

Enhancement of artificial intelligence learning using Quizizz AI for SMA Negeri 3 Semarang teachers

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ARTICLE INFO:

Received: 2025-08-01
Revised: 2025-09-11
Accepted: 2025-10-14
Published: 2025-11-30

Keywords:

Artificial intelligence,
Learning, Quizizz AI

ABSTRACT

Digitising learning is a strategic approach to preparing students for the digital era, including through the use of AI. As facilitators, innovators, and mentors in the learning process, teachers at SMA Negeri 3 Semarang require digital competencies and the ability to effectively integrate technology into their teaching to make it more interactive, flexible, and tailored to students' needs. AI learning enhancement training was provided to 25 teachers over two days, focusing on using AI in the Quizizz application to improve AI-supported learning. The activities were carried out using the following methods: (1) Socialization; (2) Training; (3) Technology implementation; (4) Mentoring and evaluation; and (5) Program sustainability. Based on the training session, teachers demonstrated a high level of engagement, with 88 percent (22 participants) completing all tasks. Teachers actively created Quizizz accounts, developed quizzes, and used Quizizz AI features. A subsequent questionnaire indicated that 18 teachers who previously lacked understanding of Quizizz AI and 15 who felt unable to create and edit questions became proficient. Thus, the training had a positive impact on enhancing teachers' digital competencies and readiness to implement AI-based learning.

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How to cite: Al Adawiyah, A., Handayani, S., Fitrasah, R., Kurniawati, N., & Rohman, Y. L. (2025). Enhancement of artificial intelligence learning using Quizizz AI for SMA Negeri 3 Semarang teachers. *Abdimas: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang*, 10(4), xxx-xxx. <https://doi.org/10.26905/abdimas.v10i4.15978>

1. INTRODUCTION

Technology has become a central element in contemporary learning processes for its strong potential to support personalized learning by providing diverse and engaging forms of instructional media (Dewi et al., 2024). In educational settings, technology assists teachers in organizing learning activities and designing more practical and in-depth learning experiences. Teachers who integrate technology into their instruction can strengthen their own digital competence while also supporting students in developing digital literacy skills. In line with the concept of learning in the Smart Society 5.0 era, the integration of technology enables learning environments that are adaptive, collaborative, and sustainable. Accordingly, educators are encouraged to take advantage of three key technological components in the Society 5.0 era, namely the Internet of Things in education, the use of Virtual and Augmented Reality in learning, and Artificial Intelligence to help identify and respond to students learning needs (Sakiinah et al., 2022).

Within the Society 5.0 framework, teachers are expected to use advanced technologies to create learning environments that support the development of twenty first century skills, including creativity, critical thinking, communication, and collaboration (Hamzah & Khoiruman, 2022). This view aligns with Tjahyanti et al. (2022), who argue that schools should make effective use of emerging technologies that simplify the work of both teachers and students. Educational institutions can employ digital applications or learning media that automate tasks such as providing feedback, selecting suitable learning materials, and aligning instruction with student needs (Hakim, 2022). In Society 5.0 oriented learning, Artificial Intelligence is a key technology that supports teachers by automating routine tasks, offering feedback, and adapting learning content to individual learners. Artificial intelligence has strong potential for future educational development (Chassignol et al., 2018). It refers to computer systems designed to replicate aspects of human intelligence, including reasoning, decision making, visual perception, speech recognition, and language processing (Ma et al., 2014; Karyadi, 2023). Through the use of artificial intelligence in learning, teachers can monitor student progress in real time and adjust instructional strategies based on individual learning needs (McArthur et al., 2005).

SMA Negeri 3 Semarang is a leading public high school in Semarang City that actively integrates technology into the learning process. As an International Standard National School in Central Java, SMA N 3 Semarang, also known as Smaga, is supported by adequate educational facilities. The school has implemented various forms of technology-based learning to enhance educational quality and student competence. Based on reports from online news sources, these initiatives include the implementation of P5 activities using Arduino technology (Kelana, 2024), the use of H5P interactive learning media (Harjito, 2023), and the evaluation of student achievement through technology-based learning practices (Arief, 2024). These innovations resulted from earlier training activities conducted through community service programs by lecturers from Universitas Negeri Semarang. This indicates that Smaga is open to continuous efforts aimed at strengthening the digital competencies of both teachers and students. In line with its motto, "A Research School to Nurture Spectacular Generations," the school demonstrates a strong commitment to using technology to prepare graduates for challenges in the digital era.

In accordance with the Ministry of Primary and Secondary Education efforts to promote digital transformation, artificial intelligence can further strengthen technology integration in learning at Smaga. Information obtained through a direct interview with Saroji, S Pd, M Pd, Vice Principal for Academic Affairs, revealed that both teachers and students still have limited understanding of effective AI use in learning. Training related to artificial intelligence remains minimal. According to him, structured AI training is needed to support teachers in improving learning effectiveness and to enhance professional development within the school environment. However, such training has not yet been implemented due to limited resources.

AI can support teachers in improving learning effectiveness through tools that enable personalization, automation, and data driven learning management. Without adequate training, however, teachers may face difficulties in fully utilizing the potential of AI. In the Smaga context, the use of technology in learning has not yet been optimized, as illustrated in Figure 1, which shows that some learning activities still rely mainly on textbooks. In contrast, students often use mobile devices to support their understanding of learning materials. This gap highlights the need for AI assisted learning technology training for teachers so they can keep pace with students' technological practices. As educators, teachers are responsible not only for delivering content but also for guiding students in the ethical use of technology and artificial intelligence and in understanding its broader social implications (Taufik & Rindaningsih, 2024).

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Figure 1. Learning activities in one of the classes at SMA Negeri 3 Semarang

Saraji, S Pd, M Pd. stated in an interview that SMA Negeri 3 Semarang requires targeted training to strengthen teachers' digital competence, particularly in the use of AI assisted learning technology. At present, the school does not have access to resource persons who can provide such training, which makes Smaga highly receptive to external support in this area. In response, a training program on the use of AI for learning was organized for teachers in the Smaga environment. This initiative was designed following an assessment of partner needs, especially those related to human resources, which revealed that teachers require structured guidance in applying AI for instructional purposes. The main focus of this activity is therefore to address teachers limited understanding of AI by providing comprehensive training on basic AI concepts and their practical use in teaching.

Quizizz is a learning application that utilizes gamification to create interactive and engaging classroom experiences (Sukmawaty & Setiarini, 2023). Suitable for face-to-face classroom settings or as asynchronous learning tasks completed by students (Asria & Putrie, 2021). One of its key features is Quizizz AI, which assists educators in developing learning content by automatically generating questions based on selected topics (Mas'ud et al., 2024). This AI feature addresses common challenges faced by teachers by automating question development, offering adaptive feedback, and supporting differentiated learning. As such, Quizizz AI was selected as suitable training material for Smaga teachers, as it allows them to understand fundamental AI concepts through direct application in teaching. The use of Quizizz AI also contributes to improving teacher competence through a structured capacity building process, including the ability to create, modify, and evaluate AI generated assessment items. In classroom practice, this approach supports more frequent learning activities and enables more efficient and timely assessment that enhances student understanding.

The application of Quizizz in education is one of the efforts teachers undertake to implement interactive learning. This topic is also referenced in similar research and community services. As a result of the research on the perception of Quizizz as an AI-based interactive quiz media, students consider Quizizz to be a practical interactive quiz tool, providing 91 percent convenience in the quiz process due to its flexibility. Quizizz also has an up-to-date value of 90 percent because it has contemporary technology features, such as artificial intelligence features" (Safrizal AR, 2024). Another research states that one of the triggers for learning motivation in the use of Quizizz is that there is gamification in it where the quizzes work on the questions given can be randomized so that there can be no cheating on each other, so that this is a motivation to study seriously in order to be able to answer the questions given so that the grades obtained are more satisfactory (Citra & Rosy, 2020). The experience of students working on evaluation questions using AI Quizizz media in paper mode has also proven to be effective in improving their understanding of the learning material. This shows that the use of digital media such as AI Quizizz can be an effective tool in supporting the learning and evaluation process (Nafi'ah et al., 2024).

In addition to research evidence, several community service initiatives also support efforts to improve teachers' competence in using instructional technology through Quizizz. [Al Adawiyah et al. \(2023\)](#) reported that after three days of training, teachers were able to understand the learning materials well through direct practice using Quizizz. Similarly, [Al Adawiyah et al. \(2024\)](#) found that teachers' understanding of Quizizz features increased by 85 percent, representing a 55 percent improvement from the initial level of 30 percent prior to training. These findings indicate that Quizizz training effectively enhances the efficiency and effectiveness of technology-based learning.

These references provide empirical support that Quizizz training functions as an effective means of transferring science and technology to teachers, enabling the implementation of technology-integrated learning in line with national digitalization policies. The novelty of this service program lies in its focus on strengthening the use of artificial intelligence, one of the latest features of Quizizz, which supports lesson preparation through automated question generation and personalized feedback. Unlike previous Quizizz-focused training, this program positions Quizizz AI as a learning medium to help teachers understand basic AI concepts and their practical application in educational settings.

Training on the use of Quizizz AI addresses the need of Smaga teachers to apply AI technology in learning activities. This program supports teachers in organizing technology-assisted instruction and deepening their understanding of AI applications in education. In general, the training aims to enhance the digital competence of Smaga teachers, while specifically responding to challenges related to integrating AI into teaching and learning processes. The urgency of this training lies in encouraging teachers to become more adaptive to AI-based learning technologies and improving their readiness to face the demands of twenty-first-century education. It also contributes to strengthening Smaga's reputation as a leading school that actively supports technology-enhanced learning. To support effective implementation, the program provides learning materials and facilities including a PDF manual for using Quizizz and its AI features, access to a Quizizz account with premium features, digital training certificates, and a post-training support system in the form of an online discussion forum for sharing experiences and best practices in using Quizizz.

2. METHODS

Teachers play a crucial role in preparing future generations by supporting students' self-development and shaping attitudes and behaviors that promote social competence in society ([Tihul, 2023](#)). With the support of artificial intelligence, learning can become more effective through adaptive and personalized experiences that respond to individual student needs and enhance cognitive development. Compared to conventional approaches, teachers who use AI are better able to provide efficient and targeted learning support ([Kena et al., 2015](#)). Quizizz AI recommends questions based on students' abilities and learning needs, and training enables teachers to understand how to use these features to support differentiated instruction.

This service activity aims to provide training that strengthens the use of artificial intelligence in learning through Quizizz AI. Teachers at SMA Negeri 3 Semarang serve as the target participants of the program. The implementation follows the community service framework established by the Directorate of Research, Technology, and Community Service, which includes socialization, training, technology application, mentoring and evaluation, and program sustainability ([Puspaputri et al., 2024](#)). The specific activities are presented in the following table.

The training was conducted at SMA Negeri 3 Semarang over two days, with a total duration of four hours. This schedule was designed to ensure that participants could understand the training

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materials thoroughly while explore the features of Quizizz at the same time. The training content was developed by adapting national level materials provided by the Quizizz team, ensuring that the materials were comprehensive and covered a range of Quizizz features. The selection of training participants was determined through discussions with the Vice Principal and took into account teachers' availability and capacity, including age and their ability to participate fully until the completion of the program.

Table 1. Stages of implementation of service activities

Stages of Activity	Methods
Two-day training with material sharing: Day one - Introduction to Quizizz, creating an account, and changing languages - Explore public quizzes and new question types - Create quizzes and use media in Quizizz - Host live quizzes and homework - Understanding game settings Day two - Create a quiz with Quizizz AI - Host a Paper Mode quiz - Analysis of report results	Socialization We visited SMA Negeri 3 Semarang to conduct training socialization. Together with the Vice Principal of the Academic Section, we agreed on the implementation time and the number of teachers who were able to take part in the training. Training We provide material in the form of tutorials on using Quizizz and Quizizz AI features. Application of technology Participants access and explore the use of Quizizz and Quizizz AI features. Mentoring and evaluation Assistance and observe participants applying the Quizizz and Quizizz AI features. Program sustainability Participants carry out assignments related to the use of Quizizz and Quizizz AI features.

The sustainability of the post-training program was implemented through assignment-based evaluations aligned with the material covered in each session, including: (1) Creating a Quizizz account; (2) Developing new quizzes and hosting them in live or homework mode; and (3) Creating quizzes using Quizizz AI. Program evaluation employed a mixed-method approach, consisting of pre- and post-training questionnaires, observation of practical sessions, and analysis of participants' assignments. Prior to the training, teachers completed a questionnaire to assess their initial understanding and ability to use Quizizz and Quizizz AI features. At the end of the program, the same questionnaire was administered to measure changes in knowledge, perceived competence, and readiness to integrate Quizizz AI into classroom practice.

During the hands-on sessions, teacher performance was observed using outcome-based indicators, including: (1) The ability to create a Quizizz account and access Quizizz AI; (2) The ability to generate AI-based quiz questions from documents, videos, or written instructions; (3) The ability to edit and refine AI-generated questions to align with learning objectives; and (4) The ability to conduct quizzes in various modes (live, homework, or paper mode) and analyze the resulting reports. Participants who completed all assigned tasks and demonstrated improvement between the pre- and post-test results were considered to have achieved the expected level of competence in utilizing Quizizz AI for assessment and learning. An additional sustainability effort involved distributing a guidebook on Quizizz features to support teachers in operating the platform and to minimize potential misconceptions related to its use. Figure 2 presents a flow diagram illustrating the problem-solving methods applied in the service activities.

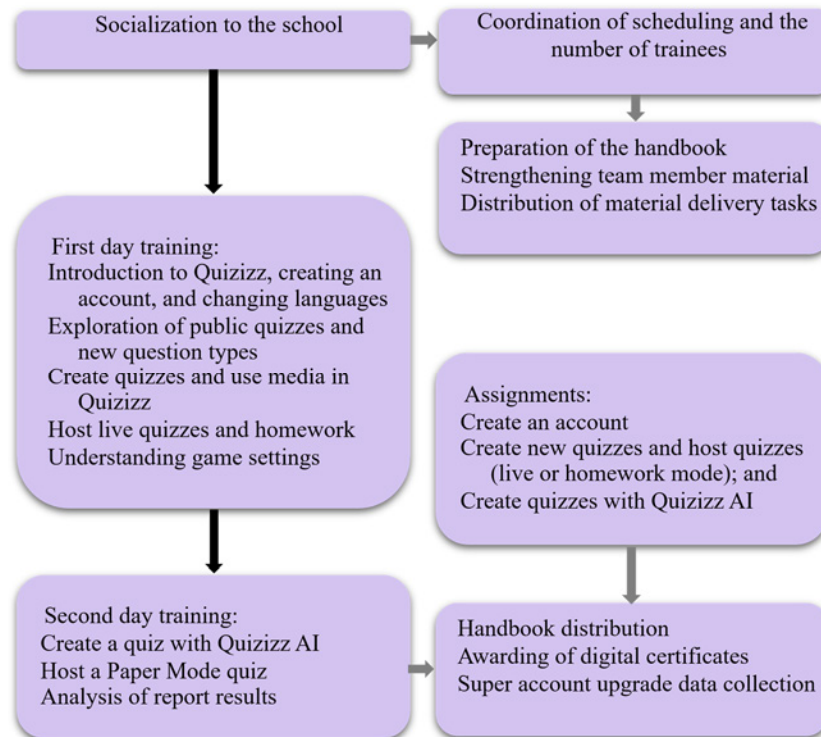


Figure 2. Flow diagram of service activities

3. RESULTS AND DISCUSSION

After careful planning, the coordination and implementation of the service were carried out effectively and ran smoothly. The service was delivered through a two-day training program conducted in the school environment. Teachers, as the main participants, took part enthusiastically by practicing various Quizizz features, with particular emphasis on AI-based functionalities. Through these hands-on activities, the training helped strengthen teachers' capacity to organize learning by utilizing artificial intelligence. The following section presents the results and discussion of the implementation of Quizizz as an AI-assisted learning service for teachers at SMA Negeri 3 Semarang.

Results

The training on the use of the Quizizz AI feature was conducted over two days and attended by a total of 25 participants, comprising teachers from SMA Negeri 3 Semarang. With a consistent attendance rate of 100 percent, participants reflect a strong interest in participating in training. Participants also demonstrated a high engagement rate of 88 percent, with 22 participants completing all tasks. Liveliness is demonstrated during practical activities through assignments such as creating a Quizizz account, designing new quizzes, hosting quizzes in both live and practice modes, and creating quizzes with Quizizz AI.

The pre- and post-training assessments demonstrated an increase in knowledge, particularly in teachers' understanding of Quizizz and Quizizz AI features. On the first day, participants successfully created an account using belajar.id account, create new quizzes with various question types, and play quizzes in both live and homework mode. By the end of day two, participants managed to design an

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AI-powered quiz with multimedia elements and varying levels of difficulty. The post-training survey also revealed that most teachers rated Quizizz as “highly impactful” for personalized learning, particularly its potential to save time on assessments, as illustrated in the Figure 3.

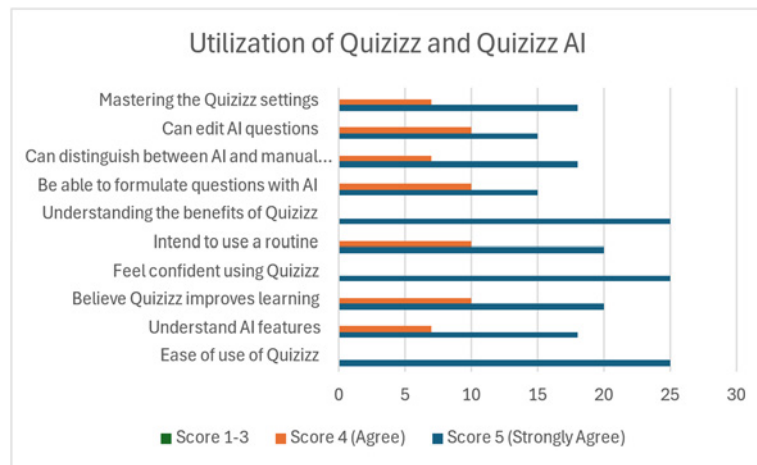


Figure 3. Quizizz AI utilization evaluation questionnaire responses

Figure 3 indicates that the majority of teachers provided very positive responses to the use of Quizizz and its AI features, reflecting a high level of readiness and willingness to integrate Quizizz into their ongoing teaching practices. Nevertheless, several indicators related to technical knowledge and competence in using AI features show varying results. This finding suggests that, although teachers have demonstrated strong interest and basic capability in utilizing these features, further reinforcement is required to optimize their technical proficiency. Therefore, training remains an appropriate and strategic effort to strengthen teachers’ motivation and readiness for more advanced digital competency development.

Discussion

The service activity began with preparatory coordination to obtain approval and determine the training schedule. The school principal, represented by the Vice Principal for Academic Affairs, welcomed and fully supported the implementation of the program, considering the relevance of the training materials to the competencies required by teachers, particularly the use of artificial intelligence in deep learning. Coordination with the Vice Principal resulted in the establishment of the training schedule, which was conducted on June 18–19, 2025. The number of participants was adjusted to the available budget, with a total of 25 teachers selected to participate. The school supported the activity by compiling the list of participants, providing training facilities and venues, and instructing teachers to bring their laptops to meet the technical requirements of the training.

The implementation of training on the use of Quizizz AI features was conducted over two days, comprising activities that included explanations of Quizizz and its AI features, accompanied by tutorials and mentoring practices. The training team, consisting of five lecturers, acted as presenters and four students as companions to accompany the teachers during the practice of using Quizizz. On the first day, training is provided with materials that include an introduction to Quizizz, creating an account, exploring public quizzes, creating quizzes, and organizing live quizzes, homework, or paper mode.

Before providing the material, participants complete a questionnaire that contains questions about their knowledge and understanding of Quizizz and its AI features. From the results of the questionnaire responses, data was obtained indicating that 18 teachers did not understand the Quizizz AI feature, and 15 teachers were unable to compile and edit questions using the Quizizz AI feature. Even so, teachers responded positively to understanding and using Quizizz in their learning, indicating a need to provide training on the application of Quizizz features, especially Quizizz AI.

As shown in Figure 4, the training sessions were tailored to the teachers' prior experience with Quizizz. On the first day, most teachers were able to follow and understand the material easily, as they had been familiar with Quizizz since the implementation of online learning. Therefore, the introductory material was not delivered in depth. In the session on creating an account, most teachers already had Quizizz accounts, although many had not yet used their *belajar.id* accounts to log in. Participants were guided to reconfigure their accounts using *belajar.id*, a facility provided by the Ministry of Primary and Secondary Education (Kemendikdasmen) that has collaborated with Quizizz and allows teachers to access features similar to a "super account."

In the public quiz exploration session, teachers were already accustomed to sharing quizzes with students using public quizzes available in the Quizizz question bank. As a result, this material was delivered only as a brief review. In contrast, the "Making a Quiz" session required more detailed explanation, as most teachers had previously relied mainly on multiple-choice questions and were unfamiliar with other question types. Quizizz offers 19 question types, including Multiple Choice, Short Fill, Analysis, Interactive Video, Image Answer, Video Answer, Audio Answer, Essay, Survey, Word Cloud, Match, Drag and Drop, Marker, Categorize, Reorder, Drop-down, Labeled Image, Math Response, and Math Graph. Explaining the preparation and use of these question types motivated teachers to design quizzes that extend beyond conventional multiple-choice formats.

In the final session, teachers were guided to host quizzes in both live and homework modes to understand the differences between the two. Most teachers had previously used only live mode. Through guided practice, they became familiar with the workflow and characteristics of homework mode. The paper mode feature was introduced at the end of the second day, adjusted to the available time and participants' readiness to practice its use.



Figure 4. First day training activities

On the second day, the training focused on advanced materials, including creating quizzes with Quizizz AI, developing interactive presentations, and analyzing report results. After teachers understood the application of core Quizizz features, particularly the creation of quizzes using the 19 available question types. The training proceeded to the AI-assisted quiz creation feature, namely Quizizz AI.

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As the latest feature in Quizizz, Quizizz AI supports teachers in generating quizzes more efficiently by automating question creation based on subjects and instructional needs. Similar in concept to the public quiz feature, Quizizz AI enables teachers to create, customize, and refine quizzes through artificial intelligence, such as generating questions from topics or texts, suggesting improvements to existing items, classifying question difficulty levels, integrating multimedia elements, and adapting content to students' learning needs. Overall, Quizizz AI streamlines quiz preparation, saves teachers' time, and supports more engaging and effective assessments.

As illustrated in Figure 5, most teachers were still unfamiliar with Quizizz AI and had not used this feature extensively prior to the training. Therefore, the "Creating Quizzes with Quizizz AI" session was delivered with in-depth explanations and hands-on tutorials. Teachers were guided to generate questions by uploading documents, including teaching materials and existing question banks, as well as by using YouTube videos, websites, online articles, and written topics, prompts, or quotations aligned with instructional objectives. Throughout the session, participants practiced directly while receiving assistance in operating Quizizz AI to produce diverse and detailed quiz items tailored to their preferences and classroom needs.

In addition, the session on "Making Interactive Presentations" revealed that teachers had not previously utilized this feature as a learning medium. Quizizz Interactive Presentations offer a more engaging alternative to conventional presentation platforms by allowing quizzes to be embedded within the material delivery process. This interactivity enables students to actively participate in learning while the lesson is being presented, thereby increasing engagement and reinforcing understanding.

Additionally, the use of video media embedded in the slides appears intuitively on the students' screens, allowing them to manually control video playback. Similarly, when website page media are embedded in the slides, students can independently explore the linked web pages. The advanced features of this interactive presentation tool encouraged teachers to directly practice developing instructional materials using interactive presentation slides. Based on analysis of report results, teachers learned how to evaluate student performance after quizzes were completed. For Short Fill and Essay question types, teachers can manually adjust scores from 0 to 1 when a correct answer is marked incorrect by the system, or from 1 to 0 if a response is indeed incorrect. After receiving explanations and tutorials, teachers practiced analyzing student responses by reviewing completed quizzes and identifying potential scoring errors.



Figure 5. Second day training activities

In the closing session, teachers were invited to experience the paper mode quiz to gain an overview of quiz-based learning without the use of digital devices. This session was placed at the end of the training due to its longer duration compared to live or homework modes. Teachers showed high

enthusiasm for this activity, as it created a competitive classroom atmosphere in which students rushed to submit their answer sheets to be scanned by the teacher's device. This mode serves as an alternative to gadget-based learning and supports a more conventional classroom interaction while maintaining student engagement.

To conclude the training, teachers completed a post-training evaluation questionnaire to assess their understanding of the materials delivered over the two-day program. The results indicate a substantial improvement in teachers' competencies. A total of 18 teachers who initially reported limited understanding of the Quizizz AI feature, along with 15 teachers who were previously unable to compile and edit questions using Quizizz AI, were subsequently able to create and modify AI-assisted questions independently. These findings demonstrate that the training had a positive impact on enhancing teachers' digital competence and readiness to implement AI-based learning.

In contrast to previous studies and service programs related to Quizizz, which primarily emphasized motivation, perceived ease of use, or the utilization of standard features, this service activity places artificial intelligence at the core of the intervention. Teachers were trained to directly generate, refine, and analyze AI-powered questions derived from their own instructional materials. This focus represents the novelty of the service outcomes, as it extends beyond operating Quizizz as a game-based assessment platform and explicitly fosters teachers' artificial intelligence literacy through the intensive and practical use of Quizizz AI.

4. CONCLUSIONS AND RECOMMENDATIONS

Training on the use of Quizizz and its AI features for SMA Negeri 3 Semarang teachers contributes to strengthening artificial intelligence learning at the high school level, as part of support for the implementation of the deep learning curriculum. Using the Quizizz AI feature in learning, especially when preparing assessments, makes it easier for teachers to produce learning assessments more efficiently. By designing specific instructions and utilizing a variety of uploaded documents and media, teachers can enhance their ability to leverage artificial intelligence for learning. Based on the results of the two-day training, teachers were motivated and helped to understand and apply the use of the Quizizz AI feature. Teachers can create, modify, and play quizzes generated by Quizizz AI, utilizing various question types and multimedia elements that align with their subject matter. The training effectively achieves its goal of enhancing digital and AI-related pedagogical competencies, while also supporting teachers in integrating AI into classroom learning. To help teachers utilize Quizizz and Quizizz AI, a handbook is provided at the end of the second day of training. The guidebook is designed to provide an exploration of Quizizz features, enabling teachers to utilize each feature effectively. This guidebook is one of the forms of follow-up provided after the training activities end. The next follow-up effort is to upgrade the basic teacher account to a super account. Five of the most active and experienced teachers use Quizizz to enhance their accounts. The basis for this improvement is the best decision because experienced teachers, facilitated by super accounts, can become mentors for fellow teachers in the dissemination of Quizizz usage practices in detail, without being hindered by limited access. Accounts that have been upgraded are valid for one year, allowing for a long duration to be used for disseminating Quizizz usage practices.

In addition to the follow-up efforts outlined above, another suggestion for a follow-up plan is to provide regular assistance to help teachers overcome technical obstacles by establishing an online forum via Telegram. This forum serves as an open consultation space for discussing the use of Quizizz after training, encouraging teachers to integrate it into their learning further. Additionally, training in utilizing Quizizz and Quizizz AI can be replicated and adapted to meet the needs of teachers in other schools. This replication can be facilitated through subject-based teacher forums, such as MGMP, so

that Quizizz AI integration becomes part of a broader professional learning community rather than just a one-time activity. Schools and education offices can also make Quizizz AI training a routine part of their professional development program to ensure the continuous improvement of teachers' digital and AI-related competencies. Thus, this training can open up opportunities for teachers new to using Quizizz to understand better its use in learning, as well as have an impact on improving the digital competencies teachers need to support in-depth curriculum learning. In the next service, it is recommended to examine the impact of Quizizz AI-powered learning on student learning outcomes, differentiation practices, and the long-term integration of Quizizz AI in classroom learning.

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