

PBSI AI-LAB: Mentoring on the Use of Artificial Intelligence for Prospective Indonesian Language Teachers

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Abstract

The rapid development of artificial intelligence (AI) creates new opportunities for Indonesian language education while also presenting challenges for prospective teachers who need adequate literacy and practical skills to use AI appropriately. The PBSI AI-Lab program was designed to provide prospective Indonesian language teachers with knowledge, practical experience, and ethical awareness in utilizing AI for educational purposes. The program was conducted over approximately three months through three main activities: Artificial Intelligence Literacy Training, Practical Training on AI Utilization for Teaching Materials, and Mentoring on AI Application and Ethics. The activities introduced participants to basic AI concepts, generative AI, potential applications in Indonesian language education, prompt engineering, development of teaching materials and learning activities, and AI-assisted assessment. Participants were also guided to review, refine, and contextualize AI-generated outputs while considering accuracy, originality, transparency, data protection, and human judgment. The implementation demonstrated that participants were able to explain basic AI concepts, formulate more specific prompts, develop AI-assisted instructional products, revise generated content, and recognize principles of responsible AI use. The program also provided practical resources that can be further adapted for Indonesian language teaching. Sustainability is directed toward independent practice, continued development of AI-assisted learning materials, peer sharing, and integration of responsible AI use into PBSI academic activities. The program supports the readiness of prospective Indonesian language teachers to utilize AI creatively, critically, and responsibly.

Keywords: *AI Literacy, Artificial Intelligence, Indonesian Language Education, Prompt Engineering, Prospective Teachers*

Introduction

The rapid development of information and communication technology has brought substantial changes to the educational environment, particularly in the ways teachers prepare learning activities, develop instructional materials, and facilitate student engagement. Digital transformation has expanded the role of teachers from information providers to learning facilitators who are expected to select and integrate appropriate technologies according to students' needs and learning contexts (Redecker, 2017). This condition highlights the importance of preparing prospective teachers with digital competencies that extend beyond basic technology operation (Chiu et al., 2023).

Artificial Intelligence (AI) has become one of the technologies with growing relevance to contemporary education. AI enables computer systems to perform tasks associated

with human cognitive capabilities, including language processing, pattern recognition, information generation, and recommendation. The emergence of generative AI, particularly large language models (LLMs), has created additional opportunities for educators to develop learning materials, formulate assessment activities, generate ideas, and provide learning feedback (Holmes et al., 2019; Kasneci et al., 2023). The availability of these technologies makes AI literacy increasingly relevant for prospective teachers who will work in digitally oriented learning environments (Adiguzel et al., 2023; Chen et al., 2023).

Prospective Indonesian language teachers constitute an important partner group in the development of responsible AI literacy because their future professional activities are closely related to language, text, communication, and literacy. The characteristics of Indonesian language learning provide various opportunities for AI-supported activities, including text analysis, writing practice, language editing, development of learning media, generation of discussion topics, and preparation of assessment instruments. Recent literature indicates that generative AI can support educators in designing learning activities, developing instructional materials, preparing assessments, and providing feedback, while its effective use still requires appropriate pedagogical consideration (Ayanwale et al., 2024; Nusi & Hardiah, 2024). In language teacher education, explicit preparation for generative AI use can also support prospective teachers in developing pedagogical competence and critical awareness of AI applications in language teaching (Moorhouse et al., 2024). AI technology can therefore become a supporting tool for prospective teachers in designing varied learning experiences while maintaining the teacher's role in determining learning objectives, evaluating content, adapting materials to learners' needs, and making pedagogical decisions (Zhai, 2025).

Digital literacy among prospective teachers should encompass more than the ability to operate digital devices and applications. It also involves the ability to access, understand, evaluate, and use digital information appropriately, productively, and ethically. AI literacy consequently needs to be positioned as part of prospective teachers' broader digital competence (Bozkurt et al., 2021; Celik et al., 2022). Understanding how AI generates information, recognizing the need to verify AI-generated content, formulating appropriate instructions, and considering ethical implications are important aspects that need to accompany practical AI use in educational settings.

The main problem faced by prospective Indonesian language teachers is the need for more structured knowledge and practical experience in using AI for pedagogical purposes. AI applications are increasingly accessible, yet familiarity with digital platforms does not automatically ensure the ability to use them appropriately for learning design (Sperling et al., 2024; Zhang, 2024). Users may rely on AI merely to obtain instant answers without sufficiently examining the accuracy, relevance, context, and suitability of the generated content. Such practices can reduce the pedagogical value of AI use and raise concerns related to academic integrity, originality, information accuracy, and excessive dependence on technology (Du et al., 2024; Laru et al., 2025).

Another important issue concerns the limited understanding of how AI can be integrated into specific learning tasks in Indonesian language education. Prospective teachers need experience in transforming general AI capabilities into concrete instructional products, such as teaching materials, learning activities, writing prompts, discussion tasks, and assessment instruments. Effective integration requires an understanding of both the capabilities and limitations of AI, as well as the ability to position AI as a supporting technology rather than a replacement for teacher judgment.

AI can function as a teaching aid, a learning support system, and a means of facilitating more personalized learning experiences when its use is aligned with appropriate educational purposes (Zawacki-Richter et al., 2019; Ouyang & Jiao, 2021).

Ethical considerations represent another essential aspect of AI use among prospective teachers. The use of generative AI requires users to pay attention to the accuracy and credibility of generated information, transparency in its use, originality of learning products, protection of personal information, and the appropriate role of human judgment. Prospective teachers therefore need opportunities to practice reviewing and refining AI-generated outputs rather than accepting them without further consideration. Responsible AI use requires technological competence to be accompanied by critical thinking and ethical awareness so that AI contributes constructively to educational practice (Zawacki-Richter et al., 2019; Kasneci et al., 2023).

The needs described above require a community service program that combines conceptual understanding, direct practice, and continuous guidance. The PBSI AI-Lab (Artificial Intelligence Laboratory) is designed as a mentoring program for prospective Indonesian language teachers to provide practical experience in understanding and utilizing AI for educational purposes. The program begins with AI Literacy Training, which introduces basic AI concepts, developments in generative AI, and the opportunities and challenges associated with AI-supported Indonesian language learning. This activity provides participants with an initial foundation for understanding AI before moving into more application-oriented activities (Du et al., 2024; Kohnke et al., 2025).

The second component is Practical Training on AI Utilization for Teaching Materials, which provides participants with direct experience in preparing prompts, developing teaching materials, designing learning activities, and preparing AI-assisted assessment instruments according to Indonesian language learning needs. The practical orientation allows participants to connect AI capabilities with actual instructional tasks rather than treating AI merely as a general-purpose information tool. The third component is Mentoring on AI Application and Ethics, which provides continued guidance for participants to apply, review, and refine their AI-assisted products while strengthening responsible and ethical AI practices in education (Pei et al., 2025). These three components are designed to provide an integrated learning experience combining knowledge, practical skills, and responsible technology use.

The PBSI AI-Lab: Mentoring on the Use of Artificial Intelligence for Prospective Indonesian Language Teachers program is therefore directed toward supporting prospective Indonesian language teachers in developing AI literacy and practical competence relevant to their future teaching responsibilities. Through AI literacy training, hands-on development of instructional products, and continued mentoring on AI application and ethics, participants are expected to become more prepared to utilize AI critically, creatively, and responsibly in Indonesian language education. The program also provides a foundation for prospective teachers to adapt to continuing technological developments while maintaining pedagogical judgment and the professional values of educators.

Method

The PBSI AI-Lab community service program was conducted for prospective Indonesian language teachers from the Indonesian Language and Literature Education (PBSI) study program. The participants consisted of PBSI students who were preparing

for their future roles as Indonesian language teachers. The main issue addressed through the program was the limited understanding and practical experience of using Artificial Intelligence (AI) for educational purposes, particularly in developing Indonesian language teaching materials, learning activities, and assessment instruments. The activity was carried out for approximately three months, covering preparation, implementation, mentoring, and monitoring activities. The solutions were delivered through three main activities: AI Literacy Training, Practical Training on AI Utilization for Teaching Materials, and Mentoring on AI Application and Ethics.

Preparation

The preparation stage focused on ensuring the readiness of participants, learning materials, supporting facilities, and activity arrangements. The service team coordinated with the PBSI study program and identified the participants' general needs related to the use of AI in Indonesian language education. Training materials were prepared to cover basic AI concepts, developments in generative AI, opportunities and challenges of AI in education, prompt engineering, development of teaching materials and learning activities, AI-assisted assessment, and responsible and ethical AI use. Supporting facilities, including presentation materials, internet access, digital devices, AI applications, practice instructions, and activity schedules, were also prepared to support the hands-on learning process.

Implementation of Activities

Artificial Intelligence Literacy Training

The first activity introduced participants to the basic concepts and development of Artificial Intelligence and generative AI. The materials covered the characteristics and functions of AI, examples of generative AI applications, and their potential use in educational settings. The discussion was directed toward the context of Indonesian language learning, including the use of AI for text generation, language activities, idea development, text analysis, and preparation of learning resources. Participants were also introduced to the opportunities and challenges associated with AI use, including the need to verify AI-generated information and maintain the teacher's role in making pedagogical decisions. Interactive presentations, discussions, demonstrations, and question-and-answer sessions were used to encourage active participation.

Practical Training on AI Utilization for Teaching Materials

The second activity provided participants with direct practice in utilizing AI to develop Indonesian language teaching materials. Participants were introduced to prompt engineering, particularly the formulation of clear instructions that specify learning objectives, learner characteristics, topics, activity formats, and expected outputs. Participants then practiced using AI to develop teaching materials, learning activities, writing prompts, discussion tasks, and assessment instruments relevant to Indonesian language learning. Each participant was encouraged to review, modify, and adapt the generated outputs according to the intended learning objectives and classroom context. The activity emphasized that AI-generated content should serve as a starting point that requires teacher review and contextual adjustment rather than being used directly without further consideration.

Mentoring on AI Application and Ethics

The third activity focused on continued guidance in applying and refining the AI-assisted instructional products developed during the practical sessions. Participants received assistance in reviewing the suitability, clarity, accuracy, and pedagogical relevance of their materials and activities. The mentoring process also strengthened participants' understanding of responsible AI use in education, including information verification, originality of work, transparency in AI use, protection of personal information, and the importance of human judgment. Participants were encouraged to refine their products based on feedback and to consider how AI could be used appropriately without replacing the professional role of the teacher.

Monitoring and Evaluation

Monitoring was conducted throughout the activities by observing participant engagement, participation in discussions and practical sessions, ability to formulate prompts, and completion of AI-assisted instructional products. Program achievement was indicated by participants' ability to explain basic AI concepts, formulate appropriate prompts, develop teaching materials or learning activities using AI, refine AI-generated outputs, and demonstrate an understanding of responsible and ethical AI use. The quality of the products was considered from their alignment with Indonesian language learning objectives, relevance to learners' needs, clarity of content, and appropriate use of AI.

The sustainability of the program is directed toward encouraging participants to continue practicing AI-assisted instructional development independently and applying the skills gained during their teaching preparation activities. Participants are also encouraged to develop and refine a collection of AI-assisted teaching materials that can be adapted for future Indonesian language learning contexts. Continued mentoring and integration of AI literacy into relevant PBSI academic activities can support the ongoing development of responsible AI competence among prospective Indonesian language teachers.

Results and Discussion

The PBSI AI-Lab program was implemented through a series of activities designed to strengthen Artificial Intelligence (AI) literacy, practical AI utilization, and responsible technology use among prospective Indonesian language teachers. The activities were carried out sequentially, beginning with conceptual literacy, continuing with hands-on practice, followed by mentoring, and concluding with efforts to strengthen participants' long-term capacity to integrate AI into Indonesian language education. This structure enabled participants to connect theoretical understanding with practical application while developing awareness of the ethical responsibilities accompanying AI use in educational settings.

Artificial Intelligence Literacy Training

The Artificial Intelligence Literacy Training became the starting point of the PBSI AI-Lab program by introducing participants to the basic concepts of AI and its relevance to Indonesian language education. The session discussed the evolution of AI technology, the emergence of generative AI, and the characteristics of large language models that increasingly support educational activities. Participants were encouraged to understand AI as a technology that complements teachers' professional work rather than replacing their pedagogical role. This perspective aligns with the Digital Competence of Educators

framework, which emphasizes that educators need the ability to select and integrate technology appropriately into learning activities (Redecker, 2017).

The discussion also highlighted various opportunities offered by AI in Indonesian language learning. Examples included generating instructional ideas, developing reading and writing activities, preparing language exercises, organizing classroom discussions, and supporting assessment preparation. These examples helped participants connect AI capabilities with instructional situations that prospective Indonesian language teachers may encounter during lesson preparation and classroom practice. The discussion reflected the growing role of AI as a teaching aid and learning support technology in educational environments (Ouyang & Jiao, 2021).



Figure 1. Presentation on the Introduction to Artificial Intelligence Concepts in Education

Figure 1 illustrates the introductory session in which participants received explanations regarding AI concepts, educational applications, and the changing role of teachers in technology-supported learning. The presentation was accompanied by interactive discussions that encouraged participants to relate AI concepts to classroom situations and Indonesian language learning activities.

The literacy session also emphasized that AI-generated information requires critical review before being used for instructional purposes. Participants discussed the importance of checking information accuracy, adjusting generated content to learning objectives, and considering classroom context before adopting AI-assisted materials. Such discussions are increasingly relevant because the accessibility of generative AI also introduces challenges related to information validity, originality, and academic integrity (Kasneci et al., 2023).

Questions and discussions throughout the session demonstrated participants' growing curiosity about how AI could be integrated into their future teaching practice. Many participants began viewing AI not only as a tool for obtaining quick information but also as a resource that can assist lesson planning, activity design, and instructional preparation. This broader understanding became an important foundation for the practical activities conducted in the following stage.

Practical Training on AI Utilization for Teaching Materials

The Practical Training on AI Utilization for Teaching Materials provided participants with direct experience in applying AI to Indonesian language learning activities. Participants worked individually and collaboratively while exploring AI applications to produce instructional materials that corresponded to specific learning objectives. Practical activities covered teaching material development, preparation of classroom activities, creation of writing exercises, generation of discussion topics, and preparation of assessment instruments that could later be adapted to classroom situations.

The practical sessions introduced participants to prompt engineering, particularly the importance of formulating clear and contextual instructions. Participants learned that AI produces more relevant outputs when prompts include learning objectives, learner characteristics, topics, language levels, activity formats, and expected outputs. This activity shifted participants' attention from simply requesting information toward communicating instructional intentions effectively through carefully structured prompts.



Figure 2. Practices of AI Utilization in the Development Indonesian Language Learning Materials

Figure 2 documents participants during the hands-on practice session using AI applications to develop Indonesian language learning materials. Participants experimented with different prompts and immediately compared the resulting outputs, allowing them to recognize how prompt quality influences the relevance and usefulness of AI-generated instructional materials.

The practice activities produced various AI-assisted instructional products, including lesson material drafts, literacy activities, writing tasks, discussion prompts, and assessment instruments. Participants also learned to revise AI-generated outputs by adjusting wording, improving contextual relevance, and refining instructional sequences so that the materials became more suitable for Indonesian language learning. This process reinforced the idea that AI-generated content functions as an initial resource that still requires teacher review and adaptation (Kasneci et al., 2023).



Figure 3. Participants Practicing Prompt Engineering for Learning Purposes

Figure 3 shows participants refining prompts after reviewing the initial AI responses. The mentoring provided during this activity encouraged participants to improve prompt specificity whenever the generated outputs did not fully correspond to the intended learning objectives. This iterative process strengthened participants' confidence in directing AI to produce more appropriate educational content.

Repeated practice throughout the session helped participants become more familiar with AI-assisted instructional preparation. Instead of depending on AI-generated responses without further consideration, participants became accustomed to reviewing, modifying, and contextualizing generated materials according to classroom needs. This

practical experience reflects the importance of combining technological capability with pedagogical judgment when integrating AI into educational activities (Zawacki-Richter et al., 2019).

Mentoring on AI Application and Ethics

The mentoring stage focused on supporting participants as they refined and contextualized the instructional products developed during the practical sessions. Guidance was provided while participants reviewed teaching materials, learning activities, prompts, and assessment instruments to ensure that each product aligned with Indonesian language learning objectives. This process encouraged participants to view AI-assisted products as resources that require thoughtful adaptation rather than finished products ready for immediate classroom use.

Ethical considerations became an integral part of the mentoring activities. Discussions covered information verification, originality of instructional materials, transparency regarding AI assistance, responsible handling of digital information, and the continuing importance of human decision-making in education. These discussions reinforced participants' understanding that responsible AI use depends on critical judgment alongside technical competence (UNESCO, 2023).

Participants also practiced identifying AI-generated content that required revision due to inappropriate wording, inaccurate information, overly general responses, or insufficient classroom relevance. Such activities encouraged participants to revise prompts, edit generated content, and improve instructional clarity before incorporating AI-assisted materials into lesson preparation. This process reflects the principle that effective AI integration depends on educators' ability to understand both the capabilities and limitations of AI technology (Zawacki-Richter et al., 2019).

The mentoring sessions accommodated differences in participants' levels of digital familiarity through direct assistance and collaborative discussions. Participants who encountered difficulties received immediate guidance while also observing alternative approaches demonstrated by their peers. The collaborative atmosphere created opportunities for participants to exchange practical strategies for developing prompts and refining AI-assisted instructional products.

The mentoring process also strengthened participants' confidence in using AI as part of their future professional responsibilities. Participants increasingly recognized that AI can support instructional preparation while teachers continue to determine learning objectives, classroom strategies, and instructional quality. This understanding supports the growing view that AI functions as a collaborative partner capable of expanding educators' professional capabilities rather than replacing them (Ouyang & Jiao, 2021).

Strengthening Partner Empowerment

The PBSI AI-Lab program strengthened partner empowerment through interconnected experiences involving AI literacy, practical AI utilization, and responsible AI application. Participants developed broader familiarity with AI concepts while simultaneously acquiring practical experience in creating instructional materials relevant to Indonesian language education. These experiences positioned AI as a meaningful instructional support tool that can continue to be explored beyond the completion of the program.

The practical products developed during the activities became tangible outputs that participants can further adapt during future teaching preparation. Instead of limiting AI use to information retrieval or automatic text generation, participants experienced how AI can contribute to different stages of instructional planning, including lesson preparation, activity design, literacy development, and assessment preparation. Such experiences are closely connected with educators' broader digital competence, which includes selecting and integrating appropriate technologies into learning environments (Redecker, 2017).

Another important outcome involved participants' growing ability to formulate effective prompts independently. The repeated practice of developing and revising prompts enabled participants to recognize that successful AI interaction depends on providing clear instructional intentions and sufficient contextual information. This experience encourages participants to continue exploring AI applications while maintaining critical evaluation throughout the content development process.

The collaborative atmosphere established during the program also contributed to participants' long-term readiness. Discussions, peer exchanges, and shared practical experiences created opportunities for participants to continue learning from one another while expanding their collection of AI-assisted instructional resources. This collaborative learning process is in line with community-based mentoring approaches that emphasize active participant involvement, practical assistance, and the strengthening of participants' capacity to apply newly acquired knowledge independently (Ariella et al., 2025). This collaborative experience supports ongoing adaptation as AI technology continues to develop within educational settings.

The sustainability of the program is directed toward encouraging continued independent practice, further development of AI-assisted Indonesian language learning materials, and broader integration of responsible AI use into PBSI academic activities. The experiences gained through PBSI AI-Lab provide participants with a foundation for utilizing AI creatively, critically, and responsibly while preparing for technology-oriented educational environments.

Conclusion

The PBSI AI-Lab program addressed the limited AI literacy and practical experience of prospective Indonesian language teachers in utilizing artificial intelligence for educational purposes. The program provided an integrated series of activities consisting of Artificial Intelligence Literacy Training, Practical Training on AI Utilization for Teaching Materials, and Mentoring on AI Application and Ethics.

The Artificial Intelligence Literacy Training provided participants with an understanding of basic AI concepts, generative AI, its potential applications, and the challenges associated with its use in Indonesian language education. The Practical Training enabled participants to formulate prompts and develop AI-assisted teaching materials, learning activities, writing tasks, discussion prompts, and assessment instruments. The Mentoring activity supported participants in reviewing, refining, and contextualizing AI-generated outputs while emphasizing verification, originality, transparency, data protection, and human judgment in educational decision-making.

The implementation indicators were reflected in participants' ability to explain basic AI concepts, formulate more specific prompts, produce AI-assisted instructional materials, revise AI-generated content, and recognize ethical principles in AI use. The

activities also provided participants with practical experience that can be applied independently in future teaching preparation.

The program is expected to continue through independent practice, further development of AI-assisted Indonesian language learning materials, and integration of responsible AI use into PBSI academic activities. Continued mentoring and peer sharing can support the sustainability of the program and strengthen the readiness of prospective Indonesian language teachers to use AI creatively, critically, and responsibly.

Acknowledgment

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