DEVELOPMENT OF ARTIFICIAL INTELLIGENCE-BASED IRE LEARNING ASSESSMENT: OPPORTUNITIES AND CHALLENGES AT MTS DURUL JAZIL

Anas Sofyan[1*]
Wahab[2]

[1,2]Institut Agama Islam Negeri Pontianak

E-mail: [1]ibnumiyahanassofyan@gmail.com, [2]abdulwahabassambasi@gmail.com*

Abstract

Islamic Religious Education (IRE) plays an important role in shaping the character and morals of students in Indonesia. However, in its efforts to improve the quality of learning, IRE also faces the challenge of remaining relevant and effective in conveying religious values to the younger generation. The increasingly advanced digital era has brought artificial intelligence (AI) technology as a potential tool to enhance the effectiveness of learning assessments. This research aims to develop Islamic Religious Education learning assessments based on artificial intelligence (AI) at MTs Darul Jazil, as well as to identify the opportunities and challenges faced in its implementation. Using a qualitative design with a descriptive method. Research results show that AI offers the ability to provide objective and rapid data analysis, which can enhance the effectiveness of evaluations, reduce correction time, and provide more in-depth and personalized feedback to students. This positive impact enables the development of a more responsive and adaptive IRE curriculum to the individual needs of students and changes in education. However, this research also reveals several significant challenges, such as ethical issues and data privacy, the readiness of technological infrastructure, and the ability of educators to use AI. To address these challenges, intensive teacher training, the development of strict privacy and ethical policies, and investment in adequate technological infrastructure are recommended. With this comprehensive approach, MTs Darul Jazil can optimize the use of AI in IRE assessments, improve the quality of education, and create a more effective and efficient learning environment.

Keywords: Learning Assessment, IRE, Artificial Intelligence, Opportunities and Challenges

Abstrak

Pendidikan Agama Islam (PAI) memainkan peran penting dalam membentuk karakter dan moral peserta didik di Indonesia. Namun, dalam upayanya meningkatkan kualitas pembelajaran, PAI juga menghadapi tantangan untuk tetap relevan dan efektif dalam menyampaikan nilai-nilai keagamaan kepada generasi muda. Era digital yang semakin maju telah menghadirkan teknologi kecerdasan buatan (Artificial Intelligence/AI) sebagai alat potensial untuk meningkatkan efektivitas penilaian pembelajaran. Penelitian ini bertujuan untuk mengembangkan penilaian pembelajaran PAI berbasis kecerdasan buatan (AI) di MTs Darul Jazil serta mengidentifikasi peluang dan tantangan yang dihadapi dalam penerapannya. Penelitian menggunakan desain kualitatif dengan metode deskriptif. Hasil penelitian menunjukkan bahwa AI menawarkan kemampuan untuk menyediakan analisis data yang objektif dan cepat, yang dapat meningkatkan efektivitas evaluasi, mengurangi waktu koreksi, dan memberikan umpan balik yang lebih mendalam serta personal kepada siswa. Dampak positif ini memungkinkan pengembangan kurikulum PAI yang lebih responsif dan adaptif terhadap kebutuhan individu siswa dan perubahan dalam pendidikan. Namun, penelitian ini juga mengungkapkan beberapa tantangan signifikan, seperti isu etika dan privasi data, kesiapan infrastruktur teknologi, serta kemampuan pendidik dalam menggunakan AI. Untuk mengatasi tantangan ini, disarankan pelatihan intensif bagi guru, pengembangan kebijakan privasi dan etika yang ketat, serta investasi dalam infrastruktur teknologi yang memadai. Dengan pendekatan yang komprehensif ini, MTs Darul Jazil dapat mengoptimalkan penggunaan AI dalam penilaian PAI, meningkatkan kualitas pendidikan, dan menciptakan lingkungan belajar yang lebih efektif dan efisien.

Kata Kunci: Penilaian Pembelajaran, PAI, Kecerdasan Buatan, Peluang dan Tantangan

INTRODUCTION

Teachers often face challenges in providing objective assessments. IRE assessments include dimensions that are not only cognitive but also affective and psychomotor, such as the practice of worship and student morals. Due to the subjective nature of assessment, teachers are sometimes influenced by personal views, social relationships with students, or perceptions that are not entirely based on predetermined criteria. At MTs Darul Jazil, there is no standard or uniform assessment tool to measure IRE learning outcomes, especially in affective aspects such as morality or student attitudes. As a result, the results of assessments between teachers are often different, even though they refer to the same curriculum.

Lack of adequate evaluation tools, such as detailed assessment rubrics and technological tools to support the assessment process. This causes difficulties in measuring abstract indicators, such as the level of religious understanding or changes in students' behavior in daily life. Teachers at MTs Darul Jazil often face a high workload, ranging from teaching, guiding extracurricular activities, to conducting learning evaluations. The manual assessment process takes a lot of time, especially in assessing the affective and psychomotor aspects of students that require direct observation and documentation.

Many teachers find it difficult to apply more modern and technology-based assessment techniques. This is due to the lack of training on the use of technology or innovative approaches such as computer-based assessment or artificial intelligence. Differences in students' backgrounds in terms of religious understanding and religious practices are also a challenge. Teachers find it difficult to develop assessment indicators that are inclusive and able to accommodate the diversity of students' abilities and experiences.

Islamic Religious Education (IRE) plays an important role in the education system in Indonesia, functioning as a moral and spiritual foundation for students (Misbah, W. A., & Mariyam, 2024). At MTs Darul Jazil, IRE not only teaches knowledge about Islamic teachings, but also seeks to shape the character and personality of students to become individuals of faith, piety, and noble character. For example, the IRE program at MTs Darul Jazil integrates religious activities with social activities, which has proven to be effective in increasing empathy and tolerance among students, especially in diverse community environments. The main goal of IRE is to guide students to understand and practice the teachings of Islam in their daily lives, so that they can interact well in a pluralistic society (Parnawi, A., & Ridho, 2023).

However, the assessment of IRE learning at MTs Darul Jazil faces various challenges. One of the main problems is the subjectivity of assessment, where teachers are often influenced by personal views or biases in assessing students' abilities and understanding. Preliminary research shows that around 65% of teachers at MTs Darul Jazil admit that there are difficulties in providing objective assessments. Additionally, the lack of consistent standards in IRE assessments at these institutions leads to variations in assessment results among students, which can reduce trust in the grading system. Limited

resources, both in terms of adequate evaluation tools and training for teaching staff in effective assessment techniques, also contribute to the deterioration of the quality of IRE assessment. Therefore, there needs to be a systematic effort to formulate a more objective assessment method and provide adequate resources so that the IRE assessment at MTs Darul Jazil can be more effective and have a positive impact on student development.

Artificial intelligence (AI) is a branch of computer science that focuses on developing systems capable of performing tasks that would normally require human intelligence (Mantara, 2024), such as pattern recognition, natural language processing, and decision-making. Examples of AI applications can be found in various fields, such as in customer service through chatbots, data analysis in the health field for disease diagnosis, and the use of algorithms in recommendation systems on e-commerce platforms. In recent years, the development of AI technology has accelerated rapidly, with advances in machine learning and deep learning allowing systems to learn from large amounts of data and improve their performance over time (Kushariyadi, Kushariyadi, 2024).

In the context of education, AI can be used for learning personalization, where the system can adjust teaching materials based on each student's abilities and progress, as well as in data analysis to identify learning patterns and provide more appropriate feedback (Annisa, N., Nurdin, N., & Martyrs, 2024). In addition, AI also has the potential to automate the assessment process and provide quick feedback, thereby increasing the efficiency and effectiveness of learning (Labobar, J., & Malatuny, 2024).

The use of artificial intelligence (AI) in Islamic Religious Education (IRE) assessments at MTs Darul Jazil offers great potential to overcome various existing challenges, such as subjectivity and lack of assessment standards. With objective data analysis capabilities, AI can minimize bias in assessment, ensuring more accurate and fair evaluations for all students (Soegiarto, Ita, 2023). Additionally, AI can adjust teaching materials and evaluation methods based on individual student progress, creating a more responsive learning environment (Wardani, Febri Pramudya, 2024). The grading automation offered by AI also improves time efficiency for teachers, allowing them to focus on developing more effective curriculum and teaching strategies. By taking advantage of this opportunity, the application of AI in IRE assessment not only improves the quality of evaluation, but also supports optimal student growth and development (Bungawati, 2022).

In an effort to understand the development of artificial intelligence (AI)-based Islamic Religious Education (IRE) learning assessments, it is important to review previous studies that have explored the opportunities and challenges involved. Various studies have been conducted to explore the potential of AI in improving objectivity, efficiency, and personalization of assessments in education. Some of these studies provide valuable insights into how AI technology can be integrated in assessment systems, as well as the challenges that may be faced in their implementation.

The article entitled "The Impact of Artificial Intelligence in the Assessment and Evaluation of Student Learning Outcomes" written by Wibowo and Ariany (M. U. Wibowo & Ariany, 2024). The article highlights the application of artificial intelligence (AI) in the

assessment of student learning outcomes that has a significant impact on education. So that AI is able to analyze and process data automatically, producing more complete information about student learning progress. In addition, in an article entitled "Implementation of IRE Learning Assessment through Computer Based Test at SMK Negeri 7 Bandung City", the author explores the implementation of IRE assessment using CBT at SMK Negeri 7 Bandung City. The results show that although CBT improves the efficiency of assessment, there are challenges in its implementation, including teacher readiness and the necessary technological infrastructure (Binanto, 2020). Furthermore, in the article "Artificial Intelligence in Education: Opportunities and Challenges of Its Utilization for Learning Personalization" by Fadli Mahesa, it is shown that artificial intelligence (AI) has great potential to improve learning effectiveness, motivation, and student engagement, as well as assist teachers in developing more effective learning plans. Despite challenges such as the availability of accurate data, infrastructure limitations, and data privacy concerns, this research is expected to contribute to the development of science and technology in education, especially in the use of AI for personalized learning (Mahesa, 2024). And meanwhile, in the article "Artificial Intelligence Transformation in the Context of Islamic Religious Education Learning at Al-Azhfar Integrated MTs North Gorontalo" written by Febrianto Hakeu, Ridwanto Djahuno (Hakeu, F., & Djahuno, 2024). The article provides valuable insights into the potential and challenges of using AI in Islamic religious education, as well as provides a basis for the development of Islamic religious education that is of higher quality and relevant to the demands of the times. Finally, an article written by Bainar entitled "Opportunities and Challenges of Digitalization for Islamic Religious Education" explained that digitalization encourages educational transformation for the better by utilizing technology and data. Various parties in the educational environment, including students, teachers, educators, administrative staff, graduates, and parents of students, play a role in this process. With the increasingly fierce competition in the education sector, the use of digital technology is the key for educational institutions to remain relevant and superior in this digital era. Keywords: Digitalization, Islamic Education, Opportunities and Challenges (Bainar, 2024).

Various previous studies have discussed the application of artificial intelligence (AI) in the world of education, but there are still gaps that need to be filled, especially in the context of Islamic Religious Education (IRE). The research of Wibowo & Ariany (2024) highlights the significant impact of AI in analyzing and processing learning outcome data automatically, but the focus is more on general aspects of education and has not touched on specific assessments in religious learning. Similarly, Binanto's (2020) research on the application of Computer-Based Test (CBT) for IRE at SMK Negeri 7 Bandung City is still limited to the cognitive aspect, without discussing the affective and psychomotor dimensions that are important characteristics in the IRE assessment. In addition, the studies of Mahesa (2024) and Hakeu & Djahuno (2024) show the great potential of AI in the personalization of Islamic religious learning and education, but no one has specifically

developed AI-based assessment standards that can integrate spiritual and moral values according to the needs of IRE at the Madrasah Tsanawiyah (MTs) level.

Another gap can be seen from the lack of research that in-depth addresses the challenges of AI implementation in religious education institutions, especially MTs. Previous research, such as those conducted by Hakeu & Djahuno (2024), is more general and has not provided concrete solutions to specific challenges, such as limited infrastructure, teacher training, or access to relevant technologies. In addition, most studies are theoretical or literature-based without raising specific case studies in an educational institution. This study aims to fill this gap by examining the application of AI in IRE assessment at MTs Darul Jazil, providing contextual and practical insights that have not been widely raised in previous research.

Furthermore, this study also highlights the importance of IRE assessments that are responsive to the context of pluralism in Indonesian society. Although Bainar's article (2024) highlights the relevance of digitalization in Islamic education, the aspect of social diversity has not been touched much. This research focuses on how AI can help create a more equitable, inclusive, and appropriate assessment system for educational needs in a pluralistic society. Thus, this research not only fills the existing gap, but also offers a concrete contribution through an innovative, effective, and relevant AI-based assessment model to improve the quality of Islamic religious education in the digital era.

By understanding the opportunities and challenges faced in the development of Islamic Religious Education (IRE) learning assessments based on artificial intelligence, as well as reviewing various relevant previous studies, this study aims to explore in depth how AI can be implemented effectively in the context of MTs Darul Jazil. This study uses a qualitative design with a descriptive method to identify and analyze opportunities and challenges in the implementation of AI in IRE assessment, so as to optimally improve the quality of assessment and student learning outcomes.

METHOD

This study uses a qualitative method with a descriptive approach. The descriptive qualitative approach is to make a systematic, factual and actual description of the facts and the relationship between the phenomenon or event being researched (Ramdhan, 2021). This study aims to explore the extent to which the development of Islamic Religious Education Learning (IRE) assessment based on artificial intelligence (AI) can optimize the learning process at MTs Darul Jazil, as well as to identify the opportunities and challenges that arise from the application of the method. With a descriptive approach, this study seeks to provide an in-depth understanding of the implementation of AI-based assessment through clear and detailed analysis. The data collection techniques used include observation, interviews, and documentation (Fadli, 2021), with the research location at MTs Darul Jazil. The research subjects consisted of IRE teachers and students, as well as informants involved such as school principals. After the data collection process in the field, researchers will analyze data related to the application of AI-based assessment in the context of IRE, focusing on identifying potential and existing challenges. This analysis, according to Miles, Huberman, and Saldana, will be divided into three

streams of activities that take place simultaneously, namely data condensation, data presentation, and conclusion drawing (Majid. A, 2017).

This research method is a field study that can be carried out in various ways, including interviews, surveys, and observation activities of resource persons. Observation activities usually include working with workers, living in communities with residents, observing developments in community life or organizational meetings (Rizal, 2021).

The location of this research was carried out directly on Jalan Panca Bhakti, precisely in North Pontianak District. The reason why the researcher chose this place is because there are several sources that still exist that the researcher considers to know about the information needed by the researcher. The research was used, talking about how the research was conducted, how many people would be interviewed in depth in structure and unstructured.

The source of data obtained from the informant directly is from the results of interviews with the informants concerned such as 1. Sofyan Hadi as the principal. 2. Ahmad Zaini, as a teacher at MTS Darul Jazil. 3. Muzdhalifah, as a teacher at MTS Darul Jazil. 4. Nurcholis, as a teacher at MTS Darul Jazil. The researcher here will identify the Form of Development of Artificial Intelligence-Based IRE Learning Assessment. Researchers will do this by using a combination of observation and interview techniques to obtain information about the opportunities and challenges that exist in Mts Darul Jazil. Once the data is collected entirely, the next step is to convert the verbal data into written data.

RESULTS AND DISCUSSION
Opportunities for the Use of Artificial Intelligence in IRE Assessment.

The use of artificial intelligence (AI) in the Islamic Religious Education (IRE) assessment process at MTs Darul Jazil has shown a significant opportunity to improve the effectiveness of evaluation. AI is able to improve the assessment process by providing more objective and rapid data analysis, which in turn reduces the time required to correct assignments and exams (Oktavianus, A. J. E., Naibaho, L., & Rantung, 2023). One of the AI tools used is Google Classroom, which provides an efficient and integrated learning management platform with various features that support assessment (Mu'minah, I. H., & Gaffar, 2020).

Digital Classroom allows teachers to easily create and distribute assignments, as well as monitor student progress in real-time (Fadhilah, U., & Lizawati, 2023). Automated grading features integrated with digital forms allow teachers to create quizzes and exams with multiple-choice answers or short fills that can be graded automatically (Rohman, 2021). For example, when students complete a quiz, they can instantly see their scores and feedback from the system. This not only saves teachers time in correcting assignments but also gives students the opportunity to learn from their mistakes instantly. Case studies related to the use of artificial intelligence (AI) in the assessment of Islamic Religious Education (IRE) at MTs Darul Jazil have improved the efficiency of evaluation through fast and objective data analysis. Digital platforms, such as Classroom,

allow teachers to structure and grade assignments and provide instant feedback to students. Additionally, integration with apps like Edpuzzle supports interactive learning that can be tailored to the needs of students. However, the application of AI faces challenges such as data privacy, limited infrastructure, and lack of teacher training. To overcome this, transparent data protection policies, improved system security, and training for teachers are needed to maximize the potential of this technology in supporting adaptive and innovative learning.

One of the teachers at MTS Darul Jazil stated:

"By using Google Classroom, we can correct assignments faster. This system not only provides a score, but also instant feedback on the areas that need improvement. This makes the assessment process more efficient and transparent"

Google Classroom also supports integration with various other AI-based educational apps, such as Edpuzzle, which can be used to create interactive learning materials (Alamin, 2023). For example, Edpuzzle allows teachers to turn learning videos into interactive by adding questions and comments. Students can learn at their own pace, and teachers can track their progress through the analytics provided by the platform.

The positive impact on student learning is very clear, where they receive more in-depth and rapid feedback, allowing them to understand their strengths and weaknesses in understanding the teaching material. In addition, the implementation of AI also opens up opportunities for the development of a more responsive and adaptive IRE curriculum, by allowing the adjustment of teaching materials based on the individual needs of students and the latest developments in education, thereby creating a more personalized and relevant learning experience for them (Adedo, E., & Deriwanto, 2024). This was also expressed by the principal of MTS Darul Jazil, namely:

"We can adjust the learning materials based on the assessment results provided by AI. If there is a group of students who are struggling with a topic, we can immediately make adjustments in teaching to target their needs".

A teacher also affirmed that:

"We can now provide learning experiences tailored to the individual needs of students, thanks to the analysis carried out by the AI system. This helps us in designing a curriculum that is more in line with the latest developments in education"

A student of MTS Darul Jazil also revealed, that:

"The feedback from the AI system has helped me a lot. I can see my mistakes directly and correct them quickly, so I don't just repeat the same mistakes".

He also explained that instant feedback allows him to not only correct his mistakes, but also understand concepts that he has not mastered. According to the student, the learning experience becomes more enjoyable because he feels supported by technology that is able to provide clear direction. With these various advantages, educators at MTs Darul Jazil are optimistic that the use of AI in IRE assessments will continue to develop and have an even greater positive impact on the learning process in schools.

Challenges in the Implementation of Artificial Intelligence.

Although there are many opportunities, the implementation of artificial intelligence (AI) in the assessment of Islamic Religious Education (IRE) at MTs Darul Jazil faces several

significant challenges that need to be considered. *First*, ethical issues and data privacy are a major concern, given that the collection and processing of student data must be done in a secure and responsible manner to protect their personal information from misuse (H. S. Wibowo, 2023). *Second*, infrastructure readiness at MTs Darul Jazil is a challenge in itself; Without adequate hardware and software, the AI implementation process will not be optimal and can hinder the effectiveness of assessments. *Third*, the ability of teachers to use AI technology is also a key factor, because without adequate training, teachers may find it difficult to utilize these tools effectively in the teaching and assessment process, which can reduce the positive impact of these technologies in improving the quality of education.

This is also in line with the statement of the Principal of MTS Darul Jazil:

"Ethical issues and data privacy are the main concerns. We must ensure that the collection and processing of student data is carried out in a safe and responsible manner, in order to protect their personal information from misuse."

The teacher also added:

"We must be more careful in using student data. There are concerns about how the data is stored and used, especially when it comes to sensitive assessment results. We also realized that we needed to upgrade our existing technology facilities. Without good infrastructure support, it will be difficult for us to integrate AI in assessment effectively, so we need to get more in-depth training on the use of AI. Without a good understanding, we may not be able to maximize the potential of this technology in improving the quality of education".

Strategies to overcome challenges.

To overcome the challenges faced in the implementation of artificial intelligence (AI) in the assessment of Islamic Religious Education (IRE) at MTs Darul Jazil, a number of strategies can be implemented. *First*, develop a clear and transparent data use policy, including the purpose of data collection, how the data is used, and the data protection measures taken (Rahmawati, S. N. E., Hasanah, M., Rohmah, A., Pratama, R. A. P., & Anshori, 2023). In addition, it is important to educate students and parents about this policy through seminars or meetings, so that they understand their rights regarding personal data and feel more confident in the use of technology that involves data collection. *Second* To ensure the security of student data, it is necessary to implement encryption technology to protect students' personal information and ensure that the data management system is properly protected against unauthorized access (Fajirah Lubis, I., Az-Zahra, F., Tanjung, L. H. F., Firmansyah, R., & Gunawan, 2024). In addition, it is important to conduct regular security audits to identify and fix potential vulnerabilities in the system, so that the integrity and confidentiality of student data can be maintained more effectively. *Third*, conduct training for teachers and staff on the importance of ethics and data privacy, and how to use data responsibly (Hartono, 2024). In addition, education about data privacy should also be provided to students, so that they understand the importance of protecting their personal information and know the steps that can be taken to maintain that privacy. With this effort, it is hoped that all school members can contribute to creating a safe and

ethical environment in the use of data. *Fourth*, establish a clear policy for deleting student data that is no longer needed for educational purposes, in order to minimize the risk of data misuse (Sutarto, 2022). Additionally, it is important to ensure that sensitive data is stored separately from other information and can only be accessed by authorized authorities, thus maintaining the confidentiality and security of students' personal information more effectively. *Fifth*, creating regular reports explaining how data is used and the steps taken to protect student privacy, in order to build trust between schools, students, and parents. Additionally, it is important to provide a feedback channel for students and parents regarding privacy and data use policies, so that they can raise concerns or suggestions, and contribute to creating an environment that is transparent and responsive to the needs of all parties.

This research has strong relevance to previous theories and literature studies regarding the application of artificial intelligence (AI) in education, especially in the context of assessment. Although many previous studies have identified the benefits and challenges of using AI in education, this study highlights the specific context of Darul Jazil's MTs and provides new insights into the implementation of AI in Islamic Religious Education (IRE) assessments. The contribution of this research to the development of educational and technological theories lies in emphasizing the need for a more responsive and adaptive approach in assessment, as well as the importance of paying attention to ethical aspects and data privacy. However, this study also has some limitations that need to be noted. Although the focus is on MTs Darul Jazil, the results of this study may not be fully generalizable for other educational institutions that have different contexts and conditions. External factors, such as support from management, parental involvement, and government policies, can also affect the successful application of AI in assessment. Therefore, more research is needed to explore these factors and their impact on the use of AI in education. Thus, this research not only adds to the treasure of understanding about the use of AI in education, but also provides practical recommendations that can be adopted by other educational institutions to improve the quality of learning and assessment in the digital era. Along with the rapid development of technology, the application of AI in education has the potential to revolutionize learning and assessment methods, as well as open up new opportunities for future generations.

CONCLUSION AND ADVICE

Suggestions can be in the form of input for the next researcher, or implicit recommendations from the research findings. In this study, the use of artificial intelligence (AI) in the assessment of Islamic Religious Education (IRE) at MTs Darul Jazil shows many opportunities to improve the effectiveness of evaluation and quality of education. The implementation of tools such as Google Classroom and Edpuzzle has shown great potential in providing students with fast and in-depth feedback, enabling a more personalized learning experience. However, significant challenges are also faced, including ethical and data privacy issues, as well as infrastructure readiness that needs to be considered. For this reason, clear strategies can be adopted to overcome these obstacles, such as the preparation of transparent data policies and training for educators.

This research provides new insights into how AI can be effectively implemented in educational contexts, while emphasizing the importance of paying attention to ethical aspects and data privacy. With a responsive and adaptive approach, it is hoped that the application of AI in IRE assessments will not only have a positive impact on the learning process and the quality of education in this digital era, but also create a more effective and efficient learning environment.

REFERENCES

Adedo, E., & Deriwanto, D. (2024). The Development of Digital Media and Its Utilization in Islamic Religious Education Learning. *Doctoral Dissertation, Curup State Islamic Institute*.

Alamin, Z. (2023). IMPROVING ISLAMIC EDUCATION THROUGH THE USE OF ARTIFICIAL INTELLIGENCE-BASED EDUCATION PLATFORMS. *Creative: Journal of Islamic Religious Education Thought*, *21*(1), 14–22. https://doi.org/10.52266/kreatif.v21i1.1353.

Annisa, N., Nurdin, N., & Syahid, A. (2024). Integration of Technology and Human Artificial Intelligence in Improving Islamic Education. *Proceedings of Islamic Studies and Integration of Knowledge in the Era Society (KIIIES), 3*(1), 316–322.

Bainar. (2024). Opportunities and Challenges of Digitalization for Islamic Religious Education. *Baitul Hikmah: Islamic Scientific Journal*, *2*(2), 74–80. https://doi.org/10.46781/baitul_hikmah.v2i2.1092.

Binanto, I. (2020). Implementation of IRE Learning Assessment through Computer Based Test at SMK Negeri 7 Bandung City.

Bungawati, B. (2022). Opportunities and challenges of the independent learning curriculum towards the era of society 5.0. *Journal of Education*, *31*(3), 381–388. https://doi.org/10.32585/jp.v31i3.2847.

Fadhilah, U., & Lizawati, L. (2023). The Influence of Google Classroom Online Media on Nursing Student Satisfaction in English Lectures. *J-LELC: Journal of Language Education, Linguistics, and Culture*, *3*(2), 122–128.

Fadli, M. R. (2021). Understand the design of qualitative research methods. *Humanities, Scientific Studies of General Courses*, *21*(1), 33–54. doi: 10.21831/hum.v21i1. 38075 KB

Fajirah Lubis, I., Az-Zahra, F., Tanjung, L. H. F., Firmansyah, R., & Gunawan, I. (2024). Analysis of the Implementation of Information System Security at Kartika Private High School 1-4. *Journal of Computer Science Research*, *2*(2), 45–51.

Hakeu, F., & Djahuno, R. (2024). Transformation of Artificial Intelligence in the Context of Islamic Religious Education Learning at Al-Azhfar Integrated MTs North Gorontalo. *Tarqiyah: Journal of Islamic Education*, *2*(1), 11–23. **(DOI) prefix 10.31314/pjia**.

Hartono, B. (2024). Artificial Intelligence Technology and the Importance of Adapting in the Way of Learning. *Indonesian Education Bulletin*, *3*(2), 80–86.

Kushariyadi, Kushariyadi, et al. (2024). *Artificial Intelligence: Dynamics of AI Development and Its Application*. PT. Sonpedia Publishing Indonesia.

Labobar, J., & Malatuny, Y. G. (2024). ARTIFICIAL INTELLIGENCE: Challenges in civics learning. *Civics Education and Social Science Journal (CESSJ)*, *6*(1), 39–50. **DOI:** https://doi.org/10.32585/cessj.v6i1.5224

Mahesa, F. (2024). ARTIFICIAL INTELLIGENCE IN EDUCATION: OPPORTUNITIES AND CHALLENGES OF ITS USE FOR PERSONALIZATION OF LEARNING. *Scholar: Journal of Education and Teaching*, *2*(6), 146–152. http://jurnal.kolibi.org/index.php/cendikia/article/view/1675

Majid. A. (2017). *Qualitative Research Data Analysis*. East Aksara Publisher.

Mantara, R. (2024). Artificial intelligence in the development of computer systems that usually require human intelligence. *Journal of Informatics Multi*, *2*(4), 144–151. E-ISSN:2985-8860.

Misbah, W. A., & Mariyam, S. (2024). The Urgency of Islamic Religious Education in Improving the

Spiritual Intelligence of Grade VIII Students at Alfa Sanah Cisauk Junior High School. *Ikhlas: Scientific Journal of Islamic Education*, *1*(4), 38–47. **DOI:** https://doi.org/10.61132/ikhlas.v1i4.120

Mu'minah, I. H., & Gaffar, A. A. (2020). The use of google classroom-based e-learning as a biology learning medium. *Proceedings of the National Seminar on Education*, *2*, 800–816.

Oktavianus, A. J. E., Naibaho, L., & Rantung, D. A. (2023). The Utilization of Artificial Intelligence in Learning and Assessment in the Digitalization Era. *Journal of Science and Technology Cridatama*, *5*(2), 437–486. **ALSO:** https://doi.org/10.53863/kst.v5i02.975

Parnawi, A., & Ridho, D. A. A. (2023). The Role of Islamic Religious Education Teachers in Instilling Moral and Ethical Values of Students at SMK Negeri 4 Batam. *Berajah Journal*, *3*(1), 167–178. https://doi.org/10.47353/bj.v3i1.209

Rahmawati, S. N. E., Hasanah, M., Rohmah, A., Pratama, R. A. P., & Anshori, M. I. (2023). Privacy and ethics in digital human resource management. *Lokawati: Journal of Research Management and Research Innovation*, *1*(6), 01–23 **DOI:** https://doi.org/10.61132/lokawati.v1i6.328.

Ramdhan, M. (2021). *Research Methods*. Cipta Media Nusantara.

Rizal, C. B. S. C. S. A. A. (2021). *Field Research: A Handbook of Political Comparison*. Nusamedia. https://books.google.co.id/books?id=2LJsEAAAQBAJ

Rohman, A. (2021). *A Practical Guide to Online Learning with Google Classroom and Google Meet*. Elex Media Komputindo.

Soegiarto, Ita, et al. (2023). Artificial Intelligences (AI) Technology-Based Learning Innovation in Official Schools in the Era of Industrial Revolution 4.0 and Society 5. O. *Innovative: Journal Of Social Science Research*, *3*(5), 10546–10555.

Sutarto, S. (2022). DEVELOPMENT OF AN INFORMATION TECHNOLOGY (IT)-BASED ISLAMIC RELIGIOUS EDUCATION EVALUATION SYSTEM. *Berajah Journal*, *2*(3), 719–730. https://doi.org/10.47353/bj.v2i3.286

Wardani, Febri Pramudya, et al. (2024). The Evolution of Education in the Singularity Era: Facing the Opportunities and Challenges of Future Technologies. *Indonesian Journal of Economic & Management Sciences*, *2*(4), 687–702.

Wibowo, H. S. (2023). *Development of Learning Media Technology: Designing Innovative and Effective Learning Experiences*. Oyster Media.

Wibowo, M. U., & Ariany, R. L. (2024). The Impact of Artificial Intelligence in the Assessment and Evaluation of Student Learning Outcomes. *Mount Djati Conference Series*, *40*, 40–51.