

The Utilization of Artificial Intelligence (AI) Technology in Islamic Primary Education in the Era of Society 5.0

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Abstract

Artificial intelligence, or more commonly known as AI, is a new breakthrough that addresses the challenges emerging in the era of Society 5.0. AI is the result of rapid developments in the world of technology, particularly in the fields of science and communication technology, which are at the forefront of this century's advancements, including advancements in the field of education. The aim of this research is to clarify the role of AI in education and the extent of its utilization in Islamic primary education. The research methodology employed in this article consists of a literature review and analysis of relevant literature sources to identify AI's contributions. The findings indicate that AI can significantly assist teachers in managing and analyzing student data through algorithms, thereby enhancing their ability to interpret students' performance. This research sheds light on the potential of AI to revolutionize Islamic primary education in the context of Society 5.0.

Keywords: Artificial Intelligence (AI), Islamic Primary Education, Society 5.0, Education Innovation

INTRODUCTION

Years passed quickly as times changed and developed, evolution in the field of information and communication technology brought a number of drastic changes. Changes in an increasingly advanced era are accompanied by digital transformation in human life, creating new value and becoming a pillar of industrial policy in both developed and developing countries. After passing through the era of industrial revolution 4.0, it is a phenomenon that changes the industrial paradigm by combining digital and physical technology to create a production system that is more efficient, flexible and connected. Even the era of industrial revolution 4.0 which was born in 2011 by the German government at the Hannover Fair, which became a big explosion in the field of technology, changed the way people live and work (Tohar et al., 2022) .

The era of society 5.0 was born as an evolution of the era of the industrial revolution 4.0, anticipating society 5.0 which has become a global trend first initiated by Japan in 2019 and then welcoming a new idea in the era of globalization. Society begins to interact with new technology and integrate their lives. Responding to the disruption that emerged during the Industrial Revolution 4.0 era, the Industrial Revolution 5.0 era was born from a concept to balance economic progress through an integration system between the virtual and physical worlds. The era of society 5.0 is also developing progress in the field of education, namely by utilizing artificial intelligence for learning (Wati & Adiyono, 2023) .

Supports previous research regarding preparation for this era of society (Liriwati, 2023) in the title artificial intelligence curriculum transformation to build relevant education in the future. Revealing that artificial intelligence with its ability to collect, analyze and process big data to improve curriculum, and create relevant education. This is the same as previous research which discussed artificial intelligence, but in this research we will not discuss curriculum transformation. However, the use of artificial intelligence is for elementary school age education, where at that age children will prefer to learn using something that can make their learning easier.

The aim of this research is to find out about the society 5.0 era that has taken place and the development of artificial technology. Not only that, the aim of this research will also discuss the use of artificial technology for the education sector. As we know, in a digital era like this, of course we as educators must always keep up with changing times. Researchers will explain how the era of society 5.0 is leading to modern society by utilizing existing technology

METHODS

This research uses a qualitative approach with content analysis. This study uses descriptive analysis methods, reviewing library materials, published research results, opinions of figures who discuss the concept of the industrial revolution and the emergence of artificial technology. Data analysis through the Miles Huberman model, namely reducing data, presenting data, and drawing conclusions (Maharani, 2023). We will present the data that has been collected from books and journals in the content and discussion sections and then in the end we will provide the main conclusions from the main discussion.

RESULTS AND DISCUSSION

Artificial Intelligence (AI) in the Education Sector

The era of the industrial revolution has increasingly developed with the development of Artificial Intelligence or commonly known as AI. AI or Artificial Intelligence is an artificial intelligence referring to the development of technology that is able to imitate human thinking and acting abilities. *Artificial* means something made by humans, while *Intelligence* means intelligence. This AI creation also has the main goal of helping humans in various activities and jobs with the ability to imitate human thinking. This shows that AI is able to receive and process data to complete an order (Farmawati et al., 2023).

This is the same as what Keng Siau wrote in his journal if this AI technology can be combined with humans and also use other smart technology such as robotics. The collaboration of each of these elements makes AI technology show its potential in business, health services, education, etc. Apart from that, of course the application of AI has had an impact on humanity and society. The future of work will be influenced by AI in the industrial revolution 5.0 era, even for future revolutions (Keng, 2020). AI

artificial intelligence is conventionally associated with computers.

However, it is clear from a review of various articles, especially in the context of the educational field. That although computers may have been the basis for the development of artificial intelligence, there are trends that are very different from computers. This is also what Lijia Chen has conveyed in her research, with the definition and description mentioned previously. Observing AI is the result of research and development over several decades that brings together system designers, data scientists, principal designers, statisticians, linguists, cognitive scientists, psychologists, education experts, with certain levels of intelligence and abilities to carry out different functions. This includes helping teachers and supporting students to develop flexible knowledge and skills for an ever-changing world (Xieling et al., 2021) .

AI also uses increasing program and software capabilities, such as algorithmic machine learning, which provides machines with the ability to perform various tasks that require human-like intelligence and the ability to adapt to the immediate environment (Liji & Zhijian, 2020) . AI in the education sector represents a knowledge domain and directs the learning process while students act as recipients of AI services to follow certain material. Students act as recipients to provide reciprocity to a predetermined set of knowledge. The use of AI in the education sector is to make learning logical or easily accepted by the brain (Fan & Pengcheng, 2021) . These conveniences are of course the design and goal of the industrial revolution 5.0 after the 4.0 era "internet of things" developed artificial intelligence in the 5.0 era.

Industrial Revolution 5.0

If we refer to the term industrial revolution 4.0, it has actually been explained explicitly by (Schwab. Klaus, 2019) the executive of the world economic forum based in Germany. We are now at the beginning of a revolution that is fundamentally changing the way we live, work, and relate to each other. This change is very drastic and occurs at an exponential speed, the industrial revolution 1.0 is marked by the growth of mechanization and steam and water-based energy. The industrial revolution volume 2.0 is marked by electrical power being used to make mass production. Industrial revolution 3.0 is marked by electronics and information technology. Now the industrial revolution 4.0, since the middle of this century, is the digital revolution which is characterized by a combination of technology that blurs digital space and physics.

A technological revolution is underway that is blurring the boundaries between the physical, digital and biological realms. At this time, society has even stepped into the industrial revolution 5.0, where a concept of society is human-centered and digital-based (technology-based). When we look further into the concept of the industrial revolution 5.0, it was triggered by the problem of population decline

in Japan. Referring to this, the industrial revolution can be interpreted as changes that occur in humans in carrying out the production process in the industrial world. It can be said that previously society 4.0 was searching, retrieving and analyzing information or data in the Amaya world via the internet.

In the era of society 5.0, a large amount of information is obtained from sensors in physical space and then accumulated in cyberspace (Ahmadi & Iba, 2020) . If the industrial revolution 4.0 pays more attention to the manufacturing process, while society 5.0 pays more attention to innovation with humans at the center. In this case improving the quality of life, social responsibility, sustainable development, through the use of technological advances (Teknowijoyo & Marpelina, 2021) .

Utilization of AI in Elementary School Age Education

As stated by the United Nations Educational Scientific and Cultural Organization (UNESCO), AI is not only entering the economy but also the education sector. This is the same as updating instructions, teaching methods, approaches, or learning media (tools) from the virtual world to real life. More specific applications of AI are widespread in areas including curriculum development, content personalization, teaching methods, student assessment, and communication between teachers and students. In other cases, AI in education has taken the form of an adaptive learning system, an intelligent tutoring system that improves the learning experience. Learning, which is an integral part of education, is one aspect of education that is within the scope of learning.

The scope of education with artificial intelligence is a new breakthrough, one of which is as a learning medium. According to Miles and Huberman, the use of media in implementing learning becomes data that can be processed and analyzed continuously to produce media as expected. The use of artificial intelligence is certainly beneficial not only for students but also educators in supporting material that has been previously studied at school. The following are several uses of artificial intelligence to support independent learning.

1. Self-Learning Personal Virtual Tutor

Artificial intelligence can function as a personal virtual tutor that provides individual guidance based on students' needs and weaknesses. The task of a virtual tutor is to provide additional material, practice, and appropriate feedback to help students improve their understanding of a particular topic. For example, "Robo Guru by Ruang Guru", a platform developed by the Ruang Guru team that uses artificial intelligence to become a virtual tutor for students or children who do not yet understand learning material. Collaboration between humans and technology eliminates the gap between cyberspace and real life.

This is the same as the statement from research (Laine et al., 2022) , that

advances in immersive virtual reality technology have enabled the development of learning environments. When combined with a sufficiently sophisticated computer tutoring agent such an environment can facilitate an asynchronous and self-regulated approach to learning material. Collaboration between humans as tutors or even robots to deliver learning in the virtual world.

2. Adaptive Learning System (Augmented Reality)

Adaptive learning systems can develop learning plans and adjust them based on the individual needs and level of understanding of students. The learning materials and difficulty levels created can be adjusted automatically based on students' learning progress. Augmented reality-based adaptive learning systems are one of the supporting learning media for interactive and adaptive learning systems. For example, the Assemblr application platform supports learning media because educators can create lesson materials in 3D.

Collaborating with a QR Code then appearing in the real world in 3D can make students understand the lesson quickly. This is the same as research from (Georgeo et al., 2022) that augmented reality has the ability to display computer graphics in the real world. AR allows users to see the real world as well as virtual images attached to real locations and objects. In AR user interfaces view the world through a handheld or head-mounted display in a see-through manner or overlay graphics on a video of the surrounding environment.

3. Learning Chatbot

Chatbot is a computer development that can simulate human conversation via typewriter, voice commands, or even both. AI intelligence can act as a learning chatbot developed to provide assistance and answers to students' questions. Using this chatbot, students can ask questions related to learning material, assignments or certain themes . The chatbot will be tasked with providing answers to students' questions in the form of explanations. Examples include Chat GPT, Brainly and many more, the system in these platforms allows children to ask questions according to the theme they want to search for.

This artificial intelligence will then answer every child's problem according to the user's abilities. This is in accordance with research from (Xinjie & Zhonggen, 2023) which states that the development of artificial intelligence in recent years has encouraged the use of chatbot technology in sustainable education. Apart from being useful for supporters, this chatbot technology also has a moderate to high influence on learning outcomes.

CONCLUSION

The era of society 5.0 was born as an evolution of the era of the industrial

revolution 4.0, anticipating society 5.0 which has become a global trend first initiated by Japan in 2019 and then welcoming a new idea in the era of globalization. Society begins to interact with new technology and integrate their lives. The era of the industrial revolution 5.0 is marked by the increasing development of artificial intelligence to help every human job. This AI can be combined with humans and also use other smart technologies such as robotics.

The collaboration of each of these elements makes AI technology show its potential in business, health services, education, etc. Apart from that, of course the application of AI has had an impact on humanity and society. The application and use of AI in the education sector include virtual tutors, 3D Augmented Reality media and the use of chatbots in learning.

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