

## Islamic Education and Industrial Revolution 4.0

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### ABSTRACT

Globalisation refers to the process of integration and interaction among countries, individuals, and institutions across the world. Islamic education, which traditionally emphasises religious values, is now challenged to preserve its core principles amid rapid technological and societal transformations. The emergence of the Industrial Revolution 4.0, marked by advanced digital technologies, minimises physical boundaries and accelerates knowledge exchange. This study aims to examine the impact of globalisation on Islamic education, particularly focusing on the challenges brought by modernisation and digital development. Using a qualitative-descriptive approach, the research explores various strategies to strengthen students' character in this era, such as holistic education, integration of religious and ethical instruction, the central role of teachers as moral exemplars, and the incorporation of technology in learning processes. The findings highlight the urgency of adapting Islamic education to the dynamics of the digital age without compromising its foundational values. The study concludes that the role of educators as ethical leaders becomes increasingly significant in shaping morally grounded learners, as Islamic education must respond proactively to complex ethical and social issues arising in the globalised world.

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## INTRODUCTION

Globalisation is the integration and interaction between countries, individuals and entities around the world. Globalisation includes the exchange of information, ideas, goods, services, technology and culture. The characteristics of globalisation are the opening of global markets for small companies, the assistance of developing countries to become more stable and secure, the increase in international trade, the encouragement of technological progress, the existence of national borders to become more transparent, the ease of communication and transactions, and many bring progress and convenience (Kusmira, L., Gultom, Y., dan Nasution, 2024).

When viewed from Islamic education, globalisation connects the world in an interdependent network and brings major changes in almost every life. Education as a vital vector in social development. In Islamic education, education must also keep pace with the progress of the times related to modernisation, technology, and the development of values that can affect the understanding and teaching of religion. The development of information and communication technology has changed the way students learn and interact. These changes also affect Islamic education in both traditional and modern aspects (Amrullah, 2024).

Islamic education, which initially focused only on religious values, is now faced with the challenge of maintaining its characteristics in the midst of rapid change. In addition, global education standards encourage Islamic educational institutions to adapt to these demands without having to abandon the basic principles of Islamic teachings. On the other hand, globalisation provides opportunities for Islamic education to develop more widely through utilisation. Many literatures explain that globalisation has both positive and negative impacts on Islamic education. Globalisation opens up great opportunities for students to access a variety of information and knowledge that enriches their understanding of religious teachings. On the other hand, globalisation also risks bringing negative influences such as the gap between tradition and modernisation, as well as the entry of foreign values that can change the understanding of the true teachings of Islam (Adelia, I., and Mitra, 2021).

Modernisation in Islamic education is not just about keeping up with technological developments, but also includes adapting the education curriculum to the global context. This can be seen in the number of Islamic education institutions that are now adopting digital technology in the teaching and learning process, either through online learning or by utilising educational software and applications. However, there are concerns that the utilisation of such technology may reduce the depth of religious understanding if not matched with adequate guidance. Sometimes there are also those who argue that Islamic education in the era of globalisation is able to adapt without losing its essence. Islamic education not only teaches religious knowledge but also equips students to interact with the outside world so that they can become part of a global society that still adheres to Islamic principles (Gaus, 2017).

Islamic education in the midst of globalisation faces complex challenges where technological advances and social changes must be balanced with the maintenance of authentic Islamic values. Therefore, Islamic education is very important in finding the right approach in order to develop in the midst of globalisation without losing the roots of religious teachings. If associated with education 4.0 which leads to an industrial revolution where humans and technology are harmonised to create new opportunities creatively and innovatively. In addition, the 4.0 revolution also leads to improved manufacturing technology, the creation of strategic policy frameworks and so on. The education sector is one of the main pillars for the progress of the nation's next generation and needs to adjust according to the times so as not to be left behind both in terms of educational technology and learning curriculum compared to developed countries. The new era 4.0 will bring major changes in the physical world such as virtual facilities made possible by digital connections that minimise distance, eliminate differences and transfer knowledge (Syerlita, R., dan Siagian, 2024).

This study aims to analyse how globalisation affects Islamic education by emphasising the challenges faced in the process of modernisation and technological development. In addition, it explores how Islamic education can take advantage of the opportunities that exist in facing the challenges of globalisation while still maintaining the basic values of religious teachings. It also examines the impact of the industrial revolution 4.0 on education in the current era of globalisation.

## METHODS

This research leads to descriptive research by paying attention to the influence and use of technology in the era of globalisation which leads to the industrial revolution 4.0 on education, especially Islamic education. There is an influence on the utilisation of the development of the industrial revolution 4.0 based on facts and phenomena that occur today. In addition, the quantitative approach in this research is descriptive analysis to obtain a systematic, factual and accurate description of the facts, characteristics and relationships between the phenomena being studied with the data that has been obtained (Sugiyono, 2017).

## FINDINGS AND DISCUSSION

This research aims to explore how globalisation affects Islamic education and the challenges and opportunities that arise with modernisation and technological development. Globalisation is considered as a factor that has a broad impact on almost every aspect of life including education. In

particular, Islamic education faces major challenges related to the process of adapting to modernisation and technological developments that have the potential to change the essence of Islamic education itself.

Globalisation has greatly affected the integrity of Islamic education globally, driven by technological advances, trade and cultural exchange. In the context of Islamic education, globalisation brings significant impacts that have both positive and negative sides. One of the positive impacts of globalisation is increased access to knowledge. Islamic education can access various sources of knowledge from around the world more easily. This opens up great opportunities for Islamic education to be more open, inclusive and responsive to the development of modern science. Globalisation provides a great opportunity for Muslims to deepen their understanding of religion in a more flexible way.

Globalisation also allows Islamic education to spread more widely even outside Muslim-majority areas. The spread of Islamic teachings in various print and digital media introduces Islamic principles to various parts of the world. This has had a positive impact in increasing cross-cultural understanding of Islam, reducing negative stereotypes and opening up space for collaboration between Islamic educational institutions in different countries. However, globalisation also presents challenges in terms of maintaining the authenticity of Islamic teachings. Islamic teachings that have been set out in classical texts are sometimes distorted and misinterpreted in the global context. Therefore, the biggest challenge for Islamic education is how to maintain a balance between following global developments while remaining faithful to the basic principles of Islamic teachings (Kusmira, L., Gultom, Y., dan Nasution, 2024).

The development of increasingly sophisticated technology is influenced by the development of industrial revolutions starting from the 1.0 revolution which is characterised by mass production of products, for the 2.0 revolution marked by the development of electricity, and 3.0 marked by data processing on computers, industrial revolution 4.0 is characterised by the ability to transfer data using networks without having to interact between humans (Kurniawati, A., Hasrul, I., dan Delipeter, 2019). The industrial revolution 4.0 leads to the projection of modern technology implemented through improved manufacturing technology, the creation of strategic policy frameworks and so on. The education sector as one of the main pillars for the progress of the nation's next generation also needs to adjust according to the times so as not to be left behind both in the field of educational technology and learning curriculum compared to developed countries. The new era of industry 4.0 will bring major changes in the physical world such as virtual facilities made possible by digital connections that minimise distance, eliminate differences and transfer knowledge (Dito, B., dan Pujiastuti, 2021).

Education 4.0 is a response to the needs of the industrial revolution 4.0 where humans and technology are harmonised to create new opportunities creatively and innovatively. The existence of the 4.0 revolution not only has a limited impact on industrial transformation, but also changes the way we learn and work. Education faces the challenge of adapting curricula and learning methods to be relevant to future demands, with a focus on skills such as critical thinking, communication, collaboration and creativity. Technology is also expanding the accessibility of education worldwide through online learning platforms and digital resources, changing the traditional paradigm of learning. On the other hand, the industrial revolution 4.0 is creating a global labour market that requires new skills and rapid adaptation from the workforce. Despite challenges such as digital inequality and rapid economic change, this era also provides opportunities to realise inclusive and sustainable progress in an increasingly connected global society. Education that leads to 4.0 is characterised by greater use of digital technology (cyber system) in the learning process. A change in perception needs to be seen as the first step in facing this challenge. Therefore, students must have several competencies to provide answers in facing industry 4.0 (Dito, B., dan Pujiastuti, 2021).

The impact of the industrial revolution in Islamic education will have a significant impact by integrating digital technology deeply. The use of e-learning platforms, video conferencing and online learning applications provide wider and more flexible access to education. Technologies such as virtual reality (VR) and augmented reality (AR) are being utilised to create a more interactive and

engaging learning experience. Artificial intelligence (AI) data analytics enable personalised learning where teaching materials and methods can be tailored to individual needs. In addition, global educational resources are becoming more accessible and allow students and teachers to get the latest and best information, including through MOOCs (Massive Open Online Courses) that offer courses from renowned universities and institutions.

This revolution also encourages the development of digital skills in the education curriculum such as coding data science and cyber security to prepare the next generation for an increasingly technology-driven world of work. Technology facilitates global collaboration and communication, enriching perspectives through interaction with peers from different parts of the world. Collaborative platforms such as Google Classroom and Microsoft Teams facilitate coordination and communication in teaching and learning activities. In addition, technology-based management systems assist in administrative efficiency so that more focus can be placed on learning activities. Overall, the industrial revolution 4.0 is driving significant transformation in education and improving the accessibility, personalisation and quality of learning as well as preparing young people for the challenges of a technology-based future (Syerlita, R., dan Siagian, 2024).

Globalisation not only has a very significant impact on some aspects of life, but globalisation is also a challenge that is quite attention-grabbing and must be faced by Islamic educational institutions. (a) the task of Islamic education is to encourage the formation of a modern civilisation and culture that is relevant to the development of science and technology. However, the effectiveness of Islamic education has decreased due to a large focus on the moral and spiritual dimensions. Many argue that Islamic education is still lacking in prioritising practical and pragmatic aspects such as technological skills. As a result, Islamic education is in a less competitive position in the global cultural arena. There are two important things that must be considered in adjusting Islamic education during globalisation, namely ensuring that the development of science and technology remains related to the value of Islamic teachings and to understand the contribution of Islamic education to the development of science and technology in the future. (b) the condition of democratisation of Islamic education leads to the political structure of the state and not based on an authoritarian political system. Over time, these requirements have evolved to encompass management frameworks in various fields including education. The democratisation of Islamic education requires a transition from a standardised and centralised model of education to a more independent model. (c) Islamic education leads to cultural transformation and prioritises friendship. The most important thing is how moral values are framed in Islamic education which becomes a liberating force that releases itself from the confines of poverty, lack of knowledge and social, cultural and economic backwardness (Nida, S., Rahmawati, N.W., Isbah, M.F., dan Putri, 2024).

From a sociological point of view, education not only plays a role in preparing people to enter the future, but also has a relationship with social transformation, and vice versa. Various patterns of education systems illustrate the style, tradition, and social culture of the existing society. During the industrial revolution 4.0, there will be many opportunities that can be developed and depend on creativity to seek and find opportunities scattered in their respective fields of industry. This revolution will change many industries and job characteristics. Generating new business lines, new jobs, new professions that were not thought of before. To be able to compete in the industrial era 4.0 must be able to read and be responsive to changes and equip themselves with measurable skills (Waluya, S.B., dan Asikin, 2019).

For Islamic education, the industrial revolution 4.0 not only educates the nation's children and produces righteous humans, but education must be able to produce individuals who have material benefits, education that is made must give an attractive, creative and innovative impression, shifting the role of educators not only as mentors and advisors, but rather motivators and facilitators. There is a change in the paradigm of society where education was once considered a place to study and improve oneself, now education is considered one of the efforts to get a job. To face several challenges related to the 4.0 revolution, requires educational capabilities and support from various parties so that it can sustain the success of Islamic education. The role of teachers is increasingly important and strategic, this is due to a shift in development priorities by the government. After

focusing on infrastructure development, the government seeks to improve the quality of human resources (HR).

Developing the quality of human resources means relying on teachers so that teachers are expected to be able to become agents of transformation in strengthening human resources in building students' talents. There are five competencies that teachers must prepare for the 4.0 revolution, namely (a) educational competence (skill-based learning competence). (b) competence for technological commercialisation (teachers must have competencies that will bring students to have an entrepreneurial attitude with technology for the results of students' innovative work. (c) competence in globalisation (teachers do not stutter against various cultures and are able to solve educational problems). (d) competence in future strategies (competence to predict exactly what will happen in the future and its strategies by means of joint lectures, joint research, joint resources, staff mobility and rotation. (e) counsellor competence (teacher competence to understand that in the future students' problems are not only difficulties in understanding teaching materials, but also related to psychological problems due to the times (Hadi, A., Mukhlis, I., Oline, G., Azizah, 2020)

There are several values that are starting to erode due to industrial transformation 4.0, namely (a) cultural values related to culture, characteristics of the social environment and society that systematically lead to ways of developing a healthy balance between openness and skepticism, (b) formal juridical values related to political, legal and ideological aspects. Socio-political values are the content of values that can provide guidance to humans to behave and have good social behaviour or good politics in their lives. (c) religious values, where maintaining these values is the biggest challenge in facing revolution 4.0 where the times demand humans to be more creative because basically the times cannot be resisted. The cultivation of this value needs to be strengthened to raise the dignity of the world of education (Choli, 2024).

A holistic approach to character education recognizes that religious and ethical education must keep pace with technological advances. Religious education provides a spiritual moral foundation, while ethics education helps in understanding and applying moral values in everyday life. Technology, on the other hand, can be used to support and strengthen the learning process by providing tools and platforms that facilitate better teaching and interaction. Teachers have an important role as models of Islamic character, especially in the digital age where outside influences can interfere with religious values. Teachers must demonstrate real examples of the values taught such as integrity, justice and patience both in daily interactions with students and in the use of technology. Through their behavior, teachers can teach students about the importance of consistency between religious teachings and real actions in everyday life. Teachers must also be able to integrate Islamic values into the use of technology. This involves teaching digital ethics including how to behave politely on social media, maintain privacy and avoid spreading misinformation. Thus teachers not only shape students' character directly but teach them how to adapt to digital challenges and uphold religious values (Ali, 2018).

Some strategies for forming a generation with character in the 4.0 revolution era include (a) a holistic approach that leads to the integration of religious education, ethics and technology in the curriculum, having an implementation in the curriculum that combines religious material with interactive digital applications. (b) religious education that teaches moral and spiritual values through religious teaching materials, having an implementation in the teaching of values such as honesty and responsibility through class discussions. (c) ethics education that instills moral ethics relevant to the digital context, implemented in discussions and activities on the ethics of social media use and privacy. (d) the role of the teacher as a model who demonstrates Islamic behavior in daily interactions and the use of technology, implemented in demonstrations of attitudes and actions in accordance with religious values in the classroom and *online*. (e) integration of technology that teaches digital ethics and the use of technology in accordance with Islamic teachings, implementation in education about polite behavior and ethics in social media. A holistic approach to character education in the digital age allows for the harmonious integration of religious values with technological advances. Teachers as Islamic role models play a central role in this strategy by setting an example in their actions and by teaching these values in the context of modern technology.

Through this approach, it is hoped that students will not only become academically intelligent individuals but also have strong character and high integrity in the midst of rapid digital development (Afif, N., and Nawawi, 2024).

## CONCLUSION

Islamic education in the era of the Industrial Revolution 4.0 faces various challenges due to changes in many aspects of life, particularly driven by technological advancements and digitalisation. In the digital context, one of the main challenges is how to maintain and adapt strong spiritual and moral values within the fast-paced development of modern technology. While technology provides a valuable opportunity to broaden the reach of Islamic education through digital platforms, offering greater access for individuals to explore religious teachings, it also demands a more significant role from educators. Teachers are not only expected to deliver content, but must also serve as mentors who shape students' character, enabling them to respond to the emerging moral and social challenges of the digital age. The role of educators as ethical role models has become even more critical in addressing complex issues of values, identity, and behaviour in a globalised world.

This research contributes practically to the field of Islamic education by reinforcing the importance of digital literacy among educators and their role in integrating moral values into technological contexts. Future researchers may explore how digital-based Islamic learning models can be optimised for character education in various educational environments.

## REFERENCES

- Adelia, I., and Mitra, O. (2021). Problems of Islamic Education in Madrasah Educational Institutions. *Journal of Islamic Studies.*, 2(1), 32–45.
- Afif, N., and Nawawi, A. (2024). The Industrial Revolution 4.0 and the Challenges of Islamic Education: Strengthening the Role of Teachers as Caliphs in Shaping Generations of Character. *Reslaj: Religion Education Social Laa Raiba Journal*, 6(12), 6284–6294.
- Ali, M. (2018). Integrating Islamic Value in Modern Education: Utilizing Digital Platforms. *Islamuc Educational Press*.
- Amrullah, A. (2024). Islamic Education in a Modern Context: Concepts, Implementation, and Challenges. *SCHOLASTICA: Journal of Education and Culture*, 6(1), 46–59.
- Choli, I. (2024). Islamic Education and Industry 4.0. *Tahdzib Al-Akhlak Journal*, 4(1), 20–40.
- Dito, B., dan Pujiastuti, H. (2021). The Impact of the Industrial Revolution 4.0 on the Education Sector: A Literature Review on Digital Learning in Primary and Secondary Education. *Journal of Science and Science Education*, 3(1), 25–30.
- Gaus, D. (2017). Indonesian Islamic Education and the Challenges of Globalization: A Socio-Historical Perspective. *Journal of Science-Based Islamic Elementary Education*, 2(10), 13–22.
- Hadi, A., Mukhlis, I., Oline, G., Azizah, N. (2020). Islamic Education and Challenges in the Industrial Revolution Era 4.0. *Reforma Journal*, 11(1), 1–13.
- Kurniawati, A., Hasrul, I., dan Delipeter, L. (2019). Analysis of Interactive Multimedia in Facing the Challenges of Education in the Era of Industrial Globalization 4.0. *Journal of Physics Learning Research*, 2(1), 34–40.
- Kusmira, L., Gultom, Y., dan Nasution, A. (2024). The Influence of Globalization on Islamic Education Including the Challenges of Modernization and Technological Development. *Journal of Counseling, Education and Society*, 5(2), 8–16.
- Nida, S., Rahmawati, N.W., Isbah, M.F., dan Putri, M. (2024). Islamic Education in the Age of Globalization 5.0: Innovative Strategies for Future Challenges. *At-Tajdid: Journal of Islamic Education and Thought*, 8(2), 512–525.
- Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. CV Alfabeta.
- Syerlita, R., dan Siagian, I. (2024). The Impact of the Development of the Industrial Revolution 4.0 on Education in the Current Era of Globalization. *Journal on Education*, 7(1), 3507–3515.
- Waluya, S.B., dan Asikin, M. (2019). Learning Strategies in Facing the Challenges of the Industrial

Revolution Era 4.0. *Journal of Islamic Education*, 4(3), 469–475.