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Artificial Intelligence-Enhanced Instructional Media Design: Phenomenological Insights from Pre-Service Islamic Education Teachers

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ABSTRACT

This study explores the experiences of undergraduate students in the Islamic Education (PAI) program at UIN Jurai Siwo Lampung in utilizing Artificial Intelligence (AI) to design instructional media during the 2025 Teaching Assistance Program. The research aims to (1) uncover the meaning of students' experiences in using AI for designing learning media, and (2) analyze AI's contributions to the learning process and the professional development of these students as prospective teachers. A phenomenological qualitative approach was employed, using in-depth interviews, limited observations, and document analysis for data collection. Data were analyzed through Interpretative Phenomenological Analysis (IPA) to identify the structural meaning of students' experiences. The findings reveal four key themes in how students make meaning of AI: AI as a transformational tool in media design, AI as a pedagogical support for simplifying concepts, AI as a catalyst for increasing motivation and dynamic classroom interactions, and AI as a component in shaping novice teacher identity. Additionally, three primary contributions of AI to the teaching process were identified: enhancing the quality of instructional delivery, increasing student motivation and engagement, and strengthening students' techno-pedagogical competencies. These findings indicate that integrating AI opens substantial opportunities for novice teachers to create more effective, creative, and relevant learning experiences in the digital era. The study underscores the importance of AI literacy for future teachers to ensure ethical and contextual use of technology, and it recommends further longitudinal research to examine the long-term impacts of AI use on teacher professional development.

Keywords: artificial intelligence; instructional media; phenomenology; teaching practicum; novice teachers

INTRODUCTION

Over the past two decades, advances in digital technology have spurred a significant transformation in education, notably through the adoption of Artificial Intelligence (AI). AI is no longer merely a technical aid; it has evolved into systems capable of delivering adaptive, intelligent, and personalized learning experiences. AI plays a pivotal role in supporting *Intelligent Tutoring Systems* that provide materials tailored to individual student needs and bolster collaborative learning (Kisno et al., 2023; Y. Xu et al., 2024). Furthermore, AI has shifted the teacher's role from that of a traditional instructor to a facilitator who encourages student autonomy in learning (He et al., 2023), reflecting a fundamental change in modern instructional practice.

The implementation of AI in education is increasingly evident through educational chatbots and AI-driven learning platforms that can enhance student engagement (Z. Xu et al., 2023). These technologies enrich learning experiences by enabling more personalized and responsive interactions. However, integrating AI into classrooms also presents challenges, including data privacy concerns, infrastructure limitations, and technological access gaps among different groups of students (Afonso et al., 2025; Chen, 2025). Despite these challenges, researchers agree that AI offers tremendous opportunities to foster pedagogical innovation and significantly improve learning outcomes across diverse educational contexts (Paglialunga & Melogno, 2025). This makes the use of AI a highly relevant topic for investigation in educational settings, including its role in the design of instructional media.

Instructional media are a crucial component of the learning process, significantly influencing student motivation and comprehension. Numerous studies affirm that using

appropriate learning media can increase student engagement and interest (Hendar et al., 2022; Lestari & Sujana, 2021; Putri & Suniasih, 2022). From the perspective of Mayer's cognitive theory of multimedia learning, visual elements in instruction play an important role in information processing and can enhance conceptual understanding (Masrurah & Anita, 2024). Effective instructional media are characterized by interactivity, relevance to the subject matter, and the ability to cater to various student learning styles (Anugerah & Chandra, 2023; Nurdiana & Murjainah, 2018). Thus, employing suitable media can create a dynamic and engaging learning environment that optimally supports student learning outcomes.

In practice, however, designing high-quality instructional media is challenging for novice teachers and student teachers in teaching practicum programs. They often face limited understanding and skills in integrating technology effectively. In such situations, technological support becomes essential, as digital tools can boost student engagement and help create more interactive learning experiences (Pongsakdi et al., 2021; Shaikh, 2023). Student teachers in teaching assistance programs need this support to develop their pedagogical and professional competencies. In the digital era, novice teachers are expected to master technology integration aligned with pedagogical strategies (Pradana et al., 2024), which means they must be equipped with relevant techno-pedagogical knowledge (Adhikari, 2021). Adequate training and technological support enable these teachers to leverage digital tools to improve teaching quality (Dawadi, 2022; Maja, 2023). Therefore, utilizing AI emerges as a strategic solution for student teachers to develop their pedagogical and professional competencies.

Research on teachers' use of AI suggests that this technology can improve lesson planning, assessment, as well as student engagement and motivation. For example, recent studies report that primary and secondary teachers see AI as enabling more effective instruction (Chapagai & Adhikari, 2024). Novice teachers and student teachers (pre-service teachers) also report benefits of AI in designing more engaging learning experiences, although integration challenges remain (Sari & Atmoko, 2024; Sulisworo et al., 2024). Moreover, AI-based training programs have been shown to enhance teachers' competencies in producing adaptive and interactive digital media (Maulana et al., 2025; Sundari et al., 2024). These findings underscore the importance of strengthening technological capacity in teacher education.

Despite evidence of the significant benefits of AI in education, gaps remain in the literature, especially concerning how student teachers in teaching assistance programs perceive and authentically integrate AI into designing instructional media. Previous studies have rarely delved deeply into the challenges faced by teachers—particularly student teachers—in effectively integrating AI into curricula and teaching materials (Fahimirad & Kotamjani, 2018). Additionally, there is limited in-depth exploration of how these novice educators derive meaning from using AI in their teaching practice and how it affects their professional growth (Supriyadi et al., 2024). Thus, this study focuses on an in-depth exploration of the experiences of students in the Islamic Education (PAI) program who participated in the 2025 Teaching Assistance Program, specifically examining their use of AI in designing instructional media. The study aims to: (1) uncover the meanings that these student teachers associate with using AI in instructional media design; and (2) analyze how AI utilization contributes to the instructional process and the professional development of the students as prospective teachers. Using a phenomenological approach, this research provides a comprehensive understanding of AI use in the context of religious education and its contribution to strengthening novice teacher competencies in the digital age.

METHOD

This research employed a qualitative method with a phenomenological approach to explore and understand the lived experiences of student teachers in the Teaching Assistance Program who utilized Artificial Intelligence (AI) in creating instructional media. The phenomenological approach is crucial for uncovering the essence of individuals' subjective experiences and understanding how meanings are constructed through social interaction and context (Cahill et al., 2017; Diaz Andrade, 2017). Through this approach, the researcher can examine how student teachers internalize the use of AI as an assistive tool in designing creative and innovative learning media, while also understanding the reflective processes that occur

during their teaching practice (Manzoor, 2023). The goal is to identify the deep structures and meanings of the authentic experiences of these students when applying AI technology in the development of instructional media in school settings.

The participants were 8 students from the Islamic Education (PAI) Study Program at UIN Jurai Siwo Lampung who had completed a Teaching Assistance Program in partner schools and had experience using AI in producing instructional media. Participants were selected through purposive sampling based on specific criteria: (1) having participated in a teaching practicum at a school via the teaching assistance program, (2) having used AI technology to create instructional media, and (3) willingness to discuss their experiences reflectively. The sample size of eight was determined based on the principle of data sufficiency and saturation, as no new information emerged from interviews beyond this point (Creswell, 2009). The participants included both male and female students, all of whom were in the final year of their undergraduate program and had varying degrees of familiarity with educational technology tools prior to the study.

Data were collected through semi-structured, in-depth interviews that provided participants the flexibility to openly describe their experiences. Interview questions centered on their process of designing media with AI, the challenges and benefits they perceived, and their reflections on how AI influenced their teaching practice. All interviews were audio-recorded with participant consent and transcribed verbatim for analysis. In addition to interviews, the researcher collected documents in the form of examples of instructional media produced using AI (e.g. AI-generated lesson slides, quizzes, and module content). Field observations focused on the ways participants utilized AI-generated materials during lessons, and the interactions and engagement of students with these materials. These multiple data sources provided a richer context for understanding the participants' experiences.

The data were analyzed following the steps of Interpretative Phenomenological Analysis (IPA) as outlined by Smith, Flowers, and Larkin (2022). The analysis process began with reading and re-reading the interview transcripts to immerse the researcher in the participants' narratives and gain a deep understanding of each individual's experience (Smith et al., 2022). Next, initial noting was performed, involving detailed annotations on the transcripts capturing descriptive comments (what was said), linguistic comments (how it was said), and conceptual comments (researcher's interpretations and insights). These initial notes were then used to develop emergent themes by identifying patterns and significant concepts that encapsulate the essence of each participant's statements. The emergent themes were carefully examined and clustered to form superordinate themes by looking for connections, similarities, or overarching structures that span across the detailed themes. Each case (participant) was analyzed individually to honor the idiographic nature of phenomenology, and only after analyzing all cases did the researcher proceed to identify patterns across cases. In this cross-case analysis, commonalities and divergences among participants' experiences were noted, leading to a composite understanding of the group's shared meanings as well as unique individual nuances (Smith et al., 2022). This layered analytical approach allowed for a deep, reflective interpretation of the data, preserving the richness of each participant's account while constructing a coherent overall picture of the phenomenon.

To ensure the trustworthiness of the findings, this study employed triangulation and member checking. Triangulation was conducted by comparing information from multiple sources: interview narratives, the AI-generated instructional media documents, and the classroom observation notes, to see if they converged on the same themes or revealed contradictions. This cross-verification strengthened the credibility of the interpretations. Member checking involved providing participants with summaries of the preliminary findings or interpretations and soliciting their feedback to verify accuracy and resonance with their lived experiences (Creswell & Poth, 2018). The participants confirmed that the themes reflected their experiences adequately and offered clarifications when necessary.

RESULT AND DISCUSSION

Results

1. Students' Interpretations of AI Use in Instructional Media Design

Based on the IPA, the meanings that student teachers attached to the use of AI in designing instructional media can be distilled into four main thematic constructions. Each theme emerged from the interview narratives and is reinforced by classroom observation findings and analyses of the instructional media artifacts produced (such as teaching modules and AI-generated quizzes). **Table 1 presents an overview of these four themes, along with descriptions and illustrative quotes from participants.**

Table 1. Students’ Perceived Meanings of Artificial Intelligence in Designing Instructional Media

No.	Main Theme of Meaning	Description of Findings	Interview Excerpts
1	AI as a transformational tool in media creation	Students view AI as a technology that brings efficiency and ease to producing high-quality materials, questions, and visual media. AI is perceived not merely as a technical aid, but as a transformative agent in teaching practice.	“AI helps me create presentations and videos that are far more engaging” (EV); “AI makes my preparation time much faster” (BG); “AI simplifies the process of gathering content so I don’t have to search for too long” (ZF); “I can produce materials that I couldn’t have made on my own before” (MS)
2	AI as a pedagogical support	AI assists in simplifying difficult concepts, providing alternative explanations, and strengthening the sequencing of lesson content. Students feel that AI supports their pedagogical needs by helping adapt content to student level and organizing material systematically.	“AI helps me structure the material more systematically” (RD); “If students are confused, I use AI to give an alternative explanation” (MI); “AI helps me adjust the language to the students’ level” (EV)
3	AI as a catalyst for changing classroom dynamics	AI-based media increase student enthusiasm, attention, and participation, especially among typically passive students. The use of interactive quizzes and AI-generated videos leads to a more lively and participatory class environment.	“Students immediately became enthusiastic and competed to answer” (ND); “The AI quiz turned usually passive students into active ones” (MS); “The avatar video made the kids focus” (EV)
4	AI as part of novice teacher professional identity formation	Positive experiences with AI build student teachers’ confidence, creativity, and motivation to continue developing as future educators. Students feel that using AI has become part of their journey in becoming adaptive and innovative teachers.	“Praise from students made me more confident” (BG); “AI made me realize teachers must keep evolving with technology” (LF); “This experience makes me feel more prepared to be a teacher” (RD); “AI has added to my capacity as a future teacher” (ZF)

1.1 Artificial Intelligence as a Transformational Tool in Instructional Media Creation

Students interpreted AI as a technology that enables them to produce instructional media more quickly, easily, and with higher quality, positioning AI not just as a technical aide but as an agent of transformation in teaching practice. One participant, EV, emphasized, “AI helps me create presentations and videos that are far more engaging than if I did it manually” (EV), while BG stated, “With AI, I can make media that I previously would not have been able to create by myself” (BG). This interpretation is consistent with observation results: almost all participants scored high on the planning and production of AI-based media, indicating that they designed and generated slides, videos, teaching modules, and even auto-graded quizzes using various platforms such as ChatGPT, Canva’s AI tools, PowerPoint AI generator, Gamma and Quizizz’s

AI features. The effectiveness of this approach was evident in classroom artifacts. For instance, a presentation titled “Menghindari Gibah, Menumbuhkan Tabayyun” (“Avoiding Gossip, Embracing Verification”) and another on *Qur’an Hadith* were well-structured, used polished language, and had professional visual designs, demonstrating AI’s support in creating coherent and high-quality content.



Figure 1. An AI-assisted presentation slide (Gamma and Canva) created and used by a student.

This slide demonstrates how AI helps student teachers generate more structured and visually engaging materials for classroom use. The automatically suggested layouts, graphics, and well-organized text reflect AI support in clarifying conceptual flow and enhancing the visual appeal of the instructional content. The use of such AI-generated slides (Gamma and Canva) confirmed that students perceive AI as a transformational tool, fundamentally changing their media creation process from a manual, time-consuming task to a more efficient, structured, and productive workflow.

1.2 Artificial Intelligence as a Pedagogical Support for Simplifying Concepts and Differentiation

Students also interpreted AI as a pedagogical partner that assists them in simplifying complex concepts, providing varied explanations, and strengthening the structure of the material to be delivered. RD noted, “AI helps me organize material in a more systematic and student-friendly way” (RD), while MI added, “If a student is confused, I use AI to provide another example or explanation” (MI). This interpretation aligns with observation findings on how AI-generated media were integrated into teaching and how outputs were adapted. Students did not simply present raw AI outputs; they actively simplified language, selected appropriate examples, and adjusted content to the local context before using it in class. This is evidenced by high observation scores in the categories of content adaptation and creativity.

Document analysis supports this theme. For example, an AI-assisted *Qur’an Hadith* module initially contained a dense paragraph explaining the function of Hadith in relation to the Qur’an, which the student then condensed into bullet points on slides for classroom presentation. This process indicates the use of AI for summarizing and tidying up content, followed by the student’s effort to tailor it to the learners’ characteristics. Similarly, in the “Avoiding Gossip, Embracing Verification” presentation, the content structure—from definition, scripture references, and survey data, to practical steps and case studies—suggests systematic support from a text generator (AI) which was then contextualized within the Islamic Education perspective. Thus, the interpretation of AI as a pedagogical support is reflected in the students’ ability to process AI outputs into material that is more accessible and comprehensible for their students.

1.3 Artificial Intelligence as a Catalyst for Changes in Classroom Dynamics and Student Engagement

Students perceived AI as a catalyst that transforms classroom dynamics to be more lively, participatory, and enjoyable. ND described, “When I used Quizizz, the students became instantly enthusiastic and were eager to answer” (ND), whereas EV recounted an experience using an AI-based video: “The students said the AI video felt like watching a YouTuber, and they became more active in asking questions” (EV). These accounts indicate that AI-based media hold strong

emotional and aesthetic appeal for students, thereby increasing their engagement. Observation data reinforced this interpretation: in classes utilizing interactive AI quizzes and AI-enhanced presentations, observers recorded higher levels of student participation compared to classes with conventional media. Students were eager to answer questions, actively responded, and engaged in discussions following the viewing of videos or presentation of case studies generated with AI. The observation scores for student activeness and classroom interaction were predominantly in the good to excellent range, signaling that AI media contributed to a more conducive and participatory learning atmosphere.

The instructional media documents also illustrate AI's potential in altering the learning ambiance. For example, daily quizzes created with Wayground/Quizizz were designed with interfaces familiar to the digital generation, effectively bridging students' digital culture with the context of Islamic Education lessons. Another example is a thematic moral education presentation that employed AI-generated illustrations, survey data, and narratives relevant to students' social media reality, thereby enhancing the material's appeal to students. The consistency between interview narratives, observation outcomes, and artifact evidence strengthens the finding that AI not only aids teachers in explaining content but also enriches students' learning experiences both emotionally and socially.

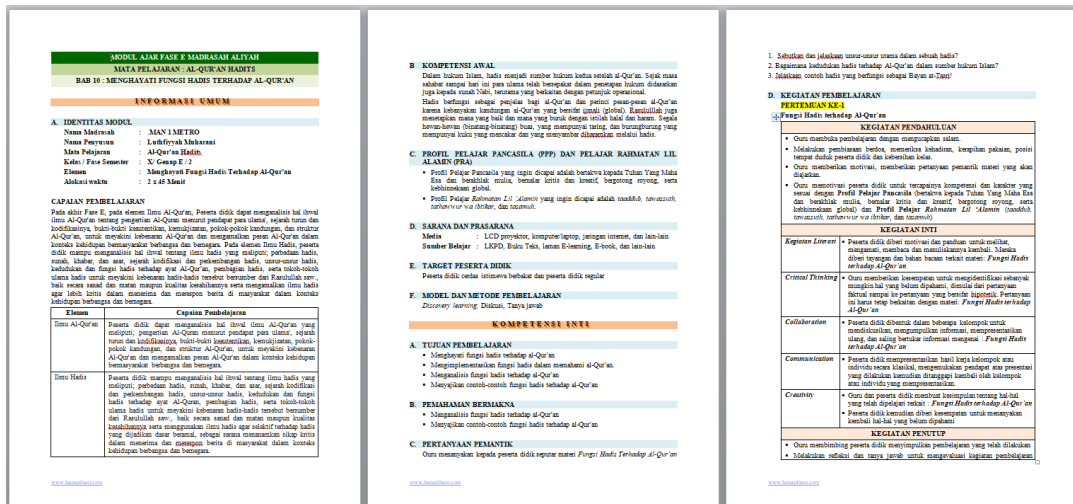


Figure 2. Excerpt from a lesson module developed with AI support, containing well-structured learning objectives, teaching scenarios, and content.

The module content illustrates how AI helped summarize theory, simplify concepts, and suggest varied learning activities. These outputs indicate AI's role in condensing material, providing alternative explanations, and organizing components of the lesson in alignment with the *Kurikulum Merdeka* (Indonesian national curriculum) format. The overall evidence shows that students used AI to strengthen the conceptual and structural aspects of their lesson planning, making their teaching process more planned, focused, and effective. AI not only eased the preparation of content but also provided an initial framework which the students then refined and enriched with pedagogical considerations.

1.4 Artificial Intelligence as an Element in Novice Teacher Professional Identity Formation

Students felt that their experience using AI became an integral part of forming their professional identity as future teachers in the digital era. BG mentioned, "Praise from students for the media I created with AI made me more confident in teaching" (BG). Likewise, LF observed that using AI pushed her to keep learning and adapting: "AI made me realize that as a teacher I must continuously develop by keeping up with technology" (LF). This meaning is reflected in high observation scores on the ethics and responsibility aspects of AI use, where students showed mindfulness in selecting content, avoiding plagiarism, and citing sources when using AI-

generated material. Furthermore, on the reflection aspect, students began to evaluate the effectiveness of the AI media they used and plan improvements for subsequent lessons, indicating a developing habit of reflective practice.

Analysis of teaching modules, presentations, and quizzes provides additional evidence that students were not merely using AI in a technical sense, but were combining technological skills with considerations of Islamic educational values, student needs, and curriculum demands. For instance, their lesson plans were comprehensive; their choice of illustrations aligned with Islamic ethics; and their interactive quiz designs reflected an effort to be engaging yet respectful of the content's religious context. These efforts suggest that the students were actively constructing an image of themselves as creative, tech-savvy, and responsible educators. They viewed the integration of AI as part of becoming a professional teacher who can harness modern tools while upholding educational and religious values.

In summary, the students' experiences yielded four significant interpretations of AI use: as a transformational tool, as a pedagogical support, as a catalyst for classroom dynamics, and as a component of professional identity formation. These meanings illustrate a multifaceted understanding of AI—beyond its technical utility—highlighting its role in empowering novice teachers and shaping their approaches to teaching and professional growth.

2. AI's Contributions to Teaching Practice and Students' Professional Development

Through the IPA, three main findings were identified regarding AI's contributions to the student teachers' instructional practices and professional growth. Each finding is derived from interview narratives and corroborated by classroom observation results as well as analyses of documents and media that the students produced during the Teaching Assistance Program.

Table 2. Contributions of AI to Teaching Process, Student Response, and Student Teachers' Professional Development

No.	Focus of AI's Contribution	Description of Findings	Interview Excerpts
1	Enhancing the quality of instructional delivery	AI reinforces lesson structure, clarifies content delivery, and aids differentiation in heterogeneous classrooms. Student teachers found that AI helped them present content in a more organized and accessible way, and tailor teaching methods to different student needs.	"AI makes the material more coherent and easier to understand" (MI); "The structure from AI made it easier for me to teach" (RD); "AI helped me prepare a clearer flow of the lesson" (BG)
2	Increasing student motivation and engagement	Interactive media such as AI-generated quizzes, digital avatars, and modern visuals created a more lively and engaging learning atmosphere. The novelty and familiarity of these AI-based elements boosted student interest and participation.	"This is like watching a YouTuber, Ma'am!" (EV, imitating a student's excitement); "Students who are usually passive became active participants" (MS); "Quizizz made the class much more fun" (ND)
3	Strengthening novice teacher professionalism	The use of AI improved the student teachers' digital literacy, confidence, and techno-pedagogical skills. It helped them feel more competent and professional by enabling the creation of high-quality teaching media.	"The media I made with AI made me more confident in teaching" (BG); "AI made me realize the importance of digital skills for teachers" (LF); "I feel more professional because I can create good media" (ZF)

2.1 Artificial Intelligence as an Enhancer of Teaching Quality and Effectiveness

The first finding indicates that students positioned AI as a tool that strengthens the quality and effectiveness of their teaching, mainly by simplifying content, providing a clear lesson structure, and supporting differentiation to accommodate diverse student abilities. Students perceived that AI helped them deliver more focused and easily understood material. EV

encapsulated this by saying, “AI can turn complex material into something simpler and quickly understood by students” (EV). Similarly, RD affirmed, “AI helps me organize the content more systematically and appropriate to the students’ level” (RD). These statements suggest that AI functioned as a partner that **makes it easier for** the student **teachers to** manage instructional content.

This interpretation is aligned with observation findings: most of the student teachers received high marks on aspects of lesson planning, content appropriateness, and alignment between objectives, content, and media. Observers noted that the materials presented had a clear flow, logical sequence of concepts, and a level of complexity suited to the student audience. This indicates that the students did not rely on AI outputs verbatim; rather, they utilized AI-generated suggestions to refine the structure of the material and adapt it to their students’ needs. Supporting documentation further strengthens this finding. For example, an AI-assisted *Qur’an Hadith* lesson module (Chapter 10) demonstrated well-organized learning objectives, content outlines, and structured learning activities, while a slide presentation for the same chapter showed how complex content about the function of Hadith vis-à-vis the Qur’an was distilled into concise bullet points with clear visual emphasis.

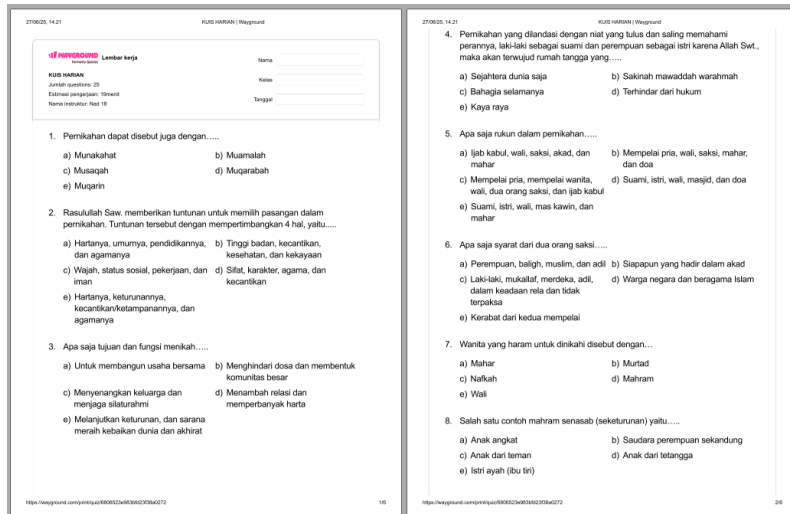


Figure 3. Example of an AI-generated interactive quiz used by a student teacher to formatively assess students’ understanding.

The quiz is automatically formatted, with a variety of distractors and a modern digital interface, indicating the use of AI in question generation and evaluation management. This quiz significantly increased student enthusiasm and created a more participatory learning atmosphere. The auto-graded format and gamified elements bridged the gap between students’ digital experiences and the formal classroom, serving not just as a visual aid, but as a motivational trigger that enhanced engagement in the learning process.

Overall, the students’ use of AI clearly bolstered the conceptual clarity and structural coherence of their lessons, making their teaching more planned and purposeful. AI provided initial content frameworks (such as organized outlines or simplified explanations) which the students then further developed with pedagogical insight. Thus, AI was understood as a catalyst that accelerates the improvement of lesson design and implementation, enabling the students to teach more effectively in the classroom.

2.2 Artificial Intelligence as a Trigger for Student Engagement and Motivation

The second finding confirms that AI contributed significantly to increasing student engagement and motivation. The student teachers observed that using modern visuals, videos, avatars, and AI-based gamification transformed the classroom atmosphere into one that was more vibrant, interactive, and fun. ND shared, “When I used Quizizz, students immediately

became excited and even competed to answer questions” (ND). Likewise, EV noted a similar effect when she played a video with a digital avatar: “Students said, ‘Ma’am, this is like watching a YouTuber but it’s a lesson,’ and they became more active in asking questions” (EV). These excerpts show that AI-based media have a strong emotional and entertainment value for students, capturing their interest and prompting them to participate more actively.

Observation results support these narratives. In classes where interactive AI quizzes and AI-augmented presentations were used, observers recorded much higher participation levels compared to classes using traditional media. Students appeared enthusiastic in answering quiz questions, actively responded to prompts, and engaged in discussions following AI-generated videos or case scenarios. Observation scores for student activeness and interaction were generally in the “good” to “very good” range, indicating that AI media helped create a learning environment that was both conducive and participatory. Documented media also corroborate this finding. The daily Quizizz-based quizzes were designed with interfaces familiar to students (including clear numbering of questions, answer options, and automatic scoring when used online), demonstrating that the student teachers leveraged AI not only to generate questions but also to design an assessment experience that was challenging yet enjoyable.

The integration of these AI tools resulted in clearly observable positive behavioral changes in students. The class became more *learner-centered*, with students eagerly taking part in activities rather than passively receiving information. In effect, AI served as a bridge between the students’ digital lives and the formal classroom content, validating the students’ familiarity with digital entertainment and incorporating it into educational activities. This contribution underscores that AI, in the eyes of the student teachers, is not just a means of delivering content but a mechanism to *enrich the learning experience*, increase student motivation, and align learning with the digital inclinations of contemporary students.

2.3 Artificial Intelligence as a Driver of Novice Teacher Professional Development

The third finding shows that using AI played a role in the professional identity development of the student teachers. Many participants felt that successfully employing AI in the classroom boosted their confidence, digital literacy, and techno-pedagogical abilities. BG conveyed, “Students said my media was cool, and that made me more confident while teaching” (BG). MI added that using AI made him increasingly aware of the importance of technology mastery for modern teachers: “AI helps me prepare lessons more creatively and according to student needs, and that strengthens me as a future teacher” (MI). These quotes illustrate that the experience of using AI became part of the students’ reflective process in understanding their role and professional skills.

Observation data indicate that the students began to exhibit professional attitudes in managing AI-based instructional media. In terms of ethical AI usage, observers noted efforts by the students to modify and adapt AI-generated material rather than copying it verbatim. The participants were cautious in selecting AI-provided content, aligning it with Islamic values, and avoiding materials that were inappropriate for their classroom context. Additionally, regarding reflective practice, some students started evaluating the strengths and limitations of the AI media they used and planning improvements for subsequent lessons. This indicates the emergence of a critical perspective on their own teaching and the tools they use, which is a hallmark of professional growth.

The analysis of learning documents further reinforces this theme. The *Qur’an Hadith* module created by one participant was designed not only to facilitate knowledge transfer but also to instill religious values and scientific attitudes, showing the student’s effort to integrate spiritual, cognitive, and technological dimensions. The AI-based presentations and quizzes also reflected the students’ willingness to explore new formats that resonate with the digital generation while still maintaining academic and religious rigor in the content. **These findings suggest that AI acted as a catalyst in the process of forming the student teachers’ professional identities.** Through repeated interactions with technology, student responses, and self-reflection, the participants built the conviction that teachers in the digital age need to be adaptive, creative, and responsible in leveraging AI for educational purposes.

In summary, the integration of AI in these student teachers' practice provided notable contributions: it improved the coherence and effectiveness of their instruction, heightened student engagement and motivation, and contributed to their development as confident, digitally literate, and reflective educators. These contributions were evidenced not only in the students' own perceptions and narratives but also through concrete observations of classroom behavior and the quality of instructional materials produced.

Discussion

The student teachers' interpretations of using Artificial Intelligence (AI) in designing instructional media indicate that this technology is understood not merely as a technical aid, but as an integral component shaping how future teachers design, develop, and reflect on learning. Recent literature affirms that AI functions as a pedagogical agent capable of creating more dynamic, adaptive, and collaborative learning environments (Alvarado, 2023; Asrifan et al., 2024). The experiences of the participants in this study revealed four forms of meaning – AI as a transformational tool, a pedagogical support, a catalyst for class dynamics, and a shaper of professional identity – that align with global trends in AI development in education, as noted by Thalji and Alkhasawneh (2025) and Chere and Wayi-Mgwebi (2024).

First, the notion of AI as a transformational tool in instructional media creation is strongly supported by prior research emphasizing AI's capability to generate creative, personalized, and high-quality content through generative tools like ChatGPT and AI-based design platforms (Mavundla et al., 2025; Rosario & Ciastellardi, 2024). In this study, students harnessed AI to develop slides, modules, avatar-led videos, and interactive quizzes, echoing the idea that AI extends teachers' pedagogical capacity and creativity via media automation (Asrifan et al., 2024). This is evident in learning artifacts such as the structured Qur'an Hadith module and thematic presentations, which are systematically organized and polished, in line with the findings of UI Haq et al. (2025) regarding the importance of institutional support and digital literacy in maximizing AI effectiveness. Thus, AI integration not only accelerates material creation but also introduces innovative modes of content delivery that traditional approaches cannot easily achieve. This insight is reinforced by findings that AI tools are capable of producing a variety of content with high uniqueness, consistency of ideas, and depth of scientific understanding (Qistiyah & Sabandi, 2024).

Second, AI has proven to be a pedagogical support that facilitates concept simplification, material adaptation, and differentiated instruction. This finding confirms literature indicating that AI can provide alternative explanations, analogies, and personalized learning pathways (Alvarado, 2023; Thalji & Alkhasawneh, 2025). In this study, participants used AI to reformulate complex concepts – such as the function of Hadith, ethics of social media use, and the principle of *tabayyun* (verification) – into formats more easily grasped by students. This practice resonates with the work of Chere and Wayi-Mgwebi (2024), who report that AI can supply instant feedback and support student self-guided inquiry. Furthermore, our findings reinforce the theory that AI enhances teachers' Technological Pedagogical Content Knowledge (TPACK) by seamlessly integrating technology, pedagogy, and content (Tan et al., 2025). In essence, AI functioned not only as a content provider but as a *pedagogical partner* that bolsters the accuracy and instructional alignment of the materials.

Third, the contribution of AI as a catalyst in changing classroom dynamics was clearly observed in this study. Participants reported heightened student engagement, a more lively classroom atmosphere, and increased motivation when using AI-based media like Quizizz, digital avatars, and automated presentations. This aligns with findings by Tariq (2025), who asserted that AI can improve the effectiveness and variety of instructional strategies through interactive learning experiences. Similarly, Vashishth et al. (2024) highlighted AI's social impact in creating collaborative learning spaces appealing to the digital generation. The students in our study noted that their pupils felt "like watching a YouTuber but it's a lesson," implying that AI bridges digital youth culture with formal education. Additionally, AI's role in alleviating teachers' administrative burdens and improving instructional efficiency, as described by Thalji

and Alkhasawneh (2025), was indirectly evident; with AI handling content generation and quiz grading, student teachers could focus more on facilitating learning and engaging with students.

17 Fourth, AI was found to play a role in shaping the professional identity of novice teachers. The experiences of the students using AI boosted their confidence, digital literacy, and awareness of the importance of technological competence in teaching – outcomes that are consistent with Tripathi et al. (2025) and Yang and Yanqiu (2025), who note that AI encourages teachers to redefine their professional roles and develop reflective skills. AI's support for professional development is also emphasized by Zhang (2025), who showed that repeated interactions with AI broaden pedagogical horizons and inspire teacher innovation. Meanwhile, Shao et al. (2025) stressed that using AI enhances novice teachers' cognitive and techno-pedagogical skills, thereby strengthening their competencies holistically. In our study, AI's impact went beyond technical aspects; it influenced how these student teachers perceive their roles, responsibilities, and professional growth in an increasingly digital educational ecosystem. They began to see themselves as adaptive and innovative educators, a transformation spurred by successful AI integration into their teaching. This aligns with findings that media technology in Islamic Religious Education enhances engagement, motivation, and digital competence, thereby strengthening teachers' professional growth (Suraijiah et al., 2023).

16 Integrating AI into the learning process and professional development of student teachers in this teaching practicum context has shown significant contributions to how novice educators understand, design, and implement instruction. Contemporary literature underscores that AI serves not just as a technical aid but as a *pedagogical ecosystem* supporting personalized learning, enhancing student engagement, and reinforcing teachers' professional competencies (Dei, 2025; Jakob et al., 2025; Kovalchuk et al., 2025). The experiences of the participants in our study confirm this view: AI directly contributed to improving instructional effectiveness, enriching classroom dynamics, and shaping their professional identities as digital-era educators. Empirical evidence gathered through interviews, observations, and document analysis demonstrates that AI provided an innovative space for these student teachers to explore media design, create interactive learning experiences, and deepen their pedagogical reflection.

Specifically, AI usage was found to improve the quality of the student teachers' instructional process, particularly through AI's capacity to personalize learning and expedite material preparation. Literature indicates that AI can tailor content and instructional methods to individual student needs, thereby creating effective and adaptive learning experiences (Dei, 2025; Jakob et al., 2025; Kovalchuk et al., 2025). In this study, participants leveraged AI to generate alternative explanations, simplify complex topics, and offer differentiated models of instruction. This aligns with findings by Malik et al. (2019) and Darıcan (2025), which assert that AI supports instructional flexibility via automated assessments, content analysis, and rich resource provision. The learning artifacts produced (lesson modules, slide presentations, digital quizzes) illustrate how the students optimized AI recommendations to construct lesson structures that were coherent, accurate, and relevant. Thus, AI acted as a catalyst accelerating the enhancement of lesson planning and execution among these student teachers.

Beyond improving instructional design, AI played a pivotal role in boosting student motivation and engagement. Studies by Dan et al. (2025) and Chang and Chang (2025) emphasize that AI can deliver real-time feedback, foster interactive learning environments, and facilitate adaptive learning through gamified elements. Our findings corroborate these concepts: AI-based media such as Quizizz games, avatar videos, and auto-generated presentations prompted students to be more active and enthusiastic in class. Furthermore, Monzon and Hays (2025) explain that AI can enhance learning retention by presenting content in visually and emotionally engaging ways. This dynamic was clearly observed in our study – the emotional and visual appeal of AI-driven content (e.g., the excitement of a game-like quiz or a relatable digital animation) resonated with students and encouraged deeper participation. The increased engagement indicates that AI served not only as a visual aid, but as a mechanism enriching the learning experience and connecting students' digital preferences with the instructional goals.

AI's contributions were also evident in strengthening the professional capacities of the student teachers. The experience of using AI to design, implement, and evaluate instruction

boosted their confidence, digital literacy, and techno-pedagogical fluency. The literature notes that AI contributes to teacher professional development through personalized training, access to relevant educational resources, and technical support for instructional innovation (Madureira & Batista, 2024; Tang et al., 2025). In our study, AI assisted with tasks like automatic quiz generation, lesson planning, and tech-enhanced class design, which helped the novice teachers reduce administrative burdens and focus more on creative and interactive aspects of teaching (Shukla et al., 2025). Moreover, Toba et al. (2025) highlight that AI can strengthen novice teacher competencies by automating the creation of assessment questions based on Bloom's taxonomy – a finding reflected in our participants' practice of generating digital quizzes that challenged students at various cognitive levels. Overall, AI functioned as both a reflective and strategic medium in shaping these student teachers into professionals who are adaptive, innovative, and prepared to face future pedagogical challenges. This is consistent with findings that AI provides personalised guidance, feedback, and support to both students and teachers, thereby enhancing instructional effectiveness and professional capacity (Bakti et al., 2023).

Importantly, this study extends the conversation on AI in education into the specific context of Islamic Education, shedding light on how AI's potential and challenges manifest in a religious education setting. The participants demonstrated how AI can be aligned with cultural and religious values – for example, by carefully selecting AI-generated content to ensure it is ethical and contextually appropriate, and by using AI to highlight Islamic perspectives in their teaching materials. This suggests that AI integration is feasible and beneficial even in content areas that require sensitivity to values and local context, provided that educators exercise critical oversight and contextualization of AI outputs (Li-ji & Zhao, 2024; Nguyen, 2023). The unique context of this study – pre-service Islamic Education teachers in Indonesia – also highlights that while the global trends of AI in education apply, there are additional layers of meaning when AI is used to support teaching in value-laden subjects (Munir & Majid, 2024; Nasih et al., 2024). The student teachers managed to bridge modern AI tools with the age-old content of religious teachings, indicating a successful blend of innovation with tradition.

This study expands the discourse on AI in education by examining its application within Islamic Education, illustrating how its potentials and challenges emerge in religious contexts. Through AI tools, student teachers critically assessed and curated ethical, culturally aligned content, particularly in highlighting Islamic perspectives – a process supported by Ahmad (2025), who underscores AI's transformative role in modern Islamic education. Their ability to refine AI-generated materials demonstrates the technology's value in sensitive subject areas when paired with reflective oversight (Gunder & Ford, 2025). This experience strengthened their instructional design skills and positioned them as innovative educators aligned with AI-enhanced pedagogies that integrate ethical and cultural considerations ("Digital transformations & innovations in business PG Education," 2025). These findings further emphasize the need for teacher education programs to embed AI literacy and practical training to prepare educators for ethical and contextually informed use of AI in 21st-century classrooms.

CONCLUSION

This study demonstrates that the utilization of Artificial Intelligence (AI) by student teachers in a teaching assistance practicum for instructional media design functions not merely as technical support, but as a process shaping how they understand, design, and reflect on pedagogical practice. The key findings reveal four dimensions of meaning attributed to AI use – AI as a transformational tool, a pedagogical support, a catalyst for changing classroom dynamics, and a contributor to professional identity formation – which collectively indicate that AI has become an integral part of developing novice teachers' techno-pedagogical competencies. In addition, the study found that AI contributes significantly to improving the quality of instruction, increasing student motivation and engagement, and strengthening the professionalism of these students as prospective teachers in the digital era. Conceptually, this research enriches the body of knowledge on AI integration in Islamic education, particularly in the context of instructional media design. Practically, the results underscore the importance of AI literacy training for pre-

18 service teachers so that they can harness technology in appropriate, ethical, and context-sensitive ways. Going forward, follow-up research could be directed towards longitudinal explorations of the impact of AI use on teachers' professional competencies, the integration of AI in authentic assessments, and the development of AI-based media that are more attuned to the value-laden and cultural context of religious education.

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