CONSILIUM Journal : Journal Education and Counseling
p-ISSN :[2775-9465]
e-ISSN :[2776-1223]

THE ROLE OF ARTIFICIAL INTELLIGENCE (AI) AT SCHOOL LEARNING

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ABSTRACT
Services using AI can be found everywhere, such as Google Assistant, Siri, Google Translate, Computer Games, and so on. The purpose of this research is to find out the role of Artificial Intelligence (AI) in learning in schools. This research uses a descriptive qualitative approach with the literature study method. Sources of data were obtained through research journal articles, proceeding articles and books that were relevant to the research objectives. The results of this study found that AI can assist in analyzing individual student data and produce learning recommendations that are tailored to the needs and abilities of each student. Thus, AI can help teachers to provide a more personal and effective approach to the learning process. Adaptable Teaching: AI can be used to develop adaptive teaching systems, where learning materials can be adapted to students' level of understanding. For example, AI can provide additional exercises or additional explanatory material to students who are having difficulty understanding a particular topic.

Keywords: Artificial Intelligence (AI), Learning Activities, School

INTRODUCTION
Artificial Intelligence or commonly abbreviated as AI is a technology that has actually been developed for a long time and along with its development has affected humans in all aspects of life. According to Fauzan, (2020), Artificial Intelligence is a computational program that can make machines work like human intelligence, such as making decisions, solving problems, and making predictions. Because AI has almost the same abilities as humans, AI is also called External Intelligence or External Intelligence.

The initial development of AI was carried out by the United States with the IBM company and continued by Microsoft for more than 25 years. The United States develops defense and security technology through DARPA or the Defense Advanced Research Projects Agency which has been operating for more than 60 years. The United States used AI technology in the 1991 Gulf War under the name DART or Dynamic Analysis and Replanning Tool as a tool for planning goods logistics and also transportation initiated by DARPA (Russel, 2014)

China, as a country that continues to keep pace with the United States as a superpower, continues to develop by implicated AI technology in the military realm. China has invested more than 150 billion USD for the development of AI technology and in the future China will trade the AI technology it has developed. The development of AI by China was demonstrated at the Beijing Civil-Military Integration Expo last May 2019 where at the exhibition there were many drones that have the function of transporting people and goods and are also equipped with AI so that they can operate according to the program and without human operation. China apart from showing off the drones they have, also acceptS production of drones on demand if a country wants to buy them.

In addition, AI has a definite goal of understanding intelligence and building intelligent systems (Chanda, 2018);(Puspitoputra, 2020). Services using AI can be found everywhere, such as Google Assistant, Siri, Google Translate, Computer Games, and so on (Guntoro, 2020). Few people know about the benefits of this AI. Especially in developing countries like Indonesia, this problem can cause a domino effect on other fields that need AI in their business and also widen the gap in the development of AI technology to compete with other developed countries (Uno, 2023). Starting from elementary school, children must have the opportunity to learn key knowledge from computer science, such as computing and programming thinking, this is done so that children have the opportunity to advance to the next superior level. Because if they don't, they will grow up as passive consumers of rapidly evolving technology devices and services.

The role of IT is also often used in supporting learning, both in schools and for self-learning. In the future learning activities will apply more artificial intelligence. AI can be used to present learning materials, conduct assessments, and provide learning feedback. Based on the explanation above, this study aims to determine the role of Artificial Intelligence (AI) in learning in schools.

METHOD

This paper applies a descriptive qualitative approach to the literature study method. The literature review method is a series related to the method of collecting library data, reading and recording, and managing research documents (Zed, 2008).

Data Source

Secondary data sources were obtained through research journal articles, proceeding articles, and books that were relevant to the research objectives, while the primary data sources were from the researchers themselves. Data collection was obtained by analyzing data sources originating from books, proceedings, or journals according to the research theme

Research Step

Systematically the steps in writing research are as shown in the following figure:

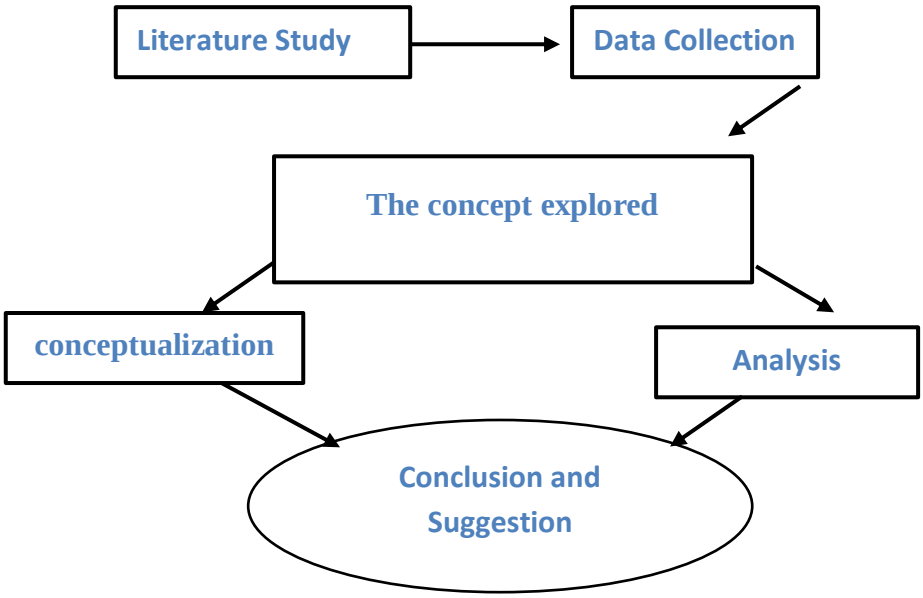

Figure 1. Flowchart of the concept studied

RESULT AND DISCUSSION

In general, the benefits of AI are that it makes the learning and teaching process smarter, assists teaching staff in assessing assignments submitted by students, and assists in the process of identifying and verifying student identity.

Application of AI in the Education Sector

The application of AI in various fields of life creates challenges for the world of education. Universities are racing against time to produce as many graduates with qualifications in AI as possible to meet the needs of the industry. The application of AI, on the other hand, has also penetrated the education sector, from basic education to higher education, and even professional education. AI is believed to be able to help humans learn better and achieve their desired educational goals (Mulianingsih et al., 2020);(David, 2020).

One of the biggest challenges in the world of education is the different ways and speeds of learning for each individual (Astini, 2022). For example, there are students whose left brain is stronger. While others have higher intelligence in fields that rely on the right brain. There are also people who have to face physical and mental obstacles in the learning process. Examples of the application of AI in education are:

AI-Based Personalization

An example of applying AI in education is a system that can personalize learning for each person or student. AI systems can help create a learning profile for each student and adapt learning materials to each student's abilities, ways of learning, and experience (Raup et al., 2022). The AI system allows professionals in the field of education to take advantage of intelligence assistance which can provide a variety of learning materials based on a predetermined curriculum but the material is tailored to the special needs of each student (Suprayitno, 2020). Personalized digital learning content can also be delivered thanks to AI and machine learning. Thick textbooks can now be broken down into more concise content that is easier to read and understand, such as study guides, summaries, flashcards or short notes. The AI system also allows people to learn with the help of educational assistants such

as bots (Sarosa et al., 2020). Apart from helping in terms of the learning process, the presence of this education assistant also presents adaptive learning where everyone can learn at their own pace.

Voice Assistant

Another example of applying AI in education is the use of voice assistants in the classroom. The presence of voice assistants, such as Amazon Alexa, Google Home, Apple Siri, and Microsoft Cortana allows students to interact with learning materials without having to interact with teachers or lecturers, both in the classroom and at home. In the higher education environment, AI-based voice assistants are used to provide information about the campus. In this way, students no longer need to carry thick guidebooks or have to visit websites back and forth when looking for information about campuses. An example of this kind of application is found at Arizona State University, USA. The university provides Amazon Alexa to each new student so that they can get information about the campus promptly and in more detail.

Application of AI in Learning Activities

Two approaches can be applied to implementing artificial intelligence (AI) in educational settings. First, the transfer of teacher tasks to the AI system, which acts as a tutor for each student. The existence of smart technology that adapts content to each student is already widely used in many classrooms, in the form of smart tutor systems. The alternative role of AI is to increase human intelligence and assist humans in carrying out effective and efficient learning activities (Manongga et al., 2022).

Various things can be done to apply AI in learning activities. The times are growing, demanding all fields including education to adapt and collaborate to solve problems

Virtual Mentor

The universal Internet was created as a means for disseminating information, knowledge, and thoughts on various topics. One of the programs that run alongside The Lab System, which operates more as a multimedia environment with integrated eLearning, is Virtual Mentor. the virtual mentor feature is more useful than regular classroom instruction (Amalia & Suhendi, 2021).

If Learning by Asking (LBA), also known as interaction learning, is not used, interaction learning will not occur. There will be two main components when using this LBA (Video Streaming Server and Web Server). Processing of the original video by these two components will result in the generation of questions which will later become one of the question data which can then be recalled and developed depending on the intensity of the questions that arise and the changes in the video being processed. The availability of virtual mentors such as LBA makes contact more efficient from a managerial and financial standpoint.

Voice Assistant

Users can study without having to read thanks to the voice assistant feature or voice assistant, voice replacement. Reading information that activates voice assistants will be different from human cognitive processes such as absorbing information from sound. Voice Assistant is currently being developed for use in various technological devices. In the classroom, this feature speeds up students' search for additional materials. The existence of a voice assistant also makes it possible for students to get transparent and accurate information (Deci, 2022).

Presentation Translator

Presentation Translator or presentation translator has the function of explaining or presenting a text from a different language into the desired language (Octo, 2023). Users only need to listen to various kinds of speech texts, articles, or digital books without the need to

read and translate one by one. This technology allows users to listen to foreign language utterances or sentences in their mother tongue.

Intelligent Tutoring System (ITS)

Intelligent Tutoring System (ITS) is a computer application that is able to understand and act like a teacher by adopting the teacher's expression when giving lessons (Jauhari & bin Ibrahim, 2010). The simple definition is an intelligent system that seems to act like a teacher who can help students in their independent learning process. This intelligent system provides the ability to adapt to the needs of students such as what teaching strategies are appropriate to apply with these students (Widiastuti & Ayuninghemi, 2016). With this ITS, teachers don't need to find it difficult to supervise the learning of each student and students can also increase their knowledge. Compared to e-learning, ITS perfects these weaknesses by paying attention to students' abilities, and teaching material according to their abilities (Conati, 2011). Meanwhile, compared to conventional teaching, the advantages of ITS are because ITS uses a one-to-one (private) approach between ITS and students (Mark & Greer, 1993). Classroom learning will be ineffective when students' understanding is not the same. Thus students need to be given full power in learning and ITS provides full service in teaching.

ITS tends to rely on exercises according to modern learning theory, exercises are carried out while learning is taking place so that it can investigate knowledge gaps. Modern learning theory emphasizes the importance of practice and places great emphasis on feedback as it is supposed to guide learning. Intelligent Tutoring Systems (ITS) have a broad influence on exchange rate, education, health, training and education programs. ITS currently provides intelligent presentations on appropriate educational content for students, such as level of knowledge, desired level of detail, assessment, student level, and familiarity with the subject. The initial evaluation of ITS was carried out by a group of students and teachers. That's an acceptable result.

Discussion

AI is a field within computer science that focuses on developing computer systems that can perform tasks that normally require human intelligence. The main goal of AI is to develop computers or machines that can learn, think and behave like humans (Syamsuar & Reflianto, 2019). AI systems use complex algorithms and mathematical models to process data and learn from experience to make decisions or perform certain tasks (Sobron & Lubis, 2021). There are several approaches to developing AI, including its use in learning methods in schools such as Machine Learning, Deep Learning, Natural Language Processing, Computer Vision and Robotics. In school education, AI has a very important role in the educational process (Pardamean et al., 2022), because in the era of the industrial revolution 4.0, the role of AI, whether consciously or not, is very helpful in the teaching and learning process, especially assisting teachers in forming, implementing and planning learning methods in schools

An example of the role of AI in the context of school education is the personalization of learning: AI can assist in analyzing individual student data and producing learning recommendations that are tailored to the needs and abilities of each student (Mambu et al., 2023);(Diana, 2018). Thus, AI can help teachers to provide a more personal and effective approach to the learning process. Adaptable Teaching: AI can be used to develop adaptive teaching systems, where learning materials can be adapted to students' level of understanding (Sudirman et al., 2022). For example, AI can provide additional exercises or additional explanatory material to students who are having difficulty understanding a particular topic. Automated Assessment: AI can be used to evaluate students' answers automatically (Afrita, 2023). Using machine learning algorithms, AIR can analyze and assess students' answers based on predetermined criteria. This can help teachers save time in providing feedback and

evaluating student work. Virtual Tutor: AI can be used as a virtual tutor available 24/7. Students can ask their questions to the virtual tutor and receive real-time explanations or help. A virtual tutor can assist students in understanding difficult concepts or provide additional exercises to improve their understanding (Afriansyah, 2019). Educational Data Analysis: AI can be used to analyze educational data such as test results, attendance and overall student performance (Sanjaya, 2020). With this data analysis, teachers and school staff can gain better insight into student progress and identify areas for improvement. Early Warning Systems: AI can be used to develop early warning systems that can detect problems or risks to students, such as high absenteeism, decreased academic performance, or signs of learning difficulties. Having this information, teachers and school staff can take the necessary actions to provide support to students who need it. The application of AI in secondary school education can help increase the efficiency and quality of learning, provide a more personalized approach, and assist teachers in providing more adaptive and effective education. However, it is important to remember that the role of AI in education should complement that of the teacher, not replace it. Teachers remain an important component of the educational process, while AI can be a tool that supports and enriches students' learning experiences

CONCLUSION

The presence of AI technology is a breakthrough in the field of educational technology to facilitate learning. Wise and controlled use of technology can accelerate education. The emergence of artificial intelligence technology (Artificial Intelligence) can also instill independence in students. The teacher is not burdened with such a dominant role; however, his duties are specific in the scope of providing enlightenment with substantial keywords. The basis for every use of technology for teachers is to continue to prioritize the essence of teaching, namely managing the morale and behavior of students. As for students, the existence of educational technology can help them control and monitor their own learning, enabling them to live and work well in the future

REFERENCES

Afriansyah. (2019). Pengembangan model pembelajaran virtual (mpv) berbasis video e-learning moodle. *Bahana Manajemen Pendidikan*, *12*(4), 25–47.

Afrita, J. (2023). Peran Artificial Intelligence dalam Meningkatkan Efisiensi dan Efektifitas Sistem Pendidikan The Role of Artificial Intelligence in Improving the Efficiency and Effectiveness of Educational Systems. *Jurnal Penelitian*, *2*(12), 3181–3187.

Amalia, A., & Suhendi, S. (2021). Analisis dan Perancangan Aplikasi Mobile guna Kegiatan Mentoring berbasis Online. *Jurnal Informatika Terpadu*, *7*(1), 21–26. https://doi.org/10.54914/jit.v7i1.328

Astini, N. K. S. (2022). Tantangan Implementasi Merdeka Belajar. *Jurnal Lampuhyang* , *13*(1), 164–180.

Chanda. (2018). Penerapan Artificial Intelligence dalam Computer Aided Instructure(CAI). *Jurnal Sistem Cerdas*, *1*(1), 50–57.

Conati, C. (2011). Intelligent tutoring systems: New challenges and directions. *IJCAI International Joint Conference on Artificial Intelligence*, *4*(1), 2–7.

David. (2020). Artificial Intelligence sebagai Solusi Menghadapi Era Disrupsi Digital 4.0. *Jurnal Inovasi Pengabdian Kepada Masyarakat (JUDIMAS)*, *1*(1), 107–116.

Deci. (2022). Pembelajaran Beragama Siswa SMA IT. *Communnity Development Journal*, *3*(2), 393–399.

Diana. (2018). Penggunaan Teknologi Machine Learning Untuk Pelayanan Monitoring Kegiatan Belajar Mengajar Pada Smk Bina Sriwijaya Palembang. *Jurnal Teknik Informatika*, *128*(1), 1–13.

Fauzan, I. (2020). Artificial Intelligence (Ai) on the Surveillance and Civil Service Control-an Exploration of Concepts After the End of Pandemic. In *Civil Service* (Vol. 14, Issue 1, pp. 31–42).

Guntoro. (2020). Aplikasi chatbot untuk layanan informasi dan akademik kampus berbasis artificial intelligence markup language (AIML). *Digital Zone: Jurnal Teknologi Informasi Dan Komunikasi*, *21*(1), 1–9.

Jauhari, J., & bin Ibrahim, M. (2010). Intelligent tutoring system sebagai upaya dalam pembelajarn berbantuan komputer. *Generic*, *5*(2), 1–6.

Mambu, J. G. Z., Pitra, D. H., Rizki, A., Ilmi, M., Nugroho, W., & Natasya, V. (2023). Pemanfaatan Teknologi Artificial Intelligence (AI) Dalam Menghadapi Tantangan Mengajar Guru di Era Digital. *Jounarl On Education*, *06*(01), 2689–2698.

Manongga, D., Rahardja, U., Sembiring, I., Lutfiani, N., & Yadila, A. B. (2022). Dampak Kecerdasan Buatan Bagi Pendidikan. *ADI Bisnis Digital Interdisiplin Jurnal*, *3*(2), 41–55.

Mark, M. a, & Greer, J. E. (1993). Evaluation methodologies for intelligent tutoring systems. *Journal of Artificial Intelligence in Education*, *4*(306), 129.

Mulianingsih, F., Anwar, K., Shintasiwi, F. A., & Rahma, A. J. (2020). Artificial Intellegence Dengan Pembentukan Nilai Dan Karakter Di Bidang Pendidikan. *IJTIMAIYA: Journal of Social Science Teaching*, *4*(2), 148.

Octo. (2023). Peranan Teknologi Informasi Artificial Intelligence (AI) Pada Yayasan Al-Kahfi. *Indonesian Journal of Multidisciplinary*, *1*(2), 952–960.

Pardamean, B., Suparyanto, T., Anugrahana, A., Anugraheni, I., & Sudigyo, D. (2022). Implementasi Team-Based Learning Dalam Pengembangan Pembelajaran Online Berbasis Artificial Intelligence. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, *12*(2), 118–126.

Puspitoputra. (2020). Pengukuran Tingkat Kematangan Tata Kelola Teknologi Informasi Berdasarkan Framework COBIT 4.1 Proses Acquire and Implement (AI). *Jurnal Teknologi Informasi*, *4*(1), 158–165. http://j-ptiik.ub.ac.id/index.php/j-ptiik/article/view/6875

Raup, A., Ridwan, W., Khoeriyah, Y., Supiana, S., & Zaqiah, Q. Y. (2022). Deep Learning dan Penerapannya dalam Pembelajaran. *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, *5*(9), 3258–3267.

Russel, S. (2014). Artificial Intelligence, A Modern Approach. In *Harlow: Pearson Education Limit.*

Sanjaya. (2020). 21 Refleksi Pembelajaran Daring di Masa Darurat. In *SCU Knowledge Media.*

Sarosa, M., Kusumawardani, M., Suyono, A., & Sari, Z. (2020). Implementasi Chatbot Pembelajaran Bahasa Inggris menggunakan Media Sosial. *Jurnal Edukasi Dan Penelitian Informatika (JEPIN)*, *6*(3), 317.

Sobron, M., & Lubis. (2021). Implementasi Artificial Intelligence Pada System Manufaktur Terpadu. *Seminar Nasional Teknik (SEMNASTEK) UISU*, *4*(1), 1–7.

Sudirman, S., Sarjan, M., Rokhmat, J., Hamidi, H., & Fauzi, I. (2022). Penilaian Pendidikan IPA secara Realtime dan Terintegrasi dengan Artificial Intelligence: Perspektif Filsafat. *Jurnal Ilmiah Profesi Pendidikan*, *7*(4).

Suprayitno. (2020). Pendidikan karakter di era milenial. In *Deepublish*.

Syamsuar, S., & Reflianto, R. (2019). Pendidikan Dan Tantangan Pembelajaran Berbasis Teknologi Informasi Di Era Revolusi Industri 4.0. *E-Tech : Jurnal Ilmiah Teknologi Pendidikan*, *6*(2).

Uno. (2023). Mengelola kecerdasan dalam pembelajaran: sebuah konsep pembelajaran berbasis kecerdasan. In *Bumi Aksara*.

Widiastuti, I., & Ayuninghemi, R. (2016). Struktur Bayesian Network untuk Penentuan Class Karakteristik Siswa pada Sistem Tutor Cerdas. *Prosiding*, *3*(1), 15–19.

Zed, M. (2008). Metode Penelitian Kepustakaan. In *Jakarta : Yayasan Obor. Indonesia*.