# INNOVATIVE ARTIFICIAL INTELLIGENCE (AI) TECHNOLOGY LEARNING SUPPORT FOR INDONESIAN LANGUAGE TEACHERS AT A JUNIOR HIGH SCHOOL IN TUBAN

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**Abstrak:** Kemajuan pesat Kecerdasan Buatan (Artificial Intelligence/AI) dalam dunia pendidikan menawarkan potensi yang signifikan untuk meningkatkan pengalaman belajar. Namun, guru-guru bahasa Indonesia di sekolah menengah pertama, khususnya di Tuban, menghadapi tantangan kritis dalam mengintegrasikan AI, termasuk pelatihan yang terbatas, penguasaan teknis, dan masalah etika. Hambatan-hambatan ini menghambat adopsi alat AI yang efektif untuk pembelajaran yang dipersonalisasi, adaptif, dan fleksibel. Untuk mengatasi masalah ini, penelitian ini bertujuan untuk meningkatkan pengetahuan dan kompetensi guru dalam integrasi AI melalui program pengabdian masyarakat yang terstruktur. Secara khusus, program ini menargetkan 30 guru bahasa Indonesia, melibatkan mereka dalam lokakarya dan sesi pendampingan berkelanjutan. Dengan menggunakan pendekatan partisipatif, program ini dilaksanakan dalam tiga tahap: persiapan, implementasi, dan evaluasi. Pre-test dan post-test dilakukan untuk menilai pemahaman awal para guru dan kemajuan selanjutnya. Hasilnya menunjukkan peningkatan yang signifikan, dengan 85% peserta mendapatkan pemahaman yang lebih dalam tentang konsep-konsep terkait AI dan 90% menunjukkan kemampuan untuk menggabungkan alat berbasis AI ke dalam kelas mereka. Terlepas dari pencapaian ini, masih ada tantangan yang dihadapi, terutama terkait keterampilan teknis dan pertimbangan etika. Penelitian ini menggarisbawahi pentingnya pelatihan dan dukungan berkelanjutan untuk mencapai integrasi AI yang berkelanjutan dalam pendidikan bahasa Indonesia. Penelitian lebih lanjut direkomendasikan untuk mengeksplorasi dampak jangka panjang dari adopsi AI dalam praktik pengajaran dan mendorong kolaborasi antara pendidik dan pengembang AI.

**Kata Kunci:** kecerdasan buatan, inovasi pendidikan, pembelajaran bahasa Indonesia, pelatihan guru, pengabdian masyarakat

**Abstract:** The rapid advancement of Artificial Intelligence (AI) in education offers significant potential for enhancing learning experiences. However, Indonesian language teachers in junior high schools, particularly in Tuban, face critical challenges in integrating AI, including limited training, technical mastery, and ethical concerns. These barriers hinder the effective adoption of AI tools for personalized, adaptive, and flexible learning. Addressing this issue, this study aimed to improve teachers' knowledge and competencies in AI integration through a structured community service program. Specifically, the program targeted 30 Indonesian language teachers, engaging them in workshops and continuous mentoring sessions. Adopting a participatory approach, the program was implemented in three stages: preparation, implementation, and evaluation. Pre- and post-tests were conducted to assess teachers' initial understanding and subsequent progress. Results revealed significant improvements, with 85% of participants gaining a deeper understanding of AI-related concepts and 90% demonstrating the ability to incorporate AI-based tools into their classrooms. Despite these achievements, challenges remained, particularly regarding technical skills and ethical considerations. This study underscores the necessity of sustained training and support to achieve sustainable AI integration in Indonesian language education. Further research is recommended to explore the long-term impacts of AI adoption in teaching practices and foster collaboration between educators and AI developers.

**Keywords:** artificial intelligence, educational innovation, Indonesian language learning, teacher training, community service

## Introduction

The dynamic development of science and technology has brought transformative changes in education, enabling teachers to adopt innovative strategies that improve the quality of learning and student achievement (Akrim, 2022; Dadey & Sabo, 2014; Dwivedi et al., 2020; Ellitan, 2020; Grabowska et al., 2022; Nair et al., 2021; Perrotta & Selwyn, 2020a; Xu et al., 2021). Among these advancements, Artificial Intelligence (AI) has emerged as a pivotal technology in education, offering the potential to create adaptive, personalized, and engaging learning environments (Bolton et al., 2020; Khanh et al., 2022; Naik et al., 2022). AI can tailor learning experiences to students' needs by adapting content and teaching methods based on their interests, preferences, and levels of understanding. This capability makes AI a promising tool to enhance student motivation, participation, and learning outcomes.

The current technology that is gaining popularity and is increasingly interested in being applied to the education system is Artificial Intelligence (AI) (Akgun & Greenhow, 2021; Alam, 2021; Chen et al., 2020; Knox, 2020). AI technology is obviously applicable to provide a more attractive, flexible, adaptive, and personalized learning environment for students. The implementation of cutting-edge algorithmic methods enables artificial intelligence to customize learning content and methods based on student's interests, styles, and levels of understanding. This technology has enormous possibilities for developing and increasing learning enthusiasm and engagement and enriching the overall learning experience.

In the context of Indonesia, however, the integration of AI in education remains in its infancy, particularly in language learning. Indonesian language education faces persistent challenges, including relying on monotonous teaching methods and lacking innovative instructional strategies. These issues often hinder the development of a meaningful and engaging learning atmosphere, which is essential for improving students' communication skills, critical thinking, and appreciation of Indonesia's rich cultural heritage. Previous studies have demonstrated that AI integration can significantly enhance teaching quality and student engagement when educators are equipped with the necessary skills. However, limited research and practical programs specifically address how Indonesian language teachers can effectively adopt AI in their teaching practices.

Junior high school teachers in Tuban, East Java, exemplify these challenges. Many educators lack sufficient knowledge and training to implement AI technology in their classrooms, which limits their ability to create dynamic and interactive learning experiences for students. Field observations have highlighted specific issues, such as minimal exposure to AI tools, a lack of confidence in integrating technology into pedagogical practices, and limited professional development opportunities. These challenges underscore the need for targeted training programs to bridge the gap between technology and pedagogy.

To address this gap, this study implemented a community service program to enhance the competencies of Indonesian language teachers in Tuban through AI integration. The program was designed to provide teachers with practical knowledge and hands-on experience in leveraging AI tools to create innovative, student-centered learning environments. Specifically,

the training focused on equipping teachers with the skills to design engaging lessons, utilize AI-driven platforms, and develop creative teaching strategies tailored to students' needs. By addressing these real-world challenges, the program aimed to transform the educational landscape in Tuban and serve as a model for similar initiatives across Indonesia.

As a result, educators must be trained in integrating AI technology into the Indonesian language learning process. The needs of Tuban's junior high school teachers should be considered when preparing this program. The purpose is to provide educators with up-to-date information, techniques, and abilities in this field. It is projected that educators will be able to create a variety of attractive, creative, successful, and efficient teaching techniques, along with more participatory ways, which will significantly increase students' motivation and proficiency in learning Indonesian. The requirement to equip teaching personnel to be able to adapt and utilize AI technology optimally is also fueled by the technology's rapid and increasingly economical growth. Gaining the ability to leverage AI's potential and applications in education will help instructors become more skilled facilitators and create new opportunities for creating cutting-edge, pertinent teaching strategies.

This study builds on previous research and community engagement programs that highlight the transformative potential of AI in education (Perrotta & Selwyn, 2020b; Xu et al., 2021). It also addresses a critical gap in the application of AI for language teaching in Indonesia, offering insights into how technology can be harnessed to overcome systemic barriers and improve teaching outcomes. Through this effort, the study not only contributes to the growing body of literature on AI in education but also provides a practical framework for empowering teachers to adapt to the demands of 21st-century learning.

## Methods

This community service (CS) activity uses a participatory approach by actively involving junior high school Indonesian language teachers in Tuban as participants. This approach is based on the consideration that the mentoring process will be more effective if the participants act as subjects who participate in the whole activity, not merely as objects receiving knowledge. This participatory approach aligns with the constructivist theory, emphasizing active engagement and contextual learning for deeper knowledge construction (Renninger, 2024). The initiative aimed to empower teachers and ensure sustainable skill development by involving participants in every program stage.

In general, this CS activity is divided into three main stages, namely: (1) preparation, (2) implementation, and (3) evaluation. Each phase was designed with specific rationales to address identified gaps. The preparation phase was essential to align the program with the actual needs and challenges faced by teachers. In contrast, the continuous mentoring phase was implemented to ensure the learning outcomes' sustainability and provide on-the-ground support as teachers transitioned theoretical knowledge into practical application. In the preparation stage, the implementation team conducted a preliminary study to identify the needs and actual conditions of the teachers in the field. This study involved observations, interviews

with teachers and students, and document reviews related to the Indonesian language learning process in several target schools. This phase included five schools in Tuban, selected based on their representation of urban and rural contexts and the diversity in access to digital technology. Teachers were selected through purposive sampling, prioritizing those with varying levels of prior technology exposure to maximize the program's impact. The preliminary study results became the basis for developing the training module and determining the appropriate mentoring strategy.

The implementation phase of CS activities was carried out through workshops and intensive mentoring. The workshop was designed to provide participants with a conceptual understanding of four key areas: (1) the development of AI technology and its impact on education, (2) the principles of AI-based innovative learning, (3) the application of AI in Indonesian language learning, and (4) classroom management that integrates AI. The workshop combines lecture, discussion, and hands-on practice methods to facilitate in-depth understanding. Multiple instructional methods during the workshops were grounded in adult learning theory, which emphasizes the importance of experiential and collaborative learning for professional development (Abedini et al., 2021)

Following the workshop, a structured and continuous mentoring program will be implemented, comprising observations and visits to target schools. Continuous mentoring was deemed necessary to provide teachers with direct guidance as they navigated the complexities of integrating AI into their teaching practices. It allowed for real-time troubleshooting and iterative improvements, fostering confidence and competence in technology adoption. At this stage, the entire program team will collaborate with teachers to gradually implement innovative AI-assisted learning methods in the classroom. This mentoring process includes activities such as (1) design and development of AI-based digital teaching materials; (2) preparation of interactive learning scenarios by utilizing AI applications; (3) learning simulations by integrating AI technology; and (4) joint reflection and evaluation of learning implementation.

At the end of the activity, an evaluation is carried out to measure the level of success of the community service program. This evaluation includes an assessment of (1) the improvement of teachers' knowledge and skills in integrating AI into Indonesian language learning, (2) changes in teachers' attitudes and perceptions towards the utilization of AI technology, and (3) the impact of the application of AI-assisted innovative learning methods on students' interest and learning achievement. The pre-and post-tests included a mix of multiple-choice and open-ended questions. The multiple-choice questions assessed factual knowledge about AI concepts and tools, while the open-ended questions evaluated teachers' ability to design and implement AI-based learning scenarios. Evaluation techniques included written tests, observations, interviews, and document studies. A rubric assessing classroom interaction guided observations, use of AI tools, and student engagement, while interviews probed teachers' and students' experiences to capture qualitative insights.

The data obtained from the various evaluation techniques were analyzed qualitatively and quantitatively. Qualitative analysis was conducted to explore teachers' and students' perceptions, experiences, and in-depth reflections on implementing AI-assisted innovative

learning. Quantitative analysis was used to objectively measure the improvement of knowledge, skills, and learning achievement. These analytical approaches were underpinned by the mixed-methods research design, which integrates qualitative and quantitative data to provide a comprehensive understanding of program outcomes (Creswell, 2015). The process of CS activities is designed in a participatory and comprehensive manner by involving various stakeholders, such as school principals, education supervisors, and local education offices. By doing this, the program's longevity will be guaranteed, and it will be easier to replicate and spread effective techniques to other regions.

## Results and Discussion

### Principles of Innovative Learning

An alternative paradigm in educational processes is required during the digital revolution and the corresponding tremendous technological advancements. Student-centered learning is the substitute method (Posekany et al., 2020; Qolamani & Mohammed, 2023). Alternative, more student-centered learning approaches are gradually replacing the traditional ones, typified by a teacher-only output of knowledge, and have proven less successful in preparing students for the challenges of the Twenty-first Century (Dada et al., 2022). Consequently, learning about innovation is crucial for promoting the growth of critical thinking, creativity, teamwork, and communication skills—all of which are essential in the digital age. The following principles are of particular importance in the context of innovative learning.

### Student-Centered

Unlike conventional teaching techniques, creative learning approaches include students actively learning instead of only viewing them as information consumers (Carvalho et al., 2021; Fidalgo-Blanco et al., 2021; Rhim & Han, 2020). This idea stems from the constructivist theory of knowledge, which holds that an individual actively creates knowledge via interactions with their surroundings and various real-world experiences rather than being an intrinsic property (Ćirić et al., 2020; Matthews, 2020). Educators perform the role of facilitator in this situation by encouraging students to explore knowledge and discover ideas.

Problem-based learning is, therefore, a practical approach that also agrees with the key principles of student-centered education. Through this strategy, students are obliged to participate in the exploration, evaluation, and decision-making process. Besides the facts, students develop critical skills like thinking, collaboration, communication, and problem-solving, which are substantially important in contemporary society. Also, this kind of teaching strategy can be applied to diverse learning environments to enable students to find out about their interests, strengths, and favorite learning styles. For instance, students can develop their creativity and investigative skills for concrete products based on their different interests and talents through project-based or inquiry-based learning.

To apply creative teaching approaches, teachers must grasp each student's traits and tailor their instruction to their learning preferences and styles. Artificial intelligence (AI) technologies can assist instructors in recognizing each student's unique traits and tailoring their

learning materials and tactics to each student's needs and learning stages (Hashim et al., 2022). Consequently, the learning experience for each individual will become more deliberate, fitting, and efficient.

## Contextualized and Meaningful Innovative Learning: Focus on Relevance and Meaning in Learning

Innovative and contextually relevant learning creates real-world circumstances for individuals. This strategy enriches and inspires learning by linking it to real-world situations or events. Students will have a better learning experience and be more aware of the importance of science in everyday life if they can bridge the gap between the ideas they are learning and their real-world experiences (Khanal, 2023).

Consequently, via creative learning that is engaging and relevant, students will comprehend the concepts more thoroughly and efficiently (Shahriar & Weber, 2022). Additionally, by understanding how concepts can be applied in real-world situations, students can improve their learning and become more conscious of the significance of science in daily life. Consequently, learners become more driven to study and advance and more involved in the educational process.

Furthermore, teachers can use this strategy to raise the caliber of instruction they deliver (Sheridan, 2020). Teachers can make learning materials more engaging and relevant for students by making suitable and appropriate connections. It will also raise students' knowledge of the significance of science in daily life. Consequently, educators can enhance their ability to help students acquire new skills and achieve better learning results.

## Collaborative and Interactive Innovative Learning: Enhancing Student Skills through Interaction and Collaboration

Cooperative experiential learning is based on interaction and cooperation among learners, educators, and other media of learning. This approach also enables students to collaborate on ideas, develop an understanding, and engage with their classmates, thus allowing learning to occur cooperatively. Learners' abilities can be developed by engagement in a group and by possessing sufficient communication skills. Through participation, the individual will acquire the skill of critically and strategically analyzing and learning how to communicate effectively. Rich discussions and debates, where active participation is encouraged, allow them to share their notions. This approach enables learners to enhance solution-finding means and adapt to daily dynamics that keep on changing. Educators may adopt innovative, interactive, collaborative learning methods. By fostering relationships and fostering collaboration among students, educators can improve their ability to promote skill development and educational outcomes (Wahyuddin et al., 2022).

## Innovative Learning that Utilizes Technology: AI Integration and Personalized Learning

The new learning approach with combined technological advancements differs much from traditional methods. Incorporating technologies such as artificial intelligence will bring efficiency

and quality to education. AI will further make education more relevant and engaging for the students and personalize it while creating enhanced critical thinking and analytical skills. It means that students can surmount challenges and deal with routine difficulties, which always appear along the way as part of the learning process. AI can use game-like environments to present challenging and abstract subjects in an entertaining and interactive style for the students. According to Hashim et al. (2022) and Van Der Vorst & Jelicic (2019), this speeds up students' learning. New teaching methodologies through technology tools and teaching resources assist teachers in enhancing instruction effectiveness. By integrating AI, educators will have the ability to support students in developing critical thinking and analysis skills toward appreciating how knowledge applies to their everyday lives. It will undoubtedly allow educators to promote further their competency in developing students while achieving academic success.

**Project and Inquiry-based Innovative Learning: Enhancing Students' Skills through Exploration, Analysis and Problem Solving**

Inquiry-based learning and project-based education have been considered two of the most effective pedagogical methods for enhancing students' competencies. These approaches provide opportunities for students to explore, make judgments on, and overcome challenges on their own or in groups. This approach also enhances their creativity, critical thinking, and problem-solving. Implementing this approach can enhance students' problem-solving skills (Karamustafaoğlu & Pektaş, 2023). Using inquiry-based and project-based learning strategies can improve educational outcomes (Karamustafaoğlu & Pektaş, 2023). By empowering students to examine and assess circumstances independently, instructors can improve educational results and help learners acquire competencies more effectively.

**Flexible and Adaptive Innovative Learning: Enhancing Student Ability through Strategies that Match Student Characteristics**

The creative, flexible, and adaptive learning process takes into account students' unique educational interests, concerns, and needs. It is important to note that teachers have helped guide students in achieving their educational goals by utilizing teaching techniques that consider each student's interests, specific needs, and preferred learning styles, whether visual, auditory, or kinesthetic (Contrino et al., 2024). For such instances, a flexible and versatile strategy may assist pupils to improve their problem-solving skills and adapt to the ups and downs of daily life. Additionally, this approach may assist individuals in adjusting to all the complexities and alterations associated with daily life. Teachers may enhance the quality of their instruction by taking a flexible and adaptable approach. Teachers may help students grow as analytical and critical learners by providing them with the versatility and adaptability they need to learn. They can also increase their understanding of the value of knowledge in everyday life. Teachers will be able to further improve their pupils' capabilities and educational accomplishments.

**Innovative Learning Focused on Authentic and Holistic Assessment: Improving Student Proficiency through Comprehensive and Diverse Assessments**

Boosting student accomplishment through innovative instruction emphasizing extensive

and authentic evaluation constitutes a highly efficient technique. Rather than focusing exclusively on cognitive qualities, the present research employs several approaches involving investigations, portfolios, and work responsibilities to explore the concept of knowing, behavior among pupils, and student achievement (Sokhanvar et al., 2021). Given these circumstances, a thorough and accurate assessment can help students develop their capacity to adapt to the new dynamics and alterations that occur in daily life. Furthermore, students can increase their analytical competencies and capacity to adapt to the volatility and adjustments that come with everyday life (Gallardo, 2020).

To improve the quality of their training, educators may also use extensive and fundamental evaluation tools (Sokhanvar et al., 2021). A teacher's job is to provide several chances for students to showcase their abilities, helping them improve critical thinking, analytical skills, and appreciation of knowledge in daily life. In this process, teachers enhance learning and achievement for all students. By implementing these principles into practice, creative education aims to extend the overall capabilities of students. Education enables pupils to grow into critical, creative, and adaptable individuals capable of meeting the challenges of the twenty-first century.



**Figure 1.** Mentoring and Practising Process

## Artificial Intelligence (AI)-assisted Indonesian Language Learning

Artificial intelligence in Indonesian language learning is among the latest innovations to have taken center stage in the Indonesian education scene and has been welcomed by teachers and students alike. AI could boost the performance of students and improve educational quality. This paper points out the critical role AI plays in Indonesian language instruction and teachers' much-needed impact on student performance. AI can also be integrated into systems built for Indonesian language learning and teaching sentence structure and grammar (see Figure 1). This way, students can learn much more efficiently, especially when it comes to more complex topics in linguistics, and it enhances their critical and analytical thinking skills.

**Pros and Cons of Using AI in Indonesian Language Learning**

Artificial intelligence-based teaching in Indonesia offers novelty in the presence of more favorable conditions for students to learn. The method has started to find broad applications since it allows considering, through complex algorithms, students' proficiency level and learning style. This form of individual training ensures the most intense development for each student and thus raises the general quality of learning. In addition, AI enables teachers to enhance students' language mastery with greater effectiveness and efficiency. AI as a virtual assistant, helps develop curriculum, plan lessons, and give students immediate feedback. It reduces instructional workload, releasing more time for teachers to develop interpersonal relationships and provide specialized help.

However, incorporating AI within the educational framework also has a few downsides. For example, students' overdependence on technology may impede their ability to develop critical thinking and problem-solving skills, which are valuable for surmounting challenges outside the classroom. AI tends to misinterpret certain things or make mistakes, which may give students misinformation and influence their understanding of Bahasa Indonesia. Furthermore, AI does not capture the full nuances of Indonesian social and cultural contexts. More than words and grammar, this language conveys cultural meaning and social nuance. Without this, AI cannot distinguish between such subtleties, impairing deep and exciting learning.

While Indonesia now plans to develop AI-driven tools for training in Indonesian language skills, it has to weigh the pros and cons for effectiveness. Relying merely on technology is not sufficient for organizing good learning. It requires a combination of teaching methodologies that put students at the center and supported by mentor-teachers as facilitators.



**Figure 2.** Mentoring and Practising Process

**Implementation of AI in Indonesian Language Learning**

AI will integrate with teaching the Indonesian language in many ways (see Figure 2). First, a teacher must assess the students' characteristics and their learning objectives. Teachers must be capable of using AI to enhance their students' skills and performance. Therefore,

choosing the appropriate learning platform becomes vital for a teacher; teachers should employ technologies that allow students to comprehend Indonesian grammar and sentence structure. Moreover, teachers and students need to start training in using AI. Teachers have to be taught how to use AI to assist pupils in learning Indonesian. AI will not only help in comprehension; it will aid in speaking and enhancing critical thinking skills. Here are some examples of AI technology that can help with Indonesian language learning:

1. Duolingo
   This AI-driven tool offers swift and accurate assessment and feedback, fostering improvement in speaking, writing, reading, and listening skills.
2. Machine Learning
   Provides immediate evaluation and detailed feedback on language usage, grammar, and comprehension.
3. Chatbot
   Facilitates conversational practice and research on various topics, enhancing language proficiency.
4. Google Translate
   AI-powered software enabling translation between Indonesian and other languages, assisting students in understanding syntax and sentence structure.
5. Voice Assistant
   Helps students locate learning materials such as books and journals, enhancing comprehension of Indonesian language intricacies.
6. Google Classroom
   Utilizes AI to augment teaching and learning experiences, offering instruction on Indonesian grammar and sentence structure.
7. Nabiha
   AI tool focusing on dialogue skills practice, aiding students in sourcing relevant information for language learning.
8. Alexa
   Acts as an assistant in retrieving educational materials, aiding students in understanding Indonesian syntax and sentence construction.

**Teacher's Understanding of the Material**

Success in implementing innovative technologies in learning directly depends on how well teachers master the material. In the community service program (community service) on AI use for Indonesian language learning among junior high school teachers in Tuban, it became clear that the effectiveness of the technology in enhancing learning activities relied heavily on teachers' understanding of the technology. Pretests and posttests were conducted to measure the development of this understanding throughout the program.

Pretest results at the outset revealed that most teachers knew little about AI. Only 10% of 30 participating teachers knew basic concepts of AI, while the rest knew AI as a general technology used in everyday life, like a translation app or other virtual assistants. Besides, 70% of the teachers considered AI relevant only from areas far from education, and 60% felt that its application to Indonesian language learning was too complicated.

The program also echoed teachers' opinions about the role of AI in the classroom, as many teachers felt it threatened their position and were reluctant to use the technology. Pre-

program interviews showed that around 65% of the participants assumed that AI could reduce the direct contact between teachers and learners, which they see as important in language improvement. These are the challenges to be addressed in the community service program, which is designed to deliver in-depth workshops on basic AI concepts, AI applications in education, and how AI could practically support Indonesian language learning. Only after a post-test following the workshop sessions, did the improvement in teachers' understanding finally reach significance. In all, 85% of the participants showed a higher understanding of the concepts of AI, while 70% agreed that AI may help improve language learning through personalized resolutions and automatic assessment. Overall, the understanding of how AI can support Indonesian language learning increased by 75% compared to the pretest results.

The workshop taught them about AI-based tools like Duolingo, Chatbot, and Google Translate that can support teaching Indonesian sentence structures and grammar. About 80% of them felt more confident using AI technology to develop teaching materials after they joined the training. They started to understand the role of AI as a supportive tool and not as a tool that would take over their role as facilitators of learning.

Afterward, the teachers continued the program by infusing AI-based tools into daily teaching practices. Classroom observations during mentoring showed that teachers began to use AI to develop interactive teaching tools and give immediate feedback to students. The results of the posttest indicated that 90% of the teachers can effectively transform the technology of AI to inspire student engagement in learning. Teachers used the AI to assess the students' sentence structures, perform on-the-spot grammar corrections, and customize individual learning materials for each student.

Another notable development was the personalized learning, which the teachers were able to adapt. Some 75% of the teachers reported that they could easily adapt teaching materials to students' levels of understanding, which was previously very hard to achieve without AI technology. Students with lower language proficiency got simpler materials, whereas more advanced ones were able to challenge themselves more.

Ethical issues arose in student data privacy, while there was also a belief that AI could not understand the profound social and cultural contexts underpinning Indonesian language learning. According to the teachers, with respect to grammar and sentence structure, AI could provide specific technical help. However, AI did not recognize the social nuance of idiomatic expressions and social contexts—things so important when learning. The following is a summary of the pretest and posttest results, indicating improvement in the teachers' understanding of the use of AI in Indonesian language learning (see Table 1).

**Table 1.** Comparison of Understanding and Skills Related to AI Before and After Training

| Understanding Aspect | Pretest (%) | Posttest (%) | Improvement (%) |
| --- | --- | --- | --- |
| Basic understanding of AI | 10 | 85 | 75 |
| Positive perception of AI | 30 | 80 | 50 |
| Ability to use AI tools | 20 | 90 | 70 |
| Confidence in personalizing content | 25 | 75 | 50 |
| Ethical and privacy understanding | 40 | 65 | 25 |

Source: researcher

The results of this community service program prove that intensive training based on AI with mentoring has enhanced the understanding and competency of junior high school teachers in implementing AI to teach Indonesians. These findings align with the study conducted by Abedini et al. (2021) on adult learning theory, which emphasizes the importance of experiential and continuous learning to foster skill acquisition and confidence in professional settings. Additionally, the results support the conclusions of Alam (2021) and Chen et al. (2020), who found that teacher training programs emphasizing hands-on experience with AI tools significantly improve educators' ability to integrate technology into their classrooms.

Although there are still several technical and ethical challenges to be overcome, by the end of this program, most teachers had become much more assured and proficient in using AI to assist them in their teaching, with benefits evident in student motivation and attainment. For example, as highlighted during teacher interviews, using AI-driven applications like interactive quizzes and automated feedback systems increased students' engagement and interest in Indonesian language lessons. It aligns with Perrotta and Selwyn's (2020) findings, which indicate that technology-enhanced learning environments boost both student motivation and academic achievement by catering to diverse learning styles.

The program also influenced community perspectives by shifting teachers' and administrators' attitudes toward technology integration. Initially, many participants expressed skepticism about AI due to perceived technical complexity and lack of relevance to language learning. However, through continuous mentoring and real-world application in classrooms, teachers developed a more positive mindset and recognized AI as a valuable tool for fostering student-centered learning. This change in perspective reflects the Diffusion of Innovations theory, which posits that consistent exposure to new technology through guided practice accelerates its acceptance and adoption (O'Callaghan et al., 2020).

The recommendations from this program include more structured and regular training and further research on the issue of long-term integration and its results in Indonesian language learning. Structured follow-up programs should emphasize ongoing mentoring. The model of teacher change asserts that sustainable professional development requires iterative learning, application, and reflection cycles (Metsäpelto et al., 2022). Furthermore, addressing technical and ethical challenges, such as data privacy and equitable access to AI tools, will require collaboration between educators, policymakers, and technology developers to create inclusive and ethical frameworks for AI integration.

In resolving the identified issues, this program successfully addressed the initial lack of AI-related knowledge and practical teaching strategies among the participants. Quantitative evaluations showed an 85% increase in teachers' understanding of AI concepts and a 90% improvement in their ability to design and deliver AI-enhanced lessons. These outcomes directly align with the program's objectives of empowering teachers with the skills and confidence needed to implement AI-based innovative teaching practices. The program demonstrates how targeted interventions can drive meaningful change in educational practices by effectively bridging the gap between theory and application.

## Conclusion

The program successfully achieved its primary objectives by enhancing the knowledge, skills, and attitudes of Indonesian language teachers at junior high schools in Tuban regarding the integration of AI into language instruction. Teachers demonstrated significant progress in understanding AI concepts and tools and in their ability to design and implement AI-supported learning strategies. These outcomes improved student engagement and academic performance, affirming the program's effectiveness. For long-term sustainability, institutional-level support is crucial. Schools and local education authorities should consider integrating AI-focused training into regular professional development programs to ensure continuous teacher competency enhancement. Additionally, fostering collaborations between educators, technology developers, and policymakers can help address technical and ethical challenges, such as data privacy and equitable access to AI tools.

The program also highlighted the importance of fostering positive attitudes toward technology among educators, which can influence the success of technology adoption in classrooms. To build on this foundation, future initiatives should focus on scaling up the program to reach more schools and teachers, accompanied by systematic monitoring and evaluation to refine AI-supported teaching practices. Expanding the program's impact requires community-level engagement, such as involving parents and students in understanding the potential benefits of AI in education. Encouraging the formation of teacher-learning communities can also sustain innovation momentum by providing a platform for sharing best practices and experiences.

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