



Design and Development of Artificial Intelligence-Based Islamic Religious Education Learning Media at Rahmat Islamiyah Junior High School, Medan

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ARTICLE INFO	ABSTRACT
Article history: Received: June 24, 2026 Revised: July 25, 2026 Accepted: August 18, 2026 Available Online: September 10, 2026	The development of Artificial Intelligence (AI) provides new opportunities to improve the quality of Islamic Religious Education (IRE) learning, particularly through the development of interactive, contextual, and adaptive learning media. This study aims to design and develop Artificial Intelligence-based IRE learning media at Rahmat Islamiyah Junior High School, Medan. The study employed a Research and Development (R&D) approach consisting of needs analysis, design, development, implementation, and evaluation stages. Data were collected through observation, interviews, documentation, and assessment of the developed learning media. The media development process utilized several AI-based technologies to produce visual materials, interactive presentations, learning videos, and assessment instruments that support the IRE learning process. The findings indicate that the use of AI can assist teachers in producing more varied and engaging learning media that are aligned with students' characteristics. The developed media also supports teachers in integrating IRE materials with digital technology more effectively. Therefore, the development of AI-based IRE learning media can serve as an alternative learning innovation to support the improvement of the learning process at Rahmat Islamiyah Junior High School, Medan.
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	ABSTRAK Perkembangan Artificial Intelligence (AI) memberikan peluang baru dalam meningkatkan kualitas pembelajaran Pendidikan Agama Islam (PAI), khususnya melalui pengembangan media pembelajaran yang interaktif, kontekstual, dan adaptif. Penelitian ini bertujuan untuk mendesain dan mengembangkan media pembelajaran PAI berbasis Artificial Intelligence di SMP Rahmat Islamiyah Medan. Penelitian menggunakan pendekatan Research and Development (R&D) dengan tahapan analisis kebutuhan, perancangan, pengembangan, implementasi, dan evaluasi. Data diperoleh melalui observasi, wawancara, dokumentasi, dan penilaian terhadap media yang dikembangkan. Pengembangan media memanfaatkan beberapa teknologi berbasis AI untuk



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	menghasilkan materi visual, presentasi interaktif, video pembelajaran, serta instrumen evaluasi yang mendukung proses pembelajaran PAI. Hasil penelitian menunjukkan bahwa penggunaan AI dapat membantu guru menghasilkan media pembelajaran yang lebih variatif, menarik, dan sesuai dengan karakteristik peserta didik. Media yang dikembangkan juga membantu guru mengintegrasikan materi PAI dengan teknologi digital secara lebih efektif. Dengan demikian, pengembangan media pembelajaran PAI berbasis AI dapat menjadi salah satu alternatif inovasi pembelajaran yang mendukung peningkatan kualitas proses pembelajaran di SMP Rahmat Islamiyah Medan.
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A. Introduction

The rapid development of digital technology has brought significant changes to educational practices across different levels of schooling. The emergence of Artificial Intelligence (AI) has further accelerated this transformation by providing technologies capable of generating text, images, presentations, videos, questions, and other educational resources. AI is increasingly discussed not only as a technological innovation but also as a tool that can support instructional design, personalized learning, assessment, and teacher professional development. A systematic review by Wang et al. (2024) indicates that artificial intelligence in education has developed into a broad research field encompassing diverse applications, research approaches, and educational contexts.

The integration of AI into education creates opportunities for teachers to develop learning experiences that are more flexible, interactive, and responsive to students' learning needs. AI-based applications can assist teachers in preparing instructional materials, designing visual resources, generating learning activities, and developing assessment instruments. These capabilities may reduce some of the technical burden associated with conventional media development and allow teachers to allocate greater attention to pedagogical planning and student interaction. Research on AI in education has consequently emphasized the potential of AI to support both teaching practices and student learning when it is integrated appropriately into instructional processes (Wang et al., 2024).

At the junior secondary school level, the integration of digital technology is particularly important because students increasingly encounter technology as part of their everyday lives. Educational environments therefore need to provide learning experiences that correspond with students' digital contexts while maintaining clear pedagogical objectives. Research on AI in K–12 education indicates that AI-related learning and technology-supported instruction can contribute to students' technological literacy, problem-solving abilities, motivation, and understanding when appropriate instructional strategies are employed (Liu & Zhong, 2024; Wang et al., 2024). This situation highlights the importance of developing learning media that are not merely technologically sophisticated but also pedagogically meaningful.

Learning media constitute an important component of the instructional process because they function as a bridge between learning content, teachers, and students. Appropriate media can make abstract concepts more concrete, provide visual representations, facilitate interaction, and create opportunities for students to engage with learning materials through different modalities. In contemporary education, digital media have expanded these possibilities by incorporating multimedia, animation, interactive presentations, video, online assessment, and adaptive learning resources. The development of AI has further expanded the potential of digital learning media by enabling teachers to produce and modify educational content more efficiently.

The use of AI in learning media development, however, should not be understood simply as replacing conventional instructional media with technological applications. Effective integration requires alignment among learning objectives, instructional content, students' characteristics, pedagogical strategies, and technological affordances. Systematic reviews of AI in education emphasize the importance of instructional design, teacher involvement, authentic learning contexts, appropriate scaffolding, and carefully designed learning activities (Liu & Zhong, 2024). Therefore, the development of AI-based media should begin with educational needs rather than with the technological capabilities of AI tools alone.

Artificial Intelligence also offers opportunities to increase the variety of instructional resources available to teachers. Through generative AI, teachers can develop preliminary drafts of explanations, illustrations, presentation materials, question sets, learning scenarios, and other resources. Such applications can be particularly useful when teachers need to adapt materials to different learning objectives and student characteristics. Nevertheless, AI-generated materials require teacher review because the quality, accuracy, contextual appropriateness, and educational value of generated content cannot be assumed automatically. The teacher therefore remains an important decision-maker in determining whether AI-generated content is suitable for classroom use.

These considerations become especially important in Islamic Religious Education (IRE), or Pendidikan Agama Islam (PAI), because the subject is concerned not only with the transmission of knowledge but also with the development of attitudes, values, morality, and religious practices. Learning media for PAI consequently need to maintain the accuracy of religious information while presenting learning content in ways that are understandable and relevant to students. Recent studies have identified considerable potential for AI-based media to support PAI learning through interactive and visually engaging resources, while simultaneously emphasizing the need to consider pedagogical, ethical, and religious dimensions (Zain et al., 2025; Yuliana, 2026).

PAI learning includes diverse subject areas, such as the Qur'an and Hadith, faith, morality, jurisprudence, Islamic history, and Islamic culture. Some of these materials contain abstract concepts that may be difficult for students to understand if presented predominantly through verbal explanations. AI-supported media can provide alternative representations through illustrations, presentations, simulations, videos, interactive questions, and other multimedia resources. The utilization of AI therefore has the potential to enrich the presentation of PAI content and provide students with more diverse opportunities to interact with learning materials (Susanti & Amin, 2025).

Recent research has demonstrated the feasibility of developing interactive AI-based learning media specifically for Islamic Religious Education. Mavianti et al.

(2026), for example, developed AI-based interactive learning media for PAI using a Research and Development approach and reported high feasibility results from expert validation as well as positive practicality findings. Their study also reported an increase in students' understanding after implementation. Such findings indicate that AI can move beyond being merely a source of information and become part of the design of structured instructional media.

Similar evidence has emerged from studies examining AI-supported PAI learning in school settings. Fadli et al. (2026) found that PAI teachers utilized applications such as ChatGPT, Canva AI, and Gamma AI to develop instructional materials and interactive learning media. The study reported positive contributions to instructional efficiency and student engagement, while also identifying challenges related to teachers' digital literacy, technological infrastructure, and the reliability of AI-generated information. These findings suggest that successful AI integration requires not only access to AI tools but also teacher competence and systematic instructional planning.

The development of AI-based media for PAI also raises important ethical and pedagogical considerations. Religious learning materials require careful verification because inaccuracies in generated content may affect students' understanding of religious concepts. In addition, excessive dependence on AI may reduce opportunities for students to engage in independent reasoning, discussion, reflection, and direct interaction with teachers. Consequently, AI should be positioned as a supporting technology within a teacher-guided learning process rather than as an autonomous replacement for teachers. Recent scholarship on AI in Islamic education has emphasized the importance of balancing technological innovation with pedagogical principles, Islamic values, academic integrity, and responsible use of technology (Faridah et al., 2026; Yuliana, 2026).

Another important issue concerns teachers' readiness to utilize AI in developing learning media. Although AI applications can simplify several stages of media production, teachers still require the ability to formulate effective prompts, evaluate generated content, adapt materials to curriculum requirements, and integrate the

resulting media into classroom instruction. A systematic review of AI in teaching and teacher professional development found that research has focused more heavily on AI applications in teaching than on the professional development needs of teachers who integrate AI into their practices (Wang et al., 2024). This imbalance indicates the need for studies that connect technological innovation with teacher capacity and actual instructional requirements.

The issue of contextualization is also important in the development of AI-based PAI media. Learning media developed for one educational environment may not automatically be appropriate for another because schools differ in terms of student characteristics, teacher competence, technological infrastructure, learning culture, and institutional objectives. AI-based media should therefore be developed by considering the actual context in which they will be implemented. This contextual approach is consistent with recent scholarship emphasizing the importance of pedagogical, technological, ethical, social, and institutional factors in developing AI-supported media for Islamic education (Setiyawan, 2026).

In the context of Indonesian schools, the integration of AI into PAI learning is becoming increasingly relevant as educational institutions respond to the broader digital transformation of teaching and learning. However, the availability of AI tools does not automatically guarantee meaningful implementation. Teachers need practical models for transforming AI capabilities into learning resources that correspond to curriculum objectives and students' needs. Recent research on digital transformation in Islamic Religious Education highlights the importance of systematic strategies and governance to ensure that AI integration contributes to learning quality while preserving the authenticity of religious knowledge and academic integrity (Faridah et al., 2026).

SMP Rahmat Islamiyah Medan represents a relevant educational context for examining the design and development of AI-based PAI learning media. As a junior secondary educational institution, the school provides a context in which digital learning resources can be integrated with students' developmental characteristics and the instructional objectives of PAI. The development of AI-based media in this setting is

expected to provide teachers with additional alternatives for presenting learning materials in more varied formats. At the same time, the development process needs to take into account the specific instructional context of the school rather than adopting AI technologies without adaptation.

The need for AI-based learning media is also associated with the challenge of creating learning experiences that are engaging without reducing the substantive character of PAI. Digital media should not merely prioritize attractive visual elements but should facilitate students' understanding, reflection, participation, and application of Islamic values. Accordingly, AI-based media need to be designed around clear learning outcomes and integrated with appropriate teaching strategies. This perspective is consistent with research indicating that well-designed AI-supported learning activities can encourage engagement and deeper understanding when technological features are connected to meaningful pedagogical purposes (Liu & Zhong, 2024).

Existing studies have provided valuable evidence regarding the utilization of AI in PAI, including studies on AI-based interactive media, teacher practices, and the opportunities and challenges associated with digital transformation. Nevertheless, there remains a need for contextual studies that focus specifically on the design and development process of AI-based PAI learning media at the junior secondary school level. Much of the existing literature discusses the potential, implementation, or general utilization of AI, whereas research focusing on how AI can be systematically transformed into contextualized PAI learning media within a particular school environment remains important. This gap provides a rationale for conducting development-oriented research at SMP Rahmat Islamiyah Medan.

The development of learning media in this study therefore positions AI as a technological resource that needs to be integrated with pedagogical considerations. The development process is expected to involve the identification of learning needs, formulation of media objectives, selection of appropriate AI-supported tools, development of learning content, production of multimedia resources, and evaluation of the resulting media. Such a process can help ensure that the developed media are

relevant to PAI learning objectives and appropriate for students. It also reflects the argument that AI integration should involve teachers as active designers and evaluators rather than passive users of technological products (Wang et al., 2024).

The significance of this research lies in its effort to connect technological innovation with the practical needs of PAI learning at the junior secondary school level. Rather than treating AI as an end in itself, the study views AI as a means for supporting the development of instructional media that are interactive, contextual, visually engaging, and aligned with Islamic educational values. The study is also expected to contribute to the growing literature on AI in Islamic Religious Education by providing a contextual example of media development in a school environment. This focus is consistent with recent research emphasizing the need for integrative and sustainable approaches to AI-based PAI media development (Setiyawan, 2026).

Based on the background and research gap described above, this study aims to design and develop Artificial Intelligence-based Islamic Religious Education learning media at Rahmat Islamiyah Junior High School, Medan. Specifically, the study seeks to identify the learning-media needs relevant to PAI instruction, design AI-supported learning media based on those needs, develop the media by integrating appropriate AI technologies and PAI content, and examine the suitability of the developed media for supporting the learning process. Through these objectives, the study is expected to contribute to the development of practical and contextually appropriate AI-based learning media that can support teachers in delivering PAI more effectively in the digital era.

B. Methods

This study employed a Research and Development (R&D) approach to design and develop Artificial Intelligence (AI)-based learning media for Islamic Religious Education (IRE) at Rahmat Islamiyah Junior High School, Medan. The R&D approach was selected because the study was oriented toward producing an instructional media product that could be utilized to support the teaching and learning process. The

development process focused on identifying instructional needs, designing the media, developing learning content using AI-supported technologies, implementing the developed media, and evaluating its suitability. The research was conducted in a natural school setting to ensure that the resulting learning media were relevant to the characteristics of teachers, students, learning objectives, and the instructional context of IRE.

The development procedure consisted of several interconnected stages, beginning with a needs analysis. The needs analysis was conducted to identify the problems encountered by teachers in developing learning media, the types of media required, students' learning characteristics, available technological facilities, and teachers' familiarity with AI-based applications. Information was collected through observation, interviews with IRE teachers, and documentation of existing learning materials. The results of this stage were used as the basis for determining the content, format, features, and technological components of the learning media. This stage was important because AI-based media development needs to be based on actual instructional requirements rather than solely on the availability of technological tools.

The second stage involved the design of the AI-based IRE learning media. At this stage, the researchers formulated learning objectives, selected relevant IRE topics, organized the instructional content, determined appropriate learning activities, and developed a media structure. The design incorporated multimedia components such as textual explanations, illustrations, presentations, learning videos, interactive questions, and evaluation activities. AI technologies were selected according to their suitability for specific media-development tasks. The design also considered the characteristics of junior secondary school students and the need to present Islamic concepts accurately, clearly, attractively, and contextually.

The third stage was the development of the learning media. At this stage, the researchers transformed the initial design into a functional instructional product by utilizing AI-supported applications for generating and refining learning materials. AI was used to assist in developing textual content, visual materials, presentation

components, video concepts, and interactive assessment items. The generated materials were subsequently reviewed, edited, and adapted by the researchers and teachers to ensure their accuracy and relevance to the IRE curriculum. Particular attention was given to the accuracy of Islamic concepts, the appropriateness of language, visual clarity, alignment with learning objectives, and integration of Islamic values. Thus, AI functioned as a supporting tool in the development process, while pedagogical and content-related decisions remained under human supervision.

The fourth stage involved expert review and product revision. The developed learning media were reviewed based on several aspects, including content feasibility, instructional design, language, visual presentation, technological functionality, and relevance to IRE learning. Feedback obtained from the review process was used to identify weaknesses and areas requiring improvement. Revisions were subsequently conducted to improve the clarity of learning materials, organization of content, visual elements, interactivity, and usability of the media. This process was conducted iteratively to ensure that the final product was sufficiently appropriate for implementation in the school context. The evaluation process also considered the importance of verifying AI-generated information before its use in religious education.

The fifth stage consisted of limited implementation and evaluation of the developed media at Rahmat Islamiyah Junior High School, Medan. The media were introduced into the IRE learning process with the involvement of teachers and students. Data were collected through observation, interviews, questionnaires, and documentation to examine the practicality, usability, attractiveness, and perceived usefulness of the media. Teachers' responses were used to determine whether the media could facilitate lesson preparation and classroom instruction, while students' responses were used to examine their engagement and perceptions of the learning experience. The implementation findings were analyzed descriptively and used to identify additional revisions that might be necessary before the media were considered ready for broader use.

The data analysis combined qualitative and quantitative techniques. Qualitative data obtained from observations, interviews, documentation, and suggestions were analyzed through data reduction, data organization, interpretation, and conclusion drawing. Quantitative data obtained from validation and response questionnaires were analyzed using descriptive statistics by calculating scores, percentages, and average results. The results were then interpreted according to predetermined feasibility and practicality criteria. The final stage involved revising the product based on the evaluation results and producing the final version of the AI-based IRE learning media. Through this R&D process, the study sought to produce learning media that were pedagogically relevant, technologically functional, visually engaging, and appropriate for supporting Islamic Religious Education at Rahmat Islamiyah Junior High School, Medan.

C. Result and Discussion

The results of this study indicate that the design and development of Artificial Intelligence (AI)-based learning media provide an opportunity to support the implementation of Islamic Religious Education (IRE) at Rahmat Islamiyah Junior High School, Medan. The development process was conducted through needs analysis, media design, media development, expert review, implementation, and evaluation. The findings demonstrate that AI can function as a supporting technology for developing learning resources that are more varied, interactive, contextual, and adaptable to students' learning needs. This finding is in line with Wang et al. (2024), who explain that AI has increasingly been utilized in education to support instructional design, learning resources, assessment, and other educational activities.

The needs analysis identified the importance of developing learning media that are relevant to the instructional conditions at Rahmat Islamiyah Junior High School, Medan. Teachers require media that can present PAI materials through various formats, including textual explanations, images, presentations, videos, and interactive exercises. The need for appropriate learning media is particularly relevant because the quality of

learning is influenced not only by the content being delivered but also by how the content is represented and experienced by students. Setiawan et al. (2026), in their analysis of learning-media financing management at SMP Rahmat Islamiyah Medan, demonstrate that learning media constitute an important component of educational management and learning support within the school context.

The findings further demonstrate that the development of learning media needs to be connected with the contextual characteristics of PAI instruction. Learning materials become more meaningful when students can relate concepts to situations, experiences, and problems encountered in their daily lives. Research by Nasution et al. (2026) on the implementation of the Contextual Teaching and Learning (CTL) approach in Islamic Religious Education classes emphasizes the relevance of contextual learning in connecting instructional content with students' real-life experiences. Therefore, the AI-based media developed in this study were designed not merely to display information but also to facilitate the presentation of contextual examples and learning activities.

The importance of contextualization is also supported by Harfiani (2026), who examined contextual-based Qur'an and Hadith learning at MTs Matahari Batang Kuis. Contextual learning provides opportunities for students to understand religious materials by connecting them with situations that are meaningful to their lives. This principle is relevant to the development of AI-based PAI media because AI allows teachers to generate examples, illustrations, scenarios, and questions that can be adapted to students' environments. Consequently, the utilization of AI can strengthen contextual learning when teachers carefully select and modify the generated materials.

The design stage produced a learning-media structure that integrated PAI content with AI-supported multimedia components. The media included learning objectives, instructional materials, illustrations, examples, learning activities, and evaluation questions. The design was developed by considering the relationship between learning objectives and each media component. Thus, visual and interactive features were not included merely for aesthetic purposes but were intended to support students' comprehension and participation. This approach corresponds with Liu and Zhong

(2024), who emphasize the importance of instructional design, teacher involvement, authentic contexts, and learning scaffolding in AI-supported education.

The design of the media also considered the need to present Islamic concepts in ways that are understandable to junior secondary school students. PAI contains a broad range of topics, including Qur'an and Hadith, faith, morality, jurisprudence, Islamic history, and Islamic practices. Some of these concepts can be abstract when delivered through conventional verbal explanations. AI-supported multimedia can provide additional representations through illustrations, scenarios, videos, presentations, and interactive questions. Zain et al. (2025) similarly identify AI-based learning media as having potential to support more adaptive and engaging Islamic Religious Education learning.

The development stage demonstrated that generative AI could support the production of various instructional resources. AI-assisted applications were used to generate initial textual content, visual concepts, presentation materials, video ideas, and assessment questions. These outputs were subsequently reviewed and modified by the researchers and teachers. This process demonstrates that AI can reduce some of the technical workload associated with learning-media production while maintaining teacher control over the instructional process. Susanti and Amin (2025) similarly discuss the potential of AI as a source for developing learning media for Islamic Religious Education.

The use of AI also increased the variety of media that could be developed within a relatively integrated instructional structure. Text-based materials could be supplemented with images, presentations, videos, and interactive questions. This variety provides teachers with greater flexibility when selecting media according to the characteristics of particular learning activities. In this respect, AI can function as a productivity-support tool for teachers rather than merely as an information source. Wang et al. (2024) identify instructional support and content development as important areas in the growing application of AI in education.

Another important finding concerns the ability of AI-supported media to accommodate contextual learning. Teachers can formulate prompts that relate PAI materials to situations familiar to students, such as family life, school activities, social relationships, environmental responsibility, honesty, discipline, and religious practices. Such contextual examples can help students understand that PAI is not limited to theoretical knowledge but is closely connected to everyday behavior. This finding reinforces the relevance of the contextual approach examined by Nasution et al. (2026), in which PAI learning is connected to students' real-life situations.

The use of contextual examples is particularly relevant when teaching moral and religious values. Rather than presenting values such as honesty, responsibility, discipline, tolerance, and respect only through definitions, AI-supported media can assist teachers in developing short scenarios, illustrations, and problem-based questions. Students can then be encouraged to analyze situations and determine appropriate responses based on Islamic principles. This approach provides opportunities for learning to move from memorization toward understanding and application. Harfiani (2026) similarly highlights the importance of contextualizing religious learning so that students can connect religious concepts with their actual experiences.

The implementation of AI-based media also provided opportunities to incorporate interactive assessment activities. AI-assisted tools were used to support the preparation of questions based on learning materials. However, generated questions were reviewed before being incorporated into the media. The review considered the relevance of questions to learning objectives, clarity of language, level of difficulty, and suitability for PAI content. This human-review process was essential because AI-generated assessment materials cannot automatically be assumed to be accurate or pedagogically appropriate.

The findings demonstrate that teacher involvement remained central throughout the media-development process. Teachers did not simply use AI-generated products but participated in selecting topics, formulating learning objectives, reviewing content, modifying generated materials, and determining how the media should be used in

classroom instruction. This finding supports the human-centered perspective on AI integration in education. AI may assist teachers in producing resources, but pedagogical decisions remain dependent on teachers' professional judgment. Faridah et al. (2026) similarly emphasize the importance of governance and human oversight in the digital transformation of Islamic Religious Education.

The role of teacher competence is also evident in the development process. Teachers require not only technical knowledge of AI applications but also the ability to evaluate the quality of generated materials and integrate them into instructional activities. This includes the ability to formulate effective prompts, verify information, revise generated content, and align materials with curriculum objectives. Research by Fahreni et al. (2024) indicates that teachers generally recognize the potential of AI in education while emphasizing the importance of competence and professional development for effective implementation.

This finding is relevant to previous educational-development activities at SMP Rahmat Islamiyah Medan. Setiawan and Maulana (2026) reported a training program on educational blog design and management for educators at the school. Such activities indicate the relevance of strengthening teachers' digital competencies and expanding their ability to utilize digital platforms for educational purposes. The development of AI-based PAI media can therefore be viewed as part of a broader effort to strengthen teachers' capacity to utilize digital technology for learning.

The implementation findings also indicate that AI-based media can complement rather than replace teachers' existing instructional practices. Teachers can use the media during the introduction of a topic, explanation of concepts, classroom discussion, individual activities, group work, and assessment. This flexibility enables AI-supported media to become an additional instructional resource rather than an independent teaching system. Wang et al. (2024) similarly describe AI as a technology capable of supporting teachers and educational processes across multiple instructional functions.

During implementation, multimedia components created additional opportunities for students to interact with PAI materials. Visual representations, learning videos,

presentations, and interactive questions can provide different entry points into the same learning content. Such variation can be particularly useful for students who respond differently to textual, visual, or interactive forms of instruction. Lee and Kwon (2024) explain that AI-related educational activities in K–12 contexts can support student engagement when technological features are connected to appropriate learning strategies.

The developed media also have potential to support students' digital literacy. Although the primary objective is PAI learning, students are exposed to digital learning resources and technology-supported learning activities. Students can gradually develop familiarity with navigating digital content, evaluating information, responding to interactive questions, and engaging with multimedia resources. Liu and Zhong (2024) emphasize that AI education in K–12 contexts should consider students' technological understanding and the pedagogical conditions required for meaningful engagement with AI-related technologies.

Nevertheless, the findings indicate that technological attractiveness should not become the primary objective of media development. A visually appealing product may have limited educational value if its content is not aligned with learning objectives. Therefore, each technological component needs to serve a clear instructional function. The development process in this study consequently emphasized the relationship between content, learning objectives, instructional activities, and technological features. This principle is consistent with Yim and Su (2024), who emphasize the importance of aligning AI learning tools with educational purposes and pedagogical considerations.

Another important result concerns the integration of Islamic values into AI-generated learning materials. The media were developed to support PAI learning rather than merely to introduce technological innovation. Therefore, AI-generated materials were reviewed to ensure their compatibility with Islamic values and the objectives of religious education. This aspect distinguishes AI-based PAI media from general learning media because religious content requires additional attention to accuracy, appropriateness, and ethical considerations. Setiyawan (2026) identifies pedagogical,

technological, ethical, and sociocultural factors as important considerations in developing AI-based media for Islamic education.

The integration of Islamic values can also be strengthened through contextual scenarios and reflective questions. For example, students can be presented with situations involving honesty in academic work, responsibility toward school assignments, respectful communication, social relationships, and responsible use of digital technology. Students can then analyze these situations using relevant Islamic principles. Such activities connect religious knowledge with practical behavior and provide opportunities for students to develop understanding through reflection. The contextual learning orientation identified by Harfiani (2026) and Nasution et al. (2026) provides a relevant theoretical basis for this approach.

The evaluation stage further indicated that the developed media could function as supplementary instructional resources for PAI teachers. The media could be adapted according to learning topics, classroom conditions, and student needs. This adaptability is one of the advantages of AI-supported media because teachers can revise content more easily than when developing every component manually from the beginning. However, adaptability still depends on teachers' ability to evaluate and modify AI-generated content appropriately.

The study also identified several challenges in implementing AI-based learning media. One challenge concerns the reliability of AI-generated information. AI systems may generate inaccurate, incomplete, or contextually inappropriate information. This issue is particularly important in PAI because religious concepts require careful verification. Therefore, AI-generated content should be treated as an initial resource that requires review against reliable educational and religious references. Yuliana (2026) similarly discusses the opportunities and challenges associated with integrating AI into Islamic Religious Education.

Another challenge concerns teachers' readiness and technological competence. Teachers may have different levels of familiarity with AI tools, and some may require additional training to use them effectively. The development of AI-based media should

therefore be accompanied by professional development that covers not only technical operation but also instructional design, prompt formulation, content verification, ethics, and responsible AI use. The experience of digital training for educators at SMP Rahmat Islamiyah Medan reported by Setiawan and Maulana (2026) provides a relevant example of the importance of continuous support for teachers in adopting educational technologies.

The findings also highlight the importance of maintaining human interaction in PAI learning. AI-supported media can provide information, visual resources, and interactive activities, but they cannot replace the teacher's role in guiding discussion, modeling behavior, providing moral direction, clarifying religious concepts, and understanding students' individual circumstances. PAI involves cognitive, affective, and behavioral dimensions, making direct teacher-student interaction an important component of the learning process. Consequently, AI should be positioned as a complementary tool within a teacher-guided learning environment.

Overall, the findings demonstrate that the design and development of AI-based PAI learning media at Rahmat Islamiyah Junior High School, Medan, can connect technological innovation with contextual and value-oriented learning. The development process began with identifying instructional needs, continued through the design and production of AI-supported media, and proceeded to review, implementation, and evaluation. The findings also demonstrate that contextualization, teacher competence, content verification, and Islamic values are important elements in the successful development of such media. Previous research on contextual PAI learning (Harfiani, 2026; Nasution et al., 2026), digital competence development at SMP Rahmat Islamiyah Medan (Setiawan & Maulana, 2026), and AI-based Islamic Religious Education media (Zain et al., 2025; Susanti & Amin, 2025) collectively support the relevance of integrating pedagogical, technological, and contextual dimensions.

In relation to the objectives of the study, the results show that AI can be utilized to support the identification of learning-media needs, the design of contextual PAI media, the development of multimedia and interactive resources, and the implementation of

technology-supported learning activities. The developed media provide an additional alternative for teachers to present PAI materials in more varied and engaging formats while maintaining the central role of teachers in instructional decision-making. The study therefore contributes a contextual example of how AI-supported media development can be connected with contextual PAI learning and teacher digital competence at the junior secondary school level. At the same time, the findings indicate that responsible implementation requires continuous teacher supervision, verification of AI-generated content, alignment with curriculum objectives, and integration with Islamic educational values.

D. Conclusion

The research concludes that the design and development of Artificial Intelligence-based Islamic Religious Education (PAI) learning media at Rahmat Islamiyah Junior High School, Medan, can provide a contextual and innovative approach to supporting PAI learning. The development process began with an analysis of teachers' needs, students' learning characteristics, available facilities, and the existing use of digital technology. These findings became the basis for designing learning media that integrates learning objectives, Islamic religious content, visual materials, presentations, videos, and interactive assessments. The use of Artificial Intelligence supported teachers in developing more varied learning resources while maintaining the relevance of the content to the characteristics and learning context of the school.

The developed media also demonstrates the importance of combining technological innovation with sound pedagogical principles and Islamic values. Artificial Intelligence can assist teachers in generating learning materials, visual content, presentation structures, video concepts, and interactive questions; however, the teacher remains responsible for reviewing, correcting, contextualizing, and ensuring the accuracy of the religious content. The integration of contextual examples, moral situations, reflective questions, and Islamic values makes the media more relevant to students' experiences and supports not only the development of cognitive knowledge

but also attitudes and character. This finding is consistent with the importance of contextual learning and teacher modeling in PAI, as reported by Nasution et al. (2026) and Harfiani (2026).

Overall, the research indicates that Artificial Intelligence-based learning media can strengthen the variety, attractiveness, and adaptability of PAI learning at the junior secondary school level when implemented through a systematic research and development process. The findings also emphasize that successful implementation depends on teacher competence, continuous mentoring, adequate digital facilities, careful verification of AI-generated information, and the preservation of meaningful teacher–student interaction. Therefore, the developed media should be viewed not as a replacement for teachers but as a supporting resource that enables teachers to design more contextual, interactive, and technology-responsive PAI learning experiences. Future development can focus on broader implementation, systematic expert validation, larger-scale testing, and evaluation of the media’s impact on students’ learning outcomes and Islamic character development.

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