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INTEGRATION OF DIGITAL LITERACY AND LANGUAGE LEARNING THROUGH AI APPLICATIONS FOR ELEMENTARY SCHOOL TEACHERS

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Abstrak:

Kebutuhan literasi digital di kalangan guru dan siswa sekolah dasar saat ini semakin mendesak, seiring berkembangnya teknologi dan perubahan metode pembelajaran. Literasi digital tidak lagi sekadar kemampuan menggunakan perangkat, tetapi bagaimana teknologi dimanfaatkan secara bermakna dalam pembelajaran bahasa. Penguatan literasi digital di SD memungkinkan guru dan siswa mengolah materi sulit menjadi lebih mudah dipahami. Studi empiris oleh Nurhidayah & Wibowo [2] menunjukkan bahwa penggunaan bahan ajar berbasis digital seperti *e-book* cerita rakyat memberi dampak positif seperti siswa memperoleh pengalaman belajar baru dan bahkan siswa tanpa ponsel dapat ikut mengakses materi digital melalui sekolah. AI dapat meningkatkan kualitas pembelajaran di SD melalui personalisasi materi, evaluasi otomatis, dan pengembangan keterampilan abad ke-21 pada siswa. Melalui PKM literasi digital, pelatihan pemanfaatan AI dalam pembelajaran bahasa, dan pendampingan implementatif guru tidak hanya dibekali kemampuan teknis, tetapi juga pedagogis untuk menciptakan materi ajar adaptif, menarik, dan sesuai kebutuhan siswa.

Kata Kunci: Literasi Digital; Pembelajaran Bahasa; Kecerdasan Buatan (AI)

Abstract:

The demand for digital literacy among elementary school teachers and students is becoming increasingly critical, reflecting technological advancements and evolving learning methods. Digital literacy now encompasses more than just the ability to operate devices; it involves the meaningful application of technology in language education. By enhancing digital literacy in elementary schools, teachers and students can engage with challenging material in more accessible ways. An empirical study by Nurhidayah &

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Wibowo highlights that the integration of digital teaching resources, such as e-books featuring folk tales, positively influences student learning experiences. Notably, even those students without smartphones can access these digital materials through their schools. Artificial intelligence can further elevate the quality of learning in elementary education by facilitating personalized material, enabling automatic assessments, and fostering essential 21st-century skills in students. Through digital literacy training, the use of AI in language instruction, and supportive mentoring, teachers gain not only the technical competencies but also the pedagogical expertise required to develop adaptive, engaging, and student-centered educational materials.

***Keywords**: Digital Literacy; Language Learning; Artificial Intelligence (AI)*

Introduction

Teachers in elementary schools today are confronted with increasingly complex professional demands due to the evolution of digital technology and shifting learning paradigms. Digital literacy skills have become essential competencies for teachers, enabling them to manage information, utilize digital devices, and effectively integrate technology into their pedagogical practices. However, these skills are not uniformly developed across various regions, particularly among teachers in clusters or elementary school teacher working groups (KKG SD), where they often remain at a low level

Initial observations and discussions with partner teachers reveal that while most elementary school educators recognize the significance of harnessing digital technology and artificial intelligence (AI) applications, they generally lack the practical skills necessary for implementation. Key barriers include insufficient training, limited technical support, and a scarcity of concrete examples of AI applications in language learning (such as reading, writing, listening, and speaking). Additionally, a limited understanding of digital ethics, information literacy, and AI security further complicates everyday teaching practices.

Moreover, many teachers are over 40 years old, making the adaptation to new technology a more prolonged process. While these educators possess significant pedagogical experience, they often lack familiarity with developing digital learning media, designing AI-based assessments, and utilizing tools such as ChatGPT, Diffit, QuillBot, and various material generators to enhance student literacy activities. These limitations result in a traditional approach to language learning, characterized by a lack of variety and an inability to meet the needs of students in the digital age.

Challenges related to partnerships are also apparent in the administrative aspects of education. Teachers struggle to create digital teaching modules, develop technology-integrated teaching materials aligned with the Merdeka Curriculum, and produce interactive resources that leverage multimedia content and AI. Conversely, schools are seeking innovative adaptive learning strategies to boost student motivation and ensure

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that learning remains relevant in today's modern world.

In light of these considerations, it is essential for elementary school teachers, as partners, to engage in capacity-building programs that include:

1. Basic and advanced digital literacy training,
2. Support in utilizing AI applications for language learning,
3. Opportunities to practice creating digital teaching materials and interactive media, and
4. Implementation and evaluation of AI-based learning through guided projects.

Through this professional development activity, teachers are expected to seamlessly integrate AI in an ethical, effective, and creative manner to enhance the quality of language learning in elementary schools. This program also addresses the partners' need to adapt to technological advancements while fostering the continuous professional growth of teachers.

Partner Issues

While elementary school teachers in the KKG (Teacher Working Group) have effectively fulfilled their teaching responsibilities, their proficiency in utilizing digital literacy and AI-based technology for language learning remains quite limited. Initial observations indicate that many teachers are not well-acquainted with AI applications that could be used to design teaching materials, create interactive learning media, develop automated assessments, or enhance the quality of literacy education in the classroom. This situation results in a conventional approach to Indonesian language learning that lacks diversity and fails to meet the needs of students in the digital age.

Limited proficiency in information technology significantly hinders teachers' ability to integrate AI into language learning. Many educators, particularly those over 40, struggle with operating digital devices, navigating AI platforms, and grasping the principles of AI as well as the ethical considerations for its safe and responsible use. Furthermore, teachers are often unaccustomed to developing digital teaching modules, AI-enhanced learning resources, or worksheets that incorporate tools like ChatGPT, Diffit, QuillBot, Canva AI, and other text and image generators.

Several factors contribute to the worsening of this condition, including teachers' lack of confidence in using new technologies, insufficient ongoing training, and the lack of intensive mentoring from universities or higher education institutions. Indeed, digital competence is a key indicator of teacher professionalism within the Merdeka Curriculum, particularly in language learning, which necessitates creativity, personalization, and the application of interactive media.

In addition to technical considerations, limited digital literacy also directly affects teachers' capacity to design literacy activities that are relevant to the digital landscape. Despite the potential of AI to enhance students' learning experiences and facilitate quick and accurate formative assessments, teachers have yet to fully embrace this technology in developing digital-based reading, writing, listening, and speaking activities.

In response to these challenges, it is evident that partners require comprehensive training, mentoring, and capacity building focused on digital literacy and the integration of AI in language learning. This will enable teachers to adapt to technological advancements and enhance the overall quality of classroom learning.

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Method

The MPBI (Master of Indonesian Language Education) program at Univet Bantara Graduate School has organized a socialization event to implement its community service initiative focused on integrating digital literacy and language learning through AI applications. This community service program has been warmly received by elementary school teachers in Sukoharjo Regency, who have expressed strong support for its implementation.

The program's execution is systematically structured through several interconnected stages, beginning with initial activities like program socialization and culminating in follow-up actions after its completion. These stages are designed to ensure that teachers not only participate in training but are also empowered to independently and sustainably apply AI-based technology in Indonesian language learning. A participatory and capacity-building approach is at the core of this initiative, positioning teachers as the primary subjects in the technology learning process.

The first stage involves disseminating the community service program, which aims to provide schools and teachers with a foundational understanding of the urgency of digital literacy and the advantages of integrating AI applications into Indonesian language learning. This dissemination occurs through face-to-face meetings that include the principal, the curriculum coordinator, and all Indonesian language educators or classroom teachers teaching the language. During this stage, the community service team outlines the program's background, the issues identified by the partners, the objectives and benefits of the initiative, as well as the planned activities for the community service period. Moreover, this socialization effort aims to align perceptions, foster partner commitment, and ensure that all teachers clearly understand their roles within the program. Additionally, an initial assessment of teachers' digital literacy skills is conducted through a pre-test, which helps establish a baseline for the partner teachers' digital competencies, ultimately aiding in the design of more relevant and needs-based training activities.

The second stage involves the implementation of digital literacy training and the utilization of AI applications, which are central to the activities aimed at enhancing teacher capacity. This training is delivered through a hands-on workshop approach, allowing teachers to learn through experience, exploration, and real-life simulations. The training materials focus on two key areas: (1) basic digital literacy, encompassing an understanding of digital concepts, digital security, device navigation, and online application management; and (2) AI technology literacy, which includes the use of tools such as ChatGPT, Gemini, Copilot, Canva AI, Quizizz AI, Worksheet AI, and various content generators that assist teachers in designing learning experiences. The training not only covers the use of these applications but also emphasizes their integration into pedagogical tasks, such as developing AI-based lesson plans, creating digital teaching materials, producing interactive media, and designing learning assessments. Instruction is provided through demonstrations, independent practice, case discussions, and technical guidance. Additionally, teachers receive digital modules as a resource to help them independently review the training content.

The third stage involves the application of AI technology in creating tools for Indonesian language learning. Following their training, teachers are tasked with utilizing the skills they've developed to produce AI-based educational resources tailored to their specific

subjects. At this stage, each teacher is required to compile a minimum of one lesson plan, one digital worksheet, and one innovative learning medium utilizing AI applications. The service team offers examples of effective prompts to assist teachers in attaining relevant and high-quality AI-generated content. Moreover, teachers are encouraged to incorporate local contexts, cultures, and the unique characteristics of their students into each educational product. This application of technology in designing teaching tools aims to bolster teachers' confidence by demonstrating the tangible benefits of AI in enhancing time efficiency, material quality, and creative instruction. Additionally, this stage ensures that the training goes beyond theoretical knowledge and progresses toward the development of tangible learning materials for classroom use.

The fourth stage involves mentoring the implementation of AI-based learning in the classroom. This mentoring takes place intensively over several weeks to ensure that teachers are fully capable of integrating technology into various Indonesian language learning activities. The support provided includes regular consultations, technical guidance, assistance with application usage, and classroom observations. Teachers receive help in executing the pre-designed learning activities, which encompass preliminary tasks, material presentation, student engagement using AI-based media or tools, and assessment of learning outcomes. Additionally, the community service team facilitates reflection sessions after each learning encounter to evaluate what was effective, identify challenges, and develop improvement strategies for future sessions. In this context, mentoring serves as a strategy to address psychological or technical barriers often encountered by teachers, particularly those who are not familiar with technology or those over 40 years of age. With direct guidance, teachers have a safe space to learn, experiment, and enhance their competencies.

The fifth stage involves a comprehensive evaluation of program implementation to assess the effectiveness of community service activities. This evaluation is conducted by collecting both quantitative and qualitative data, including digital literacy post-tests, assessments of learning tools created by teachers, observations of AI-based learning in the classroom, and reflective interviews with educators. The results from the pre-test and post-test are analyzed to gauge the improvement in digital literacy attained by teachers after their participation in the program. Furthermore, learning tools are evaluated based on their completeness, creativity, relevance to the curriculum, and the accuracy of AI integration. Classroom observations offer insights into how effectively teachers can implement technology-based learning and how students respond to it. This evaluation aims not only to determine the program's success rate but also to provide recommendations for future improvements for schools and community service teams engaged in similar initiatives.

The final stage is program sustainability, a crucial aspect of ensuring that the impact of community service extends beyond the duration of the activities. Achieving program sustainability involves establishing a digital learning community for teachers, which acts as a collaborative platform for sharing best practices, posing questions, and independently enhancing competencies. This community is facilitated through accessible platforms such as WhatsApp, Telegram, or Google Classroom. Initially, the community service team plays a passive role for the first few months, fostering discussions and providing supplementary materials before the community begins to function autonomously. Alongside the community, digital modules, video tutorials, and device templates are also made available.

The insights gained during the program can continue to be utilized by teachers in their everyday instruction. Additionally, sustainability is reflected in follow-up collaboration plans, including advanced training, further development of digital media, or support in preparing publications for teachers. Ultimately, the goal is for the program's sustainability to cultivate a proactive school culture in leveraging digital technology and AI in education, enabling teachers to adapt to advancements in educational technology and enhance the quality of the learning process in elementary schools.The final stage is program sustainability, a crucial aspect of ensuring that the impact of community service extends beyond the duration of the activities. Achieving program sustainability involves establishing a digital learning community for teachers, which acts as a collaborative platform for sharing best practices, posing questions, and independently enhancing competencies. This community is facilitated through accessible platforms such as WhatsApp, Telegram, or Google Classroom. Initially, the community service team plays a passive role for the first few months, fostering discussions and providing supplementary materials before the community begins to function autonomously. Alongside the community, digital modules, video tutorials, and device templates are also made available. The insights gained during the program can continue to be utilized by teachers in their everyday instruction. Additionally, sustainability is reflected in follow-up collaboration plans, including advanced training, further development of digital media, or support in preparing publications for teachers. Ultimately, the goal is for the program's sustainability to cultivate a proactive school culture in leveraging digital technology and AI in education, enabling teachers to adapt to advancements in educational technology and enhance the quality of the learning process in elementary schools.

The training activities were conducted in a structured manner, encompassing both theoretical and practical components. A pre-test was administered to evaluate the participants' initial knowledge of AI-based technology, helping to outline their learning objectives. This initiative included a lecture method for material delivery, interactive discussions during question-and-answer sessions on the integration of digital literacy with AI technology, mentoring for clinical applications, practical exercises with digital applications, and simulations focused on practicing material related to these applications.

The structured training incorporated the following methods:

1. Lectures presenting material along with question-and-answer sessions addressing digital literacy integration and AI-based language learning.

2. Mentorship for clinics, facilitating the practical use of AI-based digital applications in educational contexts.

3. Simulations to practice the usage of AI-based digital applications.

The community service effort was led by Dr. Veronika Unun Pratiwi, M.Pd., who possesses extensive knowledge in language teaching. The team consisted of expert members, including Dr. Nurnaningsih, M.Hum., a specialist in linguistics; Prof. Dr. Farida Nugrahani, M.Hum., an expert in education and the teaching of Indonesian literature and language; Dr. Mukti Widayati, M.Hum., who specializes in literature, language, and teaching; and Dr. Benedictus Sudiyana, M.Pd., an authority in education and the teaching of the Indonesian language. Additionally, two students from the MPBI Study Program participated in the training implementation.

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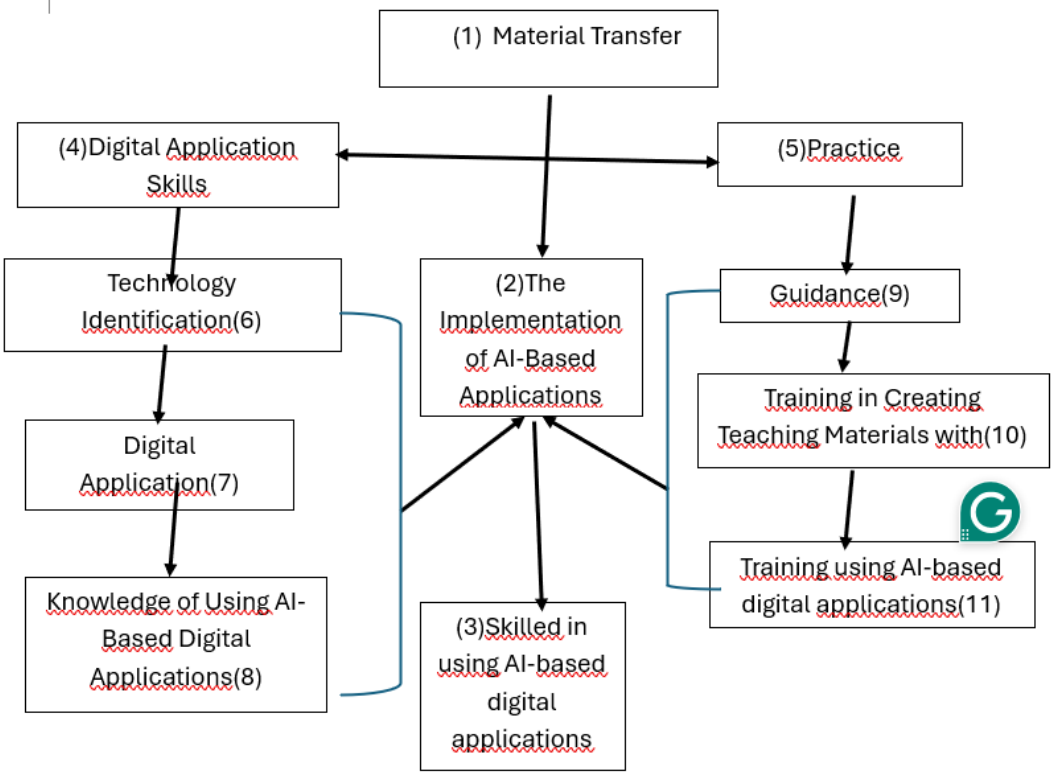
The description of science and technology to be implemented with partners is as follows:



Picture 1; The Implementation of Science and Technology

The explanation of the picture;

1. The material transfers to the partner
2. The implementation of technology based on AI
3. The skilled that use digital technology based on AI
4. The application of digital technoly in teaching learning process
5. The teachers practice use that technology
6. How to identify the technology
7. The apllication of digital technology by teachers
8. The teachers'knowledge using the digital technology
9. The team giving guidance and monitoring the teachers' activities using that digital technology
10. Teachers can create the material for teaching using that technology

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11. The training using AI by the teachers

The process for training in the integration of AI-based digital literacy is outlined in the following chart. This community service initiative begins with the distribution of materials. Teachers receive resources and guidance on utilizing digital applications effectively. These materials encompass theoretical knowledge pertaining to the use of AI-driven learning media. The next phase involves practical training, starting with an introduction to various AI-based digital applications. During this session, teachers engage in hands-on practice with these applications. They will create instructional materials using the digital tools provided. Ultimately, teachers are expected to independently implement these digital applications in their classroom teaching.

Result

Following the community service team's activities, the team produced several outputs in the form of scientific articles authored by its partners. These outputs stemmed from efforts to enhance the professional capacity of elementary school teachers in integrating digital literacy and language learning through the use of artificial intelligence (AI)-based applications. Teachers participating in the training are anticipated to gain both conceptual understanding and practical skills in employing AI applications as a means to support innovative and contextual Indonesian language learning tailored to the specific characteristics of elementary school students. The primary output consists of the development of Indonesian language learning tools grounded in digital literacy, which include teaching modules, digital teaching materials, and student worksheets (LKPD) designed to utilize AI applications in a guided and ethical manner.

Additionally, this community service initiative resulted in the creation of digital learning media products, including prototypes of Indonesian language teaching resources based on artificial intelligence (AI). These products feature interactive digital stories, reading comprehension exercises, and straightforward writing guides, all designed to be child-friendly and aligned with the elementary school curriculum. Teachers also developed learning designs based on best practices that incorporate AI to enhance language skills, particularly in reading and writing, while still recognizing the essential role of teachers as primary facilitators. Another significant outcome was an enhancement in teachers' digital literacy, as evidenced by their ability to critically and responsibly select, utilize, and evaluate AI applications in a manner that promotes character development.

As a measure of program sustainability, this community service initiative produced documentation of activities, including guidelines for utilizing AI applications in language learning within elementary schools, along with reports on classroom implementation practices. These resources are intended to serve as a reference for fellow educators and education stakeholders, facilitating the development of Indonesian language learning that is responsive to advancements in digital technology while promoting an inclusive and sustainable transformation of basic education.

Discussion

The next phase of this community service initiative aims to enhance the sustainability of the program while broadening the impact of digital literacy and AI applications in language learning within elementary schools. During this stage, the community service team will offer

additional support to participating teachers in the integration of AI-based learning tools and media in their classrooms. This assistance will include supervision, reflective discussions, and learning clinics designed to help teachers navigate both technical and pedagogical challenges that may arise throughout the implementation process.

Following this, monitoring and evaluation of the implementation of literacy-based language learning through AI applications were conducted by gathering data on learning practices, as well as feedback from teachers and students, alongside the outcomes of language acquisition. The findings from this monitoring served as a foundation for refining teaching modules, digital worksheets, and guidelines for using AI applications, ensuring they are more contextual and tailored to the needs of elementary school teachers. At this stage, the establishment of a teacher learning community was also planned as a platform for sharing effective practices and innovations in AI-driven learning. To bolster the output, the community service team will compile documentation of best practices and community service articles for publication in journals or national seminars. This next phase aims to ensure the program's sustainability, enhance teachers' autonomy in the judicious use of AI technology, and broaden the impact of community service on improving the quality of language learning in elementary schools.

This community service activity demonstrates that integrating digital literacy and language learning through artificial intelligence-based applications can enhance elementary school teachers' understanding and skills in crafting innovative, contextual, and adaptive Indonesian language instruction that aligns with technological advancements. Teachers acquire not only conceptual knowledge but also practical experience in responsibly utilizing AI applications to support students' language competencies. Therefore, it is recommended that similar initiatives be conducted continuously, engaging a broader range of participants and supported by intensive mentoring, so that the implementation of AI technology in language learning can be optimized and focused on strengthening students' character.

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