

## The Technology Development in the Education Field

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### ABSTRACT

The development of technology that is increasingly rapid today has led to the development of the world of education and one of them is the development of learning media. Learning media is the most important factor that supports success in learning. Learning technology is an application or media that has been designed in a modern way and used as theory and practice in learning, as a learning resource. Currently, the technology widely used in the world of education is information technology. However, technological developments also have negative and positive impacts. The positive impacts include such as adding information, making material delivery more interesting, and increasing interest in learning. Meanwhile, the negative impacts of technology are causing students to be lazy to study, the occurrence of immoral violations, the emergence of deviant behaviour, and the misuse of technology to commit criminal acts.

The purpose of this study is to find answers to the problems above. The development of technology in the field of education is rapidly advanced especially in learning media. From the results of this study, the authors can conclude that technological developments, especially in the world of education, are also stated to be beneficial so that students do not get bored while learning, especially nowadays which is increasingly sophisticated using information technology. The benefits of technological developments are the existence of new learning methods, facilitating access for learning, both remotely and at close range, searching for information using the web, and improve learning abilities. Communication as an educational medium is carried out using communication media such as telephone, computer, internet, e-mail and so on. Interaction between teachers and students is not only conducted face-to-face but is also carried out using these media.

**Keywords:** Education, technology advance



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## 1. INTRODUCTION

Science and technology are very influential in various fields, especially in the field of education. Technological developments become more sophisticated from time to time based on innovation and human creativity.

In education, digital technology is a tool to facilitate the teaching and learning process between teachers and students. Innovation in learning is growing with e-learning innovations that further simplify the educational process. Teachers can create many ideas and broad ideas in teaching.

Various applications and methods can be utilized so that learning is not monotonous and boring, such as online quizzes, giving assignments with exciting pictures and presentations, making videos, and many more ways to teach using this learning media. Moreover, teachers also can take advantage of using a projector to deliver the learning material to students.

Learning media is also very helpful for students in doing and collecting assignments, especially in this online period. Students can manage their assignments through these technological advances. The learning process also can be conducted everywhere and every time.

Students also do not have to be fixated on learning at a predetermined place and time. They can use a vast variety of learning methods, such as learning through videos (tutors/youtube) or can search for it and even use the internet to find various information and knowledge.

Technological developments can be applied in the field of education. Sophisticated technology is able to make the learning process delivered faster and smoother. The use of technology has also been

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proven to be able to increase students' interest in learning because it has a more attractive appearance. Learning becomes more fun and avoids boredom.

However, the advanced technology is still not utilized by many schools in Indonesia. Based on this problem, the researchers were interested to discuss the technological advanced that can be used in the education field and how beneficial they can be to achieving the learning objectives.

## 2. RESEARCH METHOD

The research used descriptive qualitative method which was library research. Library research is a technique of collecting data by finding the data through books, theories, notes and documents. This method is chosen because the data can only be obtained through theories and information on documents both printed and electronic.

## 3. RESULTS AND DISCUSSION

### A. Technological Advance in Education Fields

Facing the 21st century, UNESCO (1996) through the journal "The International Commission on Education for the Twenty-First Century" recommends sustainable (lifelong) education which is carried out based on four pillars of the learning process, such as learning to know (learning to master knowledge), learning to do (learning to recognize skills), learning to be (learning to develop oneself), and learning to live together (learning to live in society). Therefore, to be able to realize the four pillars of education in the current era of information globalization, teachers as learning agents need to master and apply Information and Communication Technology in learning.

According to Rosenberg with the development of the use of ICT there are several shifts in the learning process, such as:

1. From class to anywhere and anytime
2. From paper to 'online' or 'channel'
3. From physical means to a physical network

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 done face-to-face but is also carried out using these media. Teachers can provide services without having to deal directly with students. Similarly, students can obtain information broadly from various sources of cyberspace media by using computers or the internet.

The most recent thing is the development of what is called "cyber teaching" or virtual teaching, which is learning using the Internet.

Another term that is increasingly popular today is e-learning, which is a learning model using Information and Communication Technology media, especially the Internet. According to Rosenberg, e-learning uses Internet technology in the delivery of learning in a broad range based on three criteria, such as:

- a. E-learning is a network with the ability to update, store, distribute and share teaching materials or information,
- b. Conveying the material to final users with standard technology internet,
- c. Focusing on the broadest view of learning behind traditional learning paradigms.

In line with the development of Information and Communication Technology itself, the notion of e-learning can become wider, such as learning whose implementation is supported by technology services, for instance, video-audio, smartphones, computers and the internet.

Robin Paul Ajjelo also stated illustratively that in the future the contents of school bags will no longer be books and stationery as they are today, but will be in the form of:

- a) A notebook computer with wireless internet access contains learning materials in the form of reading material, and material to see or hear and is equipped with a digital camera and voice recorder.
- b) A watch equipped with personal data, electronic money, a security code to enter the house, a calculator and so on.
- c) Pocket videophone with software, internet access, games, music and TV.

- d) Musical instruments.
- e) Sports equipment.
- f) A pack of lunch.

This shows that children will be supported with the equipment related to the Internet as a medium to learn.

As a process, educational technology is abstract. In this case, educational technology can be understood as a complex and integrated process that involves people, procedures, ideas, tools, and organizations to analyze problems, find ways to solve problems, implement, assess and manage problem-solving which includes all aspects of learning. In line with this, the birth of Educational Technology that is sticking out at this time includes equal opportunity to obtain an education, improvement of quality, relevance, and efficiency of education.

The serious problem that is still felt by education ranging from basic education to higher education is only related to the certain quality matter which can be solved through the educational technology approach.

Learning technology continues to develop along with the times. In the implementation of daily learning, we often encounter the use of technological developments in the world of education. The application of technology in learning activities is marked by the presence of e-learning which with all its variations in levels has facilitated changes in learning delivered through all electronic media such as audio/video, interactive TV, compact disc (CD), and the internet (Jamun, 2016: 144). It is often conducted by the teacher or lecturer to combine technological tools in the learning process.

The Internet is one of the inexpensive means of communication which allows interaction between two or more people. The capabilities and characteristics of the internet allow the distance learning process (e-learning) to be more effective and efficient so that maximum results can be obtained. However, in everyday life, we must not forget that technology does not only bring positive benefits, but it will also have a negative impact. This is why we must remain aware. Considering that nowadays, we often encounter many students who often use technology facilities that are not as expected, so this can have a negative impact.

#### **B. The Benefits of Technology in Education Field**

Before presenting the data in this study, validity and reliability tests were first carried out to test whether the 15 questions that the researchers proposed were valid and reliable to be tested in this study. The validity was tested using Statistical Program For Social Science (SPSS) version 22. Testing the validity of each instrument was conducted by correlating each question item. The minimum requirement was to find out whether each question was valid or not valid by comparing if  $r_{count} > r_{table}$  (at a 5% significant rate), then it proved that the question item was valid. With the number of  $N=25$ ,  $r_{table}=0.396$ , the following results were obtained as follows:

Technology is not only useful in the social field, especially to support the needs of life, but is also useful in the field of education such as:

##### **1. Improving the Learning Ability**

This can happen because the information contained on the internet tends to be more updated. Therefore, students can easily access various new information needed, obviously with supervision from educators or teachers.

##### **2. Adding Information**

The use of technology in education is also a means of support for students and educators to search for broader information. Whereas in the past, they only relied on sources from books and print media. The positive impact of this is that the teacher is not the only source of knowledge so students in learning activities do not need to be too fixated on the information that has been conveyed by the teacher himself.

##### **3. Making Material Delivery More Interesting**

The use of technology in education can make students more comfortable and not seem bored or monotonous. This is because the delivery of information through advanced technology tends to be more varied and modern.

##### **4. Easy Access to Learning**

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The process of learning activities can also be facilitated by using the latest technology. For instance, if an educator is able to provide learning materials/assignments via a special web or email, then students just access the material and take quizzes on the web listed if the educator includes it.

#### 5. Increasing Interest in Learning

Information and knowledge provided are more complete and also easier to access. This will certainly make students more enthusiastic to learn. The use of technology in education does have several benefits in the continuity of learning. However, on the other hand, parents and educators have to keep an eye on the child when using technology because, as mentioned earlier, the ease of obtaining this information is not only positive but also negative information.

#### 6. New Learning Method

The learning system also now does not have to go through face-to-face. This is thanks to technological advances, where learning activities do not have to bring together students with teachers, but can take advantage of internet services or applications. Moreover, the existence of a data management system using technological media such as computers will make it easier for teachers to manage the data resulting from these learning activities.

### C. The Disadvantages of Technology in Education Field

- a) Students become lazy to study
- b) The occurrence of immoral violations
- c) The emergence of deviant behaviour (there are students who spend their time playing games or social media)
- d) Misuse of technology to commit criminal acts (fraud)
- e) The secrecy of the test for Education is increasingly threatened (question leaks)

Based on the table above, it obtained the total score was 2210. The highest score was 90 and the lowest score was 75.

### D. The Role of Technology in Education Field

- a) The role of technology in the field of education, including:
- b) -Replacing the human role by doing the automation of a task or process.
- c) -Strengthening the role of humans, especially in presenting information, tasks, and processes.
- d) -Working on restructuring or various changes to a task or process.
- e) -ICT as a skill and competence.
- f) -Technology is an infrastructure in education and a source of teaching materials.
- g) -As a tool and educational facility.
- h) -Being a supporter in education management and as a decision support system.
- i) Controlling smartphones.

At this time, technology has also been widely applied in the field of education, such as:

- a. Computer-Based Learning  
For instance, the implementation of the computer-based National Examination system or CBT.
- b. Sharing Research Results  
For instance, sharing research results through blog accounts such as LIPI and the Ministry of Education and Culture.
- c. Consultation with Experts via the Internet  
For instance, asking for information through various social media such as line, telegram, WhatsApp, and email.
- d. E-Learning  
E-learning here can be in the form of discussing material provided by an author and then published and also through online tutoring. For example, roboguru
- e. Online Library  
The following is an example of an online library: <https://perpusnas.go.id/>
- f. Online Discussion  
For example, kaskus.com

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Various advances in information technology in today's world will greatly affect the design and implementation of educational information systems in the future.

Thus, the readiness of educators or teachers in using these technological advances must be adjusted to the objective conditions within the scope of education.

The use of information technology in the field of education also requires careful consideration so that everything that is designed today will not be left behind after being implemented.

The selection of a system that follows international standards is also a major consideration when making its design.

#### 4. CONCLUSION

Science and technology continue to develop, even now growing very rapidly. This development is not just a matter of years, months, and days but hours and even minutes, especially with regard to information and communication technology which is supported by electronic technology. Its influence also extends to various fields of life, including the field of education. Technological developments can improve performance enabling various activities to be carried out quickly, precisely and accurately, including in the world of education.

With this very rapid development of technology, there will be a more and more rapid flow of information with all its positive and negative impacts on the people of Indonesia. Technological developments show the emergence of various types of technology-based activities, including in the world of education such as the use of e-learning, e-library, e-education, e-mail, e-laboratory and others. Education, in the future, by the influence of globalization will be more open and two-way, diverse, multidisciplinary, and related to work productivity and competitiveness.

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