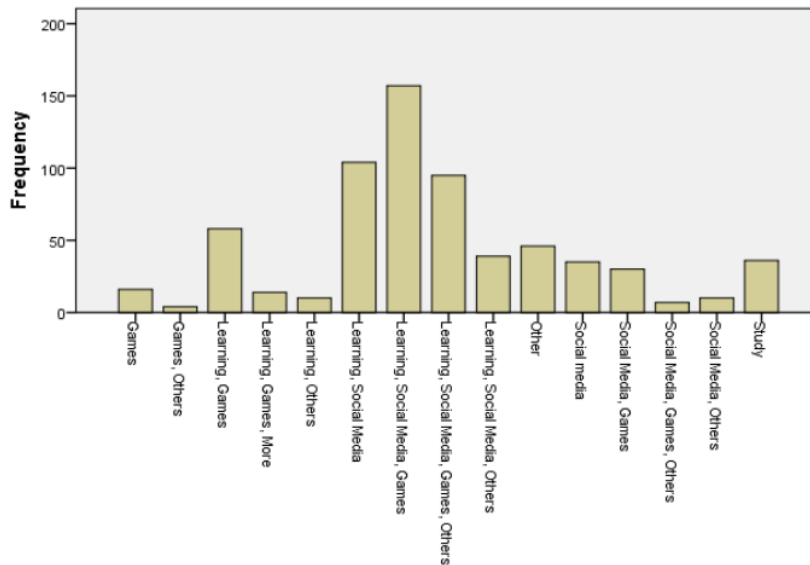


Figure 4. Criteria ”For what purposes do you often use Android Smartphones? (Can choose more than 1 answer)”



After observations in Figure 3. and Figure 4. it is stated that respondents (students) spend more of their time playing Android smartphone gadgets. Most of them play Android smartphone gadgets for 1-6 hours and 7-12 hours seen in picture

3. It can be concluded that they play Android smartphone gadgets for <12 hours. Most of what they do while playing Android smartphone gadgets is studying, social media and games seen in Figure 4. The proliferation of mobile technology provides a myriad of opportunities to support learning and performance both inside and outside the classroom. With mobile technology, the learning environment can go with the student to the field site, to the laboratory, and beyond. There is an opportunity to leverage mobile technology to better support students not only in the classroom but also as students navigate the context of their learning (Tuminah & Julis, 2022). Android-based learning media that has been developed are in the form of video, PowerPoint, and applications. This Android-based learning media has proven successful in increasing student understanding, student motivation, and student cognitive learning outcomes towards a material as well as student skills in mastering technology. In the use of Android-based learning media, there are also advantages and disadvantages. There are various uses of smartphones by study teachers such as smartphones as a tool for finding learning media, smartphones as a tool for accessing online learning media, and smartphones as a tool for developing learning media. **Given the high use of smartphones by students, teachers should facilitate students using smartphones. Its effectiveness and role (smartphones) have greater capabilities than laptops** (Rusmaniah, Ilhami, Nursahid, Jumriani, & Handy, 2023). Today's technology, especially mobile phones, is an alternative to people's needs in finding all sources of information or the latest news, completing homework assignments from teachers and relieving stress by watching social media videos or playing application games.

Discussion

With today's digital media and technologies, people can also create, work, share, socialize, research, play, collaborate, communicate and learn (Meyers, Erickson, & Small, 2013). Based on the views of the UNESCO International Commission about studying communications problems one of the roles of communication and information technology in the matter of education, i.e. transferring necessary information for growth, making and growing the personality and learning the skills, transferring necessary various and extended messages to help the learners in recognition, understanding and appreciating each other and unity in social obligations. Education is one of the major means through which one can obtain psycho-movement, unity sense, argument and self-confidence, and in this case, information technology has a major role. Technology has also been implemented in the field of education. Taking into account that education has been using technology to expand and develop various processes of the education system for more than a century, it is not surprising that the arrival of technology has increased the interest in acquiring knowledge by various methods of presenting knowledge. Nowadays, technology-based education can be obtained in various schools. Many schools have implemented schools with digital-based learning activities (Nur, Lakoro, & Lengkoan, 2023); (Wulansari, Sudiyanto, & Sumaryati, 2023); (Hamidi, Meshkat, Rezaee, & Jafari, 2011).

One example of technology being used in learning activities where most teachers have created digital-based learning media. The use of digital media is essential for increasing student interest and motivation, expanding their

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knowledge, and enhancing the quality of the learning process and learning outcomes (Muthmainnah et al., 2023). Integrating media and technology in learning requires teachers' proficiency in utilizing technology and expanding their knowledge of digital learning. The digital age requires educators' efforts to incorporate and develop technology into learning, particularly in Science Education (SE). The development of digital-based learning materials is a process aimed at creating materials or teaching resources that actively involve students in the teaching and learning process. Innovation in the use of digital learning media includes the development of interactive learning content, the use of mobile applications or specialized software, and the exploration of relevant social media or other online platforms (Fadhli, Suharyadi, Firdaus, & Bustari, 2023); (Nasution, Pulungan, & Harahap, 2023). Innovative teachers can create more engaging and motivating learning materials by utilizing digital media. They can produce instructional videos, multimedia presentations, interactive simulations, or digital learning games that align with the latest innovations in the use of digital learning media. To effectively implement digital learning media, teachers' creativity plays a vital role. With the virtually unlimited nature of digital learning resources, students have the opportunity to access a vast array of learning materials from anywhere, at any time, and with anyone. It opens the opportunity yet a challenge for teachers to continue innovating and being creative in their teaching (Kharismatunisa, 2023).

In making digital learning media, it is necessary to consider various things related to the purpose of media, target users, user interfaces, and learning materials. In this case, the purpose is to facilitate the teacher in delivering the material, creating a fun and interactive learning atmosphere, so that it can be fun and interactive so that it can be effective learning. The targets are students and teachers, so the interface presented must support the interests of both in order to attract interest and provide motivation to utilize this media. utilize this media. Material delivery can be done in a classroom that has a computer that can be accessed by students with by students accompanied by the teacher. Thus, it is expected to be effective and useful for learning in schools, especially for schools that have classes with a very large number of students in one class and schools that have a limited number of teachers. The effectiveness of learning programs is characterized by the following characteristics: (a) Successfully delivering students to achieve the specified instructional goals, (b) Providing an attractive learning experience, actively involving students to support achievement instructional objectives, and (c) Having facilities that support the teaching and learning process. The development of information technology has an impact on the increasingly effective learning process (Hidayati & Wuryandari, 2012); (Ariesta & Suwarno, 2019).

The learning process will become effective when each individual, who is involved in it, participates actively doing their respective duties. If students have direct experience with something to see, hold, feel, and perform physical activity, then students will have certain experiences that build their knowledge. Teachers also need to give students the chance to exploit themselves in learning so they have a good learning experience. Teachers can provide a medium of learning that stimulates the curiosity of students, so students have a strong curiosity for the

material presented to them and become active in learning. The main concept of learning is to give motivation, guidance and good example (Sartono, Sekarwangi, & Herwin, 2022). The learning does not just take notice of curriculum and the final result but also should pay attention to the teaching and learning process which is very important influence to produce the maximum student achievement (Inganah, Darmayanti, & Rizki, 2023); (Muthmah et al., 2023). The important components that will be there in learning are (1) Curriculum, the material to be taught, (2) Process, how the material is taught and (3) Product, the result of the learning process (Hidayati & Wuryandari, 2012). Therefore, learning media is included in the process component which is how the material is taught. All three components are very important in classroom learning activities as we know in the current era, learning media has been integrated with computer technology (Roemintoyo, Miyono, Murniati, & Budiarto, 2022).

The development of computer technology today is very supportive of the development of multimedia for learning media needs. Many application software can be used to create learning media such as Microsoft PowerPoint, Authorware, Lectora, Macromedia Flash / Adobe Flash, Virtual, Adobe Captivate, and others. In addition, the development of Internet services also provides many types of learning media that are ready to be downloaded and ready to use such as tutorial videos from Youtube and someone's blog. However, often the learning media that is ready to be downloaded and used does not match the purpose and material of learning that has been determined by the teacher. Therefore, the teacher must continue to provide media that is truly in line with the objectives and planned learning material. An important step in learning media is certainly to begin with the right media selection process based on the theory of learning media selection, for example, Anderson's theory of choosing learning media (Marpanaji, Mahali, & Putra, 2018). The right media can accelerate student understanding of the material presented or stimulate student thinking to improve student learning outcomes. Learning media occupies a strategic position in the learning process because it mediates knowledge information from teachers to students (Liu, 2022); (Wang, 2022). There are many benefits provided by learning media to students. Learning media that is currently trending and much favoured by students is digital learning media such as learning videos and others (Hadiwinata & Wibawa, 2021).

With digital technology-based learning media in education, today's educational landscape has altered for the better or improvements. Digital learning is a learning strategy that employs technology to fulfil the entire curriculum and allows students to learn quickly and rapidly (Mhlanga et al., 2022; Munoz et al., 2022). The digital classroom entirely focuses on teaching via the use of technology. Students use technological or internet-connected gadgets like laptops, tablets, Chromebooks, etc. Instead of taking notes on what the teacher has taught, most of the curriculum is delivered to students online through an engaging and interactive platform. Despite its many facets, education is fundamentally a kind of communication. The internet has resulted in the rise of new communication channels, which have extended the options for the transmission and access to educational information. These media and virtual venues serve as learning facilitators. Educational applications and websites are used in digital classrooms to assist students in improving their learning experience. Feedback loops and

technology are two critical components of a digital classroom. Feedback loops are essential for students to obtain real-time feedback from their teachers. Teachers can use feedback loops to provide feedback depending on many factors such as student, lesson, group, etc. PPTs, video presentations, e-learning methods, online training, and other digital approaches are increasingly used in the teaching-learning process (Haleem, Javaid, Qadri, & Suman, 2022). In other words, the widespread use of technology and the adoption of multimedia applications in the teaching and learning process in education is a result of its many benefits. Some of the benefits of multimedia application tools for teaching and learning are summarized as follows:

(1) The ability to transform abstract concepts into concrete content, (2) The ability to present large amounts of information in a limited time with less effort, (3) The ability to stimulate students' interest in learning and (4) Provide teachers with the ability to know where students are in learning (Abdulrahman et al., 2020) ((Kotiash et al., 2022); (Fitria, 2023); (Roemintoyo et al., 2022); (Septiana, 2022).

The understanding of the learning styles helped teachers choose appropriate teaching approaches to enhance teaching effectiveness, improve learning processes and achievement, and design proper curriculum and syllabi. There are some features concerning learning style (e.g., learning concentration time, observation, discussion, tasks, online communication, browsing resources, homework completion, academic performance, etc.). The best way to provide learning to learners was to determine learning styles through indicators, for example, personality, perception, ability and intelligence (Nguyen et al., 2022); (Pocaaan, 2022); (Pardamean, Suparyanto, Cenggoro, Sudigyo, & Anugrahana, 2022). Among the cardinal internal factors that affect the learning performance of students include age, gender, heredity, cognitive intelligence, and individual learning facilities (Fauziyah, Budayasa, & Juniati, 2022). Among the external factors that affect the learning performance of the students are the mode and method of instruction given by the teacher, qualification of the teacher, peer influence on the students, and the teacher-student ratio in a learning session (Gumasing & Castro, 2023). The Behaviorist Approach that eminent American psychologist J.B. Watson introduced in 1913 is one of the theories. This theory's principal focus is the concept of conditioning through imitation. We have found this approach to be particularly useful in class in numerous instances. During classroom interactions, we routinely recall that people tend to associate typical sounds and words through experience and objects. The next theory that can be associated with classroom teaching-learning is the Two Factor Theory which is also known as the Motivation-Hygiene Theory or Dual Factor Theory. This theory, to a great extent, is very useful in managing classroom behaviour. If the learners find interest in learning something, it becomes easy for the teachers to teach them. Another theory that can be well implemented in a teaching-learning scenario is Bruner's Theory of Development. This theory was proposed by the eminent cognitive psychologist Jerome Bruner in 1957 and proposed that the basic objective of education should be to promote intellectual development in the learners. The theory also proposed that when cognitive development is encouraged in the learner, it manifests in the form of his or her ability to think intellectually (Munna & Kalam, 2021). (Idris, Govindasamy, Nachiappan, & Bacotang, 2023)

CONCLUSION

The Digital-based learning media can be implemented and used in the process of teaching and learning activities with very good categories seen from the assessment of survey results in the field and digital media practitioners in the learning process. Suggestions that can be conveyed in the development of video media that has been done are to utilize digital media that can support the learning process. More innovative and creative in developing learning media to make students easier and more interested. The results of this study are used as a reference in conducting similar research as a reference for conducting better development research.

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ACKNOWLEDGEMENT

We would like to thank the Ministry of Research, Technology and Higher Education for funding this research. In addition, thanks to Universitas Muhammadiyah Sidoarjo, Universitas Lambung Mangkurat, and research partner schools that have contributed to this research.

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