The Utilization of Artificial Intelligence in Developing Instructional Media at Pesantren Agrobusiness Tunas Quran, Bandung Regency

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Abstract.

The rapid development of Artificial Intelligence (AI) technology has brought significant changes across various sectors, including education. One of the major challenges faced by educators is how to deliver learning materials in an engaging, creative, and interactive manner so that students can more easily understand the concepts being taught. Islamic boarding schools (pesantren), as faith-based educational institutions, play a strategic role in shaping morally grounded and competitive generations. However, teaching and learning processes in pesantren are generally still dominated by traditional methods that lack variety, which may reduce students' learning motivation. This community service program aims to improve the quality of learning through the implementation of AI-based instructional media at Pesantren Agrobusiness Tunas Quran. The approach integrates digital technology with storytelling techniques to create learning experiences that are interactive, creative, and contextually relevant. The program activities include training teachers in the use of AI for developing instructional media, mentoring the implementation of AI-supported learning in the classroom, and evaluating the effectiveness of the applied methods. The expected outcomes of the program include enhanced pedagogical and technological competencies of teachers, increased learning motivation among students, and the availability of innovative and sustainable instructional media. Furthermore, this program is expected to serve as a model for digital transformation in pesantren, enabling them to adapt to technological advancements while preserving Islamic values. The results of the training demonstrate that the "Training on the Utilization of Artificial Intelligence in Developing Instructional Media at Pesantren Agrobusiness Tunas Quran, Bandung Regency" was highly effective and well received by the participants.

Keywords: *Artificial Intelligence; Innovative Learning Media and Learning.*

I. INTRODUCTION

In the current digital era, the development of Artificial Intelligence (AI) technology has brought significant changes across various sectors, including education. One of the key challenges faced by teachers is how to deliver learning materials in an engaging, creative, and interactive manner so that students can more easily understand the concepts being taught. With the advancement of AI, learning methods can be designed to be more attractive, creative, and interactive. One effective approach is the use of AI- based instructional media, which involves developing learning materials through technology to enhance students' learning motivation.As a traditional Islamic educational institution, pesantren play an important role in shaping the character and religious understanding of the younger generation. However, along with societal and technological developments, pesantren are now confronted with new challenges in adapting to the digital era. Information technology, particularly Artificial Intelligence, offers substantial opportunities to improve the quality of education and enrich learning experiences in pesantren. One innovative approach that can be implemented is the use of AI-based innovative instructional media in teaching, which has the potential to significantly influence the way learning materials are delivered, classroom interaction is facilitated, and students' understanding of religious teachings is enhanced.

Digital-based instructional media are flexible and user-friendly, thereby accelerating knowledge transformation and supporting students' learning success [1]. Such media enable learning experiences to become more dynamic and easier to comprehend, as narrative-based content has strong emotional appeal and is more easily retained by learners. In the context of pesantren, instructional media can serve as an effective tool for teaching Islamic values through relevant narratives that connect religious teachings with everyday

life.Previous research by Bandala et al. (2025) has demonstrated that AI is effective in supporting teaching and learning processes through the application of techniques such as machine learning and big data analytics to create more dynamic and engaging learning experiences. This finding indicates that AI technology can enrich traditional teaching methods by presenting content that is more interactive and contextually aligned with students preferences and learning abilities [2]. Furthermore, the application of AI in pesantren education, particularly in the development of instructional media, can have a greater impact on students engagement in the learning process and assist them in understanding religious messages in a more appealing and accessible manner.

Research conducted by Moxotó and dos Santos (2025) also highlights that the integration of technology into value-based education, such as in pesantren, can foster greater awareness and interest in the learning material, thereby motivating students to participate more actively in learning activities [3].Based on observations and interviews conducted with the partner institution, several challenges were identified. Although Pesantren Agrobusiness Tunas Quran has considerable potential to enhance its learning practices, various constraints continue to hinder the optimization of instructional media. Among these challenges is the continued reliance on conventional presentation-based teaching methods, which tend to reduce student engagement and lead to boredom, resulting in suboptimal learning outcomes. In addition, teachers and religious instructors have not yet maximized the use of modern technologies, such as digital media or AI, to support the learning process. Therefore, this training program was designed to address these challenges by providing practical and applicable solutions for Pesantren Agrobusiness Tunas Quran.

II. METHODS

The methodological stages of the "The Utilization of Artificial Intelligence in Developing Instructional Media at Pesantren Agrobusiness Tunas Quran, Bandung Regency" are as follows:

1. Conducting surveys and interviews with the principal and teachers of Pesantren Agrobusiness Tunas Quran to identify needs, challenges, and learning conditions.
2. Implementation Stage

a. Socialization and Introduction to AI, which aims to provide participants with a basic understanding of Artificial Intelligence (AI) and how this technology can support teaching and learning processes.

b. Training on the Development of AI-Based Instructional Media, which provides training for students and religious instructors (ustadz) on how to use AI applications (such as ChatGPT, Canva, and Gamma App) to create Islamic storytelling content, agricultural education materials, or motivational narratives.

c. Practical Mentoring, involving hands-on assistance for participants in developing AI-generated content, starting from script writing, transforming text into audio, and creating simple visualizations.

d. Evaluation and Follow-up Discussion, which includes providing feedback on the participants' practical outputs and discussing how AI utilization can be applied for creative da'wah, promotion of pesantren agrobusiness products, and daily learning activities.

III. RESULT AND DISCUSSION

The implementation of the program was conducted smoothly and was accompanied by high levels of enthusiasm and active participation from the participants. The stages of the community service program implementation are described as follows:

1. Needs Analysis Stage

This stage aimed to obtain a comprehensive overview of the actual conditions in the field. The initial phase of the activity began with a needs analysis conducted at Pesantren Agrobusiness Tunas Qur'an, Bandung Regency. Data collection was carried out through direct observation, interviews with pesantren administrators and teaching staff, as well as Focus Group Discussions (FGDs). The needs analysis sought to identify participants' levels of digital literacy, their understanding of Artificial Intelligence (AI) technology, and the types of instructional media required that are aligned with the characteristics of an agrobusiness-based pesantren.

2. Training Stage

The training activities were divided into several structured sessions, as outlined below:

a. Introduction to AI Applications for Instructional Media Development

At this stage, participants were introduced to various Artificial Intelligence applications that can be utilized in the development of digital instructional media. Participants were provided with fundamental knowledge regarding the role of AI as a supportive tool in the planning, development, and delivery of learning materials. The introduction focused on the functions and potential of ChatGPT as an assistant for instructional content development, Canva as an AI-based visual design tool, and Gamma App as a platform for the automatic creation of interactive presentations and instructional media.

b. Training on the Use of ChatGPT for Instructional Content Development

This training session aimed to equip participants with the skills required to utilize AI in supporting the development of instructional materials. The training materials included effective prompt-writing techniques to generate instructional scripts, material summaries, learning objectives, evaluation questions, and content descriptions relevant to the agrobusiness pesantren context. In addition, participants were provided with an understanding of ethical considerations in the use of ChatGPT in education, including the importance of content verification and alignment with Islamic values and the pesantren curriculum.

c. Canva Training (AI-Based Visual Instructional Media Design)

In this session, participants were introduced to Canva as an AI-based graphic design platform that is easy to use for creating visual instructional media. The training covered the development of educational posters, instructional infographics, information sheets, and supporting visual content. Participants were also introduced to fundamental principles of instructional design, including color selection, typography, and effective layout. Through Canva's AI features, participants were guided to produce instructional media that are visually appealing, communicative, and appropriate for the characteristics of santri.

d. Gamma App Training (Development of Interactive Presentations and Instructional Media)

The Gamma App training focused on the use of AI for the rapid and systematic development of presentation media and digital learning materials. Participants were trained to transform instructional content prepared using ChatGPT into interactive presentation formats through the Gamma App. The training materials included organizing content flow, selecting appropriate visual formats, and adjusting content to ensure clarity and engagement for santri. The resulting media are expected to enhance the effectiveness of instructional delivery in the pesantren environment.

e. Practical Session on AI-Based Instructional Media Development

The final stage of the training consisted of hands-on practice in developing AI- based instructional media. During this session, participants directly created instructional media by integrating ChatGPT as a content development tool, Canva as a visualization platform, and Gamma App as a presentation medium. This practical activity aimed to strengthen participants' understanding through a learning by doing approach and to foster the independence of teachers and santri in developing innovative, contextual, and sustainable instructional media.

Fig 1. Training on the Utilization of Artificial Intelligence in Developing Instructional Media at Pesantren Agrobusiness Tunas Quran, Bandung Regency"

The results of the training on instructional media development through the utilization of Artificial Intelligence, which involved teachers as well as male and female students, indicate a significant improvement in creativity, digital literacy, and skills in the use of AI-based technologies. Participants were able to effectively integrate ChatGPT as a supportive application for generating engaging, well-structured instructional texts with a higher level of academic language quality, particularly in the development of instructional narratives, learning objectives, and conceptual explanations. The use of AI assisted participants in formulating instructional content that was more structured and easier to understand, while remaining aligned with the values upheld by the pesantren.

Furthermore, the use of Canva and Gamma App contributed significantly to the development of visual instructional media and digital presentations. Participants demonstrated the ability to design visually appealing PowerPoint-based instructional media through appropriate color selection, typography, and proportional, professional layout. The integration of effective visual design with relevant instructional content resulted in learning media that not only possess aesthetic value but are also communicative and interactive. Thus, the outcomes of this training demonstrate that the appropriate utilization of Artificial Intelligence can enhance the quality of instructional media and support more innovative, learner-centered educational processes within Pesantren Agrobusiness Tunas Qur'an, Bandung Regency.

IV. CONCLUSION

This community service program demonstrates that the utilization of Artificial Intelligence in developing instructional media can be effectively implemented in the pesantren educational context. The structured stages of needs analysis, training, and hands-on practice enabled teachers and students at Pesantren Agrobusiness Tunas Qur'an, Bandung Regency, to enhance their digital literacy, creativity, and technological competencies. The program successfully addressed existing challenges related to the limited use of digital media in teaching and learning processes.The integration of AI tools such as ChatGPT, Canva, and Gamma App proved to be particularly beneficial in supporting the development of structured, engaging, and contextually relevant instructional content.

Participants were able to produce instructional media that combined academically sound content with visually appealing and interactive designs, thereby improving the overall quality of learning materials. Importantly, the use of AI was implemented as a supportive tool that complemented the role of educators while remaining aligned with Islamic values and the pesantren curriculum.Overall, the findings indicate that the appropriate and ethical application of Artificial Intelligence has strong potential to enhance instructional media quality and foster more innovative, learner-centered educational practices in pesantren. This program may serve as a reference model for the digital transformation of similar Islamic educational institutions seeking to adapt to technological advancements without compromising their core educational and moral values.

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REFERENCES

[1] Bandala, A. A., Luo, D., & Ubando, A. T. (2025). A review of next-generation thermoelectric generators: Advanced geometric and nanomaterial optimization and intelligent performance enhancement. Energy Conversion and Management.

[2] Hakeu, F., Pakaya, I. I., Djahuno, R., Zakarina, U., & Tangkudung, M. (2023). Workshop Media Pembelajaran Digital Bagi Guru Dengan Teknologi AI (Artificial Intelligence). Mohuyula: ***Jurnal Pengabdian Kepada Masyarakat***, 2(2), 36-49.

[3] Moxotó, A. C. de Araújo, dos Santos, I. A. (2025). Greenwashing in Brazilian Corporations: A Machine Learning App