The Role and Impact of Information Technology in the World of Education in Indonesia

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Abstract

Technological developments impact various sectors, one of which is the education sector. Information technology has an important role and greatly impacts education in Indonesia. This study aims to determine the role and impact of information technology in Indonesia's education world. This study used a qualitative research method with a descriptive approach. At the same time, the data collection technique was carried out using a literature study through exploration of journals, books and other information relevant to the study. The results of the study show that the role of information technology in education is as a source of information, a substitute for the human role in task automation, a means of increasing competence, educational infrastructure, education management and a means of presenting ideas. Meanwhile, the impacts that information technology has on education in Indonesia include that the information needed will be more quickly and easily accessed for educational purposes, innovation in learning is growing, the development of virtual classes or teleconference-based classes does not require the educator and students to be in one room, the administrative system in an educational institution will be easier and smoother due to the application of information and communication technology systems. Meanwhile, information technology in education has negative impacts, including violations of Intellectual Property Rights, because easier access to data causes plagiarism to commit fraud.

Keywords: Role, Impact, Information Technology, Education.

Information and communication technology advancement has opened a new stage for society to acquire information autonomously. The barriers to information are naturally dissipated by the strong initiative of individuals who want to know more about what is happening around them. People have access to sources of information wherever they are. Consequently, society becomes critical and responsive to many things that develop. Information and communication technologies (ICTs) tools that allow knowledge to be distributed and used (Guzman et al., 2022; Fadillah et al., 2024). Information and communication technology development must exist and be followed by modern society today. Its development is considered as a solution to existing problems. The contribution of information and communication technology to civilization and human welfare is undeniable (Rosana, 2010). We know that in the modern era like today, the role of information technology in everyday life is

certainly very influential, one of which is on the world of education in Indonesia.

Education is one of the spearheads of developing a country, creating civilized generations, having high intellectuals and being able to build a country. Education is a conscious and planned effort to realize the feeling of learning and learning so that students actively develop their potential to have the spiritual power of diversity, self-control, personality, intelligence, noble character, as well as the skills needed for themselves, society, nation and state (Iqbal et al., 2022). Education can provide a variety of positive changes to its people. These changes can be obtained if the implementation of education is carried out appropriately. The implementation of education in Indonesia cannot be said to be right, one of the problems of education in Indonesia lies in the problem of equitable distribution of education (Salsabila et al., 2020).

The educational process is an activity to mobilize all education components by educators focused on achieving educational goals. The quality of the educational process can be determined in two aspects: the components' quality and their management's quality. The two facets are interdependent. Although the components of education are adequate, the management is not appropriate, it will result in suboptimal results. Therefore, the components and management in an educational institution, must go hand in hand and take place in a balanced manner. One of the components needed in the world of education is the existence of effective and efficient information technology because today's world of education has competed blatantly to produce discoveries and knowledge related to technology.(Maghfiroh, 2020). In addition, learning can be interpreted as components that are interconnected with each other. These components include objectives, materials, methods, and evaluations (Arifin, 2022)

The development of Information Technology spurred a new way of life including education.

The importance of technology is mentioned by (Adawiyah, 2022) that from life begins to end, this kind of life is known as e-life, meaning that this life has been influenced by various needs electronically. Moreover (Anggraeni et al., 2022) revealed that technology givens new ways of carrying out human activities, for example, the positive impact of technological advances is the internet as a medium of communication, with the internet people can exchange information from various parts of the world. Even in the world of education, this is often used with the designation of technology education, educational technology, new technology in the field of education, information skills, and learning information (Munti & Syaifuddin, 2020). So that the existing expectations can also be felt by practitioners in the world of education, whether educators or students.(Hasanah et al., 2022).

Another study examines that education globalization has already necessitated the application of digital technologies. Information technology is a driving force for educational reform and a means of generally promoting shared knowledge in society (Burbules et al., 2020). Digital technologies are a powerful instrument that can help improve education in various ways, such as making it easier for instructors to generate instructional materials and providing new methods for people to learn and collaborate (Haleem et al., 2022). Technology becomes important since teachers' beliefs about digital competence are positively related to their beliefs about technology usefulness in teaching, which correlates to use technology (Antonietti et al., 2022).

However, in this post pandemic era, it is impossible that face-to-face delivery is not only the mastering of ICT tools by teachers but also the appropriate use of modern online technologies and communication strategies for educational purposes and carrying out fundamental academic tasks (Hurajova et al., 2022). Moreover, pedagogical use of technologies which are tools, concepts, innovations, and advancements utilized in

diverse educational settings to serve varied education-related purposes (Li et al., 2022). Thus, ICT and technologies in educational settings are necessary in the globalization era.

The importance of the role and magnitude of the impact of technology on education in Indonesia is important to be studied, so researchers are interested in conducting research with the title "The Role and Impact of Information Technology in the World of Education in Indonesia".

Methodology

This research is a qualitative research with a descriptive approach. Qualitative research focuses on understanding research questions as a humanistic or idealistic approach (Pathak et al., 2013; Fadillah, et al., 2022). According to (Creswell, 2017) The descriptive method is carried out by presenting the facts which are then continued with analysis, not just deciphering, but by providing sufficient understanding and explanation. Data collection techniques are carried out by digging journals, books and other information relevant to the research. The data sources used as material are the results of research data and journals, books, and other information relevant to the research obtained through Google Scholar

Data Analysis and Findings

3.1 The role of information technology in the world of education in Indonesia

Education is a process of communication and information from educators to students that contains educational information. The elements contained in it are educators as sources of information, media as a means of presenting ideas, ideas and educational materials and students as recipients of information. Some parts of this element get a touch of the media of information technologyi (Maghfiroh, 2020).

At this time, learning has been dominated by information management activities. There are three components. There are three main components in information: the user, access, and information. A user is a student in the learning process, as information is learning material from various sources. As well as access is the transfer of information from the source of information to the student. In computer-based technology, it is studied how to design learning by utilizing computer resources, including usage settings, learning information settings, and access settings (Mahedy, 2009). The role of information technology is one of the effective media in teaching and learning activities. However, its use must be by the learning objectives (Simanjuntak, 2020).

According to Resnick (2002) in (Wahid, 2005) There are three important things to rethink about the modernization of education: (1) how we learn (how people learn); (2) what people learn; and (3) when and where people learn. The role of IT in the modernization of the nation's education can be formulated by examining the answers to these three questions and the potential of IT that can be utilised as previously outlined. The role of technology in the world of education, namely (Malindo et al., 2020):

1. Replacing the role of humans, namely by carrying out automation activities of a task or process

2. Strengthening the role of the human being i.e. presenting information, tasks, or processes

3. Restructure or make changes to a task or process

4. ICT as a skill and competence

ICT must be proportional, meaning that it can enter all levels of society according to their respective portions.

5. ICT as a learning infrastructure. Learning infrastructure means the availability of learning materials in digital format, school learning networks, so that learning can be reached anywhere and anytime, such as the availability of teaching materials in digital format, the network is the school, and learning anywhere and anytime.

6. ICT as a source of teaching materials

a.   Knowledge is developing rapidly, great teachers are scattered in all corners of the world.

b.   Books and teaching materials are updated continuously.

c.   Innovation requires cooperation of thought.

d.   Innovation requires cooperation of thought

e.   Without technology, up-to-date learning takes a long time.

7.   ICT as a learning aid and facility. ICT facilities are very helpful in the learning process. Like:

a. The delivery of knowledge considers the real-world context.

b. Provides illustrations of various scientific phenomena to accelerate the absorption of teaching materials.

c. Students explore their knowledge more broadly and independently.

d. Knowledge acquisition comes from the interaction of students and teachers.

e. The ratio between teachers and students determines the process of providing facilities.

8.   ICT as a support for learning management. ICT is very supportive in terms of managing learning, namely:

a. Every individual needs non-stop learning support every day

b. Interactive transactions and interactions between stakeholders require strong back office management.

c. The quality of service on administrative checks is gradually improved.

d. People are valuable resources.

Advantages of IT in the field of education according to (Harahap, 2019), that is:

1.   The information needed will be faster and easier to access for educational purposes.

2.   Innovation in learning is growing with e-learning innovations that make the educational process easier.

3.   IT advancements will also enable the development of virtual or teleconference-based classes that do not require educators and learners to be in the same room.

3.2 The impact of information technology in the world of education in Indonesia

The application and development of information technology in the field of education is one of the policies of the Ministry of National Education. Information technology developed in education must lead to the realization of an integrated system that can build connectivity between existing components in education so that education becomes more dynamic in obtaining various opportunities for education development in Indonesia (Munir, 2019).

Information technology contributes a lot to the world of education, in this case the field of education has a considerable impact with the advancement of information technology. Communication as an educational medium is carried out using communication media such as telephone, computer, internet, e-mail, etc. Interaction between teachers and students is not only carried out through face-to-face relationships and is also carried out using these media. Teachers can provide services without having to go head-to-head with students. Similarly, students can obtain information in a wide scope from various sources of cyber space media or cyberspace by using a computer or the internet (Mahnun, 2012).

According to Rosenberg in (Jamun, 2018), With the development of the use of ICT there are several shifts in the learning process, namely:

1.   From the classroom to where and whenever

2.   From paper to "on line" or channels

3.   From physical facilities to network facilities

The impacts caused by the use of information and communication technology in the education world of education aredivided into two, namely positive and negative impacts. The positive impact of information technology in the world of education is: that the information needed will be faster and easier to access for the benefit of education, innovation in learning is growing with the innovation of e-learning which makes the educational process easier, advances in

information and communication technology will also allow the development of virtual classes or teleconference-based classes that do not makeit a If the educator and students are in one room, the administrative system in an educational institution will be easier and smoother because of the application of the information and communication telnology system (Khotimah et al., 2019).

Meanwhile, according to (Maghfiroh, 2020) The positive impact of information technology in education is as follows.

a. The emergence of electronic media as a science and educational center, so teachers are not the only source of knowledge. Students in learning do not need to be too fixated on the information teachers teach. The subject matter can be accessed directly from the internet. The teacher is not only a teacher, but also as a director who directs and monitors students in the use of information and communication media.

b. With the advancement of information technology gives birth to new methods that make students able to understand abstract and understandable materials for students,

c. The learning system can be done always face-to-face. With the advancement of technology comes learning that does not have to bring together students and teachers, but can take advantage of the internet.

d. The existence of an assessment data processing system that uses technology. It used to be done manually so that it took a long time, with the development of technology everything can be done flexibly anywhere and anytime so that it becomes more effective.

e. The fulfillment of the needs of educational facilities can be met quickly. In the field of education, many things need to be prepared, with the presence of technology can be done in a short time.

The negative impacts of information technology in the world of education, including: advances in information and communication technology will also make it easier for violations of Intellectual Property Rights (IPR), because the

easier access to data causes people who are plagiarism to commit fraud, even though the administrative system of an educational institution is like a system without loopholes, but if there is a carelessness in running the system, it will fatal, one of the negative impacts of television is to train children to think short and stay concentrated for a short time (short span of attention) (Asmawi et al., 2019).

Related to the negative impact of information technology whose development is increasing but has shortcomings. For example, e-learning can cause teacher conversion and result in teachers being eliminated, or also cause the creation of individual individuals because the learning system can be done only alone. It is even possible that the ethics and discipline of students are difficult or difficult to supervise and foster, so that gradually ethics and humans, especially students, will decrease drastically, and the main human nature as a social being will be eroded (Lobang & Camerling, 2021).

In (Sudibyo, 2011) It can be seen some of the negative impacts of the use of information technology in the world of education, including:

1. Students or also students become addicts from the existence of cyberspace excessively. This can happen when students do not have a skeptic attitude and are critical of something new. Especially in the context of cyberspace (internet) they have indirectly entered the world that is over free, it is very important that the two attitudes above to become a fortress or filter from all existing sources of information. In addition, what is no less important is that parents' attention is instrumental in instilling values about a religious norm as a basis for life.

2. Criminal acts (Cyber Crime). In education, this can happen, for example, the theft of important documents or assets about an educational order that is kept secret (documents regarding final exams or the state) with the internet media.

Causing apathy in each individual, both for students / students and teachers / teachers /

lecturers. This can be seen, for example, in the virtual learning system and e-learning. Where the learning system does not meet each other between students and teachers, students may be less active in the learning system and the results are not optimal.

Conclusions and Implications

The role of information technology in the world of education is as a source of information, a substitute for the role of humans in the automation of tasks, a means of adding competence, educational infrastructure, educational management and a means of presenting ideas. Meanwhile, the impact that information technology has on education in Indonesia includes the information needed will be faster and easier to access for educational purposes, innovation in learning is growing, the development of virtual classes or teleconference-based classes that do not affecta If the educator and students are in one room, the administrative system in an educational institution will be easier and smoother because of the application of the information and communication telnology system. Meanwhile, there are alsonegative aspects of information technology in the world of education, including violations of Intellectual Property Rights, because the easier access to data causes people who are plagiarism to commit fraud.

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