THE INFLUENCE OF TECHNOLOGICAL INNOVATION IN EDUCATION

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ABSTRACT

In the ever-growing digital era, technological innovation has brought significant changes in various sectors, including education. This research aims to explore the influence of technology on learning and the role of artificial intelligence (AI) in supporting the educational process. Through literature analysis and case studies, we found that technology has changed traditional learning methods to be more interactive and personalized. The use of educational software, online learning platforms, and virtual collaboration tools has enriched students' learning experiences. Additionally, AI plays an important role in providing learning tailored to individual needs, through data analysis and machine learning. The research results show that the application of technology and AI in education not only increases accessibility and flexibility, but is also able to increase the effectiveness of learning. However, challenges such as the digital divide and infrastructure readiness still need to be addressed to ensure that the benefits of technology can be felt equally. This research concludes that technological innovation, especially AI, has great potential in shaping a more inclusive and adaptive educational future.

Keywords: Technology, Innovation, Education, AI

INTRODUCTION

Education cannot be separated from innovation, the two are interrelated. Educational innovation can be interpreted as something new for a person or group of people that aims to achieve certain goals or solve problems. Educational innovation is expected to have a positive impact on society to develop skills in the economic, social and other fields.

Technological advances must be balanced with skilled human resources when using this technology. Empowering individuals with relevant skills in the digital world can be key to participating in the economic, social and cultural life of their country now and in the future. We are currently entering the era of the industrial revolution where technological development is experiencing very rapid progress as the gateway to the arrival of the industrial revolution 4.0.

The rapid development of technology has brought major changes in areas of life, including education. The development of digital technology has influenced changes in the education system, where the previous education system only focused on books and was fixated on rote memorization which was too monotonous. So learning looks boring for students. Learning is mostly teacher-centered. Today's learning can utilize technology so that students' senses can be used holistically, learning can accommodate

students' various learning abilities so that learning outcomes will also improve. (Ambarwati et al., 2022)

Innovating digital technology learning must be responsive to local needs and educational structures. In responding to this, policy makers must also be responsive to this so that learning can take place effectively and efficiently. Policymakers view education as providing goods and services, often technology-based, to schools. They tend to face the fact that educational innovation also changes the school environment. Technology-based innovations tend to reopen schools and study the environment of the outside world which can disrupt the physical and social environment. At the same time as they bring new actors and stakeholders into the education system, at least the education industry with its own ideas, views and dreams about a brighter future for education can be brought into play. Therefore, educational innovation must be seen as a renewal that involves a wider range of students, including the role of government.

RESEARCH METHOD

This research is library research. Library research or Literature study is a series of activities related to methods collecting library data, reading and taking notes and processing research materials (Zed 2008). Qualitative methods are used to obtain in-depth data, data which contains meaning (Sugiono 2012). The library research method makes this possible Researchers obtain empirical data and information that has been collected by other previous researchers, in the form of scientific reports, research results reports, and books. Because the data sources and data results processed in the literature study are in form description, this research uses a qualitative approach.

RESULTS AND DISCUSSION

1. Shifting Ways of Learning

There are several things that characterize a shift in the learning paradigm, including a view of learning from teacher-centered to student-centered, from one-way to interactive, from isolation to a networked environment, from passive to active-investigating, from abstract to real-world context, from personal to team-based learning, from broad to typical behavior empowering the rules of engagement, from single sense stimulation to stimulation in all directions, from monomedia to multimedia, from one-way relationships to cooperative shifts, from mass production to customer needs, from single conscious effort to plural, from one science shifting to plural disciplinary knowledge, from centralized control to autonomy and trust, from factual to critical thinking, and from conveying knowledge to exchanging knowledge.

Nichols (2013) explains four principles of 21st century learning. Namely, instruction should be student-centered, education should be collaborative, learning should have context , and schools should be integrated with society. (Rahadian, 2018)

Learning development should use a student-centered learning approach. Students are placed as learning subjects who actively develop their interests and potential. They are no longer required to listen and memorize material, but try to construct their knowledge and skills, according to their capacity and level of

thinking development, while being invited to contribute to solving real problems that occur in society. Student-centered learning does not mean giving complete control of learning to students. Intervention is still needed and educators act as facilitators who try to help link the prior knowledge that students already have with the new information they will learn. Give students the opportunity to learn according to their own learning methods and styles and encourage them to be responsible for their learning process. Apart from that, educators also act as mentors, who try to help students when they encounter difficulties in the process of constructing their knowledge and skills.

Students must be taught to be able to collaborate with other people. Collaborate with people who are different in cultural background and the values they adhere to. In exploring information and building meaning, students need to be encouraged to collaborate with friends in their class. In working on a project, students need to learn how to appreciate each person's strengths and talents and how to take on roles and adapt themselves appropriately to them. Likewise, campuses should be able to collaborate with other educational institutions in various parts of the world to share information and experiences about the practices and learning methods they have developed. Then, they are willing to change their learning methods to make them better (Rahadian, 2018).

Learning will not mean much if it does not have an impact on students' lives outside campus. Therefore, study material needs to be linked to students' daily lives. Educators develop learning methods that allow students to connect with the real world (real words). Teachers help students to find value, meaning and confidence in what they are learning and can apply it in their daily lives. Educators assess student performance which is related to the real world.

In an effort to prepare students to become responsible citizens, campuses should be able to facilitate students to be involved in their social environment. Among other things, there are community service activities. Students can be involved in various development programs in the community, such as: health, education, environmental programs, and so on. With the power of technology and the internet, today's students can do much more. Students' social movement is no longer only around campus or where they live, but can reach levels of society in various parts of the world. Education needs to help students become responsible digital citizens.

2. Influence of Technology

With technology, of course this makes education very easy. It will be easier for everyone to learn anything without the obstacles of being far away. It is easy for schools and colleges to find information that can be done at home and can reach students who take online learning easily in several areas. Technology to improve the quality of education, interactive educational tools are a way to improve education by interacting technology in the classroom. Technology is said to be a good resource center to support the teaching and learning process. This is written in Permendiknas No. 41 of 2007 concerning Content Standard Graduate

Competencies, so the learning principles used in point 13 read "Use of information and communication technology to increase the efficiency and effectiveness of learning". Technology as a determinant of choosing learning strategies, materials and media equipment that are used to improve the learning atmosphere (Maritsa et al., 2021).

The application of technology is beneficial for education, namely:
   a. The emergence of Mass Media, especially electronic media as a source of knowledge and a center for education. Like the Internet network, Lab. School Computers and others.
   b. The emergence of new learning methods, which make it easier for students and teachers in the learning process (Marryono Jamun, 2018).
   c. The learning system does not have to be face-to-face.
   d. There is a data processing system for assessment results that uses technology (Maritsa et al., 2021)
   e. Meeting the need for educational facilities can be met quickly.

In the learning process, there are several benefits obtained from technology (Maritsa et al., 2021). This learning will be more interesting and effective, used to explain something complex clearly and easily understood, can speed up a long process quickly, present rare events, as well as many new discoveries, and show events that are unexpected by humans.

Apart from having a positive influence on education, technology also has a negative influence. In the world of education, speaking and communication skills are one of the skills that must be possessed. When learning via the internet, communication will decrease, therefore they are more likely to interact with technology. In the world of education, there are definitely several problems that can occur which can be caused by students and teachers. The problem in question is the negative influence that might occur because as we all know, today's technology in the millennial era is very sophisticated so everything Anything in the world of technology can be accessed and this is an existing problem. In the following examples, this is a negative influence on students and teachers (Maritsa et al., 2021).
   a. E-learning can cause a change in teacher functions and result in teachers being marginalized, or also cause the creation of individuals who are individual because the learning system can be done by one person. It is even possible that student ethics and discipline will be difficult or difficult to monitor and develop, so that gradually ethics and humanity, especially students, will decline drastically, and the main essence of humans, namely as social creatures, will be eroded.
   b. It is feared that students often access the internet instead of really making optimal use of information technology, but instead accessing things that are not good, such as pornography and online games. You can even suffer from cyber-relational addiction, namely excessive involvement in relationships

made via the internet (such as through chat rooms and virtual affairs) to the point of losing contact with relationships that exist in the real world.

c. Students can be exposed to information overload, namely finding endless information available on the internet, so they are willing to spend hours collecting and organizing existing information, which can ultimately make someone addicted, especially regarding pornography and can waste money because just to serve the addiction.

d. Students or university students become addicted to the excessive existence of cyberspace. This can happen when students do not have a skeptical and critical attitude towards something new. Moreover, in the context of cyberspace (the internet), they have indirectly entered an over-free world, so it is very important to have the two attitudes above to become a fortress or filter for all existing sources of information. Apart from that, what is no less important is that parental attention also plays a very important role in instilling values regarding religious norms as a basis for life.

e. Criminal acts (Cyber Crime). In the world of education, this can happen, for example, theft of important documents or assets regarding an educational system that are actually kept secret (documents regarding final or state exams) using the internet.

f. Causing an apathetic attitude in each individual, both for students and teachers/lecturers. This can be seen, for example, in virtual and e-learning learning systems. Where the learning system does not meet each other between students and teachers, it can occur that students are less active in the learning system and the results are not optimal (Marryono Jamun, 2018).

As a teenager grows up, there are more and more things that teenagers want to know and also look for their identity and they try to follow the thought patterns and behavior of adults, and teenagers start to follow what adults do every day via the internet, they can looking for things that adults usually do, such as buying drugs or watching pornographic videos, in fact, even as teenagers, they have started to misuse technology, such as starting fights via social media, making fun of each other between schools and so on. And what plays a role in preventing negative influences is the role of parents and teachers in schools by reducing the use of cellphones or other technology every day and not advising children to go out in the middle of the night because that is the source of these negative influences (Kurnia, 2021).

3. Artificial Inteligent (AI)

Behind the development of industry 4.0, there is one technological trend that is the activator of this era, namely Artificial Intelligence (AI) or what is usually called artificial intelligence. Shifting mechanisms in the manufacturing process will be completed in the work of smart machines that interact with each other and the user. AI can effectively address the challenges faced by today's manufacturing industry, through AI-powered adaptive manufacturing, automated quality control, predictive maintenance, and more. AI can provide solutions around visual inspection, control and automation, calibration and tuning, and automatic problem

identification for large manufacturing partners. The running mechanisms in the form of machine learning algorithms, applications and platforms help manufacturers find new business models, improve product quality and optimize manufacturing operations (Mulianingsih, et al., 2020).

Since the discovery of the concept of AI in 1956, this technology has continued to develop rapidly. In 1997, an AI machine first beat a grandmaster in a game of chess and in 2011, an AI machine won a game of Jeopardy! against two expert human participants. Then in 2016, AlphaGo, an AI engine created by Google, defeated the world Go champion, Lee Sedol. In 2021, GPT-3, an AI engine capable of writing text like a human, was launched by OpenAI (Chen et al., 2020).

The use of AI in the education sector can help improve the effectiveness of learning and teaching. In this case, AI can help develop learning curricula tailored to student needs, monitor individual student progress, and provide accurate feedback to students. In addition, AI can also be used to help teachers assess student work and provide better feedback. In all these sectors, the use of artificial intelligence provides great benefits in increasing system efficiency and effectiveness. Apart from that, the development of artificial intelligence technology also opens up great opportunities in creating new innovations in the future. Therefore, the use of artificial intelligence in realizing the Society concept is very important to implement and develop further (Taraya & Wibawa, 2022).

There are several applications of AI that can be used in the education sector, including virtual mentor, Voice Assistant, Smart Content, Presentation Translator, Global Courses, Automatic Assessment, and Personalized Learning (Luh Putu Ary Sri Tjahyanti & et al, 2022).

Artificial Intelligence itself works by combining a number of data, repetitive processing, and intelligent algorithms. This actually allows the software to learn automatically from patterns or features in the data. Artificial Intelligence can also be said to be a very, very broad field of study. The scope of theory, methods, technology and subfields in Artificial Intelligence is very broad, including machine learning, neural networks, cognitive computing, computer vision, and scientific language processing (Luh Putu Ary Sri Tjahyanti & et al, 2022).

CONCLUSIONS AND SUGGESTIONS

Science and technology continue to develop, even today, at a rapid pace. This development is not just a matter of years, months or days, but hours, even minutes or seconds, especially with regard to information and communication technology which is supported by electronic technology. Its influence extends to various areas of life, including education. The influence of the very rapid development of science and technology has had both positive and negative impacts. The development of science and technology has had a positive impact by increasing the openness and dissemination of information and knowledge to and from all over the world across the boundaries of space and time. The negative impact is a change in behavior, ethics, norms, rules or morals of life that conflict with the ethics, norms, rules and morals of life in society.

Responding to this situation, the role of education is very important to develop positive impacts and correct negative impacts.

REFERENCES

Ambarwati, D., Wibowo, U. B., Arsyiadanti, H., & Susanti, S. (2022). Studi Literatur: Peran Inovasi Pendidikan pada Pembelajaran Berbasis Teknologi Digital. *Jurnal Inovasi Teknologi Pendidikan, 8*(2), 173–184.

Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access, 8*, 75264–75278.

Kurnia, L. (2021). *Pengaruh Negatis Di Era Teknologi Informasi Dan Komunikasi Pada Remaja (Perspektif Pendidikan Islam). XX*(2), 1–7.

Luh Putu Ary Sri Tjahyanti, & Dkk. (2022). Peran Artificial Intelligence (Ai) Untuk Mendukung Pembelajaran Di Masa Pandemi Covid-19. *Jurnal Komputerdan Teknologi Sains(KOMTEKS), 1*(1), 1–7.

Maritsa, A., Hanifah Salsabila, U., Wafiq, M., Rahma Anindya, P., & Azhar Ma'shum, M. (2021). Pengaruh Teknologi Dalam Dunia Pendidikan. *Al-Mutharahah: Jurnal Penelitian Dan Kajian Sosial Keagamaan*, *18*(2), 91–100.

Marryono Jamun, Y. (2018). Dampak Teknologi Terhadap Pendidikan. *Jurnal Pendidikan Dan Kebudayaan Missio*, *10*(1), 1–136.

Mulianingsih, F., Anwar, K., Shintasiwi, F. A., & Rahma, A. J. (2020). Artificial Intellegence Dengan Pembentukan Nilai Dan Karakter Di Bidang Pendidikan. *IJTIMAIYA: Journal of Social Science Teaching*, *4*(2), 148.

Rahadian, D. (2018). Pergeseran Paradigma Pembelajaran Pada Pendidikan Tinggi. *Jurnal Petik*, *2*(1), 1.

Taraya, P. C., & Wibawa, A. P. (2022). *Mewujudkan Society 5 . 0 Melalui Pemanfaatan Teknologi Kecerdasan Buatan. 2*(8), 378–385.