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ENHANCING AI EDUCATION FOR DEEP LEARNING AMONG MEMBERS OF THE KAMPUNG BAHASA PARE FORUM, KEDIRI REGENCY

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Abstract: Kampung Bahasa Pare in Kediri Regency is one of Indonesia's largest non-formal language learning centres, yet its teaching practices remain dominated by drilling, translation and rote memorization, and artificial intelligence (AI) has not yet been integrated systematically. This community service program aimed to strengthen tutors' understanding of deep learning in language instruction and their capacity to use AI tools to support it. Using a training-of-trainers approach, the program involved 32 tutors representing language courses affiliated with the Kampung Bahasa Pare Forum. It comprised three connected phases, namely capacity building, practical workshops and instructional model development, and was organized and evaluated through the Plan–Do–Check–Act (PDCA) cycle, including a limited classroom pilot reviewed through observations, surveys, interviews and reflections. Tutors practised using AI to develop teaching materials, design learning activities and language exercises, and support assessment and feedback, while critically reviewing and adapting AI outputs to their learners' needs. The program produced a prototype AI-assisted English learning model accompanied by training modules, sample learning scenarios, an AI application guide, sample prompts, student worksheets and evaluation instruments. The model keeps tutors and students at the centre of learning and treats AI as a supporting tool for meaningful, collaborative and reflective learning. Sustained mentoring, broader implementation and systematic evaluation of learning outcomes are recommended.
Keywords: *artificial intelligence; deep learning; non-formal language education; training of trainers; Kampung Bahasa Pare*

INTRODUCTION

The current era of digital transformation calls on the education sector to adopt artificial intelligence (AI) technologies based on machine learning (ML) and deep learning (DL) in order to deliver learning that is more adaptive, personalized and measurable on the basis of empirical data (Chen et al., 2021; Konstantinidou et al., 2026; Linardatos et al., 2021; Ng et al., 2023). In higher education and language learning, studies indicate that AI based on ML and DL can improve learning outcomes, student engagement and satisfaction through personalized learning pathways (Naseer et al., 2024). Integrating AI into e-learning has also proven effective in optimizing students' academic performance through learning analytics, achievement prediction and adaptive feedback, with models such as convolutional and recurrent neural networks enabling accurate and timely support (Mahafdah et al., 2024). Taken together, AI can support flexible, interactive and individually tailored learning environments that respond to the challenges of the 21st century.

In education, the term deep learning carries two related meanings. In computer science, it refers to multi-layered neural networks that underpin many current AI applications. In pedagogy, deep learning refers to learning that goes beyond memorization toward understanding, connection to real-world

situations, collaboration and reflection, an approach associated with the development of higher-order thinking (Weng et al., 2023). Indonesian education has recently adopted this pedagogical sense, and curriculum work has begun to translate it into frameworks and implementation strategies (Halomoan et al., 2026). This program uses AI tools, many of which are built on deep learning technology, to support deep learning in the pedagogical sense.

The value of integrating AI is reflected in recent community service programs for Indonesian teachers (Table 1). Buchori et al. (2025) trained elementary school teachers in Semarang to use Canva AI, ChatGPT, Quizizz AI and AI video tools through a four-stage program comprising a needs assessment, in-person training, classroom simulations and two to three weeks of post-training mentoring; teachers produced interactive presentations, automated assessments and simple chatbots, and formed online communities to sustain their learning. Listiqowati et al. (2025) trained teachers at SMAN 1 Torue to use Gamma and Scribble Diffusion, improving their knowledge of AI-based media. Shodiqin et al. (2024) trained and mentored members of a high school mathematics teachers' working group (MGMP) in Demak Regency to use ChatGPT, Gamma, Wolfram, Canva and ClassPoint to develop materials for the Merdeka Curriculum.

Table 1. *Comparison of AI training programs for Indonesian educators*

Program	Participants and setting	AI tools	Approach	Main outputs
Buchori et al. (2025)	Elementary teachers, Semarang	Canva AI, ChatGPT, Quizizz AI, AI video	Needs assessment, training, simulation, mentoring	Interactive media, automated assessments, chatbots, teacher community
Listiqowati et al. (2025)	High school teachers, SMAN 1 Torue	Gamma, Scribble Diffusion	Training	Improved knowledge of AI-based media
Shodiqin et al. (2024)	High school mathematics teachers (MGMP), Demak	ChatGPT, Gamma, Wolfram, Canva, ClassPoint	Training and mentoring	Materials for the Merdeka Curriculum
This program	32 tutors, Kampung Bahasa Pare Forum (non-formal)	AI tools for language teaching	Training of trainers, three phases, PDCA, pilot	AI-assisted English learning model and support package

These programs, however, all targeted formal schooling. The integration of AI to support deep learning has not yet been optimized in non-formal education, such as Kampung Bahasa Pare in Kediri Regency, one of Indonesia's largest non-formal language learning centres (Halimah et al., 2025). Despite its potential, teaching in the area has not yet made full use of AI and is still dominated by drilling, translation-based learning and rote memorization. Conventional methods and simple, non-AI digital media are considered ineffective in fostering higher-order thinking skills (Weng et al., 2023). Several gaps contribute to unequal adoption of AI, including limited infrastructure, educators' readiness, ethical issues and data privacy, while a lack of specialized training and limited access to technology leave few educators competent in its use (Miras et al., 2023; Ng et al., 2023; van de Werfhorst et al., 2022; Yulianto & I., 2024). The "black box" nature of deep learning models also raises concerns about transparency and interpretability (Linardatos et al., 2021; Stasolla et al., 2025).

A community service program focused on AI capacity and literacy in Kampung Bahasa Pare was therefore needed to bridge the technology gap, transform conventional teaching practices and support quality education (SDG 4). Based on the situational analysis, the program addressed three questions: (1) How can tutors' understanding of deep learning in language learning be improved? (2) How can AI technology be integrated into teaching practices at Kampung Bahasa Pare? (3) How can an innovative and practical deep learning-based learning model be designed?

METHOD

This community service program used a training-of-trainers approach involving 32 tutors representing language courses affiliated with the Kampung Bahasa Pare Forum, Kediri Regency, Indonesia (Table 2). The program aimed to strengthen tutors' ability to use AI tools in planning and delivering language

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instruction, so that trained tutors could in turn support colleagues in their own courses. Its activities comprised three connected phases: capacity building, practical workshops and instructional model development (Figure 1).

Table 2. *Program overview*

Component	Description
Partner	Kampung Bahasa Pare Forum, Kediri Regency
Participants	32 tutors representing affiliated language courses
Approach	Training of trainers
Phases	Capacity building; practical workshops; instructional model development
Evaluation	Plan–Do–Check–Act cycle with a limited classroom pilot
Data sources	Classroom observations; surveys, interviews and reflections from tutors and learners
Funding	Faculty of Cultural Studies, Universitas Brawijaya, 2026 DPP/SPP scheme

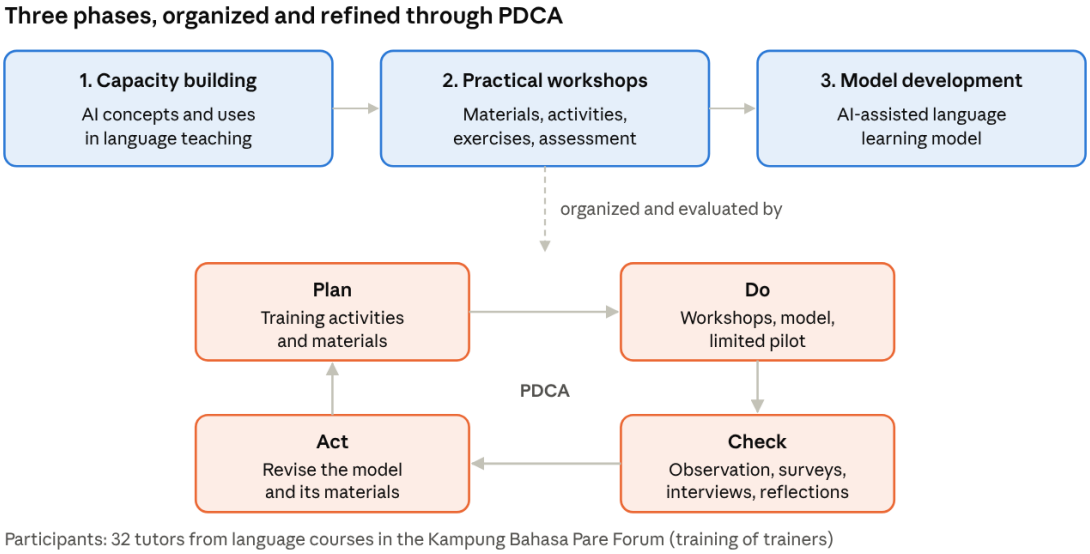


Figure 1. · *Program phases and the Plan–Do–Check–Act evaluation cycle*

In the capacity-building phase, participants were introduced to AI concepts and their potential applications in language teaching. The practical workshops then gave participants opportunities to use AI tools to develop teaching materials, design learning activities and language exercises, and prepare assessment and feedback; participants reviewed the generated outputs and adapted them to their learners' needs and teaching contexts. In the model development phase, tutors drew on this experience to design an AI-assisted language learning model, taking into account learning objectives, target language skills, learners' prior knowledge and available resources.

The program was organized and evaluated using the Plan–Do–Check–Act (PDCA) cycle. Planning covered the preparation of training activities and instructional materials. Implementation included the workshops, model development and a limited pilot in language classes. The team reviewed the pilot through classroom observations and through feedback gathered from tutors and learners in surveys, interviews and reflections. This feedback informed revisions to the instructional model and its supporting materials.

RESULTS AND DISCUSSION

This section presents the program's results according to its three phases and the PDCA cycle, addressing in turn how tutors' understanding of deep learning was enhanced, how AI was integrated into teaching practice, and how an innovative and practical learning model was designed.

Enhancing tutors' understanding of deep learning

Tutors' understanding of deep learning in language instruction was enhanced through AI training for English tutors who are members of the Kampung Bahasa Pare Forum. As AI becomes increasingly integrated into the educational ecosystem (Chiu et al., 2022), the workshops introduced tutors to current AI developments relevant to deep learning in education, particularly in English instruction. The material was presented in ways that matched the language learning contexts tutors face in Kampung Bahasa Pare, so that participants gained not only knowledge of the technology but also an understanding of its relevance to their teaching.

Understanding was further developed through demonstrations and hands-on practice. Tutors explored AI in creating and developing materials, designing learning activities, providing language exercises and supporting assessment and feedback. These activities helped participants connect the concept of deep learning to language learning needs and encouraged reflective practice, which, as Schön (1983) describes, allows educators to examine their decisions by considering assumptions, uncertainties and consequences. In the context of AI, tutors can use generated output as a starting point to evaluate, modify and adapt materials and activities to students' needs rather than accepting it as a final answer. AI practice can thus increase tutors' cognitive engagement while fostering critical awareness of how to use the technology appropriately.

AI education focused on deep learning can therefore serve as a strategy for strengthening tutors' understanding and readiness to integrate AI into language learning. This is consistent with Halomoan et al. (2026), who show that interactive applications of deep learning can support active engagement, collaboration, problem solving and more adaptive learning through immediate feedback and personalization. Successful integration, however, depends not only on technological proficiency but also on contextual lesson planning, interactive and adaptive activities, competency-based assessment and feedback, and ongoing reflection. In Kampung Bahasa Pare, continuous education and training of tutors is critical to ensuring that AI use is tailored to language learning needs, supported by adequate infrastructure and aligned with learning goals (Ng et al., 2023).

The integration of AI into teaching practices

During the practical workshops, AI was integrated into four areas of tutors' teaching practice: developing teaching materials, designing learning activities, creating language exercises, and preparing assessment and feedback. In each area, the workflow followed the same pattern (Figure 2): the AI tool produced a draft, tutors evaluated, modified and adapted it to their learners' needs and contexts, and the result was used with learners, whose responses informed further reflection. This pattern positions AI as an assistant to tutors' professional judgment rather than a replacement for it, addressing concerns about the opacity of AI systems (Linardatos et al., 2021; Stasolla et al., 2025) and about uneven digital readiness among educators (Miras et al., 2023; van de Werfhorst et al., 2022). It also reflects evidence that AI can personalize learning and provide adaptive feedback (Chen et al., 2021; Konstantinidou et al., 2026; Mahafdah et al., 2024; Naseer et al., 2024), while keeping decisions about what reaches learners in the hands of tutors.

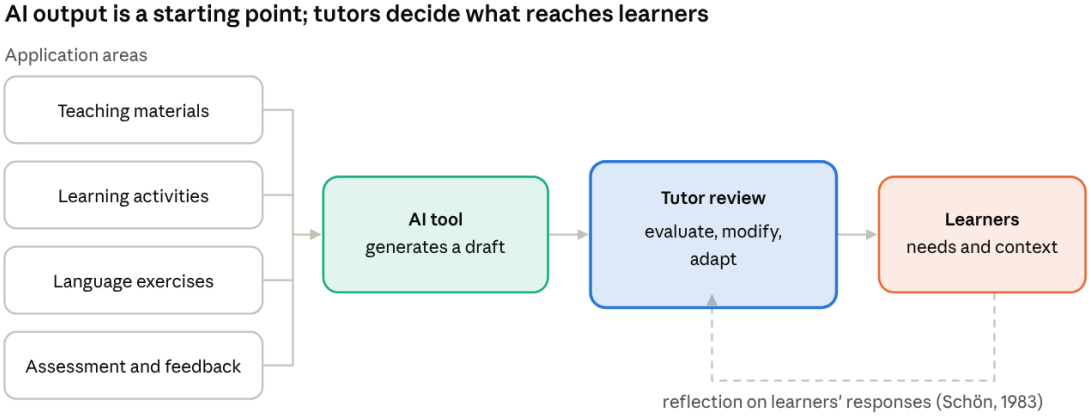


Figure 2 .· *Integrating AI into teaching practice through tutor review*

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Designing an innovative deep learning-based instructional model

The instructional model was designed in the model development phase, after tutors had gained an understanding of AI concepts and experience with several applications. Tutors were guided in developing an English learning model tailored to conditions in Kampung Bahasa Pare that would be user-friendly, not overly complex, and sustainable for tutors and language schools. The model places tutors and students at the centre of learning and treats AI as a supporting technology. Deep learning-based instruction thus focuses not only on technology but on knowledge construction, connection to real-world situations, collaboration, discussion and reflection, in line with design-based approaches to deep learning (Weng et al., 2023).

To develop an appropriate lesson, tutors first identify students' needs, classroom conditions, prior knowledge, target skills and available resources; they then formulate objectives, select a suitable AI application, design learning activities and prepare assessment (Figure 3). For example, if the objective is to improve writing, a tutor can design a sequence in which students read sample texts, discuss paragraph structure, write drafts, seek feedback from AI, revise their writing and present the final piece to classmates.

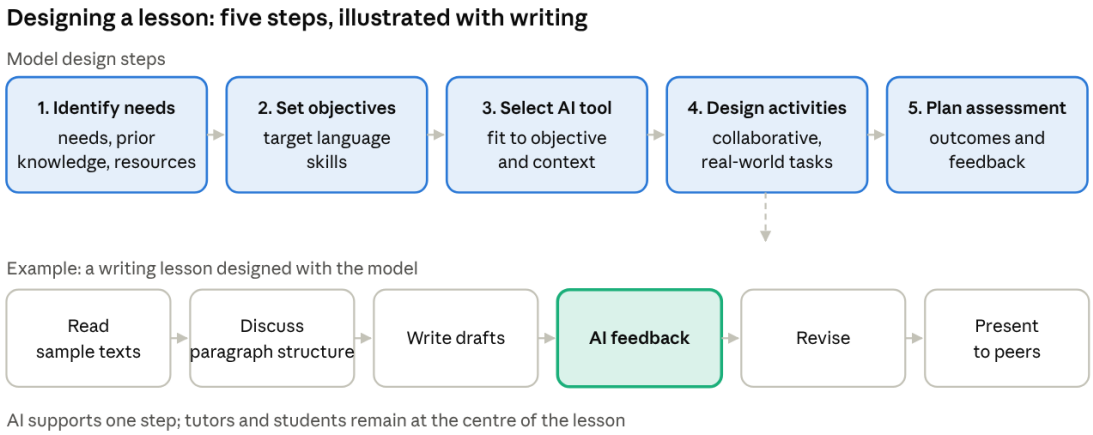


Figure 3. · *Steps for designing an AI-assisted deep learning lesson, with a writing example*

The model was piloted on a limited scale in several informal classes in Kampung Bahasa Pare to determine whether it functioned in a real learning setting. The team and tutors observed whether the learning steps were easy to understand, whether students were actively engaged, whether applications ran smoothly and whether AI genuinely helped achieve the learning objectives. The results were treated as input for refinement rather than as final. Tutors and students then provided feedback through surveys, interviews and reflections, and the team observed classes to assess changes in teaching and student engagement. Table 3 summarizes how the PDCA cycle was applied.

Table 3. *Application of the PDCA cycle*

Stage	Activities	Evidence and outputs
Plan	Preparing the training program and instructional materials	Training plan and materials
Do	Implementing workshops, developing the model and piloting it in informal classes	Draft model; pilot lessons
Check	Reviewing implementation, student responses and challenges	Classroom observations; surveys, interviews and reflections from tutors and learners
Act	Refining the parts of the model that were still ineffective	Revised model and supporting materials

The final outcome was a prototype AI- and deep learning-based English learning model that tutors in Kampung Bahasa Pare can use as a guide, accompanied by the components listed in Table 4.

Table 4. *Components of the prototype model package*

Component	Purpose
Training modules	Build tutors' understanding of AI and deep learning
Sample learning scenarios	Show how AI fits into complete lessons

Guide to using AI applications	Support practical, appropriate tool use
Sample prompts	Help tutors obtain useful AI outputs
Student worksheets	Structure learners' activities in AI-assisted lessons
Evaluation instruments	Assess learning and the model's implementation

The model is expected to strengthen tutors' pedagogical and digital competencies, improve students' learning experiences and support a shift from conventional methods toward more innovative, interactive, reflective and needs-based approaches. The program also documented practices that emerged during implementation so that they can serve as examples for other tutors, and the refined model may be adopted by language schools beyond Kampung Bahasa Pare. As in earlier programs that sustained teachers' learning through communities and mentoring (Buchori et al., 2025; Listiqowati et al., 2025; Shodiqin et al., 2024), continued support will be needed for the model to take root in the non-formal sector (Halimah et al., 2025).

These findings are supported by previous studies that highlight the potential of technology-enhanced education to improve teaching practices, learning experiences, and educational outcomes. Goel et al. (2024) and Legowo et al. (2024) discussed the potential of artificial intelligence (AI) and deep learning technologies to enhance educational experiences and outcomes, while Zhang et al. (2025) examined the applications of AI-based deep learning methods in education. Similarly, Nguyen et al. (2024) emphasized the opportunities and challenges of using AI to enhance student engagement, and Ajani et al. (2024) highlighted its potential to promote quality education and critical engagement. Rao and Suhasini (2025) further explored the integration of AI to enhance teaching and learning in higher education. In relation to instructional approaches, Yao et al. (2025) demonstrated the potential of AI-enhanced platforms to support project-based teaching, intelligent assessment, and collaborative learning, while Sari et al. (2025) examined the use of AI-supported science learning with a deep learning approach to improve inclusive learning outcomes. Dong (2026) also highlighted the importance of interaction quality in supporting deep learning through cognitive load and learning motivation. Collectively, these studies reinforce the present findings regarding the importance of innovative, interactive, reflective, and learner-centered approaches to improving educational experiences. However, while these previous studies primarily focus on AI integration, technology-enhanced instruction, and student learning outcomes, the present program extends this discussion to tutor development in non-formal language education. By strengthening tutors' pedagogical and digital competencies, documenting implementation practices, and refining a model that may be adopted by other language schools, the program offers a context-specific contribution to pedagogical innovation beyond formal educational settings. Nevertheless, consistent with the importance of sustained support in educational improvement, the successful implementation of this model will require continued professional development, mentoring, and opportunities for tutors to reflect on and improve their teaching practices.

CONCLUSION

This program supported 32 tutors from the Kampung Bahasa Pare Forum, Kediri Regency, in developing their understanding of AI and its practical applications in language instruction. Through capacity building, hands-on workshops and instructional model development, participants practised using AI to prepare teaching materials, design language activities and support assessment and feedback while critically reviewing and adapting AI outputs to learners' needs. The program produced a prototype AI-assisted English learning model accompanied by training modules, learning scenarios, an AI application guide, sample prompts, worksheets and evaluation instruments. A limited classroom pilot and feedback from tutors and learners informed revisions through the Plan–Do–Check–Act cycle. These outcomes provide a practical foundation for integrating AI into non-formal language education while preserving tutors' pedagogical judgment and encouraging meaningful, collaborative and reflective learning. Further development should include sustained mentoring, broader classroom implementation and systematic evaluation of the model's effects on tutors' competencies, learner engagement and language learning outcomes.

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