Vol 9 No 4, Desember 2025
ABDI DOSEN
Jurnal Pengabdian Pada Masyarakat
pISSN: 2614-6509
eISSN: 2620-5156

EMPOWERING HIGH SCHOOL TEACHERS THROUGH AI: A PRACTICAL TRAINING ON CHATGPT AND GEMINI FOR DIGITAL LESSON DESIGN

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Abstract

This community service program was designed to address the low level of digital literacy among high school teachers, particularly in integrating Artificial Intelligence (AI) into teaching. Observations revealed that most teachers were unfamiliar with AI tools like ChatGPT and Gemini, making it difficult for them to adapt to technological changes in education. The main problem identified was the lack of practical knowledge on how to use AI to design interactive and meaningful learning materials. To solve this, a structured training program was conducted at MAN Temanggung, consisting of workshops, hands-on sessions, and task-based learning focused on prompt creation and digital lesson planning. The training empowered teachers to explore, implement, and evaluate AI tools in their classrooms. As a result, participants demonstrated increased confidence and competence in using AI to support their teaching. This program contributes to enhancing the quality of education and aligns with the goals of Sustainable Development Goal 4 (Quality Education).

Keywords: Digital Literacy, Artificial Intelligence in Education, Teacher Training

INTRODUCTION

The growing presence of Artificial Intelligence (AI) in various aspects of life has reshaped the landscape of education, offering both opportunities and challenges. While digital transformation is widely celebrated in urban centers and privileged educational institutions, its benefits have yet to reach many teachers in rural and semi-urban areas. In the context of Temanggung Regency, Central Java, this disparity becomes evident. Numerous high school teachers remain unfamiliar with how to integrate AI tools into their pedagogical practices. Factors such as limited access to professional development, unfamiliarity with digital platforms, and the absence of contextual training programs contribute to this gap.

A preliminary needs assessment conducted at MAN Temanggung revealed that most teachers had never interacted with AI-based applications such as ChatGPT or Google Gemini. Their experiences with digital learning tools were generally limited to conventional platforms, lacking the creativity and adaptability required in today's classrooms. Consequently, lesson

https://pkm.uika-bogor.ac.id/index.php/ABDIDOS/issue/archive
Submitted: October-2025 Received: October-2025 Available online: December-2025

planning often remains static, teacher-centered, and detached from the digital realities that students increasingly inhabit.

This service program was initiated in response to these pressing needs. Unlike generic digital literacy efforts, the program emphasized hands-on experience with AI tools directly applicable to teaching, especially in the context of lesson development. Through workshops, guided exploration, and collaborative discussions, participants were introduced to prompt design strategies, real-world classroom applications, and critical reflection on the use of AI to support learning outcomes. What sets this initiative apart is its practical, low-barrier approach to empowering educators who may have limited technical backgrounds.

By anchoring the training within the teachers' daily pedagogical challenges, the program not only addressed skill gaps but also fostered a mindset shift toward innovation and openness to technology. In doing so, it contributes to a broader agenda of inclusive and equitable education, echoing the priorities of Sustainable Development Goal 4 (SDG 4)—ensuring quality education for all. The purpose of this community engagement is thus twofold: to equip educators with essential skills for navigating the AI-enhanced classroom, and to bridge the digital divide that continues to affect teaching quality in under-resourced regions.

IMPLEMENTATION METHOD

The implementation of this community service program was carried out through a participatory and practice-based approach, responsive to the contextual needs of high school teachers in MAN Temanggung. Drawing from experiential learning theory, the program was designed to bridge the gap between theoretical understanding of artificial intelligence (AI) and its practical application in classroom instruction. Prior to the main training, the team conducted a needs assessment through informal interviews and quick surveys to gauge participants' familiarity with digital tools, particularly generative AI. Findings indicated that most teachers had little to no experience using platforms such as ChatGPT or Google Gemini, which reinforced the urgency of targeted, hands-on training. The implementation unfolded through six consecutive sessions, each lasting two hours, covering topics from foundational knowledge about AI in education to the use of prompt engineering for lesson design. Participants were introduced to various tools and guided to develop lesson plans (RPP) that integrated AI features, supported by visual modules and simplified technical manuals to ensure accessibility. Activities included live demonstrations, collaborative discussions, and individual practice with ongoing feedback. This structure not only supported comprehension but also fostered confidence and experimentation. To assess the effectiveness of the implementation, participants' outputs and reflections were reviewed with attention to creativity, contextual relevance, and pedagogical clarity. The entire process was contextualized within the broader framework of digital literacy development in Indonesian education and reflected a commitment to empowering teachers as adaptive, forward-thinking educators in the era of technological transformation.

RESULTS AND DISCUSSION

The implementation of this community service activity underwent adjustments from its original plan. Initially, the program targeted French language teachers under the provincial MGMP network across Central Java, with training to be held at SMAN 1 Getasan. However, scheduling conflicts among MGMP members made it difficult to secure a unified timeline. After internal team discussions and coordination with partners and prospective participants, the activity was relocated to MAN Temanggung, engaging all subject teachers at the school.

The main objective was to enhance teachers' digital literacy, particularly in the use of artificial intelligence (AI) to develop engaging, effective, and relevant teaching materials. The activity, titled "Enhancing Digital Literacy of High School Teachers through AI-Powered Instructional Design," was structured through four integrated stages: awareness building, capacity development, guided mentoring, and institutionalization.

Pre-Training Assessment

Before beginning the training sessions, participants completed a pretest to assess their perceptions, confidence, and expectations regarding AI use in education. The questionnaire, designed using a 5-point Likert scale, covered five key indicators. Thirty teachers responded, comprising 36.7% male and 63.3% female participants. Their responses reflected a high level of enthusiasm and relevance, though confidence in using AI varied.

Table 1. Quantitative Results of the Pre-Test

No	Statement	Mean	Std. Dev.
1	The material presented matches what I want to learn	4.53	0.68
2	This AI training will improve the quality of my teaching materials	4.37	0.72
3	I hope that after the training, I can independently create interactive learning materials	4.53	0.68
4	The training topics and methods suit the characteristics of my students	4.17	0.75
5	I feel confident in using AI before the training begins	3.83	1.15

The highest-rated items revealed that participants found the material highly relevant to their needs and expected that AI integration would improve their teaching resources. However, the item regarding their confidence in using AI prior to training showed the lowest mean score (3.83), with a wider standard deviation highlighting varied levels of digital literacy and self-efficacy.

Implementation Phases

The training proceeded through four structured phases:

I. Awareness Phase: Participants explored AI fundamentals and ethical concerns through interactive discussions and contextual examples. They shared common instructional challenges such as time constraints in material development and the need for more engaging content for digital-native learners.

Figure 1. AI Concept Material
Source (Primary Data)

II. Capacity Building Phase: Participants were introduced to AI tools including ChatGPT, Canva AI, and DeepL. They practiced prompt engineering and developed sample materials collaboratively.

Figure 2. Discussion Session during Awareness Phase
Source (Primary Data)

III. Mentoring Phase: Teachers received feedback on their AI-integrated lesson plans (RPP) and refined them through one-on-one guidance.

Figure 3. Mentoring and Review Process
Source (Primary Data)

IV. Institutionalization Phase: Practical guidelines, SOPs, and digital resource banks were introduced to ensure program sustainability. Teachers were also given printed handbooks and digital access to materials.

Figure 4. Practical Guidelines Distributed and Implemented
Source (Primary Data)

Figure 5. E-Book of Practical Guideline
Source (Primary Data)

V. These stages ensured a balance between conceptual understanding and practical application, empowering teachers to confidently create AI-assisted instructional content.

Post-Training Assessment

After completing the program, participants filled out a posttest. The post-test results from the AI-integrated training program at MAN Temanggung indicate a clear positive impact on participants. Overall, the average scores show high levels of satisfaction and perceived effectiveness across key dimensions, including instructional clarity, relevance, and practical engagement.

Table 2. Post-Test Quantitative Results

No	Statement	Average	Std. Dev.
1	The facilitator's teaching method was easy to understand	4.82	0.40
2	The practicum material was useful and relevant	4.79	0.41
3	The facilitator provided opportunities for hands-on practice	4.86	0.36
4	I successfully created an example of interactive teaching material	4.32	0.67
5	The training time and duration were appropriate	4.50	0.58
6	Overall, the training results met my expectations	4.61	0.49
7	I am interested in continuing to use AI in teaching	4.64	0.48
8	I feel confident in creating clear prompts	4.32	0.67
9	I need further support after the training	4.75	0.43

The highest-rated aspect was "The facilitator provided opportunities for hands-on practice," with a mean score of 4.86 (SD = 0.36), highlighting the value of interactive learning. This was closely followed by "The facilitator's teaching methods were easy to understand" (M = 4.82) and "The practicum materials were relevant and useful" (M = 4.79), indicating participants found the sessions well-structured and contextually meaningful. The consistently low standard deviations across these items suggest a uniform positive response among participants.

Furthermore, the statement "I am interested in continuing to use AI in teaching" received a high score of 4.64, reflecting strong motivation for sustained engagement with AI tools. Meanwhile, the ability to create effective prompts and produce interactive materials scored 4.32, showing participants gained technical skills, albeit with some variance indicating a need for continued support.

Notably, the item "I need further assistance after the training" received a score of 4.75, affirming that while the program succeeded in introducing AI tools, ongoing mentoring is essential to deepen mastery and classroom implementation.

These findings confirm that the training not only enhanced knowledge and skills but also inspired a shift in attitude toward technology adoption. The results align with the program's four-stage implementation framework: awareness, capacity building, mentorship, and institutionalization, demonstrating its effectiveness in fostering long-term pedagogical innovation.

Evaluation

The comparative analysis between pretest and posttest scores demonstrates a clear and meaningful improvement in participants' perceptions and competencies regarding the integration of AI in education. The average score increased from 4.29 in the pretest to 4.60 in the posttest, indicating a gain of 0.31 points. This upward trajectory not only reflects enhanced understanding but also reveals increased confidence among participants in using AI tools such as ChatGPT and Google Gemini within their pedagogical practices.

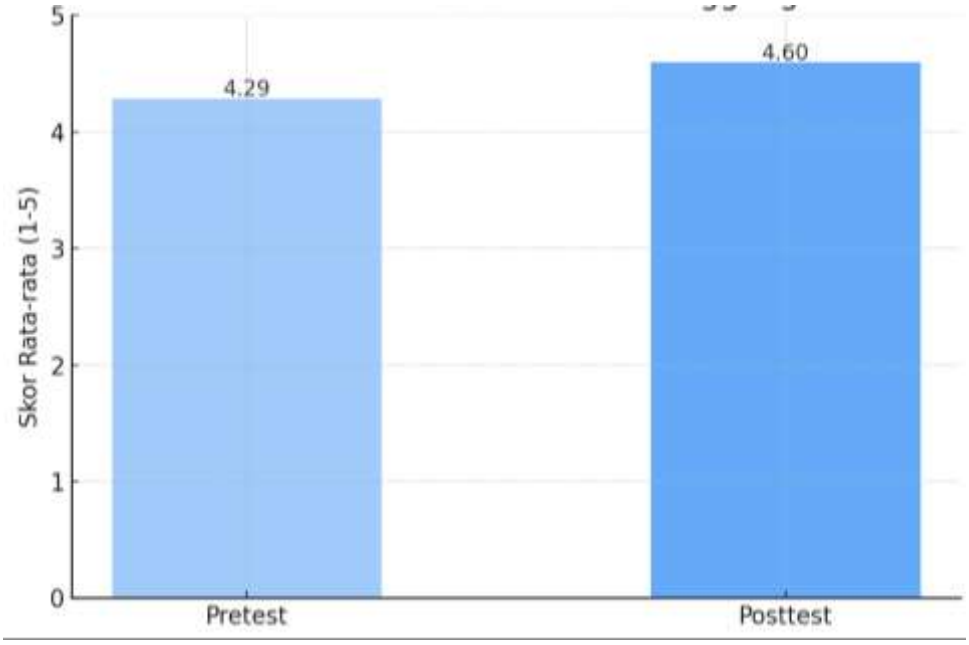

Figure 6. Pretest vs. Posttest Comparison
Source (Primary Data)

The evaluation results substantiate the effectiveness of the training design, particularly its emphasis on hands-on practice, peer interaction, and contextualized lesson development. Teachers reported a greater ability to craft clear prompts and design interactive teaching materials post-training. Notably, the consistent rise in scores across nearly all posttest indicators illustrates how the program succeeded in transforming initial skepticism or unfamiliarity into enthusiasm and practical capability.

In conclusion, the training program at MAN Temanggung not only addressed existing digital literacy gaps but also laid the groundwork for sustained innovation in classroom instruction. The strong post-training motivation, paired with the expressed need for continued support, signals both the relevance and the future potential of similar AI-focused educational development efforts.

CONCLUSION

This community service initiative has demonstrated the effectiveness of AI-based training in enhancing the pedagogical competence of high school teachers at MAN Temanggung. Through structured sessions that emphasized hands-on practice and contextualized learning, the participants significantly improved their understanding and application of AI tools such as ChatGPT and Google Gemini in lesson planning. The evaluation results, reflected in the increased post-test scores, confirmed the program's success in fostering both cognitive and technical readiness among educators. Moreover, the participants' expressed need for continued support highlights the importance of sustained mentorship in ensuring long-term integration of AI into classroom practice. In line with the goals of SDG 4, this program contributes to promoting inclusive, equitable, and quality education through digital innovation, especially in underserved regions.

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