

Exploration of Artificial Intelligence (AI) in Increasing Student Collaboration in Digital-Based Islamic Education Learning

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ABSTRACT: *Artificial Intelligence (AI) as a technology that is widely used in education today offers various features that facilitate the learning process. The use of AI can support students' collaborative learning. This study aims to explore the role of AI in improving student learning collaboration in digital-based Islamic Education at Al-Wasatiyah High School, Tangerang City. This research is qualitative research with a case study approach. The subjects of the research were two Islamic Education teachers, three students, and one IT assistant teacher. Data collection techniques were carried out by observation and interviews. Data analysis techniques were carried out by data reduction, data display, data verification, and conclusion. This study found that AI has the potential to improve students' collaborative learning, namely personalization of learning, fast access to learning resources, and provision of simulations and visualizations. Students' collaborative learning activities using AI are carried out through the stages of planning, implementing cooperative learning, and reflecting and evaluating. The main thing that is done at the implementation stage of collaborative learning is to encourage students to use group learning collaboration such as group discussions, problem-solving, and projects, guide students to use appropriate AI such as chatbot, intelligent recommendation systems, and adaptive learning platforms, find the right learning resources, and complete assignments. This study has limitations because it only uses descriptive analysis of limited data. Therefore, it is hoped that there will be further studies with more data coverage, such as the support of technological infrastructure owned by schools, the selection of various types of Artificial Intelligence (AI), and teacher skills in utilizing this technology effectively.*

Artificial Intelligence (AI) sebagai teknologi yang banyak digunakan dalam pendidikan saat ini menawarkan berbagai fitur yang memfasilitasi proses pembelajaran. Penggunaan AI dapat mendukung belajar kolaboratif siswa. Penelitian ini bertujuan mengeksplorasi peran AI dalam meningkatkan kolaborasi belajar siswa pada pendidikan agama Islam berbasis digital di SMA Al-Wasatiyah, Kota Tangerang. Penelitian ini merupakan penelitian kualitatif dengan pendekatan studi kasus. Subyek penelitian adalah dua guru Pendidikan agama Islam, tiga siswa, serta satu guru pendamping IT. Teknik pengumpulan data dilakukan dengan observasi dan wawancara. Teknik analisis data dilakukan dengan reduksi data, penyajian data, verifikasi data,

dan penarikan kesimpulan. Penelitian ini menemukan bahwa AI memiliki potensi dalam meningkatkan belajar kolaborasi siswa, yaitu personalisasi pembelajaran, akses sumber belajar yang cepat, serta penyediaan simulasi dan visualisasi. Aktivitas kolaboratif belajar siswa dengan menggunakan AI dilakukan melalui tahapan perencanaan, pelaksanaan belajar kolaboratif, serta refleksi dan evaluasi. Hal utama yang dilakukan pada tahap pelaksanaan belajar kolaboratif adalah mendorong siswa menggunakan kolaborasi belajar kelompok seperti diskusi grup, problem solving, dan proyek, membimbing siswa menggunakan AI yang sesuai seperti *chatbot*, *intelligent recommendation systems*, dan *adaptive learning platform*, menemukan sumber belajar yang tepat, dan menyelesaikan tugas. Penelitian ini memiliki keterbatasan karena hanya menggunakan analisis deskriptif dari data yang terbatas. Oleh karena itu, diharapkan adanya studi lanjutan dengan cakupan data yang lebih banyak, seperti dukungan infrastruktur teknologi yang dimiliki sekolah, pemilihan jenis AI yang beragam, dan keterampilan guru dalam memanfaatkan teknologi ini secara efektif.

Keywords: *Artificial Intelligence, Student Collaboration, Digital Learning, Islamic Education.*

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I. INTRODUCTION

It is believed that the development of information and communication technology (ICT) has changed multiple aspects of humanity in this world, including education. One technology that has been growing rapidly and adopted by many is Artificial Intelligence (AI). AI can process big data quickly and efficiently, provide predictions, and even customize Islamic Education Learning to suit individual needs. In educational context, AI provides multiple opportunities, such as personalized learning, analyzing student performance, and optimizing teaching administration tasks (Hamruni & Suwartini, 2022). With these capabilities, AI is increasingly being used in education systems around the world (Akinwalere, 2022). However, on the other hand, the use of Artificial Intelligence in the education field lies things that have the potential to bias it, this can be seen through students who currently tend to choose to shorten the time in carrying out research tasks through Artificial Intelligence which can help complete them intensively resulting in the decrease of students' critical and rational thinking (Arly et al., 2023; Pedró et al., 2019).

Fauziyah emphasizes the negative stigma on the use of AI in the education field in her research entitled "The Impact of Using Artificial Intelligence (AI) in Islamic Education Learning". In her study, Fauziyati (2023) stated that there are negative aspects related to the impact of using AI in Islamic Education Learning activities in schools, such as the use of AI that causes students to be dependent on AI technology, resulting in laziness in both Islamic Education Learning and thinking, as well as the risk of plagiarism in the making of student assignments. In the long term, AI can be a very valuable and effective tool to support Islamic education learning, especially if it is used wisely and integrated properly into the Islamic Education Learning system.

AI technology plays an important role in Islamic Learning, especially in providing a digital platform that supports collaboration and interaction between students in virtual

classrooms (Nisa et al., 2023; Rahayu et al., 2024). Collaboration between students themselves is one of the key elements in modern Islamic Education learning, especially with the emergence of competency-based approaches and 21st-century skills. Collaboration allows students to work together to solve problems, develop ideas, and improve communication and critical thinking skills (Saputra et al., 2023). In Indonesia, efforts to increase the cooperation through digital Islamic Education Learning are getting more and more attention.

Digital system in collaborative Islamic Education Learning offers extraordinary potential which allows Islamic Education Learning to be inclusive, able to overcome geographical barriers, and provide flexibility for students or training in terms of access and active involvement in the Islamic Education Learning process (Indarta et al., 2022). However, Yuniarti et al. (2023) stated, there is a weakness in the use of digital media for students in learning, namely the dependence on its use. On the other hand, not all institutions can provide it, such as schools with facilities that are not so complete and cannot support the use of digital Islamic Education Learning media.

The use of digital media as a means of Islamic Education Learning can make a positive contribution in improving students' character and responsibility. Through digital media, students can develop collaboration skills, communication, independence, discipline, digital ethical awareness, and commitment in the use of technology. In addition, the use of digital media also presents challenges that teachers and students need to face, such as time management, technical problem solving, ensuring the quality and effectiveness of the learning process (Eraku et al., 2021; Sakti, 2023).

Therefore, digital media is a driver of a person's critical power in analysing information that can be made a source of knowledge that is closely related to a person's ability to use it. Even the positive and negative impacts depend on Human Resources. In this case, Amalia (2015) links digital media with literacy, which is the ability of individuals to use digital technology efficiently and produce and assess digital information data effectively. The ability to understand and process information data in various forms to be conveyed using digital media devices. Have competence in using digital technology effectively, with multiple activities such as creating data and processing data so as to gain knowledge through digital media. The ability to convey and critically analyse information obtained on digital media is one form of understanding digital media literacy.

Digital media is closely related to literacy, Douglas A.J. Belshaw in, mentions 8 fundamental components that are needed in the application of digital media literacy including: Cultural, which means a person's habit or intensity in using technology (internet). Cognitive, meaning skills in managing information. Constructive means making something more useful. Communicative, meaning knowing how the internet can provide the right communication network. Confidence in one's own abilities. Creative means being able to create new and original things. Critical, meaning the ability to analyse information critically, and social responsibility (Rizal, 2022).

The ability to effectively use various forms of digital technology and communication tools, including mobile phones, tablets, laptops and desktop computers, is known as digital literacy. It includes not only the ability to communicate effectively with others but also to acquire, manage, integrate, analyse and evaluate information. Achieving digital literacy means empowering people to be an active part of society. Hidayat & Khotimah (2019) explained that the use of digital technology in the continuity of

learning can increase students' interest and motivation to learn, the quality of the learning process, and learning outcomes, but must pay attention to various aspects of human resource capabilities as well as the security and health of teachers and students. So, in the context of learning, digital literacy allows learners who master it to gain knowledge, attitudes and skills through practical and fun learning activities.

As explained above, it indicates the integration of technology into learning. Willingness to adapt to change is a key requirement for integrating technology into learning. Therefore, the integration of technology into good Islamic Education Learning is when students have access to various tools that are appropriate to the task at hand and provide them with the opportunity to build a deeper understanding of the content (Akbar et al., 2023). In Nurhayati et al. (2024), it is stated that the integration of AI in collaborative Islamic Learning provides the potential to increase the effectiveness and motivation of students' learning. Educators have the opportunity to personalize learner-centered learning.

At Al-Wasatiyah Senior High School, Tangerang City, the implementation of AI in digital Islamic Education Learning aims to increase collaboration among students. AI is used to facilitate group project management, provide real-time feedback, as well as analyze individual contributions within the team. This is considered an important step in building collaborative skills in the digital age, where teamwork and effective communication become very important. In Harahap (2019) AI allows teachers to monitor student progress more easily and provide more targeted guidance. On the other hand, Zahara et al. (2023) stated that the use of AI in education by teachers has a negative impact, such as teachers becoming lazy, reducing some work, especially in the administrative field, not understanding the purpose and information created, AI works based on what has been programmed, has a high risk of break-ins, and damage (Suyanto, 2018).

However, behind its great potential, the implementation of AI at Al-Wasatiyah Senior High School also faces a variety of challenges. The main challenge is the availability of technological infrastructure, such as limited access to digital devices and uneven coverage of internet connectivity. In addition, the readiness of teachers to adopt and utilize this technology effectively is also one of the obstacles that need to be overcome (Arar et al., 2025). Therefore, this study aims to explore the implementation of AI in digital Islamic Education Learning at Al-Wasatiyah Senior High School, focusing on how this technology can improve student collaboration as well as existing challenges and opportunities.

II. METHOD

This research is a qualitative study with a case study approach. The qualitative method was chosen because this study aims to deeply understand the implementation of Artificial Intelligence technology in digital Islamic Education Learning at Al-Wasatiyah Senior High School and its impact on student collaboration. This step is in line with Sudaryono (2016) explanation that descriptive qualitative research is used to create a systematic, factual and accurate picture of the facts, characteristics and relationships between the phenomena or realities being investigated. The research was conducted at Al-Wasatiyah Senior High School, Tangerang City. This school was chosen because it has implemented AI in digital learning.

The data in this study were collected through three main methods: 1) In-depth interview: Interviews were conducted with Satari and Jami' a teacher of Islamic Education, Wahyu Dewantara an assistant teacher responsible for the implementation of AI technology, and students with the initials SQS, ZA, and BSF. The interview aims to gain an understanding of their experience in using AI to support collaborative learning. 2)

Participatory observation: Researchers directly observe the Islamic Education Learning process using AI technology namely chatbot, intelligent recommendation systems, and adaptive learning platforms, especially when students collaborate on group assignments. This observation was carried out to see how AI functions in facilitating collaboration, as well as how students and teachers use it in their daily activities in the digital classroom. 3) Documentation: Additional data was collected through documentation, such as Islamic Religious Learning reports, guidelines for using AI-based platforms, and digital teaching materials used at Al-Wasatiyah Senior High School. This documentation helps researchers understand more about the implementation of AI in learning.

The data collected in this study were analyzed using an interactive approach from Miles et al. (2014), which consists of three main stages, namely data reduction, data presentation, and drawing conclusions. Data reduction is carried out by sorting and simplifying relevant data according to the focus of the research, especially related to the exploration of the application of Artificial Intelligence in improving student collaboration in digital-based Islamic Education learning. Furthermore, the summarized data is presented systematically through descriptive narratives and mapping the logic of relationships between data, in order to make it easier for researchers to see patterns and relationships of information found. The final stage is drawing conclusions and verification, which is carried out continuously throughout the research process so that the conclusions obtained truly reflect field conditions. In this analysis process, researchers also open up the possibility of returning to the field if additional data is needed to strengthen the results obtained.

Meanwhile, the validity of the data in this study is maintained by applying four criteria according to Guba & Lincoln (1994), namely credibility, transferability, dependability, and confirmability. Data credibility is guaranteed through triangulation of sources, methods, and time so that the results obtained can be trusted. Transferability is maintained by providing an in-depth description of the context so that the research results can be applied to similar situations. Dependability is strengthened by recording an audit trail to ensure that the research process is carried out consistently and can be traced. Meanwhile, confirmability is maintained by maintaining the objectivity of the researcher through self-reflection and the use of verifiable data. By applying this analysis technique and validity test, it is hoped that the research results will have a high level of trust and validity in the context of digital-based Islamic education involving AI.

III. RESULT AND DISCUSSION

Islamic Education Learning by Utilizing Artificial Intelligence (AI)

Islamic Education (PAI) learning at Al-Wasatiyah High School is carried out as an effort to change the cognitive, affective, and psychomotor structures of students through learning arrangements. Islamic Education learning is also an activity effort in an educational environment that includes planning, implementation, and evaluation (Satari, 2024). Basically, Islamic Education learning is the result of the relationship

between students and their environment, so that changes in behaviour towards the better are formed. So, learning Islamic Education at Al-Wasatiyah High School is an activity in the field of education that contains the interaction of educators with students in order to achieve a certain goal.

Islamic Education learning at Al-Wasatiyah High School is carried out by utilizing digital media via smartphones, computers, and the internet. According to Dewantara (2024) an IT assistant teacher, this has been done since 2023 as a form of technology integration into learning and increasing the effectiveness of learning carried out by students in class.

The results of the researcher's observations show the use of digital media at Al-Wasatiyah High School in classroom learning is used to accommodate and access sophisticated technology, in this case Artificial Intelligence. In relation to Islamic Education learning, many types of Artificial Intelligence help teachers and students such as chatbot edukasi AI, intelligent recommendation systems, adaptive learning platforms, and others. In its use, it is adjusted to the learning materials and learning needs of teachers and students.

According to Satari (2024), as an Islamic Education teacher, he is greatly helped by Artificial Intelligence technology in teaching Islamic Education. By using a chatbot, for example, he can direct students to complete assignments quickly and effectively. This is because chatbots are able to provide fast and accurate answers to student questions, as well as relevant and contextual information, unlike search engines that only offer a list of links. The same thing is utilizing the type of intelligent recommendation system where he can guide students to search for and find Islamic Education materials according to the interests and needs of the students themselves.

However, basically AI technology only plays a role as a supporting tool to achieve learning goals and success, not replacing the role of teachers as teachers and learning guides for students. Whatever information or learning materials are obtained by students from AI, technology must be validated and checked by the teacher. This is so that nothing conflicts with the culture and values of Islam itself (Satari, 2024).

Researchers conducted interviews with students, with the SQS (2024), about the usefulness of using AI in the classroom. SQS (2024) said that the students were happy with the use of AI technology. They felt more motivated to learn and encouraged to be able to learn independently. If they needed additional material about Islam, they easily found it and then studied it enthusiastically. Gradually, this made their learning achievements increase.

Another student, with the initials ZA (2024) said that he enjoyed learning using AI technology. He and his friends usually use the chatbot edukasi AI to search for certain information about Islam or answers to assignments given by teachers. According to ZA (2024), this allows him to learn independently, both at school and at home. However, the information or answers to the assignments are still given to the teacher to be checked.

To better understand the practical Islamic Education material, such as reading the Qur'an, praying, and others, AI is very helpful for students because it provides a visual form. This is expressed by BSF (2024), who stated that he understood more about the correct pronunciation of letters and prayer movements after seeing them visually on AI. According to him, there are many learning materials that he can understand and

comprehend with the help of AI, such as other examples of materials on ablution procedures, hajj rituals, tayamum, and others.

The utilization of Artificial Intelligence technology in Islamic Education learning at Al-Wasatiyah High School can be explained as follows:

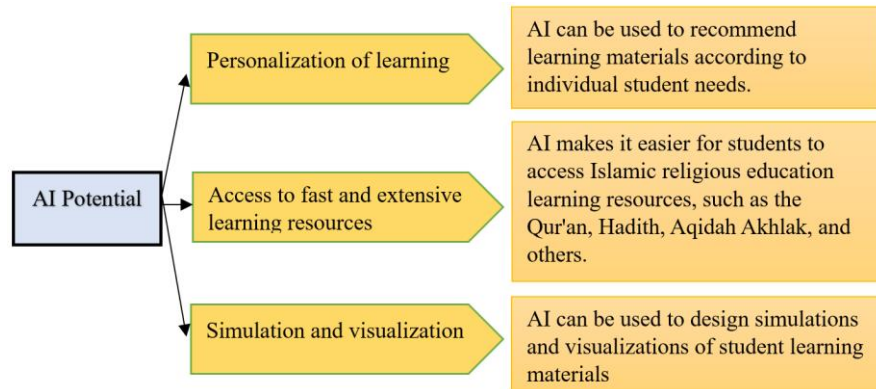


Figure 1. Description of the utilization of AI in Islamic education

Based on the diagram above, it can be seen that Artificial Intelligence has the potential to support the effectiveness and success of Islamic Education learning. This potential includes:

First, personalization of learning, namely the provision of learning materials that are tailored to the needs, interests, and abilities of students in order to maximize their potential. Artificial Intelligence is able to provide a learning system by sending personalized learning materials to students. In accordance with the statement of SQS (2024) where they and other students are more motivated in learning, they are greatly helped in finding and studying additional materials about Islam. This is certainly different from the conventional learning system where all students who study at a certain level are delivered with the same learning materials. With personalized learning, each student can improve their ability and motivation to learn gradually according to their potential and skills (Murtaza et al., 2022).

Furthermore, personalization of learning with AI can also provide a broader learning experience for students. Many experiences and learning materials are received by students, which will also increase their motivation and understanding of certain materials being studied (Hamruni & Suwartini, 2022). Thus, the use of Artificial Intelligence not only increases students' learning abilities and motivation but also ensures that students are able to understand and comprehend the learning materials they need, including Islamic religious knowledge materials (Ruiz-Rojas et al., 2023).

Second, access to learning resources quickly and widely. The AI based search system allows students to obtain many learning resources that suit their learning needs. As done by student ZA who utilize AI to find answers to assignments given by teachers. This will make students more enthusiastic in finding topics about Islamic Education and at the same time, assist the teacher's task in preparing and providing learning materials, especially Islamic Education topics studied by students (Zadeh, 2023). However, Islamic Education teachers still have the responsibility to ensure that the content of the material obtained by students does not deviate and is in accordance with Islamic culture and values (Lee et al., 2024).

Third, there is simulation and visualization of learning materials. By utilizing Artificial Intelligence, BSF (2024) also search for and find learning materials and access the learning resources they need. In fact, especially related to Islamic Education practice materials, such as reading the Qur'an, prayer movements, Hajj rituals, and others, students can understand and comprehend these materials more quickly. This also increases students' interest and motivation to learn (Hidayat et al., 2019). However, of course this cannot replace the role of teachers in instilling moral values, religious values, and character building in students (Mauluddin, 2024).

The Implementation of AI in Increasing Student Collaboration in Digital-Based Islamic Education Learning

Student collaboration in Islamic Education learning is an important skill that students should develop. In this context, Artificial Intelligence technology plays an important role in facilitating this collaboration, especially through digital platforms that allow students to work together despite being in different locations. Teachers can more easily monitor each student's contribution to the group project, provide immediate feedback, and direct students in the development of collaborative skills. At Al-Wasatiyah High School, students' cooperative learning activities in Islamic Education are carried out by teachers with the following steps:

Firstly, the preparatory step. According to Jami' (2024) as the Islamic Education teacher, some of the things prepared in this step are forming student groups, conveying learning objectives that students must achieve, and dividing tasks to students. This step is important so that students know and understand the purpose of learning and what must be done in cooperation to complete the tasks given by the teacher. In addition, because the learning process utilises digital technology, both the school, teachers and students must prepare adequate facilities and infrastructure, such as laptops, mobile phones, internet networks, and especially the ability of teachers and students to operate Artificial Intelligence technology (Satari, 2024).

Second is the collaborative learning implementation step. In this step, the teacher creates activities that encourage students' cooperative learning, directs them in selecting and using appropriate Artificial Intelligence technology to support learning activities, guides students in finding appropriate learning resources, and guides students in completing assigned tasks (Jami', 2024).

According to Satari (2024), who also teaches Islamic Education at Al-Wasatiyah High School, there are many topics about Islamic religious material that can be used as discussion material and found solutions in student collaboration learning using AI technology. For example, the topic of *jamak* and *qashar* prayers is performed by travellers (people who are travelling). The things that can be discussed and solved by students are the problem of what is the limit of the distance of travel that allows a traveller to perform *jamak* and *qashar* prayers, how to perform *jamak* and *qashar* prayers in vehicles, what are the legal basis of the Qur'an and hadith that are used as references, and others.

The researcher, Jami' (2024) also explained that there are many Islamic religious skills that students must master, such as calling to prayer, tayammum as a substitute for ablution, reading the Qur'an properly and correctly (*tartil* and *tahsin*), and others. These topics require practical teaching. So, in order for students to have the ability to perform these acts of worship correctly, the learning activities are carried out by direct practice. In this case, students are directed to enrich their learning resources by looking for

guidance on how to perform these acts of worship on 'AI adaptive learning platforms that provide simulation content and visualisations.

According to the researcher's observation, in learning practice, after the topics in Islamic Education above are distributed to students, they are guided by the teacher to work on and discuss them within the framework of cooperation, group discussions, and division of tasks and responsibilities. So, there will be interaction between students, exchange of information, complementarity, sharing of problems, and individual responsibility in completing the task, among others. This kind of learning system encourages students to actively involve themselves in groups, train their social skills, increase their learning motivation, obtain more information about learning materials, and become independent learners and responsible for their groups.

As mentioned above, the AI technologies commonly used by students at Al-Wasatiyah High School include chatbots, intelligent recommendation systems, and adaptive learning platforms. SQS (2024) said that she and her friends at school often use chatbots to obtain information, materials or answers to assignments given by teachers. For example, the teacher once gave his group an assignment in the form of a presentation on the procedures for praying *jamak* and *qashar*. So, what student SQS students and their groups do is discuss what topics will be presented, divide these topics among each group member, look for related learning materials, collaborate in making a PPT, and determine who will present it in front of the class.

Another case with student ZA (2024), where he and his group had been given an assignment to practice reading and memorising short Qur'an letters. So, what they did was to work together to find the content on the 'adaptive learning platform'. They listened carefully to the simulation video so that they could pronounce the letters of the Qur'an correctly, imitate the rhythm of the reading, and then listen to each other group members so that they memorise quickly and there are no wrong pronunciations.

Third, reflection and evaluation. In this step, teachers and students reflect and evaluate the learning outcomes, how future learning can be improved, and involve students in any learning planning that will be carried out. In this step, teachers and students can also enrich the learning context with problems relevant to learners' real life (Satari, 2024).

With regard to learning impact, BSF (2024) said that since using AI technology, he and his group have progressed in terms of mastering learning materials. This is because in addition to the materials available being very diverse and designed according to their learning needs, they are also directly involved in the learning process. The same thing was said by student ZA (2024). He claims to be a visual person who will quickly understand and comprehend information and learning materials if presented in visual form. Therefore, he is greatly helped by AI, which provides Islamic Education materials visually, such as prayer procedures, recitation of the Qur'an, and others. Furthermore, the students also stated that they felt more motivated in learning, responsible for completing the part of the task assigned to them, trained in solving problems, and had a better ability to interact with friends.

Tabel 1. The implementation of AI in increasing student collaboration in Islamic Education learning

No	Steps	Activities	Learning Impact
1	Preparation	- Forming student groups. - Deliver the learning objectives to be achieved by the students. - Divide the task among the students.	- Students progress in terms of mastery of learning materials. - Students know and understand learning material faster.
2	Implementation of collaborative learning	- Create activities that encourage students' collaborative learning, such as group discussions, problem-solving, and joint projects. - Direct students in selecting and utilising appropriate AI, such as chatbots, intelligent recommendation systems, and adaptive learning platforms. - Guiding students to find the right learning resources. - Guiding students to complete the assigned tasks.	- Students have an adaptive learning experience. - The teaching process is more effective. - Increase students' learning motivation. - Develop social skills - Practising problem-solving skills.
3	Reflection and evaluation	- Reflecting and evaluating the learning outcomes that have been achieved. - Make improvements on how to learn in the future - Involve students in every learning plan that will be carried out.	

Based on table 1 above, it appears that Islamic Education learning at Al-Wasatiyah High School is carried out by utilizing Artificial Intelligence technology. Teachers and students use the Artificial Intelligence platform to facilitate project-based Islamic Education learning, which requires students to work in groups. Also, it is based on problem-solving, where students are asked to solve problems related to Islamic Education material.

Utilization of Artificial Intelligence in collaborative learning Islamic Education is carried out by encouraging students' creativity and finding ideas and library sources for completing assignments in groups. Although it has advantages in terms of access speed and language, the use of chatbots or chatgpt for example, has challenges related to the authenticity and accuracy of information that needs to be validated by users, especially in terms of religious material. So in this case, the role of teachers is very important in helping students find learning sources that are credible, valid, and in accordance with religious values (Onofre et al., 2024).

Furthermore, the emphasis on the problem-solving learning approach can also be done by teachers and students. With this approach, teachers provide problem topics about Islamic Education that groups of students must solve. This makes the use of Artificial Intelligence able to encourage critical thinking, the ability to work together in groups, and analytical skills in solving existing problems. However, teachers still play an important role as facilitators and motivators so that students can possess these abilities (Mulianingsih et al., 2020).

In terms of learning interactions, the presence of AI supports students in conducting exploratory learning, interacting between groups, determining their learning resources that are of interest and needed, and taking control of their learning system. This makes students rich in literacy experiences and can develop the quality of their understanding of learning materials and improve their critical cognitive power (Holmes et al., 2019).

According to the students' statements, the use of AI technology provides progress in terms of mastery of learning materials. It makes it easier to complete problem-based learning assignments. This can be obtained because problem-based learning teaches students to think critically and solve problems by identifying, analyzing, and solving complex problems. In addition, discussions and group work in problem-based learning can encourage student collaboration (Nursaya'bani et al., 2025). With the presence of a chatbot, for example, students are more motivated to learn and have a broader learning experience because of the availability of more varied and quickly accessible religious materials.

Basically, the benefits that students obtain by utilizing Artificial Intelligence technology are not only seen from the perspective of the smoothness and effectiveness of the learning process and mastery of learning materials but what is also no less important is that students have good social interaction skills, problem-solving skills, and high learning motivation (Afrita, 2023). For this, students do not get it solely from the use of AI technology; it requires the role and guidance of teachers. Thus, Artificial Intelligence technology cannot replace the role of teachers as educators and motivators, especially in terms of forming students' mentality and character Hidayat et al. (2024). This is because Artificial Intelligence technology works literally, not accommodating values, morals, and character which must also be taught to students (Hamdi et al., 2025; Zuhri et al., 2024).

IV. CONCLUSION

This research shows that the utilisation of Artificial Intelligence (AI) in learning activities at Al-Wasatiyah High School has encouraged student collaboration, especially in learning Islamic Education. The steps taken are through the preparation stage, the implementation of collaborative learning, and reflection and evaluation. In the collaborative learning implementation stage, what was done was to encourage students to use group learning collaboration, such as group discussions, problem-solving, and joint projects, guiding students to choose and utilise appropriate Artificial Intelligence, such as chatbots, intelligent recommendation systems, adaptive learning platforms, guiding students to find relevant learning resources, and complete the assigned tasks. The use of AI in Islamic Education learning not only makes the teaching process more effective, but also has a positive impact that is felt, namely that students experience progress in mastering learning materials, learning materials are understood more quickly, have adaptive learning experiences, learning motivation increases, and develop social interaction skills and problem-solving skills. This study recommends that the use of AI in Islamic Education learning is also carried out by students in other educational institutions as an alternative for learning effectiveness and success. This study has limitations because it only uses descriptive analysis of limited data. Therefore, it is hoped that there will be further studies with more data coverage, such as the fulfillment of technological facilities owned by schools, the choice of appropriate types of AI, and improving teacher skills in utilizing this technology effectively.

V. REFERENCES

- [1] Afrita, J. (2023). Peran Artificial Intelligence dalam Meningkatkan Efisiensi dan Efektifitas Sistem Pendidikan. *Comserva : Jurnal Penelitian Dan Pengabdian Masyarakat*, 2(12), 3181–3187. <https://doi.org/10.59141/comserva.v2i12.731>
- [2] Akbar, J. saddam ... Hamsiah, A. (2023). *Penerapan Pembelajaran Era Digital*. Jambi: PT Sonpedia Publishing Indonesia.
- [3] Akinwalere, S. N. and V. I. (2022). Artificial Intelligence in Higher Education: Challenges and Opportunities. *Border Crossing*, 12(1), 1–15. <https://doi.org/10.33182/bc.v12i1.2015>
- [4] Amalia, R. R. (2015). Literasi Digital Pelajar SMA : Kemampuan Berkomunikasi dan Berpartisipasi Pelajar SMA Negeri di Daerah Istimewa Yogyakarta Melalui Internet. *Jurnal Studi Pemuda*, 4(1), 224–240. <https://doi.org/10.22146/studipemudaugm.36733>
- [5] Arar, K. ... Saiti, A. (2025). Rethinking School Leadership and Policy in the Digital AI Era. *Leadership and Policy in Schools*. <https://doi.org/10.1080/15700763.2025.2454098>
- [6] Arly, A. ... Andini, R. (2023). Implementasi Penggunaan Artificial Intelligence Dalam Proses Pembelajaran Mahasiswa Ilmu Komunikasi di Kelas A. *Prosiding Seminar Nasional*, 2, 362–374. <https://proceeding.unesa.ac.id/index.php/sniis/article/view/816>
- [7] BSF. (2024). *Interview with student*.
- [8] Dewantara, W. (2024). *Interview with Information Technology assistant teacher*.
- [9] Eraku, S. S. ... Arifin, A. (2021). Digital Literacy and Educators of Islamic Education. *Edukasi Islami: Jurnal Pendidikan Islam*, 10(1), 569. <https://doi.org/10.30868/ei.v10i01.1533>
- [10] Fauziyati, W. R. (2023). Dampak Penggunaan Artificial Intelligence (AI) Dalam Pembelajaran Pendidikan Agama Islam. *Jurnal Review Pendidikan Dan Pengajaran (JRPP)*, 6(4), 2180–2187. <https://doi.org/10.31004/jrpp.v6i4.21623>
- [11] Guba, & Lincoln. (1994). *Handbooks of Qualitative Research*. London: Sage Publication.
- [12] Hamdi, T. ... Hasanah, R. (2025). Mu'tazilah and the Digital Era: Reinterpreting Islamic Tafsir in the Era of Artificial Intelligence (AI). *Jurnal Semiotika-Q: Kajian Ilmu Al-Quran Dan Tafsir*, 5(1), 1–16. <https://doi.org/10.19109/jsq.v5i1.25256>
- [13] Hamruni, & Suwartini, S. (2022). Artificial Intelligence In Global Islamic Education. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, 27(6), 39–49. <https://doi.org/10.9790/0837-2706033949>

- [14] Harahap, M. (2019). *Teknologi dalam Pendidikan di Indonesia: Peluang dan Tantangan*. Yogyakarta: Pustaka Pelajar.
- [15] Hidayat, L. A. ... Hyangsewu, P. (2024). Inovasi Pembelajaran PAI : Penerapan Kecerdasan Buatan untuk Meningkatkan Motivasi Siswa. *Journal of Education Research*, 5(4), 5632–5640. <https://doi.org/10.37985/jer.v5i4.1846>
- [16] Hidayat, N., & Khotimah, H. (2019). Pemanfaatan Teknologi Digital Dalam Pembelajaran. *Jurnal Pendidikan & Pengajaran Guru Sekolah Dasar*, 2(1), 10–15. <https://doi.org/10.55215/jppguseda.v2i1.988>
- [17] Hidayat, R. ... Hamdani, F. (2019). Rancang Bangun Simulasi Edukasi Tata Cara Sholat 5 Waktu Dan Pengenalan Huruf Hijaiyah Berbasis Virtual Reality (VR). *Jurnal Informatika, Teknologi Dan Sains*, 1(1), 76–86. <https://doi.org/10.51401/jinteks.v1i1.377>
- [18] Holmes, W. ... Fadel, C. (2019). Artificial Intelligence In Education Promises and Implications for Teaching. *Journal of Computer Assisted Learning*, 14(4), 251–259. <https://onlinelibrary.wiley.com/doi/10.1046/j.1365-2729.1998.1440251.x>
- [19] Indarta, Y. ... Watrianthos, R. (2022). Metaverse: Tantangan dan Peluang dalam Pendidikan. *Jurnal Basicedu*, 6(3), 3351–3363. <https://doi.org/10.31004/basicedu.v6i3.2615>
- [20] Jami'. (2024). *Interview with Islamic religious education teacher*.
- [21] Lee, Y. J. ... Ryu, J. (2024). Korean in-Service Teachers' Perceptions of Implementing Artificial Intelligence (AI) Education for Teaching in Schools and Their AI Teacher Training Programs. *International Journal of Information and Education Technology*, 14(2), 214–219. <https://doi.org/10.18178/ijiet.2024.14.2.2042>
- [22] Mauluddin, M. (2024). Kontribusi Artificial Intelligence (AI) pada Studi Al Quran di Era Digital; Peluang dan Tantangan. *Madinah: Jurnal Studi Islam*, 11(1), 99–113. <https://doi.org/10.58518/madinah.v11i1.2518>
- [23] Miles, M. B. ... Saldaña, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook (3rd ed.)*. New York: SAGE Publications.
- [24] Mulianingsih, F. ... Rahma, A. J. (2020). Program Studi Tadris Ilmu Pengetahuan Sosial Institut Agama Islam Negeri Kudus Artificial Intellegence dengan Pembentukan Nilai dan Karakter di Bidang Pendidikan. *Ijtimaiya : Journal of Social Science Teaching*, 4(2), 148–154. <http://dx.doi.org/10.21043/ji.v4i2.8625>
- [25] Murtaza, M. ... Usman, M. (2022). AI-Based Personalized E-Learning Systems: Issues, Challenges, and Solutions. *IEEE Access*, 10(August), 81323–81342. <https://doi.org/10.1109/ACCESS.2022.3193938>
- [26] Nisa, K. ... Pribadi, R. A. (2023). Kolaborasi Pendidik Dan Peserta Didik dalam Mewujudkan Digitalisasi dan Penguasaan Teknologi Pada Pembelajaran Abad 21.

- Jurnal Basicedu*, 7(3), 1433–1445. <https://doi.org/10.31004/basicedu.v7i3.5383>
- [27] Nurhayati, N. ... Susanto, T. T. D. (2024). Integrasi AI dalam collaborative learning untuk meningkatkan efektivitas pembelajaran. *Academy of Education Journal*, 15(1), 1063–1071. <https://doi.org/10.47200/aoej.v15i1.2372>
- [28] Nursaya'bani, K. K. ... Iskandar, S. (2025). Strategi Pengembangan Pembelajaran Abad Ke-21: Mengintegrasikan Kreativitas, Kolaborasi, dan Teknologi. *JIIP (Jurnal Ilmiah Ilmu Pendidikan)*, 8(1), 109–116. <https://doi.org/10.54371/jiip.v8i1.6470>
- [29] Onofre, P. J. ... Jimenez, B. (2024). Educational Innovation in Mexico: Enhancing Learning with Artificial Intelligence, Applying ChatGPT in Higher Education Institutions, Professor-Student Collaboration. *Ciencia Latina Revista Científica Multidisciplinar*, 8(3), 6210–6228. https://doi.org/10.37811/cl_rcm.v8i3.11819
- [30] Pedró, F. ... Valverde, P. (2019). Artificial intelligence in education: challenges and opportunities for sustainable development. *Unesco*, 46. <https://unesdoc.unesco.org/ark:/48223/pf0000366994>
- [31] Rahayu, A. P. ... Besari, A. (2024). Inovasi Metode Pembelajaran Kolaboratif di Era digital: Studi Kasus Perguruan Tinggi Swasta Magetan: Innovation of Collaborative Learning Methods in the Digital Era: Case Study of Magetan Private Colleges. *Edu Cendikia: Jurnal Ilmiah Kependidikan*, 4(2), 368–379. <https://doi.org/10.47709/educendikia.v4i02>
- [32] Rizal, C. (2022). *Literasi Digital*. Padang: PT. Global Eksekutif Teknologi.
- [33] Ruiz-Rojas, L. I. ... Gonzalez-Rodriguez, M. (2023). Empowering Education with Generative Artificial Intelligence Tools: Approach with an Instructional Design Matrix. *Sustainability (Switzerland)*, 15(15). <https://doi.org/10.3390/su151511524>
- [34] Sakti, A. (2023). Meningkatkan Pembelajaran Melalui Teknologi Digital. *Jurnal Penelitian Rumpun Ilmu Teknik*, 2(2), 212–219. <https://doi.org/10.55606/juprit.v2i2.2025>
- [35] Saputra, I. ... Kusumastuti, D. (2023). Integration of Artificial Intelligence in Education: Opportunities, Challenges, Threats and Obstacles. A Literature Review. *The Indonesian Journal of Computer Science*, 12(4), 1590–1600. <https://doi.org/10.33022/ijcs.v12i4.3266>
- [36] Satari. (2024). *Interview with Islamic religious education teacher*.
- [37] SQS. (2024). *Interview with student*.
- [38] Sudaryono. (2016). *Metode Penelitian Pendidikan*. Jakarta: Prenada Media.
- [39] Suyanto, M. (2018). *Revolusi Pendidikan di Era Digital*. Bandung: Alfabeta.
- [40] Yuniarti, A. ... Putri, S. (2023). Media Konvensional Dan Media Digital Dalam Pembelajaran. *JUTECH: Journal Education and Technology*, 4(2), 84–95. <https://doi.org/10.31932/jutech.v4i2.2920>

- [41] ZA. (2024). *Interview with student*.
- [42] Zadeh, A. R. (2023). Artificial Intelligence and Modern Information Technologies Applications in Islamic Sciences: A Survey. *International Journal on Perceptive and Cognitive Computing*, 9(2), 48–61. <https://doi.org/10.31436/ijpcc.v9i2.403>
- [43] Zahara, S. L. ... Chusni, M. M. (2023). Implementasi Teknologi Artificial Intelligence (AI) dalam Bidang Pendidikan. *Jurnal Penelitian Sains Dan Pendidikan (JPSP)*, 3(1), 15–20. <https://doi.org/10.23971/jpsp.v3i1.4022>
- [44] Zuhri, M. ... Munawaroh, N. (2024). The Ethics of Artificial Intelligence (AI) Utilization in Qur’anic Studies: An Islamic Philosophical Perspective. *Asyahid Journal of Islamic and Quranic Studies (AJIQS)*, 6. <https://doi.org/10.62213/b6hexr21>