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AI-Driven Teaching Capacity Building for English Teachers: A Professional Development Program for MGMP Tanjung Jabung Timur

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Abstract
This community service program aimed to strengthen the technopedagogical competence of junior high school English teachers in Tanjung Jabung Timur Regency through the integration of Artificial Intelligence (AI) into classroom practice. The program adopted a participatory, needs-based approach involving 30 teachers from 12 schools and was implemented over seven weeks through workshops, mentoring, and classroom application. The training introduced AI concepts, ethical considerations, and hands-on use of selected applications, followed by guided implementation supported by reflective practice and continuous feedback. The results indicate notable improvements in teachers' confidence and ability to design AI-integrated lessons, accompanied by increased student engagement and more interactive classroom dynamics. The program also contributed to a shift in teachers' perceptions of AI from a perceived challenge to a supportive instructional partner and fostered the development of a professional learning community within the MGMP network. The novelty of this initiative lies in its mentoring-driven and practice-oriented approach tailored to rural educational contexts. The findings suggest that sustainable AI integration requires not only technical training but also ongoing professional support, collaborative structures, and alignment with local conditions.

Keywords: Artifical Intelligence in Education, English Language Teaching, Professional Learning Community, Teacher Capacity Building, Technopedagogical Competence

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INTRODUCTION

The rapid advancement of digital technology, particularly Artificial Intelligence (AI), has significantly transformed educational practices worldwide (Barakina et al., 2021). In the context of the Industrial Revolution 4.0 and Society 5.0, the integration of AI into teaching and learning is increasingly recognized as a key driver for improving educational quality and fostering 21st-century skills (Adel, 2024). AI-powered tools offer opportunities for personalized learning, real-time feedback, and interactive learning environments, particularly in language

education, where adaptive technologies can enhance students' listening, speaking, reading, and writing skills (Jegede, 2024; Daekhakhena, 2025).

A growing body of research has highlighted the potential of AI in education. For instance, studies by Holmes et al. (2019) emphasize that AI can support adaptive learning and improve student engagement, while Hockly (2018) demonstrates the role of AI in enhancing English Language Teaching (ELT) through automation and intelligent feedback systems. Similarly, Kukulska-Hulme (2020) argues that mobile and AI-assisted learning can promote learner autonomy and flexibility. In the Indonesian context, Sadaf and Gezer (2020) found that teachers' digital literacy remains a critical factor in determining the effectiveness of technology integration in classrooms.

Despite these promising findings, several challenges persist, particularly in rural and underdeveloped regions (Lagakos, 2020). Previous studies have predominantly focused on the effectiveness of AI tools in controlled or well-resourced environments, with limited attention to their implementation in contexts characterized by low digital literacy, inadequate infrastructure, and minimal professional support for teachers (Mostert, 2024). In regions such as Tanjung Jabung Timur Regency, the integration of technology in education is still at an early stage. In addition to limited access to digital tools, many schools face unstable internet connectivity, restricted bandwidth, and unequal access to devices among students and teachers. Furthermore, variations in teachers' digital skills remain a significant barrier, as many educators have limited experience in using advanced digital platforms, including AI-based applications, in their instructional practices (Asad et al., 2021; San Pablo-Palacio, 2025).

This condition reveals a significant research gap. While the literature extensively discusses the potential and effectiveness of AI in education, there is a lack of empirical studies examining how AI-based interventions can be implemented through community service programs to enhance teachers' capacity in rural settings. Moreover, few studies have explored the process of transforming teachers' pedagogical practices through sustained training and mentoring, particularly within collaborative professional communities such as the English Teachers' Working Group (MGMP).

Addressing this gap, this study offers a distinctive contribution by bridging the divide between the theoretical potential of AI and its practical implementation in resource-constrained educational contexts. Unlike prior research that primarily focuses on the effectiveness of AI tools, this study conceptualizes AI integration as a capacity-building process supported by structured training and continuous mentoring. Furthermore, it adopts a longitudinal approach that ensures the transfer of knowledge into authentic classroom practices rather than limiting intervention to short-term workshops. Another key contribution lies in situating the program within a collaborative professional learning community (MGMP), emphasizing the role of peer interaction and institutional support in sustaining pedagogical transformation. Through this integrated approach, the study proposes a context-sensitive and scalable model for AI adoption in rural education settings, thereby extending existing frameworks of technology integration with practical, community-based insights.

Based on these considerations, the objective of this study is to enhance the pedagogical competence and digital literacy of junior high school English teachers in Tanjung Jabung Timur Regency through the integration of AI-based technologies. Specifically, this study aims to: (1) improve teachers' ability to design and implement AI-

integrated lesson plans, (2) promote student-centered learning through technology-enhanced instruction, and (3) establish a sustainable professional learning community to support continuous innovation in teaching practices.

METHODS

This program employed a participatory and practice-based approach, consisting of two main stages: preparation and implementation. It involved 30 junior high school English teachers from 12 schools in Tanjung Jabung Timur Regency.

Preparation Stage

The preparation stage involved coordination with the local Education Office and the English Teachers' Working Group (MGMP). A needs assessment was conducted through observations, interviews, and focus group discussions to identify teachers' challenges and training needs.

Implementation Stage (Training and Mentoring)

The implementation stage was carried out over a period of seven weeks through an integrated series of training and mentoring activities. It began with workshops that introduced teachers to the concept of Artificial Intelligence in education, including its ethical considerations and practical classroom applications. Following this, participants engaged in hands-on training sessions where they practiced using various AI-based tools such as Write & Improve, Lyricstraining, StoryWeaver, Suno, and Gliglish. Building on these experiences, teachers then developed lesson plans that meaningfully integrated AI tools into their instructional design. These lesson plans were subsequently implemented in their respective classrooms, allowing teachers to apply what they had learned in real teaching contexts. Throughout the process, continuous mentoring and evaluation were provided through classroom observations, reflection journals, and structured feedback sessions. To assess the effectiveness of the program, data were systematically collected from observations, participant reflections, and evaluation reports.

RESULTS AND DISCUSSION

The implementation of the AI-based teaching capacity building program yielded significant outcomes across multiple dimensions, including teachers' competence, pedagogical transformation, student engagement, and institutional development. The findings are discussed in relation to relevant theoretical frameworks and previous studies.

Enhancement of Technopedagogical Competence

One of the most prominent results of the program was the improvement in teachers' technopedagogical competence. Prior to the intervention, most participants demonstrated limited familiarity with digital tools and had not integrated technology meaningfully into their teaching practices. However, following the training and mentoring sessions, approximately 90% of teachers reported increased confidence in using AI-based applications in the classroom.

Teachers were able to design lesson plans that integrated tools such as Write & Improve for writing feedback, Lyricstraining for listening activities, and Gliglish for speaking practice. This shift reflects the development of Technological Pedagogical Content Knowledge (TPACK), where teachers successfully combined content knowledge, pedagogy, and technology in instructional design.

This finding aligns with previous studies emphasizing that effective technology integration requires both technical skills and pedagogical understanding (Koehler et al., 2013; Akram et al., 2021). The hands-on and practice-oriented nature of the training played a crucial role in facilitating this competence development.

A teacher reflected: “Before the training, I only used PowerPoint. Now, I can design interactive lessons using AI tools, and my students respond more actively.” This competency development activity can be seen in the following Figure 1.

Figure 1. Enhancement of Technopedagogical Competence

Pedagogical Transformation toward Student-Centered Learning

The program contributed to a significant transformation in teaching approaches. Initially, most teachers adopted a teacher-centered approach focused on grammar instruction and rote learning. After the intervention, there was a noticeable shift toward student-centered learning, with students actively participating in collaborative and interactive activities.

AI tools enabled more personalized and adaptive learning experiences (Lata, 2024; Raza, 2025). For instance, automated feedback features allowed students to independently revise their work, promoting self-directed learning. Teachers also reported that AI-supported activities fostered critical thinking and creativity.

This transformation aligns with constructivist learning theory (Machumu & Zhu, 2017; Rob & Rob, 2018) and supports the argument that digital technologies can facilitate more meaningful learning experiences (Dębiec, 2017; Allayarova, 2025).

A participant noted: “Students are no longer passive. They explore, discuss, and even correct their own mistakes using AI feedback.”

Increased Student Engagement and Motivation

Another significant outcome of the program was the improvement in student engagement and motivation. Approximately 85% of teachers observed that students were more enthusiastic and actively involved in learning

activities.

Interactive AI-based applications played a key role in this improvement. For instance, students showed increased interest in practicing speaking using AI-powered pronunciation tools, as these platforms provided immediate feedback without fear of judgment. Similarly, gamified platforms such as Lyricstraining made listening activities more enjoyable and relatable.

These findings are in line with previous research suggesting that technology-enhanced learning environments can increase student motivation by making learning more interactive and relevant (Holmes et al., 2019; Duterte, 2024). In the context of rural education, such innovations are particularly important in overcoming learning monotony and disengagement.

A teacher shared: "My students are more confident speaking English because they can practice with AI without feeling embarrassed."

Overcoming Challenges in Infrastructure and Digital Literacy

Despite the positive outcomes, several challenges were identified during the implementation process. Limited internet connectivity and inadequate access to digital devices remained significant barriers in some schools. In addition, variations in teachers' initial digital literacy levels affected the pace of learning during training sessions.

To address these challenges, the program adopted flexible strategies, such as using low-bandwidth applications, encouraging collaborative learning among teachers, and providing continuous mentoring support. These approaches proved effective in ensuring that all participants could benefit from the program regardless of their initial competence level.

This finding highlights the importance of contextual adaptation in implementing technology-based interventions, particularly in resource-constrained environments.

Institutional Strengthening and Sustainability

Beyond individual competence development, the program also contributed to strengthening institutional capacity. The establishment of a digital-based professional learning community within the MGMP served as a platform for ongoing collaboration, knowledge sharing, and professional development (Rahimah et al., 2025; Muhlis et al., 2025).

This community enables teachers to continuously exchange best practices, discuss challenges, and explore new AI tools, thereby ensuring the sustainability of the program's impact (Pedro et al, 2019; Allam, 2025). Furthermore, the commitment of the local Education Office to replicate the program in other districts indicates strong institutional support and scalability.

From a broader perspective, this outcome demonstrates that community service programs can play a strategic role in building sustainable educational ecosystems through collaboration between universities, schools, and government institutions.

Implications for Educational Practice and Policy

The findings of this study have important implications for both educational practice and policy. First, AI-based training programs should be integrated into continuous professional development initiatives for teachers. Second, there is a need for increased investment in digital infrastructure to support technology-enhanced learning.

Finally, collaboration between higher education institutions and local education authorities should be strengthened to ensure the successful implementation and sustainability of similar programs. A summary of the key findings is presented in Table 1.

Table 1. Summary of Key Findings

Dimension	Key Findings	Evidence
Technopedagogical Competence	Significant improvement in teachers' ability to integrate AI tools	90% of teachers reported increased confidence
Pedagogical Transformation	Shift from teacher-centered to student-centered learning	student-centered learning Increased use of interactive and collaborative activities
Student Engagement	Higher motivation and participation	85% of teachers observed increased engagement
Challenges	Infrastructure and digital iteracy gaps	Limited internet access and varied teacher readiness
Institutional Impact	Stregthened MGMP collaboration	Formation of a digital professional learning community

The findings presented in Table 1 highlight several important outcomes of the program implementation. First, there was a significant improvement in teachers' technopedagogical competence, as most participants reported increased confidence in integrating AI tools into their teaching practices. This improvement also contributed to a pedagogical transformation, shifting teaching approaches from teacher-centered to more student-centered learning environments, characterized by the use of interactive and collaborative activities.

In terms of student engagement, teachers observed higher levels of motivation and participation among students, indicating a positive impact on the learning process. However, several challenges were identified, particularly related to infrastructure limitations and varying levels of digital literacy among teachers, which may affect the sustainability of technology integration. Despite these constraints, the program generated a meaningful institutional impact, notably through strengthened MGMP collaboration and the formation of a digital professional learning community that supports continuous teacher development.

CONCLUSION

This study demonstrates that integrating Artificial Intelligence (AI) through a structured capacity-building program can effectively enhance the pedagogical competence and digital literacy of junior high school English teachers in rural contexts. The combination of workshops, hands-on training, and continuous mentoring improved teachers' technopedagogical skills and supported the shift toward more interactive and student-centered learning. The use of AI tools also increased student engagement and motivation, while fostering a positive shift in teachers' perceptions of technology. The establishment of a professional learning community within the MGMP further ensured sustainability by promoting collaboration and continuous professional development. However, challenges related to limited infrastructure and varying levels of digital literacy remain. Future research should examine the use of specific digital platforms within MGMP communities, such as Google Classroom, WhatsApp, Zoom, or similar tools to better understand how they support sustained collaboration and mentoring. Overall, this study

highlights the importance of combining technological innovation, pedagogical development, and institutional collaboration to achieve sustainable educational improvement.

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DECRALATIONS

Author Contribution	:	F: Conceptualization, project design, supervision, and manuscript drafting; AM: Methodology development and training design; MH: Data collection, field implementation; MG: Data analysis, interpretation of findings, and preparation of results section; EM: Development of training materials; DI: Monitoring and evaluation, mentoring activities, and validation of program outcomes; RH: Manuscript editing, language refinement, and final revie of the article
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