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Integration of Artificial Intelligence (AI) in PAI Learning and Its Implications for the Learning Independence of Grade X Students at State Senior High School 8 Yogyakarta

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ABSTRACT

The development of digital technology, including Artificial Intelligence (AI), has brought significant changes to the learning process, particularly in Islamic Religious Education (IRE). SMA N 8 Yogyakarta utilizes AI to support interactive learning and access to digital references, although supervision is still necessary to prevent students from becoming dependent on technology. This study uses a descriptive-analytical qualitative method with a field approach. The research subjects consisted of 10 tenth-grade students and PAI teachers selected through purposive sampling. Data were obtained through non-participatory observation, interviews, and documentation, then analyzed using the Miles & Huberman model and tested for validity through triangulation. The results show that the integration of AI in PAI learning includes the stages of planning, implementation, and evaluation. Teachers prepare modules, select applications, and set rules for use. Implementation includes game-based learning, creative notes, digital resources, and chatbots as learning assistants. The evaluation proves that AI can increase student motivation, discipline, responsibility, activity, and confidence. The impact is evident in learning independence: students are more proactive, able to manage the learning process, and develop creativity and critical thinking. The main obstacles are teacher readiness, device limitations, and potential student dependence, thus requiring continuous supervision and guidance.

Keywords: *Artificial Intelligence, Independent Learning, Islamic Religious Education*

ABSTRAK

Perkembangan teknologi digital, termasuk Artificial Intelligence (AI), membawa perubahan signifikan dalam proses pembelajaran, khususnya Pendidikan Agama Islam (PAI). SMA N 8 Yogyakarta memanfaatkan AI untuk mendukung pembelajaran interaktif dan akses referensi digital, meskipun pengawasan tetap diperlukan agar siswa tidak bergantung pada teknologi. Penelitian ini menggunakan metode kualitatif deskriptif-analitik dengan pendekatan lapangan. Subjek penelitian terdiri atas 10 siswa kelas X dan guru PAI yang dipilih melalui purposive sampling. Data diperoleh melalui observasi non-partisipatif, wawancara, dan dokumentasi, kemudian dianalisis dengan model Miles & Huberman serta diuji keabsahannya melalui triangulasi. Hasil penelitian menunjukkan bahwa integrasi AI dalam pembelajaran PAI meliputi tahap perencanaan, pelaksanaan, dan evaluasi. Guru menyiapkan

modul, memilih aplikasi, serta menetapkan aturan penggunaan. Pelaksanaan mencakup game-based learning, catatan kreatif, sumber digital, dan chatbot sebagai asisten belajar. Evaluasi membuktikan AI mampu meningkatkan motivasi, kedisiplinan, tanggung jawab, keaktifan, serta kepercayaan diri siswa. Dampaknya terlihat pada kemandirian belajar: siswa lebih proaktif, mampu mengatur proses belajar, serta mengembangkan kreativitas dan berpikir kritis. Kendala utama adalah kesiapan guru, keterbatasan perangkat, serta potensi ketergantungan siswa, sehingga perlu pengawasan dan pembimbingan berkelanjutan

Kata Kunci**:** *Artificial Intelligence, Kemandirian Belajar, Pendidikan Agama Islam*

INTRODUCTION

Digital technology's development in the Fourth Industrial Revolution era has significantly impacted almost all aspects of human life, including education (Budiman, 2017). One manifestation of this transformation is the emergence of Artificial Intelligence (AI), which is increasingly used to improve learning effectiveness, efficiency, and quality. This technology has brought about various innovations such as adaptive learning, virtual mentors, voice assistants, smart content, presentation translators, automatic evaluation, game-based learning, distance learning, and chatbots (Muttaqin et al., 2023). Several studies show that teachers believe AI can help students by providing learning support tailored to individual needs (Banerjee et al., 2021). This proves that AI has great potential to enrich learning experiences, expand access to information, and address various educational challenges in the digital age.

As time progresses, the world is entering the Society 5.0 era, pioneered by Japan, a phase of society that places humans at the centre and as technology users to solve life's problems (Fukuyama, 2018). In the context of education, this requires curriculum adjustments to keep pace with technological developments. After the COVID-19 pandemic, the digitisation of education has accelerated, and AI has become an important instrument in supporting the learning process. Various AI-based platforms such as Quizizz, Kahoot, Duolingo, and Brainly are used to increase student engagement, while chatbots such as ChatGPT, Siri, and Google Assistant provide fast and personalised services according to learning needs (Okonkwo & Ade-Ibijola, 2021).

However, the use of AI does have pros and cons. On the one hand, AI offers efficiency, speed of understanding, and personalisation of learning (Fadlurrahman et al., 2023). On the other hand, there are concerns about declining originality, academic integrity, and student independence in learning. Some countries have even implemented strict policies on the use of AI in educational settings. For example, China has imposed restrictions on the use of AI in schools to protect students' cognitive development and ensure that teachers remain central (Tempo.co, 2025). UNESCO data also shows that as of May 2023, only about 10% of schools and universities worldwide have a formal framework for AI use. About 40% of countries prohibit cell phone use in

schools, up from 24% in July 2023 (Mnctrijaya.com, 2025).

A similar situation occurs in Indonesia. A 2023 survey of ten high schools in Jakarta showed that 89% of students use AI platforms such as Claude.ai to complete assignments, which implies low motivation for critical thinking and increased dependence on technology (Hidayat, 2024). This fact confirms that the use of AI in learning needs to be accompanied by strengthening critical, independent, and responsible learning characteristics so that its benefits can be optimised. One important aspect affected by the use of AI is student independence in learning (Rahmad et al., 2025).

Learning independence is an active and constructive process, in which students determine goals, set strategies, monitor, and control cognition, motivation, and behaviour based on their environmental context (Nurhayati, 2017). Indicators include self-confidence, discipline, responsibility, activeness, and high motivation (Mudjiman, 2006). Strong independent learning will shape critical, creative individuals who are not easily dependent on technology. Conversely, without independence, the use of AI has the potential to create dependence and weaken students' critical thinking skills. Therefore, strengthening independent learning cannot be seen as a supplement but as a fundamental foundation that must be instilled from an early age.

This is in line with the direction of national education policy through Proyek Penguatan Profil Pelajar Pancasila Rahmatan lil ‘Alamin (P5RA), which places independent character as one of the important dimensions in shaping students who are ready to face the challenges of the digital age (Ainaya & Saragih, 2025). Independent character not only means completing tasks without assistance, but also the ability to make decisions, take initiative, and engage in self-reflection. Several studies have shown the effectiveness of strengthening independent learning in schools. For example, contextual project-based learning at SD Inpres Lingga Tengah has been proven to foster critical and independent character (Sinulingga & Lisnasari, 2025), while the implementation of P5RA at MTs Negeri 9 Jember has increased students' independence in decision-making and project management (Utami, Ulum, & Mukhlis, 2025). These findings indicate that independent learning and critical thinking are two complementary aspects, and both are key to optimising the use of AI in education.

In the context of Islamic Religious Education (*Pendidikan Agama Islam/PAI* in Indonesian), the integration of AI is becoming increasingly relevant. PAI aims not only to transfer religious knowledge but also to shape students who are faithful, pious, and have noble character (Fuad, 2018). AI support allows PAI learning to be designed in a more interesting, interactive, and personalised way. For example, smart content facilitates access to digital interpretations of the Qur'an, chatbots help students quickly understand fiqh issues, and game-based learning provides an enjoyable experience in

learning Islamic history and morals. These innovations align with Islamic education principles, emphasising balance, integration, and suitability with the times (Kadir, 2023).

However, the application of AI in PAI also presents new challenges, especially in maintaining the essence of PAI as a science based on the Qur'an and hadith. The use of AI without clear references risks causing misunderstandings of Islamic teachings (Sari, Amin, & Isnanimataka, 2024). Therefore, the integration of AI in PAI must be directed at strengthening understanding in accordance with the sources of Islamic teachings while instilling moral and spiritual values in students (Muchlis, 2025; Razak, Jannah, & Saleh, 2019). AI should serve as a tool to deepen Islamic values, not as a substitute for the main sources of religious learning.

SMA Negeri 8 Yogyakarta is one of the schools that combines a global vision with Islamic values and has a strong orientation towards mastery of science and technology (Siallagan, 2022; SMAN 8 Yogyakarta, 2025b). This school has used various modern devices such as laptops, tablets, mobile phones, projectors, and audio-visual systems to support learning, including access to digital libraries and AI-based applications (SMAN 8 Yogyakarta, 2025a). However, the use of technology in this school still requires supervision so that students do not get caught up in an instant attitude when completing tasks. Thus, SMA N 8 Yogyakarta is the right location to examine the extent to which the integration of AI in PAI learning affects student learning independence.

Various previous studies have shown that the application of AI in education has a significant impact on both teachers and students. Rismawati (2024) found that AI can increase the creativity of PAI teachers, while Lutfi (2024) revealed that the application of AI in mathematics lessons can improve the quality of learning while posing challenges in the form of student dependence on teachers. Huda and Suwahyu (2024) added that the use of AI enriches the PAI learning process despite facing obstacles such as privacy issues and technological dependence. Meanwhile, Astuti et al. (2024) highlight the effectiveness of AI in tailoring material to student needs and encouraging critical thinking. However, most of these studies focus on teacher creativity, learning effectiveness, and student learning motivation. In contrast, studies on the implications of AI on learning independence in the context of PAI at the high school level are still limited.

Based on the above description, this study aims to analyse the integration of Artificial Intelligence (AI) in PAI learning and its implications for the learning independence of 10th-grade students at SMA N 8 Yogyakarta. This study is important because few studies examine the relationship between the use of AI in PAI and the formation of learning independence character. The results of this study are expected to provide an in-depth description of how AI technology can be effectively integrated

into PAI learning and ensure that its use remains in line with the objectives of Islamic education. Namely, to shape faithful students, have noble character, and develop themselves independently. Thus, this study not only has academic relevance but also provides practical contributions to the development of character-based AI learning policies and strategies.

METHODS

This study uses a qualitative approach with descriptive-analytical field research. This approach was chosen because the study focuses on gaining an in-depth understanding of the use of Artificial Intelligence (AI) in PAI learning and its implications for the learning independence of 10th-grade students at SMA N 8 Yogyakarta. According to Creswell & Creswell (2018), qualitative research allows researchers to explore social phenomena comprehensively by considering participants' perspectives. Meanwhile, descriptive-analytical research aims to describe and analyse social phenomena, attitudes, beliefs, perceptions, and thoughts of individuals or groups (Kusumastuti & Khoiron, 2019). Thus, this study focuses on describing and analysing the use of AI in PAI learning and its implications for student learning independence.

The research was conducted from December 2024 to February 2025 at SMA N 8 Yogyakarta, located at Jl. Sidobali No.1, Muja Muju, Umbulharjo District, Yogyakarta City, Special Region of Yogyakarta. The subjects of this study were 10th-grade students and 10th-grade PAI teachers at SMA Negeri 8 Yogyakarta. The selection of research subjects was carried out using purposive sampling, which is the selection of informants based on certain considerations in accordance with the research needs (Sugiyono, 2013). The criteria set were 10th-grade students at SMA Negeri 8 Yogyakarta who used Artificial Intelligence (AI) in PAI learning. Based on these criteria, 10 student informants were obtained: six students from class XE2, two from class XE6, and two from class XE7. In addition, grade X PAI teachers were also included as research subjects because they have a strategic role as facilitators of AI use and are responsible for guiding students' independent learning.

Data collection was conducted through observation, interviews, and documentation. The observation used was non-participatory observation, where the researcher was present in the classroom without being directly involved in the learning process. The focus was on the use of Artificial Intelligence (AI) by teachers and students in PAI learning and its implications for independent learning, such as confidence, activeness, discipline, responsibility, and motivation. Structured interviews were conducted using a list of questions compiled according to the research topic, covering aspects of AI use and its impact on independent learning from the perspective of both teachers and students. Documentation was used as supporting data in the form of

photos of activities, teaching modules, and evidence of AI platform use (Quizizz AI, ChatGPT, Gemini, and Canva AI).

Data analysis was conducted using the Miles and Huberman model, including data collection, condensation, data presentation, and verification (Miles, Huberman, & Saldana, 2014). To maintain data validity, the researchers used credibility tests through source, technique, and time triangulation techniques. The triangulation results showed that the data from teachers and students were consistent, and the use of Artificial Intelligence (AI) in PAI learning tended to have a positive impact on learning independence. However, there were challenges in the form of potential student dependence on AI.

RESULT AND DISCUSSION

1. Integration of Artificial Intelligence (AI) in Islamic Religious Education (PAI) in Grade X at SMA N 8 Yogyakarta

   The integration of Artificial Intelligence (AI) in Islamic Religious Education (PAI) learning in Grade X at SMA N 8 Yogyakarta is a form of innovation that is in line with technological developments and responds to the need to improve the quality of learning. AI is understood by teachers and students as artificial intelligence designed to assist humans in carrying out various tasks, including in the context of education. In PAI learning, AI not only functions as an aid, but also as a means to foster 21st-century skills, such as digital literacy, critical thinking, collaboration, and effective communication in students (Al Imron, Fathoni, Sari, Baher, & Jatmiko, 2025). From the teachers' perspective, AI is seen as a medium that can facilitate material delivery while enriching the variety of learning. Meanwhile, students view AI as a practical and enjoyable tool for understanding material, searching for information, and completing assignments. However, there are differences in the level of mastery and experience between teachers and students. Teachers tend to be more cautious and still limited in their use, while students are more active and extensive in using AI inside and outside the classroom.

   In PAI learning at SMA N 8 Yogyakarta, the integration of Artificial Intelligence (AI) is divided into three stages: planning, implementation, and evaluation. These three stages are interrelated in creating optimal results from the Artificial Intelligence (AI) integration process and seeing its implications for student learning independence.

   a. Learning Planning

      The planning stage plays a vital role as it provides a foundation for teachers to determine the direction of artificial intelligence (AI) use. PAI teachers

at SMA N 8 Yogyakarta strive to design learning that utilises Artificial Intelligence (AI) wisely without shifting the role of the teacher as the main facilitator.

First, the preparation of AI-based teaching modules PAI teachers at SMA N 8 Yogyakarta prepare teaching tools and teaching modules that are integrated with Artificial Intelligence (AI)-based applications according to the material requirements. For example, at the beginning of the semester, teachers determine one to two meetings designed with the help of Artificial Intelligence (AI)-based applications such as Quizizz or Kahoot. This selection considers the material's suitability, the difficulty level, and the teachers' skills in operating the application. This approach aligns with the findings of Kurniawan et al. (2024), who emphasise that AI can help teachers prepare teaching modules more efficiently, improve material quality, and adapt to student needs.

Second, the selection of Artificial Intelligence (AI) applications relevant to PAI. Teachers select websites and Artificial Intelligence (AI) applications relevant to PAI learning objectives. The selected applications must support learning activities without causing information distortion, especially in fundamental material, such as faith, morals, worship, and interpretation of hadith. In this material, the integration of Artificial Intelligence (AI) is strictly limited so as not to cause interpretation bias. Conversely, Islamic history material is more permissible to use Artificial Intelligence (AI) because it is more descriptive in nature.

Third, establishing rules for the use of Artificial Intelligence (AI). Teachers establish unwritten rules and restrictions on the use of AI. These rules maintain student independence and prevent complete dependence on artificial intelligence. Teachers, for example, prohibit the use of Artificial Intelligence (AI) during exams and tests, and impose restrictions on its use in tasks related to worship practices.

The three stages of planning show a balance between the use of modern technology and the responsibility of teachers to maintain the essence of religious learning. This is in line with the research by Skiara et al. (2025), which emphasises the regulation of the use of Artificial Intelligence (AI) through monitoring activities, so that the process of integrating Artificial Intelligence (AI) in learning remains in accordance with Islamic values.

b. Implementation of Learning

In the implementation stage of PAI learning, Artificial Intelligence (AI) is not only used as a tool, but also integrated as part of the PAI learning strategy and method that adapts to student needs and educational objectives. This aims to make learning more varied, interesting, and able to respond to student needs.

First, the integration of Artificial Intelligence (AI) through game-based learning models using applications such as Quizizz and Kahoot. In this context, AI functions as a game medium and a learning analysis system that helps teachers monitor students' understanding in real time. Students can participate in educational games through PAI questions that are presented interactively. Teachers utilise the performance analysis feature of Quizizz Artificial Intelligence (AI) to assess the extent of students' understanding of the material. This integration creates a more interactive and competitive learning atmosphere while supporting the achievement of PAI learning objectives through a fun and meaningful learning experience.

Second, Artificial Intelligence (AI) is integrated into the preparation of learning material notes by students, either in the form of PowerPoint or posters. AI-based applications, such as Canva Artificial Intelligence (AI), are used by students to design more creative and interesting presentations and posters. This integration provides space for students to combine religious understanding with technological skills, so the learning process is not only cognitive but also trains psychomotor aspects in using technology.

Third, Artificial Intelligence (AI) integration is evident in providing digital learning resources. Teachers, together with PPL (Field Experience Program) or PPG (Teacher Professional Education Program) students, manage an Artificial Intelligence (AI)-based website that contains PAI material, which is then distributed as independent learning material. This integration not only expands students' access to material but also encourages them to learn flexibly outside the classroom and develop independence in exploring knowledge. This independence is also reflected in the use of Artificial Intelligence (AI) by students, as shown in the research by Basri and Ernawati (2025), which found that students actively utilise AI chatbots, such as ChatGPT, Gemini, Claude, and Poe, as part of their independent learning strategies.

Fourth, Artificial Intelligence (AI) is integrated as a learning assistant through chatbots or virtual assistants such as ChatGPT or Gemini. Students use these facilities to deepen their knowledge, clarify difficult material, or discuss Islamic law. In the context of integration, chatbots serve as additional facilitators who accompany students. However, teachers remain the main controllers so that students do not simply rely on instant answers but are still trained to think critically and analytically.

c. Evaluation of Artificial Intelligence (AI) Use

The evaluation stage aims to assess the results of Artificial Intelligence (AI) implementation while understanding its impact on the quality of the learning process and student independence. This evaluation is carried out

continuously by teachers through observation of student learning behaviour, analysis of work results, and direct feedback from students regarding their experiences using AI in learning.

First, teachers ask students to provide feedback on their learning experiences using AI. Most students stated that Artificial Intelligence (AI) helped them understand the material more easily, increased their motivation to learn, and created a pleasant atmosphere. Game-based methods such as Quizizz are considered more interesting and challenging than conventional methods such as lectures, thereby fostering active student participation in class.

Second, teachers identify the advantages and disadvantages of integrating Artificial Intelligence (AI). On the positive side, Artificial Intelligence (AI) encourages students to be more independent in searching for information, broadening their horizons, and honing their technological skills. Students also become accustomed to using various applications to support creativity in taking notes, making presentations, and creating learning media. However, on the negative side, Artificial Intelligence (AI) can potentially reduce critical thinking if students become too dependent on its instant answers. Teachers also face additional challenges in assessing the originality and honesty of student work that involves AI assistance.

Third, teachers noted technical and pedagogical obstacles. These obstacles include limited and unstable internet access, differences in device availability among students, and teachers' limited competence in mastering AI-based applications. Although schools have conducted brief training on AI, its implementation in the field is still not optimal. Many teachers feel unconfident enough to take full advantage of AI features. This condition is similar to the findings of Jamilah et al. (2024), who show that AI is used in planning and assessment. However, its application is still limited due to teachers' limited digital competence and technical support.

Fourth, teacher readiness is inversely proportional to student response. While teachers tend to be cautious and limited in using AI, students show great enthusiasm. They believe that using AI, whether through games or discussions with chatbots such as ChatGPT or Gemini, makes learning more lively and less monotonous than conventional methods. This enthusiasm indicates a great opportunity for schools to develop AI-based learning strategies further and provide teachers with support through improved digital competencies and adequate infrastructure.

Fifth, teachers establish control measures to ensure that AI integration supports learning objectives without reducing student independence. These rules include prohibiting the use of Artificial Intelligence (AI) during exams,

requiring students to collect electronic devices at the front of the classroom, and checking that assignments are appropriate for students' actual abilities. This step aims to ensure that Artificial Intelligence (AI) is positioned as a support, not a substitute for students' critical thinking processes, and not to weaken their learning independence. The establishment of these rules is in line with Atlantis Press research, which shows that Artificial Intelligence (AI) can increase student learning autonomy and flexibility, but still requires teacher supervision so as not to reduce critical thinking skills (Sasmayunita & Assiddiq, 2025).

Overall, integrating Artificial Intelligence (AI) in PAI learning has great potential to develop a modern, religious, and adaptive learning model in line with the times. This potential can be realised if teachers and schools are able to manage limitations and maintain a balance between technology and Islamic values.

Despite obstacles such as limited facilities, teacher readiness, and concerns about student dependence, the integration of Artificial Intelligence (AI) still has a significant positive impact. Its presence helps create more effective, interactive, and efficient learning and increases student comfort in classical learning with teachers and independently. In addition, integrating Artificial Intelligence (AI) in PAI learning also opens up opportunities for personalised learning and expands access to religious information sources. However, its application still needs to be controlled so that it is in line with Islamic principles and does not reduce the critical thinking skills of students (Wahyuni, Yaumi, Arsyad, & Husain, 2025).

2. Implications of Integrating Artificial Intelligence (AI) in PAI Learning on the Learning Independence of Grade X Students at SMA N 8 Yogyakarta

The integration of Artificial Intelligence in education has become an inevitable phenomenon. At SMA N 8 Yogyakarta, particularly in PAI subjects, Artificial Intelligence (AI) has begun to be integrated as a learning medium that encourages student learning independence. The study results show that the integration of Artificial Intelligence (AI) has implications for various aspects of learning, such as student and teacher perceptions, changes in learning patterns, and indicators of independent learning.

In general, integrating Artificial Intelligence (AI) in PAI learning significantly increases student motivation, activity, discipline, responsibility, and confidence in learning. This aligns with the view that Artificial Intelligence (AI) can personalise the learning process according to students' needs and facilitate access to information (Holmes, Bialik, & Fadel, 2021). However, several obstacles were still found, so teacher assistance is needed.

a. Student and Teacher Perceptions of Artificial Intelligence (AI) Integration in PAI Learning

Student and teacher perceptions of Artificial Intelligence (AI) integration in PAI learning at SMA N 8 Yogyakarta generally show positive responses. PAI teachers welcome this innovation because it can bring new colour to learning. Teachers believe that Artificial Intelligence (AI) is important to integrate, considering that PAI should not lag behind technological developments, even though the substance of the subject is still based on the Qur'an and hadith. This is in line with the opinion of Syaodih (2000), who emphasises that integrating technology in learning can improve the quality of the teaching and learning process if used appropriately and purposefully.

Students also showed enthusiasm for integrating AI in learning, both during the learning process with teachers and when studying independently. Artificial Intelligence (AI) is considered to help them understand difficult material, facilitate information retrieval, and increase motivation to learn. However, teachers continue to guide students to use Artificial Intelligence (AI) productively and ethically, especially in verifying information, limiting its use, and selecting applications relevant to PAI material. Thus, Artificial Intelligence (AI) serves as a technical tool and a means of developing students' independence in learning.

b. Changes in Student Learning Patterns Due to the Integration of Artificial Intelligence (AI) in PAI Learning

The study results show a shift in the learning patterns of tenth-grade students after teachers integrated Artificial Intelligence (AI) into PAI learning. Before integrating Artificial Intelligence (AI) in learning was implemented, students more often waited for teacher explanations or relied on help from friends and notes, which tended to foster a passive attitude. However, with the advent of Artificial Intelligence (AI) such as ChatGPT and digital-based Qur'an interpretation applications, students have new alternatives to obtain explanations quickly, easily, and flexibly. This phenomenon aligns with Redecker's findings that Artificial Intelligence (AI) in education can increase interactivity and support a more independent learning style (Redecker & Punie, 2017).

Nevertheless, this change also poses challenges, such as the tendency to copy answers without understanding the content or the potential for dependence. However, based on observations at SMA N 8 Yogyakarta, most students have shifted from passive to active learning, as seen in their more proactive search for information, discussions, and the courage to express their opinions. This change in pattern shows that Artificial Intelligence (AI) can

encourage students to not only rely on teachers but also optimise alternative learning resources independently.

c. Implications of Artificial Intelligence (AI) Integration in PAI Learning on the Learning Independence of Grade X Students at SMA N 8 Yogyakarta

The learning independence of grade X students at SMA N 8 Yogyakarta appears to have increased in several important indicators, namely confidence, activeness, discipline, responsibility, and motivation. These indicators are the main benchmarks for assessing the extent to which students can manage their learning process independently (Mudjiman, 2006).

First, in terms of confidence, most students admitted that they were more courageous in answering questions and participating in discussions after first searching for information through Artificial Intelligence (AI). They felt that they had sufficient knowledge to argue their points. Although one student stated that they felt less confident due to their dependence on Artificial Intelligence (AI), most students showed positive improvement. This finding reinforces studies that confirm that self-confidence is greatly influenced by successful experiences in understanding the material (Bandura, 1997).

Second, student engagement increased by implementing Artificial Intelligence (AI)-based game-based learning methods such as Quizizz and Kahoot. Students who were usually passive became more involved in discussions and were more confident in expressing their opinions. Interview data shows that nine out of ten students feel that Artificial Intelligence (AI) helps increase their activity. This aligns with Sianturi, Simangunsong, & Simatupang's (2025) findings, who state that Kahoot media can make students more active, motivated, and highly engaged in learning because learning becomes interactive and fun.

Third, student discipline is also influenced by the use of AI. Most students use Artificial Intelligence (AI) selectively, for example, when they have difficulty understanding the material or want to verify their answers. Artificial Intelligence (AI) also helps students complete tasks more quickly, encouraging them to submit their assignments on time. However, a few students experience a decline in discipline because they tend to rely on AI. These findings indicate the need for teacher supervision in limiting the use of Artificial Intelligence (AI) so that it continues to support learning discipline (Zimmerman, 2002).

Fourth, student responsibility is reflected in their awareness of reviewing answers obtained from Artificial Intelligence (AI) before presenting them. Most students are able to understand and explain the material in their own words, demonstrating critical understanding rather than simply copying information.

Although one student has not yet been able to demonstrate full responsibility, in general, students can manage the use of Artificial Intelligence (AI) responsibly.

Fifth, student motivation to learn increased significantly with the use of AI. Learning motivation is a concept that describes the force that drives individuals, or the force within individuals, to arouse, direct, and maintain learning behaviour (Munajat, 2007). Students felt that learning became more enjoyable, less monotonous, and suited to their learning styles. This is evident when teachers use Artificial Intelligence (AI) in the form of games, the classroom atmosphere becomes more lively, students are more enthusiastic, and boredom is reduced. These findings align with a study that confirms that intrinsic motivation can grow when students feel that the learning environment supports their psychological needs, such as feeling that the learning process is enjoyable and suits their needs and interests (Ryan & Deci, 2000).

Overall, the majority of 10th-grade students at SMA N 8 Yogyakarta have demonstrated the characteristics of independent learning as described by Negoro (2008), namely initiative, self-confidence, decision-making skills, responsibility, and adaptability to the environment (Fatihah, 2016). Artificial Intelligence (AI) not only supports cognitive processes but also acts as an affective and motivational stimulus. However, a small number of students with below-average intellectual abilities tend to be more dependent on Artificial Intelligence (AI). Therefore, teacher assistance is very important so that Artificial Intelligence (AI) truly strengthens independent learning, rather than causing dependence.

CONCLUSION

The integration of Artificial Intelligence (AI) in Islamic Religious Education (PAI) learning in class X at SMA N 8 Yogyakarta shows that AI can be an effective, interactive, and adaptive learning medium. Teachers utilise AI in a planned manner through module planning, application selection, and establishing usage rules. At the same time, students actively use AI to understand the material, take notes, and access digital learning resources. Despite differences in proficiency levels between teachers and students, the integration of AI has succeeded in increasing activity, creativity, and enjoyable learning experiences, while maintaining the role of teachers as primary facilitators and ensuring that Islamic values remain intact.

The integration of AI positively impacts student learning independence, as seen in increased confidence, activity, discipline, responsibility, and motivation to learn. Students become more proactive in seeking information, discussing, and utilising technology to learn independently. However, teacher guidance is still needed to prevent dependence on AI, ensure critical understanding, and maintain a balance

between technology and religious values, so AI truly functions as a tool to support the development of independent learning.

In practical terms, the results of this study can be applied by teachers by making Artificial Intelligence (AI) a supporting medium, not a substitute, in PAI learning. Teachers need to set strict rules, integrate Artificial Intelligence (AI) selectively according to the material, and supervise students so they do not become completely dependent on technology. Thus, Artificial Intelligence (AI) can be an effective means of strengthening learning and a medium for training students' independent learning.

For further research, a broader study is needed on the differences in the impact of Artificial Intelligence (AI) use on students with varying academic abilities, as well as a deeper exploration of pedagogical strategies that can balance the use of technology with religious education values. Further research could also test the comparative effectiveness of various Artificial Intelligence (AI) platforms in improving students' cognitive, affective, and psychomotor aspects. With this step, the integration of Artificial Intelligence (AI) in PAI learning is relevant to technological developments and in line with educational goals that emphasise character building, independence, and noble character.

DECLARATIONS

Author contribution statement

The author is responsible for the entire research process, from designing the methodology, collecting data, analysing, and interpreting the results. In the writing process, the author utilises Artificial Intelligence (AI) technology solely as a technical tool for editing and language refinement. At the same time, all ideas, data, and analysis remain entirely the author's responsibility. The results of this study are expected to serve as a reference and provide benefits for PAI and Budi Pekerti teachers in their efforts to increase student motivation in the classroom.

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