

## SYSTEMATIC LITERATURE REVIEW

### THE INFLUENCA OF DIGITAL TECHNOLOGY ON EDUCATION

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#### ABSTRACT

Digital technology is developing rapidly and promoting changes in the socio-cultural views of the millennial generation, the development of technology gives impetus to the emergence of the era of globalization, which increasingly affects the opening of different foreign cultures around the world. Digital technology is a tool or system that no longer uses human labor, but the system works automatically with the help of a computer system or a computer-readable format. At the same time, learning is a process carried out by teachers, during which students acquire knowledge and information, mastery or skills and develop the character of the student. Learning with the help of digital technology has changed the perception of traditional learning, offering students new opportunities to develop skills and knowledge. Thanks to interactive learning methods, versatile media and the flexibility of distance learning, digital technology allows students to actively participate in the learning process.

**Keywords: Digital Technology; Change; Learning.**

#### ABSTRACT

*Digital technology is developing rapidly and is encouraging a change in the socio-cultural views of the millennial generation, the development of technology has given impetus to the emergence of the era of globalization, which is increasingly influencing the opening of different foreign cultures around the world. Digital technology is a tool or system that no longer uses human power to operate, instead the system operates automatically using a computer system or computer readable format. Learning, on the other hand, is a process conducted by teachers in which students acquire knowledge and information, mastery or skills, and the development of students' character. Learning with the help of digital technology has changed the perception of traditional learning, offering students new opportunities to develop skills and knowledge. Thanks to interactive learning methods, versatile media and the flexibility of distance learning, digital technology enables students to actively participate in the learning process.* Keywords: digital technology, change, learning. of.

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## INTRODUCTION

“Internet of Things” is a well-known term that marks the 4.0 era in terms of its tremendous development in all fields. The use of gadgets that are always connected to the internet and become community’s life. The current era 4.0 indirectly changes the perspective on 21st century education today. The change in the education of the 21st century today is not only the concept of how to teach, but much more important, namely the change of perspective on the concept of education itself.

Tecology is a result obtained from scientific experts in their research that can be enjoyed and used by all people without having to bother making it, therefore it can be concluded that with the development of technology, it must be utilized as well as possible to provide convenience for educational learning.

The application of technology in education must be utilized as well as possible, because education does not only deal with intellectual knowledge, but also contains real life values so that the help and cooperation of an educator and students is needed. Therefore, educators are needed who are able to provide insights to their students well so that they can be accepted and applied in everyday life.

Along with advancement of science and technology, it is not impossible that education and all systems will also undergo changes. For example, the learning process in the classrppm. Which used to be done face-to-face, can be done online such as utilizing digital technology, social media or other supporting media.

Educational goals can be achieved if teachers successfully teach creative thinking skills to students in a continuous learning process. Creative thinking involves the ability to generate original ideas, recognize new and unexpected relationships, and create unique and successful chains between seemingly unrelated elements.

Although previous studies have shown the importance of creative thinking, the implementation of learning in schools is still far from the above expectations, and learning still tends to inhibit the growth and development of student creativity. Examples of learning theory without contextual meaning for students. Therefore, you will be very limited in developing new ideas and will only follow the theories and concepts explained in the guidebook. Therefore learning needs to be modified with new concepts to provide space for students to find learning problems and solve them themselves.

Education cannot be separated from innovation, the two are interrelated. Educational innovation can be defined as something new for a group of people that aims to achieve certain goals or solve problems. (Rusdiana, 2014). Digital technology has opened the door to expanding the learning methods and media available to students, and thus, enabling improvements in learning effectiveness and efficiency. (Sakti, 2023).

The development of digital technology has affected changes in the education system, where the old education system was only based on books and fixated on memorization that was too monotonous. So that learning looks boring for students. Learning is mostly teacher-centered.

Learning today can utilize technology so that the use of students' senses can be done thoroughly, learning can accommodate a variety of student learning abilities so that learning outcomes will also increase (Tekege, 2017).

Information technology has integrated internet-based computer programs so that it can give rise to various kinds of e-books, e-learning, e-journals, e-dictionary, e-lab, and so on. Global requirements require that the world of education always adapt the development of technology to the efforts made to improve the quality of education, especially adaptations for its use in learning..

According to the development of technology, pedagogues must be able to optimize learning even with all the existing changes, because the rapid development of technology requires that pedagogues be able to manage and increase the potential of using information technology applied during learning. . This is in line with the research results, according to which the training and familiarization related to the use of technology can realize an academic atmosphere corresponding to the industrial revolution 4.0. (Setiawan, 2019).

Technical development must match human resources with the ability to use technology. For each person, having relevant skills in the digital world can be the key to participation in economic, social and cultural life. (Ambarwati, 2021).

The development of time implies change and growth in the quality of man. One of the hallmarks of the 21st century is 21st century skills. The development of these skills can be applied in various areas of life. One of the application goals of 21st century skills is information and communication technology as the main development model of industrial revolution 4.0. Information and communication technology is at the center of rapid economic changes. This is not entirely appropriate because human skills are necessary to create human capital in a skilled workforce. 21st century digital skills have building blocks that show someone has those skills. 21st century digital skills consist of the technical operation of technology, information management, communication, collaboration, creativity, critical thinking, problem solving and cooperation..

The development of digital technology in education must also be supported by all elements of education, namely the government, principals, teachers and the community. Educational policies that have been made must be obeyed by school officials, both principals and teachers. If the facilities and infrastructure have supported the learning, the most important thing is human resources, namely teachers. The teacher is the milestone in the success of the learning. Even the delivery of the teacher must use varied media or methods so that students do not feel bored. The development of digital technology can be developed by teachers in creating varied and educational learning content. (Ambarwati, 2021).

## RESEARCH METHODS

This research was designed using the concept of literature, that is, searching for research sources by collecting literature from several journals to facilitate searches related to the impact of digital technology on secondary school learning through a systematic literature review (SLR) method. This method is applied by identifying, reviewing, evaluating and interpreting all available studies.

The researchers reviewed the periodicals that correspond to the topic of the research discussion. The inspection process is carried out in a systematic and structured manner in each process, following predetermined steps. (Triandini, 2019).

The Systematic Literature Review technique is carried out with five steps, namely: (1) formulating the research discussion, (2) mapping and searching for articles that are in accordance with the proposed research title, (3) conducting inclusion or classification and evaluation by selecting articles that have been collected, (4) presenting and processing data, (5) interpreting the findings in the article and ending in drawing conclusions. (Nurfadilah, Fitriani, Putra, 2022).

## RESULTS AND DISCUSSION

In the problems that often occur in the world of education in Indonesia is the weak process of learning activities carried out in the classroom, in this case the existing learning process is only a theory carried out in the classroom environment and this learning aims to direct the ability of students to understand the material. whereas in theory the lack of material application in everyday life. In learning, the presence of an educator who has high potential in developing the potential of students and creativity, but the important role of current educational technology is very useful for learning from lower to upper levels such as learning media that can be used as a medium for fun learning, media can also help to find more complete insights, with technology also students can access learning materials anywhere and anytime. (Maritsa, Salsabila, Wafiq, Anindya, Ma'shum, 2021).

Technology is a mediating tool in the learning process and plays a major role in achieving learning objectives. It will benefit the students and make it easier for them to learn the various knowledge that they will learn. Changes in technological development in the digital era require several tools for the success of education in schools and universities. Technology in education continues to develop so there is a need for renewal in the education system, especially in terms of teaching methods. The presence of educational technology provides support and training to educators and learners, who have instant access to educational technology facilities in today's digital era and advance Islamic religious education in accordance with the times.

The last thing is the development of the so-called "cyber-education", which is a learning process carried out via the Internet. Another increasingly popular term is e-learning, which represents a learning model that uses technical media, especially the Internet. Learning technology continues to evolve over time. In the implementation of daily learning, one can often find the exploitation of technological developments in the world of education. The application of technology in educational activities is characterized by online learning, which with all its level variations has promoted changes in learning, carried out by learning through all electronic media such as audio/video, interactive television, CD (CD). and the internet. (Jamun, 2016).

However, remember that the application of multimedia or technology in learning will not be seen if its use is not in accordance with the set educational objectives. Therefore, instructional objectives should be used as a starting point for the use of technology. When technology is ignored, it is no longer a learning tool, but an obstacle to achieving goals effectively and efficiently. Technology can improve the quality and reach of education if used wisely for education and is very

important for economic well-being. Based on the opinions of the researchers of globalization flood, the education of the future will be more open and two-way, more versatile, more multidisciplinary and for current and competitive work productivity. (Nuryana, 2019).

**Table. 1 Research results on the influence of digital technology on education.**

No.	Title, Research, and Year of Research	Research Results
1.	Impact of Technology on Education (Yohannes Marryono Jamun 2018).	Towards the 21st century, UNESCO (1996) through the International Commission on Education for the 21st Century recommends sustainable (lifelong) education based on four pillars of learning, namely: learning to know, learning to do, learning to be and to be. learning to live together, to implement the four pillars of education in the current era of information globalization, teachers as students must manage and implement information and communication technology in education. In line with the development of information and communication technology itself, the definition of online learning can be wider, i.e. learning, the implementation of which is supported by technical services such as video-audio, smartphones, computers and the Internet. However, in daily life, we must not forget that technology also not only brings positive benefits, but also has negative effects, it is worth being careful, considering that nowadays it is often found everywhere, that many students and students often use technical devices as expected, so it can have a negative effect. Thus, the genesis of currently outstanding educational technology involves improving the fair distribution of educational opportunities, the quality/quality, importance and efficiency of education. The serious problems that continue to be experienced from basic education to higher education are just a few quality problems that can be solved by educational technology.
2.	The Influence of Technology in Education (Ana Maritsa, Unik Hanifah Salsabila, Muhammad Wafiq, Putri Rahma Anindya, Muhammad Azhar Ma'shum 2021).	Nowadays, the creation of technology is increasing, all parties in the educational world must be able to continue the continuous technological development

		<p>and participate in it. It can be seen that in the environment around us, technology strongly supports the availability of internet networks, which can also affect other developments, especially in the field of education. In education, the Internet is used as a support for media learning. The world of education must improve the progress of schools and education by making positive innovations, schools are not expected to lag behind the progress of technology by providing electronic devices that support learning. Good and perfect facilities make learning activities effective and efficient. Educational technology can be defined as a study or exercise through which students help the teaching and learning in schools in the form of the process of creating an educational work, which implies a process that uses existing and adequate technology to create a learning concept. Educational technology must use a system that is necessary to carry out processes that develop human needs or activity every day, in the process, educational technology needs several components, such as components and devices that are used in processing and performing data analysis and solving. problems existing problem. a problem The use of learning technology is one way to train the workforce in the future, as it is seen as an interesting field of school education. Technology and education in life is an integral part of human life from ancient times to the end of time. Education and technology have always developed together with the development of people on earth, education is a very important shaper of personality, but the development of a shaman must always undergo changes that are better and stronger than before..</p>
	<p>The Use of Technology in Education: Literature Analysis on Effectiveness and Implementation (Arief Yanto Rukmana, Supriandi, Rio Wirawan 2023).</p>	<p>Despite the many benefits, there are still challenges and unresolved issues in the application of technology in education, such as the digital divide, the need for teacher training, and concerns about</p>



		<p>over-reliance on technology. However, the overall impact of technology in education is undeniably positive, and its importance in modern education cannot be overstated. The use of technology in education has been a growing area of research, with numerous studies examining its effectiveness and implementation. Bibliometric analysis on this topic can be found in various studies that focus on different aspects of technology integration in education. Technology has revolutionized various aspects of modern society, including the field of education. The integration of technology in educational settings has the potential to enhance the learning experience, encourage student engagement, and facilitate access to diverse educational resources. With the rapid advancement of technology, educational institutions are increasingly adopting various digital tools and platforms to deliver instruction and support student learning. However, it is crucial to evaluate the effectiveness of technology in education and understand the challenges associated with its implementation to ensure successful integration.</p>
<p>4.</p>	<p>Participatory Learning and Action to Foster Quality of Life in the Family of Hope Group (Dadan Darmawan, Trian Pamungkas Alamsyah, Ila Rosmilawati 2020).</p>	<p>In general, qualitative descriptive methods are research using word and discourse research based on the philosophy of postpositivism, not based on numbers, where the key instrument is the researcher, the sampling of data sources is purposeful and snowball, the data analysis is inductive/qualitative. , and the research results emphasize what rather than generalization..</p>
<p>5.</p>	<p>The Role of Parents in Controlling Gadget Use in 11-Year-Old Children (Shella Tsyahidayatuladkia, Mohammad Kanzunnudin, Sekar Dwi Ardianti 2021).</p>	<p>The use of devices is never divided into positive and negative effects. Parents have an important role in raising children so that young people can be successful in the future. Parents also have a great responsibility to guide their children. The role of parents is very important in the education of primary school children in this era of online learning. Parents must pay attention to their children while studying so that</p>

		<p>children are motivated to study seriously and achieve maximum learning results. Some of the ways parents use to prevent children from becoming addicted to devices are the role of parents to be a good role model for children, set rules for device time, determine which applications children can use, parental supervision when children are given tools, balance. using devices with other activities, and the use of devices should not replace the role of parents as children's primary teachers..</p>
<p>6.</p>	<p>The Effect of Gadget Use on Student Achievement (Dian Kurniawati 2020).</p>	<p>The research findings and the discussion above show that the use of devices can affect student performance. We see an average of 56% of the effect. Students who often use devices experience addiction, students are addicted to games applications, social networks, Internet and other devices that students often use. In this case, the level of student activity will decrease. However, if students know how to use the device correctly, it can be used as a learning tool that supports their performance. Therefore, the role of parents and teachers in monitoring and limiting the correct use of devices is necessary. Parents and teachers can provide students with devices according to students' needs, for example, if students have difficulties in learning or do not understand the material they are learning, students can use the devices to search for learning information. of.</p>
<p>7.</p>	<p>The Impact of Digital Technology on Student Engagement in Secondary School Curriculum Activities (Sheila Michael, Abdul Said Ambotang 2020).</p>	<p>Roberts and Foehr's (2008) study of students' course activities indicated that new media such as Facebook, Twitter, etc. replaces or enhances other leisure activities, but does not take away from students' time. In other words, they argued that the amount of time students spend on social media is the same as usually spent on course activities and does not take away from their time spent on studying. However, there are a number of behavioral factors that can influence physical activity in adolescents. For example, increasing use of technology has been proposed to</p>



		reduce physical activity in the global community, including the United States..
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In the era of rapid digital and information development, it can advance science and technology. This development may soon have a positive or negative impact on society for all users of digital information technology. Technology has influenced and changed many of the daily habits of human life. If you do not keep up with technology, you will be left behind in terms of learning information. The speed of information received through proper filtering plays a role, creating opportunities to advance faster with time and skills. In addition, along with the development of communication science, information and communication have created new social habits in society and have a great impact on social life. Therefore, the speed of our reaction to new cultural practices should match the speed of our acceptance. Recent information shows that this mastery facilitates adaptation to advanced environments.

The development of technology in Indonesia in the field of education has been very pronounced, although Indonesia still needs a lot of support for technological development, Indonesia is a country that can be said to be a consumer country in the field of educational technology, but in the field of Indonesian papers it is already advanced. Technological developments in education are running very fast, changing from face-to-face learning to online learning and assignments given through Online media such as Zoom Meeting, Google Meet, E-Learning, and Wa group (Maritsa, 2020).

There are many kinds of technology in delivering to students in learning according to student targets or the teacher's ability to master the field of technology in learning, here are some forms of using technology in learning:

1. Audio: in the form of sound in delivering the material and is usually used in the form of voice messages or voice notes in each application, the effectiveness of audio in understanding material for students at an early age is less effective because early childhood is more interested in pictures and things that make the body move such as singing, dancing, exercising.
2. Visual: technological developments can be utilized in education to invite students to actively contribute to learning by displaying attractive visuals such as posters, pamphlets, and so on.
3. Audio Visual: information technology that includes sound and images simultaneously in its delivery, audio visual is considered to be very influential on education because it is very easy to understand and practice, audio as the content of the material and visual to see how to do it.

Humans have the ability to see the future. The human mind is capable of developing science and creating desired technology. Science and technology are closely related because without you technology has no new application and no one can enjoy the discoveries of science without technology. Today, the development and progress of science and technology is developing rapidly. The development of technology and information in the world is progressing very quickly, which is

characterized by the development of the information and technology industry, and the people of Indonesia is one of the countries involved in the development of electronic information media and technology information and transactions. (Article 1 paragraph 1 of the Law of the Republic of Indonesia 2008). *"Electronic data is electronic data, or a collection thereof, including but not limited to writings, audio images, maps, models, photographs, electronic data interchange (EDI), e-mail, telegram, telex, facsimile or the like, processed letters, characters, numbers, codes, symbols or perfosai that have meaning or can be understood by people of understanding."* and paragraph 3 which says: *"Information technology is the technology of collecting, preparing, storing, processing, reporting, analyzing and/or disseminating information"*.

On the one hand, we are happy that we can get information cheaply in a relatively short time, but on the other hand, it is very worrying, because such a development of science and technology can have a negative effect on the young generation, especially students. For example; with scientific and technological development and advances in the field of telecommunications, especially equipment. With the help of very good devices, students can access the world's information in a relatively short time and almost simultaneously and at a relatively low cost to help students access information related to the educational material provided in the school. as a result, student performance may increase. On the other hand, devices can have a negative impact on student learning outcomes. Students or children are "unique" individuals who have potential and are undergoing a process of development. In the development process, children need help, the nature and style of which is determined not by the teacher, but by the child himself, in a shared life with other people.

#### The Positive Influence of Technology on Education:

- a. Emergence of mass media, especially electronic media as a source of information and a center of education. Like the internet network, Lab. School computers and more. The effect of this is that the teacher is not the only source of information, so the students do not have to be too attached to the information taught by the teacher, but can also access the subject directly from the Internet, so the teacher here is . not only a teacher, but also a guide for the student who guides and monitors the progress of the study, so that students are not deceived about the use of information and communication resources in their studies.
- b. The emergence of new learning methods that make learning easier for students and teachers. With the development of technology, new methods appear that help students understand abstract material, because the material can be made abstract with the help of technology and easy for students to understand.
- c. The learning system does not have to be face-to-face. Until now, the learning process that we know is only the presence of face-to-face learning, but with the development of technology, the learning process does not have to bring students together with teachers, but can also use online mail services. and others.
- d. Availability of a technology-enabled data processing system for assessment results. In the past, when people looked at the data they received for analysis, it had to be manually analyzed and calculated. However, after the development of science and technology, all previously

manual and time-consuming tasks have become easy, namely with the help of technical resources such as computers, which can process data with the help of various programs.

- e. The need for training services can be quickly fulfilled. In the field of education, of course, there are many things and materials that must be prepared, one example is; Of course, multiplying test questions with the availability of a photocopier to meet the needs of multiple questions takes a long time to do by hand. But with the development of technology, everything can be done in just a short time. Especially in educational activities, several advantages can be obtained from the development of science and technology, namely: 1) Learning becomes more effective and interesting. 2) Can explain something difficult/complicated. 3) Speed up a long process. 4) Presents rare events. 5) Indicates events that are dangerous or unavailable.

### The Negative Effects of Technology on Education:

- a. Online learning can cause alienation and loss of teachers, or creation of individuals, because only one person can make a learning system. It is even possible that the ethics and discipline of students are difficult or difficult to observe and cultivate, so that little by little ethics and people, especially students, are drastically weakened and the basic nature of man as a social being crumbles.
- b. Students fear frequent access to the Internet, instead of really using information technology optimally, they get access to bad things like pornography, online games. Even cyber-relationship addiction is over-involvement with relationships created through the Internet (such as through chat rooms and virtual relationships) to the point of losing touch with real relationships.
- c. Students can suffer from information overload, meaning they find endless amounts of information online and spend hours gathering and organizing information, which can eventually lead to addiction, especially pornography, and can be expensive to treat.
- d. Students or university students become too dependent on the presence of cyberspace. This can happen if students are not skeptical and critical of new things. Moreover, in the context of cyberspace (internet), they have indirectly moved to the free world, so it is very important that the above two attitudes are a fortress or a filter of all available information sources. In addition, it is equally important that the attention of parents is also a very important part of the religious norm as the values of the basis of life. Crimes (Cybercrime).
- e. In the world of education, this can happen, for example, to prevent the theft of really confidential important documents or assets (documents related to final or state exams) from the educational environment through online media.
- f. It creates apathy in everyone, both students and teachers/faculty. This can be seen, for example, in virtual learning systems or online learning. If the education system does not meet students and teachers, it may happen that students are less active in the education system and the results cannot be maximized (Asmani, 2011: 149).

## CONCLUSIONS

The development of technology during this time has affected and changed the daily life of many people so that if we stutter now or do not know technology, we will lag behind in the management of information, training should also be carried out, e.g. an approach that matches the methods and trends of the current students, where we also have to see the impact of technology on student learning, where technology has both positive and negative effects.

The role of technology in education can also stimulate students' enthusiasm for learning, one of which is to provide appropriate and high-quality training opportunities that students can use. The development of education in the digital age is that the life of all people in this digital age can always be connected with technology.

Therefore, the role of society in this digital age is a challenge for society to be able to build a technology- and knowledge-based education that can meet the needs of society in this digital age. Digital technology is currently developing rapidly, so learning requires resources that must be aware of the ever-evolving technology.

The relevant resource is the teacher. The digital age affects the needs of society, including educational needs. In the digital age, education has begun to go beyond the limits of space. People no longer learn traditionally, but begin to move through the cyber world. (Efendi, 2019).

One digital content that can be used in learning is a digital book. Based on the research results, information was obtained that it is possible to present various media formats (multimedia) in digital books, such as text, images, videos, animations and user manuals, which bring the student's activities into the learning process. The content of the presented material can also be adapted to the learning objectives to achieve (Mawarni and Muhtadi, 2017).

In addition to the mass media, various online learning platforms have appeared. When developing digital technology, attention must be paid to the development of today's students, one of which is the existence of educational games that support the student in learning so that learning is not monotonous. In addition, it can help students to be more creative in solving problems. Science and technology are developing rapidly even today.

Development is not just years, months or days, but hours, even minutes or seconds, especially when it comes to information and communication technology supported by electronic technology. Its influence extends to various areas of life, including education. The rapid development of science and technology has both positive and negative effects.

The development of science and technology has a positive effect on the openness and dissemination of knowledge and information from the whole world and across the boundaries of space and time. A negative effect is the occurrence of such changes in behavior, ethics, norms, rules or morals of life, which contradict the ethics, norms, rules and morality of social life. In this situation, the role of education to develop positive effects and correct negative effects is very important.

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