Islamic Education and Technology: Integration of Islamic Education in the Midst of the Onslaught of Technology and Artificial Intelligence (AI)in the Era of Revolution 4.0

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ARTICLE INFO	ABSTRACT
Volume: 3	This research aims to analyze the integration of Islamic Religious Education in the era of Revolution 4.0 in the midst of the onslaught of technology and AI developments. The world of education after the presence of the 4.0 revolution phenomenon is predicted to enter the era of digitalization of the education system. Teaching and learning activities will change completely. The classroom has evolved with digital learning patterns that provide a more creative, participatory, diverse, and holistic learning experience, with new technologies removing geographical boundaries that trigger the emergence of new ways to generate new innovations. developments in digital technology with artificial intelligence (AI) that converts data into information, making people with an easy and cheap process to obtain it. The method used in this study is library research with secondary data sources. The results of the study show that to welcome Islamic Education 4.0 which is accompanied by the development of technology and AI, inevitably all of the latent problems above must be able to find a solution. In the era of the industrial revolution 4.0, there needs to be a significant overhaul, starting from the level of management and professionalism of human resources which requires an increase in competence and capacity. Outdated systems are replaced with new ones, for example, developing new digital-based service systems. The implementation of character education in madrasas can be carried out by the methods of (1) Teaching, (2) Example, (3) Determining priorities, (4) Priority praxis and (5) Reflection.
KEYWORD	
Artificial Intelligence (AI), Technology, Change, Islamic Religious Education and Revolution 4.0	

1. Introduction

Human life has entered the era of the industrial revolution fundamentally changing the way of living, working and relating to each other. In its scale of scope and complexity, the transformation that is taking place is experiencing a shift in lifestyle from before. Advances in the fields of information, communication, biotechnology, and materials engineering have accelerated tremendously and brought radical changes in all dimensions of life (Pouris, 2012). This condition leads us to enter a new era where everything is driven by computerization and the use of machines to ease human work and all of it goes so fast and uncontrollably. Such rapid changes are now called the Industrial Revolution 4.0 which is an integration between the use of computers and internet facilities whose users to date can reach billions of users. The digital transformation of manufacturing and the use of third-platform technology has become the identity of the industrial revolution 4.0. Information technology has become the basis in human life. Everything is limitless with unlimited power and data usage, as it is influenced by the development of the internet and massive digital technology as the backbone of human and machine movements and their connectivity. This revolution finally changed a person's perspective in living a modern and sophisticated life (i-scoop, Industry 4.0.

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digitalization of the education system. Teaching and learning activities will change completely. The classroom has evolved with a digital learning pattern that provides a more creative, participatory, diverse, and well-rounded learning experience. The existence of new technology has removed geographical boundaries that have triggered the emergence of new ways to produce new innovations. developments in digital technology with artificial intelligence (AI) that converts data into information, making people with an easy and cheap process to obtain it. The existence of new technology will have an impact on new innovations in the world of Islamic education so that its use can be used to facilitate the learning process in scientific transfer. People prefer public schools that are more promising for their future than schools that are based on religion. As a result, Islamic educational institutions, both Islamic boarding schools, madrasas, and Islamic universities are empty of interest, and some are even closed because there are no students, students, or students. It is ironic, in a country where the majority of the population is Muslim, but educational institutions are not in demand (Suhadha et al, 2023). Education in the era of the Industrial Revolution 4.0 has provided many solutions to learning problems with the lifelong learning method, namely the method of learning can be done anywhere, anytime and by anyone. Learning can be done at school, at home, at work and even in the community. Parents at home can use a wide range of learning facilities and not only in the classroom. This indirectly shows the dominance of educational technology over the presence of teachers in the religious learning process. In the future, society 4.0 is expected to make technology as an infrastructure to build comfort in the context of learning. (Lukman Hakim, 2021).

Islamic education is the oldest education in Indonesia with a long history and has survived with its methods even today. Islamic Religious Education is education through the teachings of Islam, which is in the form of guidance and nurturing for students so that they can understand, appreciate, and practice the teachings of Islam that they have believed in thoroughly, and make the teachings of Islam a view for the salvation of life in this world and in the hereafter. According to H.M. Arifin, Islamic education means an education system that can provide a person with the ability to lead his life in accordance with the ideals and values of Islam that have animated and colored his personality. (Zebua et al, 2023)

Nowadays, being tested with the presence of the century of digitalization and rapid technological changes, this is a new problem that must be faced in addition to the existing classic problems. According to (Mustofa Rembangy, 2010): "Islamic education problems are influenced by internal factors including power relations and educational orientation, curriculum aspects, learning approaches/methodologies, human resource professionalism, costs, and educational environment. Meanwhile, external factors, namely the phenomenon of globalization-multiculturalism, poverty, and government policies (Rozi, 2019)

Several reasons for the weakness experienced by Islamic education today. Among them, weaknesses in mastery of systems and methods. In general, Islamic education still uses the old (classical) system which only relies on the system of memorizing and listening to the material delivered by the teacher. Students are placed as objects in learning, while teachers are subjects (Mukti Ali, 2018). The lack of involvement of students in the teaching and learning process causes the learning process to become monotonous and boring. As a result, learning outcomes are not optimal and not in accordance with expectations. Teachers who are subjects in the teaching and learning process are sometimes poor in methods. Teachers' innovation and creativity in teaching are very lacking and almost invisible. This condition is what makes the class seem dead. The learning system and methods that are often practiced in Islamic educational institutions that are less varied and innovative are one of the factors that cause Islamic education to lag behind other education.

To welcome the era of the Industrial Revolution 4.0, the concept of Islamic education is needed and a very basic role in empowering Muslims. In this perspective, Islamic educational institutions are expected to be able to improve themselves, so that they are not only able to become a medium for transmitting culture, knowledge and expertise, but also as an interaction of potential and culture, namely how Islamic educational institutions are able to develop the potential of children given by Allah from birth in the context of preparing students. The curriculum, vision, annual program, semester program must be clear, flexible, contextual, and futuristic. An organization that is agile and dynamic in adapting to navigate the ocean of disruption, namely an organization that has human resources (Human Resources) with a good driver mentality (good drivers) instead of passengers (passengers). Human resources who are mentally good drivers will be willing to open themselves, quickly and accurately read the situation, have integrity, be agile in acting, be aware of all bad possibilities, and be able to work effectively, innovatively, and efficiently. These skills are mainly needed by leaders and managers of Islamic educational institutions. They are required to be reliable drivers for their institutions. Therefore, managerial competence alone is not enough, but must also be accompanied by the ability to lead. Meanwhile, human resources with a passenger mentality will tend to be bureaucratic, rigid, slow, and less disciplined.

The purpose of this research is so that Islamic religious education can come with a new information technology-based system. Information technology is the basis in the world of Islamic education. The development of the internet and massive digital technology as the backbone of the human and machine movement and its connectivity. This revolution finally changed

a person's perspective in living a modern and sophisticated life (i-scoop, Industry 4.0). The author is interested in conducting this research so that Islamic religious education can respond and adapt to the development of the times and technology in the era of the Industrial Revolution 4.0. This research uses the literature method. Data is collected through literature books related to Islamic religious education and technological developments in the Industrial Revolution 4.0 era, so that the Islamic religious education system through the learning process must be technology-based.

2. Literature Review

2.1 Islamic Religious Education

Islamic religious education in public schools is explained that Islamic religious education is a conscious effort to prepare students in believing, understanding, living and practicing Islam through guidance, teaching, and training activities by paying attention to guidance to respect other religions in the relationship between religious people in society to realize national unity. The term Islamic education in the context of Islam generally refers to the terms *al-tarbiyah, al-ta'dib and al-ta'lim*. Among the three terms, the term that is popularly used in the practice of Islamic education is the term *al-tarbiyah*, while the term *al-ta'dibdanal-ta'lim* is rarely used in the case that the term has been used since the beginning of the growth of Islamic education (Muhaimin, 2018).

2.2 AI technology

Artificial Intelligence (AI) is a simulation of human intelligence that is modeled on a machine and programmed to look like a human. According to Mc Leod and Schell, artificial intelligence is the provision of computer-like machines that use the ability to exhibit behaviors that are claimed to be intelligent as if their potential is displayed by humans. In other words, AI is a laptop system that is capable of doing jobs that usually require human labor or human intelligence to complete the job. AI itself is a generation that needs information to be used as knowledge like humans. AI wants to have fun and data so that its intelligence can be even better. What's interesting about AI is that it is able to self-correct or can correct itself manually. The synthetic Intelligence software in chatbot technology aspires to create such an App that is not only capable of understanding the meaning of the sentences spoken by the user, but can also provide the right and appropriate response in a short time(Hidayah, 2023).

3. Methodology

3.1 Research Methods

The research method uses library research by collecting data from writings (literacy) that are related to the topic discussed, namely Islamic Education in the 4.0 Era. The data is taken from documentation in the form of books, research journals, and supporting articles. The discussion method uses the descriptive-analytical method, which is to explain and elaborate the main ideas related to the topic discussed. Then present it critically through primary and secondary literature sources related to the theme (Sugiyono, 2019).

The data source used in this study is secondary data. Secondary data is data obtained through other parties, not directly obtained by the researcher from the research subject. In other words, secondary data is supporting data from primary data or primary data. Secondary data from this study were taken from books, documents, journals, articles, and other media sources related to strategies to strengthen the existence of Islamic education in the era of industry 4.0 and society 5.0. After data is collected on themes related to the research, then sorted, and grouped, then data analysis is carried out. Data analysis in this literature research is content analysis. Content analysis is a detailed discussion of the content regarding the theory and some relevant research results.

4. Results and Discussion

4.1 Integration of Islamic Religious Education in the Era of Technology and AI in the 4.0 Revolution

Islamic educational institutions are synonymous with lagging behind in information, communication and technology because of the very limited budget they have. A very limited budget that is used to finance school operational costs is not enough. The very limited source of funding for Islamic educational institutions makes the development of the potential of madrasas hampered. In the modern era like today, technology is the most urgent need for the development of all educational institutions, general education or religion. In fact, some people think that the progress of educational institutions depends on the completeness of the technological devices they have.

The problem that hinders the development of Islamic education, as mentioned above is the lack of creative, innovative, and critical thinking raised by Islamic education practitioners and experts on actual issues that develop in the midst of society. Islamic education practitioners and experts are more busy thinking about the differences that occur between one educational institution and another, rather than thinking about the crucial issues that develop. There have been no creative, innovative, and critical ideas raised by Islamic education thinkers for the advancement of Islamic education itself.

To welcome Islamic Education 4.0 which is accompanied by the development of technology and AI, inevitably all of the latent problems above must be able to find a solution. Otherwise, it will be difficult to realize Islamic education that is contextual to the times. Therefore, there is a need for reform and renewal of all aspects of Islamic education. To borrow Rhenald Kasali's term, there are three steps that must be taken by Islamic education in this 4.0 era, namely disruptive mindset, self-driving, and reshape or create (Qomariyah, 2023).

Islamic education today is in a fast-paced digital age, high mobility, access to information is the primary need of everyone. Everything that is needed must be available immediately, if it takes a relatively long time to access, then the community will abandon it and switch to other services that are faster and have easy access. The speed of response will greatly affect the user. This is what Rhenald Kasali calls a corporate mindset. This mindset needs to be built by Islamic education actors. So that the services provided to users are no longer bureaucratic. Furthermore, Rhenald said, the characteristics of people with a corporate mindset are:

1. Not bound by time and place. He works not limited to hours and workspaces. Such people have realized that time and place are no longer barriers to work. If this mindset is applied in the management of Islamic educational institutions, an effective and efficient managerial system will be formed.
2. Providing proactive service. Learning activities that are still concentrated on knowledge transfer from teachers and confined in the classroom, will find it difficult to produce highly competitive graduates. The educational paradigm has changed, no longer teachers, but student-centered. Teachers are required to be more proactive in providing facilities, guidance, and assistance to students.
3. Maximize the function of social media. Managers of Islamic education today must be able to take advantage of the advances in available communication media. Social media is no longer just entertainment. It has transformed into an effective communication tool, work aid, and inspiration in innovating. This opportunity must be able to be used well.
4. Not allergic to change. Precisely in the current era, change has become a necessity. An institution that remains static in its management, will lose to an institution whose management is more dynamic.

With the many problems faced by Islamic education, Islamic education does not touch the realm of humanity at all. The realm of humanity, which should be the main target of the development of Islam and its education, has become marginalized and not well managed. As a result, the level of public concern and enthusiasm for Islamic education has decreased. The level of public trust has also changed. The public's hope that Islamic education as a solution education in the current era of moral decadence has not been realized because of the lack of maximum socialization carried out by Islamic education stakeholders themselves. Such great expectations from the community are not balanced by the maximum efforts of Islamic educational institutions in socializing them (Idris, 2022).

In the era of the industrial revolution 4.0, there needs to be a significant overhaul, starting from the level of management and professionalism of human resources which requires an increase in their competence and capacity. This can be done in various ways, including through training, seminars, workshops, study scholarships, and so on. Another way to respond to the era of the industrial revolution 4.0 can be done by Create, creating new things that really did not exist before. In other words, it can be said that the old system has been expired. Outdated systems are replaced with new ones, for example, developing new digital-based service systems. So that residents of Islamic educational institutions can freely access all needs related to education and administrative services. Another example is developing a contemporary learning model by fully utilizing educational technology (Rahman & Nuryana, 2019).

4.2 Implementation of the integration of Islamic Education in the 4.0 Era with the Development of Technology and AI

Islamic religious education in the era of modernity today faces complex problems, internal problems include the moral deterioration of the nation's children, personality crises, and the birth of millennials who are connected to technology from birth, and external problems are mass information disclosure, dependence with other countries, and the unstoppable wave of the industrial revolution. This wave of disruption is expected to change several things in education, including on-demand education and skills services, opensource education and skills services, mobile and responsive education applications, more personalized courses, unlimited content services, and collaborative education platforms. According to Jakaria Umro, the challenge of Islamic education in the era of society 4.0 is the management of Islamic education that focuses on the cognitive realm and overrides other dimensions, thus giving birth to humans who rely only on intellectual intelligence. Another factor is Islamic education which is centralistic (Jakaria Umro, 2020). Agreeing with what Risdianto et al. said, that teachers should not only play the role of transmitters of knowledge but also emphasize character education, morals, and example. Because the transfer of knowledge can be replaced by technology, but the application of soft skills and hard skills cannot be replaced by anything. The response of the education community to the Industrial Revolution 4.0 is the

emergence of the philosophy of Education 4.0, where the vision of education is to motivate students not only to acquire knowledge and skills, but to identify learning sources and skills.

There are several ways to implement Islamic Education with Technology and AI in the 4.0 era, including:
1. Eliminating the paradigm of dichotomy between religious science and general science.
2. Changing the pattern of indoctrination Islamic education into a pattern of affirmative education.
3. Changing the ideological paradigm into a scientific paradigm based on the revelation of Allah swt.
4. It is necessary to reconstruct the curriculum. The paradigm of Islamic education tends to orient itself in the fields of humanities and social sciences, even though modern science (physics, chemistry, biology and mathematics) and the development of advanced technology are absolutely necessary.

Modernization in education is useless if it is not supported by the competitiveness of educators, because they are the spearhead of the implementation of education. For this reason, educators will be demanded: First, to have a mastery of digital technology. Second, Cultural transformation agents. Third, pedagogical development (Lince, 2016). Fourth, Social-personality competence. Fifth, Professional Development. Sixth, innovative-creative-adaptive (Umiarso and Asnawan, 2017). In addition, the strengthening of Islamic educational institutions also needs attention, including strengthening Islamic education management, strengthening Islamic education leadership, and reforming education policies by referring to the global education curriculum that has been tested for success and integrated into the educational curriculum (Hakim et al., 2024)

The implementation of character education in madrasas can be done by the following methods:
1. Teaching, which is providing direct understanding or inviting speakers.
2. Exemplary, Effective learning in children is by seeing, analyzing and imitating.
3. Determine priorities, so that the results are evaluated by setting standard characters, which must be understood by students, parents and the community.
4. Priority praxis, education is not only knowledge and skills, but virtue values in people's lives such as getting used to politeness and honesty.
5. Reflection, an opportunity for students to convey their understanding of character through writing that can be accessed by others (Priyanto, 2020).

Teachers as one of the components in Islamic Education in the era of industry 4.0 and society 5.0 need to have technical knowledge, namely how to use hardware and software and connect the two. Educators must be competent on the subject (content knowledge). In addition, educators must have the ability to teach knowledge, namely knowledge of student characteristics, learning theories, learning methods or methods, and assessment of learning processes and outcomes (Nuryani & Handayani, N.D.). The era of industry 4.0 and society 5.0 requires educators and educational institutions to shift learning from manual to digital. It is recommended that school curricula in Indonesia emphasize the importance of literacy, not only old literacy (reading, writing and mathematics), but also data literacy, technological literacy and human literacy. Data literacy is the understanding of reading, analyzing, and using data and information (big data) around the world (Puspita et al., n.d.). The challenge in the era of the industrial revolution 4.0 is to prepare the skills and mindset to gain a competitive advantage. The way to prepare for it all is through education. Students must be able to develop and improve their abilities. That said, the challenge for teachers is to be ready to help students develop their students' abilities (Suhadak, 2020). Through this method, teachers and students can collaborate to find out what their respective strengths and weaknesses are so that actions can be taken according to the problems faced in the learning process.

Islamic education can use the strategy of providing training to teachers to be competent in their fields. This strategy can be implemented in several ways, including:
1. Information literacy,
2. Research skills,
3. Life-based learning, which is being ready to enter the world of work requires many different skills, knowledge, and attitudes. These various abilities shape a person's character as a whole (Subekti et al., n.d.).

Learning from Thailand which has implemented several strategies to face the era of industrial revolution 4.0 and society 5.0, namely by focusing on various aspects. Among them are the development of education personnel, the improvement of the curriculum and measurement and evaluation that are aligned with the new class, as well as the improvement of materials used for learning in the form of textbooks. Students are taught to be creative in developing innovative products and ideas. The school itself must have a solid vision and management strategy to manage students and staff effectively. In this time period, there are four main trends: global, regional, local, and rational strategic issues. These trends affect how education is managed, access to education, and equality in Education. This trend affects education management, equality, access to education and adaptation to this new era (Jedaman et al., 2021). Indonesia has anticipated this industrial flow by implementing several policies contained in several regulations. To welcome the 5.0 era, there must be a way out so that

Islamic religious education can still be accepted in that era. Otherwise, it will be difficult to achieve Islamic religious education that keeps up with the times. Therefore, as mentioned earlier, all aspects of Islamic religious education need to be transformed and reformed (Latifah & Ngalimun, 2023).

5. Conclusion

Islamic education today is in a fast-paced digital age, high mobility, access to information is the primary need of everyone. Everything that is needed must be available immediately, if it takes a relatively long time to access, then the community will abandon it and switch to other services that are faster and have easy access. To welcome Islamic Education 4.0 which is accompanied by the development of technology and AI, inevitably all of the latent problems above must be able to find a solution. In the era of the industrial revolution 4.0, there needs to be a significant overhaul, starting from the level of management and professionalism of human resources which requires an increase in competence and capacity. This can be done in various ways, including through training, seminars, workshops, study scholarships, and so on. Another way to respond to the era of the industrial revolution 4.0 can be done by Create, creating new things that really did not exist before. The speed of response will greatly affect the user. This is what Rhenald Kasali calls a corporate mindset. This mindset needs to be built by Islamic education actors. So that the services provided to users are no longer bureaucratic. Another way to respond to the era of the industrial revolution 4.0 can be done by Create, creating new things that really did not exist before. In other words, it can be said that the old system has been expired. Outdated systems are replaced with new ones, for example, developing new digital-based service systems. The implementation of character education in madrasas can be carried out by the methods of (1) Teaching, (2) Example, (3) Determining priorities, (4) Priority praxis and (5) Reflection.

Conflicts of Interest: The conflict in this study is found in the problem of Islamic education influenced by internal factors including power relations and educational orientation, curriculum aspects, learning approaches/methodologies, human resource professionalism, costs, and educational environment. Meanwhile, external factors, namely the phenomenon of globalization-multiculturalism, poverty, and government policies.

References

JOURNALS :

Hakim, F., Fadlillah, A., & Rofiq, M. N. (2024). Artificial Intellegence (AI) dan Dampaknya Dalam Distorsi Pendidikan Islam. *Urwatul Wutsqo: Jurnal Studi Kependidikan dan Keislaman*, *13*(1), 129-144.

Idris, M. (2022). Pendidikan Islam dan Era Society 5.0; Peluang dan Tantangan Bagi Mahasiswa PAI Menjadi Guru Berkarakter. *Belajea: Jurnal Pendidikan Islam*, *7*(1), 61-86.

Latifah, L., & Ngalimun, N. (2023). Pemulihan Pendidikan Pasca Pandemi Melalui Transformasi Digital Dengan Pendekatan Manajemen Pendidikan Islam Di Era Society 5.0. *Jurnal Terapung: Ilmu-Ilmu Sosial*, *5*(1), 41-50.

Priyanto, A. (2020). Pendidikan Islam dalam era revolusi industri 4.0. *J-PAI: Jurnal Pendidikan Agama Islam*, *6*(2).

Rahman, A., & Nuryana, Z. (2019). Pendidikan Islam di Era Revolusi Industri 4.0.

Rozi, B. (2019). Problematika Pendidikan Islam di Era Revolusi Industri 4.0. *Jurnal Pendidikan Islam*, *9*(1), 33-47.

BOOKS:

DRS. Muhaimin, M.A. ET. (2018). *AI : paradigm pendidikan islam*. Bandung : PT remaja Rosdakarya. hal 75

Suhadha, M. K., Firnando, H. G., Sobarie, N., Septiani, R., Daroini, H., Supsiloani, S., ... & Bustomi, A. (2023). Teknologi Pendidikan Berbasis Artificial Intelligence (AI).

Zebua, R. S. Y., Khairunnisa, K., Hartatik, H., Pariyadi, P., Wahyuningtyas, D. P., Thantawi, A. M., ... & Kharisma, L. P. I. (2023). *Fenomena Artificial Intelligence (Ai)*. PT. Sonpedia Publishing Indonesia.

THESIS AND DISSERTAION:

Hidayah, N. (2023, June). Tantangan dan Strategi Pengajar dalam Menyikapi Perkembangan Teknologi Artificial Intelligence (AI), Study Kasus pada Mahasiswa Keperawatan dalam Penyelesaian Tugas Akhir. In *Prosiding Seminar Nasional Pascasarjana (PROSNAMPAS)* (Vol. 6, No. 1, pp. 552-555).

Qomariyah, N. (2023, November). PERKEMBANGAN TEKHNOLOGI AI DAN PENDIDIKAN ISLAM: UPAYA MEMBENTUK PARADIGMA BARU DALAM DUNIA PENDIDIKAN. In *Proceeding of Annual International Conference on Islamic Education and Language (AICIEL)* (pp. 576-585).