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ARTIFICIAL INTELLIGENCE (AI) IN EDUCATION: USING AI TOOLS FOR TEACHING AND LEARNING PROCESS

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Abstract : *Changes in the demands of education require innovation and creativity in the learning process. With the development of Artificial Intelligence (AI) in the field of education to help process daily activities including teaching and learning. The objective f this study is to investigate Artificial Intelligence (AI) in education, especially in the teaching and learning process. This research uses library research. The result analysis shows that AI has been widely applied to various educational technology platforms such as 1) Virtual Mentor, 2) Voice Assistant, for example, Google Assistant (Google), Siri (Apple), and Cortana (Microsoft). 3) Smart Content, 4) Presentation Translator. 5) Global Courses, for example, MOOCs, Udemy, Google AI, Alison, Khan Academy, edX, Udacity, Coursera, etc. 6) Automatic Assessment, 7) Personalized Learning for examples Ruangguru, etc. 7) Educational games, 8) Intelligent Tutoring System (ITS) or Intelligent Computer-Aided Instruction (ICAI). Artificial Intelligence (AI) is the process of modeling human thinking and designing a machine so it can behave like humans. In the future progress of science and technology, teachers' work such as correcting, student attendance, giving daily tests and exams, explaining knowledge, making administrative reports and other systemic work can be submitted to be completed by technology devices. Teachers can save more energy and can focus more on non-systemic work to create a golden generation with more character and quality with natural intelligence where robots cannot do it. Technology only runs systemically and is automated based on human commands, while the human mind, especially teachers deliver new knowledge. Therefore, the teacher's intelligence will be unmatched. AI that emerged as the industrial revolution is also the result of the creative minds of human natural intelligence. So when compared, between the two will never have an equal position.*

Keywords: *Artificial Intelligence (AI), education, teaching and learning*

INTRODUCTION

Today's technology has become an unavoidable part of the passage of time. Technology has not only changed people's lifestyles but has also changed how we work, learn, and interact. Various kinds of innovations appear all the time, making our activities and work more practical and effective. A more recent technological development is the emergence of the term artificial intelligence which is abbreviated as AI (artificial intelligence) which is currently starting to steal attention as a tool to act like humans.

In its development, artificial intelligence has also penetrated the world of education. AI systems allow people to learn with the help of education assistants such as bots. The development of the times requires the world of education to adapt to technological developments to improve the quality of education, especially the adjustment of information and communication technology. Digital learning content that is developing today can be presented thanks to the application of AI. Thick textbooks can now be presented into content that is more

concise, easier to read and understand by students, such as study guides, material summaries, or short notes. AI as a pillar of the industrial revolution 4.0 plays a central role in facilitating the learning process mediated by technology.

Artificial Intelligence (AI) is the process of modeling human thinking and designing a machine so that it can behave like humans or other terms called cognitive tasks, namely how machines can learn automatically from programmed data and information. Artificial intelligence can also be interpreted Artificial intelligence or AI is one part of computer science that makes machines (computers) able to do work as and as well as humans do. The use of Artificial Intelligence consciously or not we have applied it in everyday life. Many applications have implemented artificial intelligence as an advantage of these applications.

Artificial intelligence technology referred to here refers to machines that can think, weigh the actions to be taken, and can make decisions as humans do. Artificial intelligence (AI) is currently being developed on a large scale so that this technology will imitate and even take over the work normally done by humans. Based on the definition of AI, it was created to be able to act like humans in the form of programs and robots. Of course to facilitate human work. Even various digital platforms have used AI as a part of it. AI is used to make things easier for humans to do. Several technology companies have implemented AI including Amazon, Facebook, Microsoft, and Google.

Artificial intelligence or (AI) is a technology where machines can learn and understand logic like humans. This technology is said to be able to help simplify human life which is very complex (Fitria, 2021a). AI itself works by combining the presence of several data, iterative processing, and intelligent algorithms. This allows the software to learn automatically from patterns or features in the data. AI can also be said to be a very broad field of study. The scope of theories, methods, technologies, and subfields that exist in AI is very wide, including machine learning, neural networks, cognitive computing, computer vision, and scientific language processing.

The role of Artificial Intelligence (AI) technology is increasingly evident in various sectors, including the education sector. The presence of AI technology has transformed the educational curriculum, especially in the fields of technology, science, mathematics, and engineering. But AI will also change the face of the world of education as a whole. One technology that has recently received attention is Artificial Intelligence (AI). This technology has an important role in facilitating various job functions, including in the field of education. AI can also be implemented in the world of education. Teachers/lecturers can understand student needs more easily and more deeply (Fitria, 2021b). The students also can learn according to their needs without encountering difficulties.

Artificial Intelligence (AI) is believed to be able to help humans learn better and achieve educational goals more effectively. So it's not surprising that currently many AI-based innovations and breakthroughs are being and will be applied to support the learning process to make it more practical and effective. So when AI is present in the education sector, which then raises concerns by teachers, it is a challenge that must be faced so that the existence of education continues. Some of the strong beliefs that teachers cannot be replaced by AI are teacher collaboration with AI in the implementation of learning. Teachers need to have skills in utilizing science and technology (Science and Technology). So that teachers can take advantage of AI in terms of completing school administration such as making lesson plans, student attendance

lists, reporting student learning outcomes, making learning media and learning resources. The researcher is interested to investigate Artificial Intelligence (AI). Therefore, the objective f this study is to investigate Artificial Intelligence (AI) in education, especially in the teaching and learning process.

METHOD

This research applies library research. Library research more emphasizes the strength of the analysis of existing sources and data by relying on existing theories and concepts to be interpreted based on the writings that lead to the discussion (Sari, 2021). Here, the research problem can only be answered through library research, and vice versa no one may expect the data and field research (Zed, 2004).

The method of collecting data use document. If the data needed to answer the research problem are sought, in documents or library materials, the collection activities, that data is referred to as a document (Adi, 2021). The documents are can be both written documents, photographs, pictures, and electronic documents that can support the research. The example document used in this research is taken from books, articles journals both national and international related to the research. The method of analyzing data uses several steps, they are compiling related data from books and journals, analyzing the data (content) in the form of words and pictures then concluding.

FINDINGS AND DISCUSSION

Findings

Artificial intelligence has been widely applied to various educational technology platforms as follow:

a. Virtual Mentor

The function of AI which is currently quite widely applied to various educational technology platforms, especially those based online, is as a virtual mentor. Mentoring is a process in which a more knowledgeable person (the mentor) assists a less-knowing person (the mentee) in achieving a learning objective (Klamma et al., 2020). AI can provide feedback on students' learning activities and practice questions, then provide recommendations for material that needs to be re-studied like a teacher or tutor. Zhang (2016) states that Virtual Mentor (VM) is a multimedia-integrated e-Learning environment that stresses interaction, personalization, and intelligence.

One example is Blackboard (https://www.blackboard.com/teaching-learning/learning-management/mobile-learning-solutions) which is an application that is widely used in universities in Europe and America. This AI tool is widely used by professors/lecturers to publish notes, homework, quizzes, and tests that allow students to ask questions and assignments for the assessment process. Applications are widely used by professors/lecturers to publish notes, homework, quizzes, and tests that allow students to ask questions and assignments. Applications can also be used for assessment/assessment. This application can identify the reasons behind students' misunderstanding and can offer solutions that have been released by the lecturer and programmed beforehand.

The Blackboard concept is actually inspired by the conventional whiteboard that is in every classroom and discussion room. Blackboards in learning become the center and

medium that displays material information from the teacher to students and is also a place for ideas, discussions, problem-solving and new insights to emerge. That's how Blackboard AI works, developing solutions and solving problems in a comprehensive and cooperative manner. AI can provide feedback on student learning activities and practice questions, provide recommendations for material that needs to be re-studied like a teacher or tutor.

This AI system will continue to learn and update information independently according to the needs and constraints faced by students. This tool can identify the reasons behind students' misunderstanding and can offer solutions that have been released by the lecturer and programmed in advance. This AI system will continue to learn and update information independently according to the needs and constraints faced by students. Hwang & Vrongistinos, 2012), states that the quality teachers for quality students initiative created an electronic mentorship system between new and experienced teachers to help new teachers improve their instructional and classroom management abilities in light of the special requirements of English language learners (ELLs) in Southern California. The results of the data analysis revealed that combining the use both of Blackboard and Skype technologies was advantageous to starting instructors' ability to effectively educate ELLs.

b. Voice Assistant

This AI technology has similarities with virtual mentors. It's just that Voice Assistant relies more on the voice function as a center for interaction and communication. Voice assistants incorporate AI using cloud computing and can communicate with the users in natural language (Terzopoulos & Satratzemi, 2019). Several Edutech platforms have also adopted Voice Assistant technology to help students find content and materials more quickly and practically.

Voice Assistant is also one of the most widely recognized and used AI technologies in various fields, including education. Examples of commonly known voice assistants are Google Assistant (Google), Siri (Apple), Cortana (Microsoft), and others. Voice Assistant allows students to search for materials, reference questions, articles, and books by simply speaking or mentioning keywords. Furthermore, the VA will display the information you want to search for according to the keywords mentioned. In addition to presenting information in the form of text and images, Voice Assistant can also speak and explain the information you need like a personal assistant.

Canbek & Mutlu (2016) states that AI assistants such as the ones described facilitate human-computer connection by using natural language in digital communication. The general goal of this research is to look at the possible usage of Intelligent Personal Assistants (IPAs) that learn using advanced cognitive computing technologies and Natural Language Processing (NLP).

Voice Assistants allow interaction with various learning materials without communicating with the teacher. As a result, the educational platform can be used anywhere and anytime. That way, the students can learn independently without worrying about getting confused even without a teacher/tutor, because by using VA, everything and information that is not understood can be presented only by voice. The application of artificial intelligence to voice assistants has similarities to virtual mentors. It's just that Voice Assistant relies more on the voice function as a center for interaction and communication.

Voice Assistant allows students to search for materials, reference questions, articles, and books by simply speaking or mentioning keywords.

c. Smart Content

Smart Content is an AI technology that functions to share and find programmable digital book and material content more easily and quickly. Common examples of the application of this technology are found in various digital libraries today, both in schools, universities, and public libraries. AI can find and categorize the books we are looking for quickly and structured. We will even be given book recommendations and other content relevant to what you are looking for. Smart Content is a summary of various learning materials, from digital textbooks to interfaces that can be tailored to our needs. The examples are as follow:

1) Cram101

Artificial intelligence can find and categorize the books you are looking for quickly and in a structured way. We will even be given book recommendations and other content relevant to what we are looking for. Examples of smart content technology that have been used are Cram101 which has the function of breaking digital textbooks into specific parts. Cram101 is an online service that uses artificial intelligence to read textbooks, summarize them and post highlights and key points of the material online. The service is available for a subscription rate of $9.95 a month. So the book can consist of chapter summaries, tests, and so on. Its usefulness is so that users can find more specific information according to their needs. Examples of smart content technology that have been used are Cram101 which has the function of breaking digital textbooks into specific parts. So the book can consist of chapter summaries, tests, and so on. Its usefulness is so that users can find more specific information according to their needs. Cram101 is one such framework that produces advanced substances through part rundowns, practice tests, and cheat sheets (Jain & Alam, 2020).

2) Netex Learning

Netex Learning is yet another company focused on creating smart content platforms. The solution is full of AI-based features. The Netex platform also offers a personalized cloud platform with virtual training, conferences, and more. The application of artificial intelligence to smart content functions to share and find programmable digital book and material content more easily and quickly. Common examples of the application of this technology are found in various digital libraries today, both in schools, universities, and public libraries. There is even a more complete and sophisticated technology called Netex Learning that offers a personalized cloud platform with virtual training, workshops, and more. So when you are looking for a material or topic, this platform will recommend various multimedia such as books, videos, and various virtual training according to what you need/looking for. Netex Learning permits instructors and educators to plot an advanced educational program across video, sound, and an online colleague (Jain & Alam, 2020).

d. Presentation Translator

AI presents many opportunities to share knowledge around the world. Using Artificial Intelligence solutions, students can study various courses and training programs. There are many platforms with interactive learning materials from the best tutors. AI also provides

opportunities for students who speak different languages or have vision or hearing problems.

For example, Presentation Translator is an AI-based solution that renders subtitles in real-time mode. With AI Speech Recognition, students can hear or read in their native language. This technology has similarities to Voice Assistant, which relies on voice to carry out its functions. It's just that Presentation Translator has a usability specification to explain or present a text from a different language into the language you want. So users only need to listen to various kinds of speech texts, articles, or digital books without the need to read. So with AI Speech Recognition, users can hear in their native language. We can read and understand journals, articles, or books from any language more easily and quickly.

This technology also has an important role for those who have limitations in terms of language and vision, so that this technology has been widely adopted for various needs. It has become one of the features that are always present on smartphones today, namely 'Voice Control'. Even today we can also type using only voice (voice typing), so this can be a solution for those of us who have problems typing long text. We just need to speak and then the sentence will be written into text automatically in the app.

e. Global Courses

This AI technology has been widely applied in various fields, including education. Simply put, Global Courses users or students can search for and take online courses from all over the world. The course platform can recommend your interests and interests according to the keywords you have previously entered.

There are various free and open courses that you can try right now with a variety of interesting, interactive, and structured features and content. Examples of courses that have implemented AI technology include courses on MOOCs, Udemy, Google AI, Alison, Khan Academy, edX, Udacity, Coursera, and others (Zhang, 2021).

The hallmark of courses that already use AI technology is that there is a personalization feature that allows us to be notified about course progress, material that needs to be studied, test accumulation, total scores, relevant course recommendations, and various other features. AI-based solutions will help schools and universities that have international programs to create classes based on the curriculum and customize learning experiences that are tailored, for example, to the student's area of origin so that the subject matter provided is also adapted to the student's cultural background. Then the language is translated and automatic subtitles will allow teachers and students to communicate without any problems.

f. Automatic Assessment

AI is widely used for online automatic assessment and question correction purposes. The use of features like this makes it easier for teachers and tutors to prepare and conduct quizzes and tests easily and practically. Teachers and tutors no longer need to make questions and correct questions manually. The use of features like this makes it easier for teachers and tutors to prepare and conduct quizzes and tests easily and practically. Teachers and tutors no longer need to make questions and correct questions manually.

One example of the application of Automatic Assessment is the quiz creation and automatic correction features provided by the Kejarcita platform (https://kejarcita.id/). This feature allows teachers to easily and practically create quizzes and tests. Teachers only need to choose the type of subject, level, number of questions, level of difficulty, and several

other options. After that, the teacher only needs to share the quiz link with the students to do it directly online.

This feature allows teachers to easily and practically create quizzes and tests. Teachers only need to choose the type of subject, level, number of questions, level of difficulty, and several other options. After that, the teacher only needs to share the quiz link with the students to do it directly online. Student quiz results can be directly accepted automatically on the teacher's account. There is a score, a list of wrong questions, correct questions, and discussion. Just imagine that teachers no longer have to bother manually correcting and assessing the results of quizzes and student tests. Everything has been done by the programmed AI system.

AI technology can ease the burden on teachers/educators in handling repetitive administrative tasks, such as preparing lesson plans, assessing exams, checking student homework, and others. Automation of these processes will give teachers more time to monitor student progress and focus on improving teaching techniques.

The AI system will work independently according to programmed instructions and can learn according to the habits of the user or student. Even AI will provide recommendations for material that needs to be studied again and others based on the results you have obtained. The AI system will work alone according to programmed instructions and can learn according to the habits of the user or student. Even AI will provide recommendations for material that needs to be studied again and others based on the results you have obtained.

An AI-based deployment strategy for a College English-aided education system is provided. Some functions of the English teaching system are enhanced and humanized when combined with English teaching (Bin & Mandal, 2019). The use of artificial intelligence in English education is investigated to increase the quality and effectiveness of English instruction.

g. Personalized Learning

Personalized Learning bears some resemblance to other examples of AI technology. In essence, this AI technology allows students or users to get services like personal assistants. AI technology has a significant impact in improving the quality and learning patterns to be more practical and effective. This has also been proven by various studies and applications by various Edutech platforms, which indeed after using AI technology can have a significant impact on improving the quality and effectiveness of learning.

The application of this technology is quite common. Personalized Learning bears some resemblance to other examples of AI technology. In essence, this AI technology allows students or users to get services like personal assistants. Examples of the application of Personalized Learning, are those that have been implemented by Khan Academy (https://www.khanacademy.org/), Duolingo (https://www.duolingo.com/), Ruangguru (https://www.ruangguru. com/), and more.

AI will collect data from learning activities that have been carried out by users, and then will provide alternative learning solutions according to user needs. Personalized learning allows each student to progress and develop according to the speed and ability of each student in mastering the material and learning according to their desires and abilities (Mufdalifah, 2017). AI will also provide content recommendations, notify the user's study

schedule, and various other important functions. AI will learn to optimize the way users learn so that the learning process can be better and more effective.

AI in education enables schools or educational institutions to create more personalized learning experiences. From AI analysis of student data, teachers and educational institutions can determine the speed of learning and the needs of each student. Then the school can make a study plan based on the students' strengths and weaknesses. But what must be underlined is that technology will only function as a tool, of course, it will not completely replace the role of a teacher. For example, relating to affective and moral aspects involving feelings and psychology, of course, can only be done by a teacher. So that AI technology should be used optimally according to its capacity and function, but on the other hand, the role of the teacher must be prioritized so that humanistic and affectionate values in an educational process can continue to be lasting and maintained according to the essence of education itself, namely humanizing humans.

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h. Educational Games

Educational games are games that are designed to learn but can still offer play and fun. Educational games are all forms of games that are created, to provide an educational experience or learning experience to the players of the game. Educational content. Examples of educational games are Duolingo, Khan Academy Kids. Quick Brain and Puzzle Kids.

1st is Duolingo. This children's educational game application not only teaches English, but there are also 30 other foreign languages that children can learn, including Mandarin, French, Italian, Spanish, Korean, Japanese, and others. 2) Khan Academy Kids. The next children's educational game is Khan Academy Kids. Khan Academy Kids includes thousands of interactive activities for toddlers, preschoolers, and kindergartens. In this one-stop educational kids game, kids can learn reading, language, writing, math, social-emotional development, solving skills problems, and motor development. 3) Quick Brain. The next children's educational game is Quick Brain. As the name suggests, this latest children's game sharpens the brain's speed in processing a calculation. 4) Puzzle Kids. Animals Shapes and Jigsaw Puzzles There are 4 categories of mini-games consisting of matching shapes, arranging objects, guessing pictures, and jigsaw puzzles. Each mini-game challenges your child to find and manipulate shapes, solve jigsaw puzzles, and recognize how shapes fit into the bigger picture, all in a colorful, easy-to-use display perfect for tiny hands. This children's educational game is not just a picture-matching game, but many tricks that hone children's memory, Moms. This game is suitable for training memory, concentration, accuracy, attention, thinking speed, and logic skills.

Yunanto (2017) states that to create a game, we need to use a design theory known as gamification, in which one of the fundamental factors that must be included in the game is the function of artificial intelligence, also known as AI. The goal of this research is to develop AI in an instructional English game rapidly and correctly. The AI technique is based on the heuristic of similarity. Heuristics for answering issues based on human habits,

such as obtaining an answer from everyday behavior. The findings reveal that the suggested technique calculates similarity scores with a precision of above 60%. The conclusion is that a heuristic strategy may be used to artificial intelligence to allow it to automatically answer problems. (Haryanto et al., 2018) states that researched that Smart Edu RPG designs models for in-game elements that are built with the concept of Appreciative Learning and arranged with artificial intelligence to form immersive properties in learning games. Appreciative Learning is a learning concept that starts from something positive and fun, which will be the basis for designing learning activities in games. In understanding the material, players need to play the game repeatedly so that dynamic game elements are needed to prevent boredom and maintain the immersive level of the game. These dynamic game elements are behaviorally regulated using artificial intelligence. This research provides a model for immersive game elements using the concept of Appreciative Learning and artificial intelligence to produce dynamic content.

i. Intelligent Tutoring System (ITS)

Intelligent Tutoring System (ITS) or commonly known as Intelligent Computer-Aided Instruction is a system to provide teaching that can adapt to students' abilities. ITS is one of the developments of an expert system on artificial intelligence in the field of learning. Examples of Intelligent Tutoring System (ITS) are Intelligent Tutoring System (ITS) Based on Augmented Reality (AR) for Dimensional Geometry Material, Intelligent Tutoring System for Nun Sukun or Tanwin law learning, Intelligent Tutoring System (ITS) for circular learning, and various other ITS. (Abu Ghali et al., 2018) states that The Intelligent Tutoring System (ITS) is a computer program that provides students with personalized education and feedback without the need for human intervention. The system adjusts to each student's unique characteristics and progresses them from an easier to a more difficult level. The intelligent tutoring system was provided to a group of students of all ages to test out and observe how it affected them. (Alhabbash et al., 2016) states that the creation of an Intelligent Tutoring System (ITS) for teaching English grammar to aid students in learning the language quickly and simply. The system covers all areas of English grammar and automatically produces a series of questions for students to answer for each topic. The system adjusts to each student's unique characteristics and progresses them from an easier to a more difficult level. The intelligent tutoring system was provided to a group of pupils of all ages to test it out and see how it affected them. The findings revealed that the pupils were pleased with the system.

Discussion

Education is not just about acquiring knowledge. Education is a complex process in which we not only acquire knowledge of various concepts but also learn to apply them in daily life with our social skills. Machines cannot teach empathy, sympathy, and other emotions that are an important part of our personality development. This means that no matter how sophisticated AI is, no matter how many examples of using AI, this technology will not be able to replace the role of teachers or educators. The role of AI is limited to helping and empowering teachers in making the learning process a fun experience for students. The role of IT is also often used in supporting learning, either in schools or for self-learning. In the future, learning activities will

apply more artificial intelligence. AI can be used to present learning materials, conduct assessments, provide learning feedback. Artificial intelligence has been widely applied to various educational technology platforms.

The following are some examples of applying artificial intelligence to support learning such as 1) Virtual Mentor, for example, Blackboard to publish notes, homework, quizzes, and tests that allow students to ask questions and assignments for the assessment process. Applications are widely used by professors/lecturers to publish notes, homework, quizzes, and tests that allow students to ask questions and assignments. Applications can also be used for assessment/assessment. 2) Voice Assistant, for example, Google Assistant (Google), Siri (Apple), Cortana (Microsoft), and others. Voice Assistant allows students to search for materials, reference questions, articles, and books by simply speaking or mentioning keywords. Voice Assistants allow interaction with various learning materials without communicating with the teacher. 3) Smart Content to share and find programmable digital book and material content more easily and quickly. Common examples of the application of this technology are found in various digital libraries today, both in schools, universities, and public libraries. For example, are Cram101 to finds and categorizes digital books quickly and in a structured way. Then, Netex Learning offers a personalized cloud platform with virtual training, conferences, and more. It also looks for material or topic, this platform will recommend various multimedia such as books, videos, and various virtual training. 4) Presentation Translator. This technology also has an important role for those who have limitations in terms of language and vision, so that this technology has been widely adopted for various needs. 5) Global Courses, for example, MOOCs, Udemy, Google AI, Alison, Khan Academy, edX, Udacity, Coursera, and others. There is a personalization feature that allows us to be notified about course progress, material that needs to be studied, test accumulation, total scores, relevant course recommendations, and various other features. AI-based solutions will help schools and universities that have international programs to create classes based on the curriculum and customize learning experiences that are tailored. 5) Automatic Assessment, for example, Kejarcita platform for online automatic assessment and question correction purposes. The use of features like this makes it easier for teachers and tutors to prepare and conduct quizzes and tests easily and practically. Teachers and tutors no longer need to make questions and correct questions manually. The use of features like this makes it easier for teachers and tutors to prepare and conduct quizzes and tests easily and practically. 6) Personalized Learning for example Ruanguru (https://www.ruangguru. com/), and more. This allows students or users to get services like personal assistants. AI technology has a significant impact in improving the quality and learning patterns to be more practical and effective AI in education enables schools or educational institutions to create more personalized learning experiences. 7) Educational Games, for example, Duolingo, Khan Academy Kids. Quick Brain and Puzzle Kids. Educational games are games that are designed to learn but can still offer play and fun. Educational games are all forms of games that are created, to provide an educational experience or learning experience to the players of the game. This children's educational game is not just a picture-matching game, but many tricks that hone children's memory, Moms. This game is suitable for training memory, concentration, accuracy, attention, thinking speed, and logic skills. 8) Intelligent Tutoring System (ITS) as known as Intelligent Computer-Aided Instruction is a system to provide teaching that can adapt to students' abilities.

Despite these promising examples of AI applications, some things might be viewed as a drawback to AI, especially in the education sector. AI limits human interaction, the development of social skills, and the ability to build relationships. AI can also be a problem for developing countries because of its relatively high cost and because of insufficient internet connectivity to operate AI.

AI solutions also make the learning process so dependent on computing systems and infrastructure that it can become a target for cyberattacks and experience various technical problems. AI technology is also allegedly triggering the emergence of new methods of plagiarism. With increasingly sophisticated AI algorithms, this tool can paraphrase the original document, change conjunctions, and so on without changing the meaning. So that this plagiarized writing becomes like the original work. To overcome this, experts recommend that educational institutions implement plagiarism checker solutions that are also AI-based. Recent innovations allow developers to teach computers to perform complex tasks. This leads to opportunities to improve the learning process. However, the "teacher" is irreplaceable.

AI provides many benefits for students and teachers. First, for the student. 1) Education can be done at any time. By physically attending class, it's clear that it is time-consuming – travel at least. AI-based applications provide the opportunity to study in your spare time, spending ten or fifteen minutes – without the need to attend class. In addition, students can get feedback from tutors or instructors directly. 2) Various options to suit student needs. AI-based solutions can adapt according to the student's level of knowledge, topics of interest, and so on. 3) AI-based systems will tend to help students with their weak sides. It offers learning materials based on their weaknesses. For example, students take a test before starting to use the app; The app analyzes them and provides the appropriate assignments and courses. 4) Virtual mentors. The AI-based platform offers virtual mentors to track student progress. Of course, only “human” teachers can better understand student needs, but it's worth getting instant feedback from a virtual tutor.

With AI, it can help identify superior talents or identify learning difficulties faced by students. Learning in AI systems is technology-based, and is personalized learning so that it can foster the independence of students which will improve their learning experience. AI learning that emphasizes individual systems can increase student learning focus. AI can identify concepts like what students don't understand so that later AI can make adjustments to find new ways to help student learning. Thus, the right way of teaching students can be analyzed through artificial intelligence.

Second, for teachers and school institutions. 1) Opportunity to see the "weaknesses" of students. Different training courses make it possible to see gaps in students' knowledge. For example, AI can tell the teacher if many students choose the wrong answer for a particular question. As a result, the tutor has the opportunity to pay attention to the requested topic. 2) Better engagement. Modern technologies such as VR and gamification help engage students in the educational process, making students more interactive. Various AI-enabled algorithms can analyze user knowledge and interests and provide recommendations and training programs that can be further personalized. 3) Automatic curriculum creation. Teachers benefit greatly from AI development. Currently, they do not need to create a curriculum from scratch. As a result, tutors spend less time searching for the necessary educational materials. 4) Opportunity to find good teachers. With this online educational platform and the availability of “teachers” to choose

from, students have the opportunity to communicate with specialists from other countries. AI-enabled educational platforms offer suitable tutors, depending on teaching experience and soft skills.

With AI, making media or teaching materials will become easier, teachers do not need to understand technology in detail. There are already many applications and platforms available, teachers just need to sort and choose according to their needs. In terms of assessment, With AI, teachers no longer need to spend a lot of time assessing student assignments. Assessment of student assignments can be done automatically, even item analysis can be obtained directly without the teacher having to do the analysis one by one. Students also get direct scores thanks to the application of AI in education. They don't have to wait long to find out their value. With the help of the teacher's task in minimizing the time in assessing, the teacher will have more time to focus more on the teaching and learning process.

With the application of AI, learning activities can be carried out at any time. The presence of AI-based applications provides opportunities to learn anytime and anywhere, not limited by space and time. In addition, students also have the opportunity to find teachers other than the teachers at the school. With this online education platform and the availability of "teachers" to choose from, students have the opportunity to communicate with other teachers, even with teachers from other countries. The learning experience and abilities of students will certainly be able to develop better.

With the implementation of AI in education, in a pandemic situation like today, where the learning process has been forced to use the online mode, it is very useful. Learning activities are changed from conventional to online to facilitate the delivery of information and communication between teachers and students, and so that learning can continue. With the presence of AI in education, education is expected to be better and able to develop according to the times.

The presence of AI technology is a breakthrough in the field of education to facilitate learning and can foster independence, it does not have to depend on the role of a teacher who is too dominant, but teachers can shift to a level that provides enlightenment with substantial keywords and more importantly, must be returned to the essential teaching is moral education that must be maintained. Changes in the demands of education require innovation and creativity in the learning process. With the development of artificial intelligence in the field of education to help process daily activities including teaching and learning.

Therefore, the teacher's intelligence is unmatched as the natural teacher's intelligence that has been bestowed by the creator. However, a gift needs to be maintained properly and optimally. Artificial intelligence that emerged as the industrial revolution is also the result of the creative minds of human natural intelligence. So that, when compared, between the two will never have an equal position. Precisely artificial intelligence can collaborate with natural intelligence to become a perfect whole. In the future progress of science and technology, teacher work such as correcting, student attendance, giving daily tests and exams, explaining knowledge, making administrative reports and other systemic work can be submitted to be completed by technology devices. Teachers can save more energy and can focus more on non-systemic work to create a golden generation with more character and quality with natural intelligence where robots cannot.

CONCLUSION

The existence of artificial intelligence may be able to provide knowledge to students, but developing character cannot be done. That is an educator's job. How to inspire, motivate, make students become good students." So the role of the teacher in providing motivation, inspiration, and developing character are what AI cannot replace because AI is not given feelings and emotions like humans in general. In the end, if we look at technological developments, we must be able to adapt as technology advances. If we do not adjust, we are an educator (teacher/lecturer) may be replaced by technology.

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