

The Challenge of Using Technology to Innovation in the World of Education

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ABSTRACT

Technology is growing rapidly along with human needs to be able to simplify their lives, solve all problems more quickly, effectively, and efficiently. This development can be used to overcome the problems that are happening from 2020 until now, namely the COVID-19 pandemic. This paper discusses the challenges faced by the world of education in the use of technology, especially learning technology to support the implementation of quality learning during the covid 19 pandemic. The approach used is a library study approach which is collected through the search for journal articles related to technological challenges in educational innovation through google scholar. Several journal articles that have been collected are then reviewed and analyzed to be able to find synergies of solutions offered in responding to technological challenges to provide innovation in digital era education. Disruptive innovation is an innovation that can simplify complicated and expensive conventional situations into products with better quality, attractiveness, and cheapness. Educational innovation is a transformation effort to get a better situation in the field of education or to improve aspects of education so that it is more effective and efficient. The principles of educational innovation contain several important things which include: innovation requires an analysis of various opportunities and possibilities that are open; innovation is conceptual and perceptual; innovation must start small; innovation is directed at leadership or pioneering. The general principle of using ICT in education is that it is effective and efficient, optimal, attractive, stimulates the creative thinking power of each student during the learning process.

Keywords: Challenges, Technology, Innovation, Education

I. Introduction

The development of a rapidly changing era is marked by the massive use of technology in various fields of human life. Technology is growing rapidly along with

human needs to be able to simplify their lives, solve all problems more quickly, effectively, and efficiently. This development can be used to overcome the problems that are happening from 2020 until now, namely the covid 19 pandemic.

The limited space for community movement as an effort to prevent the transmission of the covid 19 virus provides opportunities for the use of technology, especially information and communication technology to become more massive.(Abdul Latip, 2020; Zainuddin Atsani, 2020).

The industrial revolution is currently entering its fourth phase. The massive development of science and technology has had a significant impact on people's lives. Ease and innovation occur because of the support of digital technology. Fast and efficient service with a wide reach due to the online system. (Ghufron, 2018) Information technology used in online learning when the Covid-19 pandemic hit, caused various kinds of responses and changes so that it affected the learning process and the level of development of participants in response to the material presented. (Aisa & Lisvita, 2020). Research conducted by Ningsih(2020), shows something different where most students (93.5%) prefer face-to-face offline learning directly in class compared to online learning, due to the limited internet quota owned by students and the lack of maximum understanding of the material due to limited interaction.

Education with high learning quality is shown by providing opportunities and space for students in developing their talents and potentials and fulfilling the emotional needs of students. Another thing is shown by the indicator of creating quality learning which starts from the involvement of students in learning and looking for material in the learning. Meanwhile, practice in the field shows that learning activities still make teachers the sole source of learning. This fact can indirectly limit the active attitude of students in exploring more material in a lesson because students are used to just waiting for the material given by the teacher. This

is certainly contrary to the learning process that should be applied in improving the quality of education (Cholik, 2017).

The number of access to learning resources in this era is an opportunity to change the situation where the teacher is the only source of material in the learning. The existence of information technology for the world of education makes the availability of learning resources and channels or facilities that can be used to broadcast learning programs both unidirectionally and interactively. The use of information technology becomes very important if we look at the geographical conditions of Indonesia which are generally located in mountainous areas which are scattered into many islands. Information technology provides opportunities for distance education to be held so that

all Indonesian people have access to education. (yusril, 2019).

The vast territory of Indonesia, the unequal infrastructure in each region is a separate problem in implementing online learning. The integration of the use of traditional (offline) and online learning resources is a democratic decision to overcome the proliferation of online learning resources and the difficulty of breaking away from the use of learning resources used in the classroom. (C et al., 2020). What about the teacher who is still groping inside use technology? This will certainly be a challenge in carrying out learning in the era of the rapid development of information technology and provides opportunities to innovate more through the development of learning technology. This paper will discuss the challenges faced by the world of education in the use of technology, especially learning technology to adapt to the rapid development of technology and the demands for a more massive mastery of learning technology to support the implementation of quality learning during the covid 19 pandemic. Literature review approach collected through searching for journal articles related to technological challenges in educational innovation through Google Scholar.

II. Discussion

a. Technology Challenge

Challenges can be interpreted as an opportunity to improve the situation for the better. Technology as part of an effort to solve problems faced by humans more easily can be a very helpful support to answer the challenges of better use of technology. A challenge is a thing or a form of business that aims to bring out the potential or abilities possessed (Ghufron, 2018). Every human being can be developed into something useful for himself and other humans. This potential will remain potential if it is not developed through a necessary process. This potential will be active when stimulated by a problem that requires a solution. This problem indirectly becomes a challenge that triggers someone to do something useful in solving the problems at hand.

The term technology comes from the word "texture" (Latin) which means "to weave or construct". (Nurdyansyah et al., 2015). Furthermore, the understanding of technology develops into an attempt to solve human problems. This technology

develops in every area of human life, including learning technology. In the beginning, learning technology was the next development of studies on the use of audiovisual, as well as learning programs in education. In essence, this study is an attempt to dismantle human learning problems (Nurdyansyah et al., 2015)

In the intermediate technology phase, the technology used is OHP, slides, projection films, simple electronic equipment for teaching, and projectors (LCD). The next higher technology phase relates to the use of complex packages such as distance learning using radio, television, modules, computer-assisted instruction, Wifi, as well as complex teaching or stimulation, and dial-access information systems via telephone, and so on. (Nurdyansyah et al., 2015). The hardware used is in line with the dynamic development of industrial and community products, such as e-learning which uses the internet network for learning activities. The concept of a process or software feature is

centered on developing the substance of a learning experience that is structured and organized by practicing a scientific approach for the benefit of administering educational programs. The development of this learning experience is carried out systematically and systematically by using various learning resources. The process concept and the product concept essentially cannot be separated because both are used together for the benefit of providing the maximum learning experience to students. The development of learning programs begins with behavior analysis, What students need to understand in the learning process, and the birth of behavior after exploring educational activities. The behavioral analysis stage uses the use of knowledge or knowledge to reveal the skills that prospective students must possess, in addition to the skills that they must use to obtain learning outcomes.

Several opportunities and challenges must be faced by educators and students to survive the development of knowledge due to technology with various educational innovations. Disruptive innovation is an innovation that can simplify complicated and expensive conventional situations into products with better quality, attractiveness, and cheapness. (Ohoitmur, 2018), has changed the order of solving problems in human life. This situation will be more valuable if the character education in the digital age that faces challenges that include balance, safety, and security, cyberbullying, sexting, copyright, and plagiarism (Triyanto, 2020), can be an opportunity that can be utilized as much as possible to improve the quality of education.

b. Educational Innovation

Educational innovation is a new transformation that is qualitatively different from the previous situation and is planned to be sought to improve skills in achieving certain goals in education. In other words, educational innovation is a transformation effort to get a better situation in the field of education or to improve aspects of education so that it is more effective and efficient. One example of

innovation in education is character education. The principles of educational innovation contain several important things which include (Tilaar, 1999: 356):

1. Innovation requires an analysis of the various opportunities and possibilities that are open. Many problems in the field of education require extra effort to solve. Appropriate, effective, and efficient solutions will be realized if carried out through steps starting from a study that considers all influencing aspects. Opportunities are very open to being implemented to realize effective innovation.
2. Innovation is conceptual and perceptual, meaning that it is carried out based on consideration of existing theories and the use of appropriate approaches.
3. Innovation must start small. Something that looks small does not necessarily have a role in a system. A very vital role and determines the work in a system, even though it looks small, innovation can be made at first. It can also inspire the next bigger innovation.
4. Innovation is directed at leadership or pioneering. The impetus for speeding up innovation requires the strength and spirit of leadership and pioneering from a leader.

The National Education System Law No. 20 of 2003 states that various learning methods can be applied, apart from conventional ones in the implementation of national education. So far, most of the learning is done in a closed room with the help of books and teachers who are ready to teach. In its development, learning is not just reading sheet by sheet of books but must be able to adapt to take advantage of developments in information technology in the learning process so that students are more motivated and enthusiastic. The implementation of information and communication technology is expected to strengthen learner-centered learning. As stated by Wrigley that in time when the information age

comes, the role of educators will decrease along with the rapid use of computers. The presence of ICT for some people will provide answers to educational problems, for example adding to the wealth of learning media from the existing ones. The presence of this technology must be utilized as well as possible with proper management. ICT, which has integrated its presence with the community, is something that must be filled with good values. Meanwhile, UNESCO classifies the use of ICT for: ICT, which has integrated its presence with the community, is something that must be filled with good values. Meanwhile, UNESCO classifies the use of ICT for: ICT, which has integrated its presence with the community, is something that must be filled with good values. Meanwhile, UNESCO classifies the use of ICT for:

learning in four stages, namely: emerging, applying, integrating, transforming(Nurdyansyah et al., 2015).

The emerging stage is the stage when you just realize the importance of the presence of ICT in learning and have not implemented it. This seems to happen a lot in Indonesia (perhaps also in this class). Then the second is the applying stage, which is a more advanced stage where ICT has been used as the object of study and lessons in various educational institutions. This stage has also been passed by educational institutions at this time as described in the introduction. The third is the integrating stage, where ICT has been integrated into learning or in the curriculum. This stage seems to be running a lot in college. While the transforming stage is the most ideal stage where ICT has become a tool used in learning so that it becomes the basis for change in educational institutions.

UNESCO also formulated the objectives of integrating ICT in the classroom too; first, building "Knowledge-Based Society Habits", such as ability in problem-solving, communicating, and processing the information itself into new knowledge. Second, to develop skills in using ICT, and third, to increase the effectiveness and

efficiency of the learning process. Currently, the development of information technology can change human behavior and life both in communication patterns, industry to education. With the development of technology, the general principles of using ICT in education are as follows:

following:

1. Effective and efficient. The use of ICT must pay attention to the benefits of this technology in terms of making learning effective, including the acquisition of knowledge, convenience and affordability, both time and cost. Thus, the use of ICT which is a burden will result in learning not running effectively and efficiently.
2. Optimal. By using ICT, at least learning becomes worth "more" than without using it. The added value given by ICT is the breadth of coverage, up-to-date, modernity, and openness.
3. Interesting. This means that in this principle, learning in class will be more interesting and provoke more curiosity. Learning that is not interesting and provokes more curiosity will run boring and counterproductive for learning.
4. Stimulates creative thinking power for each student during the learning process.

The role of information technology in the world of education in the future is very strategic to achieve a competitive advantage. Various uses of multimedia, applications, management information systems related to education are widely used in every school. By utilizing multimedia in learning, the delivery of material is more varied, more interesting, and easier for students to understand. Multimedia itself is the delivery of information that combines text, images, graphic art, video, and audio animation. Thus, multimedia will help to learn to take place more creatively and interactively. With the use of information technology, the learning process is easier and faster to learn various sciences in detail and care. Every student will be

motivated to be able and willing to read and learn with the principle of any time, anywhere, and anything. Whenever students always learn no matter where they are about anything. Everyone will be able and accustomed to using information technology as well as learning to ride a bicycle, learn to cook, or learn to drive a car.

Currently, the use of information and communication technology in the learning process is an absolute thing, but the extent to which it is used depends on various aspects, including the budget, HR managers, and the teachers themselves. For the effectiveness and efficiency of the use of information technology, the use of IT can be categorized (Darmawan, 2009) as follows:

- a. Utilization of computers for the delivery of learning materials (Computer Based Training). Where learning materials are designed in the form of software so that students can conduct various experiments and maximize learning progress.
- b. Distribution of teaching materials via the internet. The teaching materials are designed in the form of a webpage or interactive learning program, then these teaching materials are placed on a server connected to the internet so that students can download them independently.
- c. Media communication between experts, resource persons, and students online. This communication pattern is used when the distance between the three is far apart and learning takes place independently so that feedback occurs between them.

Based on the three points above, educators (teachers, lecturers, and students)

widyaiswara) has the main role in educating participants to learn the figure of students who can adapt to the development of the world of Information

Technology that is beneficial for all aspects of life, especially learning.

Innovation in the world of education can be a performance value in improving the quality of education through management. Education management in Indonesia currently encourages all levels of education, especially higher education, to take advantage of advances in digital technology and educational computing in the era of the fourth industrial revolution. Some solutions that can be done include the suitability of curriculum and policies in education, the readiness of human resources in utilizing ICT, optimizing the abilities of students, and developing the values (character) of students, as well as the readiness of digital-based learning facilities and infrastructure. (Reflianto & Syamsuar, 2018).

Serious thinking for the development of ICT-based education with a systematic strategy through targeted stages is needed from various educational stakeholders, as an effort to improve the quality of education that can compete in the global world. Government regulations to create a school climate that strengthens the synergy of teachers, employees, students to transform from conventional learning paradigms to adaptive learning by utilizing ICT (Khotimah et al., 2019).

I. Closing

The massive development of science and technology has had a significant impact on people's lives. Convenience and innovation occur because of the support of digital technology. The service becomes fast and efficient with a wide reach due to the online system. A challenge is a thing or a form of business that aims to bring out the potential or abilities possessed. Every human being has the potential to be developed into something useful for himself and other humans. This potential will remain potential if it is not developed through a necessary process. This potential will be active when stimulated by a problem that requires a solution.

Opportunities are very open to making appropriate innovations that are conceptual and perceptual, could start small with pioneering and leadership. The

role of information technology in the world of education in the future will be very strategic in increasing competitiveness. Various uses of multimedia, application, management information system linked to learning. The use of multimedia in education makes the delivery of modules more diverse, more interesting, and easier for students to understand. Multimedia itself is the delivery of information that combines text, Photo, graphic arts, animation video, and audio. Multimedia aims to help educators take place more creatively and interactively. Schools must decide what model of information technology must be used to support school excellence. Decision makers have to think about many things, by synergizing all components.

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