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Educational Innovation: Digital Learning in The Disruptive Era

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Abstrak
Inovasi merupakan proses pembaharuan dalam segala bidang, salah satunya pendidikan. Dengan adanya inovasi, pendidikan dapat mengadaptasi diri terhadap perubahan-perubahan dalam masyarakat dan teknologi, sehingga mampu memenuhi tuntutan zaman. Tujuan dari penelitian ini adalah untuk memberikan gambaran secara mendalam tentang inovasi pendidikan yang diterapkan dalam pembelajaran digital di era disruptif. Penelitian ini merupakan penelitian kualitatif deskriptif yang menggunakan metode studi pustaka. Penulis menggunakan berbagai sumber tertulis seperti artikel, jurnal, dan dokumen yang relevan dengan kajian ini. Hasil studi menunjukkan bahwa inovasi merupakan proses pembaruan dan perubahan. Bidang pendidikan membutuhkan inovasi agar dapat terus berkembang dan menyesuaikan diri dengan perkembangan bidang lainnya. Inovasi pendidikan pada pembelajaran digital dapat melibatkan berbagai aspek pembelajaran, antara lain sumber belajar, media pembelajaran, evaluasi pembelajaran, dan platform yang mendukung proses pelaksanaan pembelajaran.

Kata kunci: inovasi pendidikan, pembelajaran digital, era disruptif

Abstract
Innovation is a process of renewal in all fields, one of which is education. With innovation, education can adapt itself to changes in society and technology, so that it can meet the demands of the times. This research aims to provide an in-depth overview of educational innovations applied in digital learning in a disruptive era. This research is descriptive qualitative research using the literature study method. The author uses various written sources such as articles, journals, and documents that are relevant to this study. The study results show that innovation is a process of renewal and change. The education sector needs innovation so that it can continue to develop and adapt to developments in other fields. Educational innovation in digital learning can involve various aspects of learning, including learning resources, learning media, learning evaluation, and platforms that support the learning implementation process.

Keywords**:** educational innovation, digital learning, disruptive era

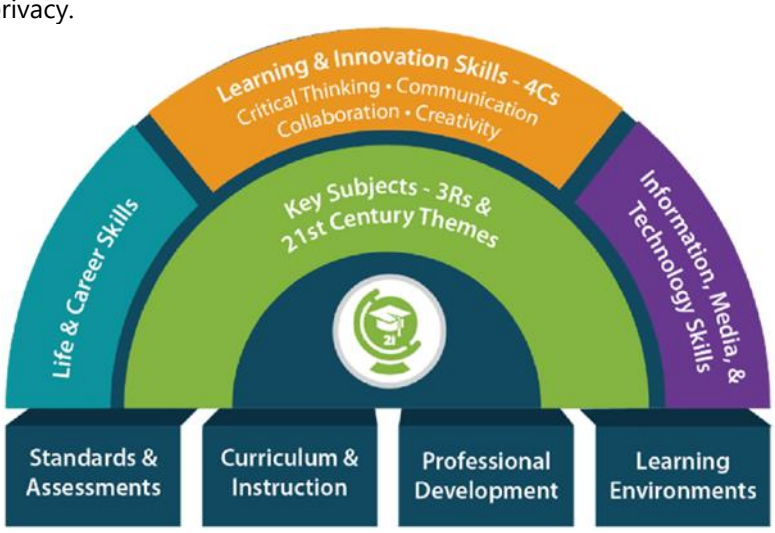
INTRODUCTION

The rapid development of technology and information affects all aspects of human life. This condition is called the disruptive era, in this era old habits are radically abandoned due to the development of digitalization. The disruptive era occurs due to the development of

communication technology, the emergence of the millennial generation, the need for exponential mindsets, corporate mindsets, disruptive business models, and the era of the internet of things (lasmawan, 2019). In this era, fundamental changes occur that include the evolution of technology that targets and changes almost all levels of life, including the level of education

This disruptive era occurred due to the influence of the industrial revolution. The industrial revolution saw major technological advances accompanied by significant socio-economic and cultural changes, so that we are now entering the industrial revolution 4.0 and social 5.0. The Industrial Revolution 4.0 was first known in Germany in 2011, marked by strong integration between the digital world and industrial production and the industrial revolution 4.0 was a digital era when all machines were connected via the internet or cyber system (Reflianto and Syamsuar, 2018).

The rapid changes that affect human life, this makes demands for higher skill mastery for teachers and students. The skills that must be possessed in the 21st century era based on the partnership for 21st Century Skills can be described in Figure 1 about the Framework for 21st Century Learning. In the figure, information can be obtained that knowledge (through core subjects) alone is not enough, it must be supplemented with: a) Learning and innovation that develops creative, innovative, critical, communication and collaboration abilities, b) building a life and career with a strong character (responsible, has a leadership soul, independent, social, tolerant, productive, flexible and adaptive. c) supported by the ability to communicate and to utilize existing information technology.example is e-commerce which has disrupted traditional retail trade. Companies that fail to take innovative steps in the digital world, such as Nokia and Kodak, ultimately face destruction due to disruption (Gans, 2016; Lee & Trimi, 2021; Vecchiato, 2017). In fact, institutions or companies that do not bridge the generation gap in adopting technology face more serious threats (Kasali, 2018). Another impact is in the field of communications, where we have experienced and witnessed major disruption in the way we interact with each other. The internet and social media, having provided a highly influential platform to convey messages, also give rise to challenges such as the spread of fake news and lack of online privacy.



Gambar 1. Framework for 21st Century Learning

The industrial revolution era can change the way of thinking and perspective in various fields, one of which is in the field of education, in the learning process, technology is widely used (Rahman & Nuryana, 2019). The development of existing technology and the many demands for skills that must be possessed by students, this also requires teachers to always innovate in accompanying the learning process of students. Teachers make extensive use of technology to maximize the teaching and learning process. Learning by utilizing the internet network is often

referred to as digital learning. Technological support in learning can make learning that involves students' senses more comprehensive so that learning can facilitate various learning abilities of students and improve learning outcomes (Tekege, 2017). This is reinforced by the results of research conducted by Suyadi (2007) which states that the use of technology in the learning process can make learning conditions more conducive, can facilitate, speed up students' work and improve students' skills in utilizing technological advances.

The development of digital technology to support the digital learning process must be supported by all elements of education including the government, principals, teachers, and the community. Of course, the digital learning process can run well inseparable from the role of teachers as teachers and facilitators. Teachers have an important role in the success of the learning process. Teachers can use various media, methods, strategies in learning so that students are more interested and motivated to learn and make it easier for students to master the material presented. The use of technology in learning includes utilizing technology to develop learning resources, learning media, learning evaluations and utilizing internet networks for virtual learning.

Innovation of learning resources, media and learning evaluation to support digital learning, teachers can create varied, interesting, fun and educational learning content. Learning content can be packaged in the form of digital books, quizzes, and others. The use of technology and internet networks can be used to conduct virtual learning by utilizing various supporting applications. For example, such as distance learning through virtual video conferences or online learning using zoom applications, google meet, and others. The development of digital learning content must be in accordance with the teaching process carried out by teachers. This is in line with research conducted by Surani which states that the existence of facilities to utilize technology in educational institutions can facilitate the teaching and learning process and other non-academic activities such as learning administration (Surani et al., 2019).

The main problem faced is the willingness of teachers to innovate in learning. The willingness of teachers to learn and follow existing developments is the key to creating effective and efficient learning (Purnasari & Sadewo, 2020). Teachers must also continue to learn to develop their skills, one of which is the use of technology to support the learning process. Many previous studies have examined the use of technology in learning, innovation in education by utilizing technology. This is because we are currently in the era of the industrial revolution 4.0, where technology plays an important role in all fields including education. Therefore, researchers want to conduct a literature study related to the role of educational innovation in digital learning.

RESEARCH METHOD

The research method used in this study is a qualitative descriptive method with a literature study . Library research is a method of collecting data by understanding and studying theories from various literatures related to the research (Adlini et al., 2022). Researchers want to describe ongoing or existing phenomena. The data collected comes from scientific journals and digital books related to innovation in digital learning. The data obtained were then analyzed using descriptive analysis methods. The analysis method used is by describing facts from theoretical studies of research results that have been conducted by previous researchers. This article analyzes related to educational innovation in digital learning

RESULT AND DISCUSSION

Educational Innovation

Innovation is the development of knowledge to create or significantly improve new processes or systems (Chehade et al., 2020). Innovation is closely related to modernization in various fields including economics, politics, education, health, and science and technology (Rusdiana, 2014). Innovation in education needs to be continuously carried out in order to keep up with developments in other fields. Educational innovation plays an important role in improving human ability to adapt to changes in the world. Education is the main means of creating competent human resources.

Innovation has several characteristics, including (a) relative advantage , namely the extent to which innovation is considered to have advantages for its users, can be measured based on its economic value, provides satisfaction and pleasure for users. The more profitable it is for users, the faster it will spread. (b) complexity is the level of complexity and difficulty in using innovation for users. Innovation will spread easily if the innovation is easy to understand and use. (c) compatibility is the level of conformity of innovation with the values or norms of users. (d) trialability or the ability to be tested by users of innovation (e) observability, the innovation can be observed, seen, and felt (Syafaruddin, Asrul, & Mesiono, 2012, Sukma & Firdaus, 2020, Abbas et al., 2020, 2021, Aslamiah, et al., 2021, Jumriani, et al., 2021). These characteristics of innovation can be used as a reference in developing educational innovation products.

Development of educational innovation products can be done in four stages, namely invention, development, diffusion, adoption (Syafaruddin, Asrul, Mesiono, 2012). Invention is a new discovery or from the adaptation of something that already exists. Development is the stage to be able to apply innovation on a larger scale. Diffusion is the stage of disseminating existing information to users or called the final absorption. Adoption is an individual or group can adopt all existing components of renewal.

Educational innovation is related to digital technology. Educational innovation requires critical, creative, and imaginative thinking. Various innovation strategies produce innovative products, and to find out whether there is an increase in the results of educational innovation, an assessment instrument is needed to evaluate how much change occurs with the innovation. The educational innovation assessment instrument shows that the statement questionnaire used includes problem solving, thinking systems, goals, teamwork, and networking. The assessment instrument is used to develop teaching, assessment, and curriculum design (Keinänen et al., 2018).

The success of educational innovation must be supported by adequate resources. One of the resources in the field of education is teachers. Teachers as teaching staff have an obligation to develop their abilities in accordance with the four competencies of educators, namely personality, pedagogical, social, and professional competencies. The development of teacher abilities can be done through training. Training that can be attended by teachers can be in the form of technical guidance (bimtek), seminars and training organized by various educational institutions or training (Syafaruddin, Asrul, Mesiono, 2012).

Digital Learning

Digital learning is often referred to as Technology Enhanced Learning (TEL) or e-Learning, which is learning that involves the innovative use of digital tools and technologies during the teaching and learning process, and (Hutapea & Naibaho, 2023). Digital learning using technology can strengthen students' learning experiences by using a combination of tools and practices, including online and formative assessments; increasing the focus and quality of teaching resources and time; online content; and technology applications. Digital learning can be a fun learning medium, thus generating students' interest in learning a material. One advantage of digital learning is that students can learn anywhere at any time. Students who are able to operate computers have a greater opportunity to develop their skills because they can access various digital learning resources through the use of the internet network. Ultimately, digital learning can improve the quality of learning because of its ability to present various innovations in learning.

As one aspect of educational innovation, the use of digital technology can support digital learning. Digital learning actively utilizes technology and internet networks. Digital learning allows access to various learning resources flexibly and can be tailored to individual needs (Vioreza, et al., 2023; Williamson, 2016). Through digital learning platforms, students can access learning materials, learning videos, interactive modules, and various other multimedia content from anywhere and anytime, as long as they are connected to the internet. The use of digital technology in learning opens up new opportunities to develop more interactive, personal, and efficient learning methods. Therefore, the introduction of new technology in the school environment is an urgent need, but it must still be adjusted to the characteristics of students (Blandul, 2015). As in the Independent Curriculum in Indonesia, its implementation optimizes the use of Information and Communication Technology (ICT) in every learning process.

The Merdeka curriculum policy increasingly supports the implementation of digital learning. The Merdeka curriculum policy strengthens support for the implementation of digital learning by emphasizing flexibility and adaptability in the learning process (Sopiansyah, et.al., 2022; Vioreza, et.al., 2023; Thomas, 2011). This curriculum provides more space for schools and teachers to develop and adapt the curriculum according to local needs, as well as utilize various available resources and technologies. With a more open and inclusive approach, the Merdeka curriculum encourages the adoption of digital technology as a means to achieve learning goals. In this case, the use of digital technology is not only considered as a tool, but also as an integral part of a learning strategy that enables a more creative, interactive, and relevant learning experience for students . As stated by Picatoste et al. (2018), if the education process utilizes digital technology optimally, it is a key factor in helping all levels of society, including education practitioners, in facing the fourth revolution.

According to Burbules et al. (2020) technology is a driving force for educational reform and a means of developing education in all elements of society. This view reflects the understanding that the development of information and communication technology has fundamentally changed the way we learn, teach, and interact in the context of education. Development technology , especially the internet and digital devices , has open accessibility to source Power previous education difficult reachable . In other words, development technology overcome obstacle geographical and economic which often

become constraint in access education quality . Utilization technology allow existence more learning interactive and personal. Various digital learning applications and platforms provide tools that facilitate interaction between students and teachers, collaboration between students , as well as use interesting multimedia content For increase involvement and understanding student to material learning (Vioreza , 2023).

Efendi (2019) stated that one form of technological progress in the world of education is the existence of various online learning platforms, namely: (1) Quipper Video, which is an online-based education platform that can be used by students as a second school; (2) Ruang Guru, an education platform that combines sharing learning activities such as tutoring rooms and Q&A with teachers online; (3) Zenius, an online-based platform that contains discussion of questions to face a level of exam. This platform does not provide a Q&A session, the discussion of questions is only through audio that can be listened to by its users; (4) Kelase, a platform that can be used by students, parents, teachers, and school staff to learn independently; (5) Quintal, a platform that emphasizes the concept of managing learning activities online. Teachers can take attendance and share materials through this platform. This platform combines the School Information System (SIS) and Learning Management System (LMS); and (6) HarukaEdu, a platform that focuses on undergraduate students and collaborates with several educational institutions. The use of digital technology can be seen in the implementation of smart learning, smart classrooms that use Google Classroom. Another thing is seen in the implementation of adaptive learning using Google Meet and Zoom Meeting.

People no longer learn conventionally but start to switch through the cyber world (Efendi, 2019). This also has an impact on the way students learn, which optimizes the use of digital libraries to meet their needs or answer their curiosity about learning materials. So the learning process also develops according to the needs of students, which ultimately gives rise to various media to help the learning process to be more efficient and effective (Efendi, 2019).

One of the digital content that can be used in the learning process is a digital book. Based on the results of the study, information was obtained that through digital book products, various media formats (multimedia) such as text, images, videos, animations, and usage tutorials can be presented, which will involve the activeness of students in the learning process. With utilise various multimedia formats, digital books can enrich experience Study student with serve information visually and audiovisually attractive and easy understood. This is can help increase Power capture and retention information students, as well as facilitate understanding complex concepts through clear and interactive visualization.

There are several methods that are used as references in creating digital learning content, including Gamejam and Editathon, both events aim to create digital learning content and develop educational games (Juraschek et al., 2020) The process of creating digital learning content must be in accordance with the teaching process carried out by teachers, so that teachers can pay attention to the following: (1) Teaching based on educational games or educational games. Educational games must be able to improve conceptual understanding and increase students' imagination, so that students' thinking processes become creative in solving problems; (2) Education supported by the use of

technology can expand teaching opportunities for teachers and learning for students. For example, online laboratories that carry out experimental activities, this can be done by students by learning while working more broadly. So that students do not feel bored with the learning; (3) Technology development can increase cooperation between cultures, both local and interlocal, so that students can expand their knowledge of cultures outside Indonesia; and (4) Technology development can be used by teachers to assess learning for students at this time by adjusting their teaching and according to needs and identifying skills that students need to acquire in a more comprehensive way. So that learning assessments do not need to be done manually as usual, this can utilize current digital technology (OECD, 2016).

Based on the explanation above, it can be concluded that the development of digital technology must be in line with the development of current students, one of which is through the use of educational games that not only avoid monotony in learning, but also strengthen students' creativity in overcoming learning challenges. As a study by Barr (2018) showed that participation in educational games increases knowledge and enriches students' skills, especially in solving learning problems. Furthermore, digital technology also allows easy access to cultural information from various countries, which significantly increases students' insights.

The application of digital technology in learning does not limit teachers' ability to assess learning. On the contrary, various learning content can be utilized to provide holistic and diverse assessments. Thus, the teaching process through digital technology not only enriches students' learning experiences but also facilitates comprehensive evaluation.

Impact of Technology Utilization in Education

Technology has opened the door to ease in finding and delivering information, especially in the world of education. The use of technology in education is not only limited to the ability to search for literature such as books, journals, and other digital sources, as highlighted by Putri (2018). In Indonesia, the application of technology in education covers various aspects, including learning media, educational administration, and learning resources, as expressed by Lestari (2018).

Through digital learning media, teachers can enrich students' learning experiences with multimedia, interactive, and adaptive content. This not only makes learning more interesting but also allows for better differentiation of learning according to individual student needs. Meanwhile, technology also helps simplify educational administration, such as student data management, lesson schedules, and reporting systems, allowing more time and energy to be focused on actual learning activities. In addition, the use of digital learning resources such as e-books, online learning videos, and online learning platforms provides wider accessibility to learning materials for students throughout Indonesia, regardless of their geographic location or economic status. This can help reduce the gap in access to education and increase educational inclusion across the country.

The advancement of technology does not mean that it can replace the role of teachers. Teachers remain the determinants of success in learning. Therefore, in implementing digital learning, teachers must have adequate skills. This is related to the

professional competence of teachers as educators, which (Sappaile, 2017) argues that teacher competence influences student learning achievement. In addition, teachers must also be ready to face changes that occur in the future (Utami & Vioreza, 2021). In addition to skills in utilizing technology to create products that can support digital learning, teachers must teach in an interesting way to help students understand learning. In addition to the positive impacts that can be felt with digital learning, teachers must always try to minimize the negative impacts that can arise.

The positive impacts of using technology in education are as follows: (1) efficiency of time, cost, and logistics (Lestari, 2018); (2) Ease of obtaining and disseminating information because it is not limited by space and time (Marryono Jamun, 2018); (3) Providing a broader learning experience to students (Fitri, 2017, p. 122). The negative impacts that arise are: (1) Changing social life (Lestari, 2018); (2) changing behavior, ethics, norms, or morals of life (Marryono Jamun, 2018); (3) making students anti-social because they are busy in the virtual world compared to the real world (Fitri, 2017) (4) making students behave lazy and wasteful (Fitri, 2017, p. 122).

The negative impacts caused by technological developments, the role of parents, teachers, and society is very important so that children can still use the technology for positive things and still have character as future successors to the nation. The family as the main place for students to develop is expected to be able to supervise and guide in the use of technology. Teachers need to provide good teaching and utilize technology for the learning process. The community can play a role in supervising and motivating students so that they do not do deviant things (Putri, 2018).

There are several other things that can be done to minimize the negative effects of using technology. The use of information technology must be considered carefully, such as not making technology the only medium or means of learning. In addition, optimizing the use of technology in education without eliminating applicable ethics, supervising the use of technology such as cell phones by minors, and enforcing the legal function that serves as the standard operating procedure for controlling the application of information technology (Marryono Jamun, 2018). So cooperation is needed from various parties so that the use of technology in children can be optimal and in accordance with its objectives.

CONCLUSION

Innovation is a process that supports renewal and change in education. Digital learning, which is highly dependent on technology, is one form of important innovation in the learning process. Technology plays a crucial role in enriching the learning experience by providing various online learning media and platforms such as Quipper, Ruang Guru, and Zenius. Packaging learning content in digital form is also an effective way to utilize technology in education. With technology, the learning process is no longer limited by space and time. All parties, including teachers and students, can access learning resources easily and efficiently. However, equal access to digital technology in Indonesia is still not optimal. Many seminars, trainings, and trainings have been conducted to ensure that teachers can keep up with technological developments and utilize them

optimally in learning. The use of technology in education has positive and negative impacts. However, with good cooperation from various parties, negative impacts can be minimized while the positive impacts are emphasized. Educational innovation in digital learning covers various aspects, including the use of learning resources, learning media, learning evaluation, and learning support platforms. By continuing to develop and improve the application of technology in education, we can achieve a more inclusive, adaptive, and quality education system.

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