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Learning Innovation for Aisyiyah Elementary School Teachers in Mataram City: The Development of AI-Generated Teaching Media

Triastama Wiraatmaja[1], Kharisma Naidi Warnanda Sabgini[2], Santi Prastiyowati[3]

University of Muhammadiyah Malang, Indonesia
[1] triastama@umm.ac.id, [2] kharisma.naidi@umm.ac.id, [3] prastyowati@umm.ac.id

Abstract

This community service program focuses on leveraging artificial intelligence (AI) to enhance teachers' competence at the Aisyiyah elementary level in Mataram city. The study aims to introduce an innovative teaching and learning tool: AI-generated teaching media. These media are designed to incorporate visually appealing graphics and contextually relevant contents align with the curriculum. The development process integrates advanced AI technologies to create customized content, age-appropriate materials, culturally relevant, and pedagogically effective media. The project employs a participatory approach, involving teachers in the design and evaluation phases to ensure that the media address the learning needs and preferences of the target audience. This program employed a qualitative methodology, including observations, tutorials, and focus group discussions, to evaluate the effectiveness of the AI-generated media in improving teachers' competence. Data were analyzed to determine how this innovative approach impacts teaching practices and learning outcomes. This initiative aligns with broader educational goals to incorporate technology as 21st century skills among young learners, and as ongoing attempts to make AI more engaging and accessible in Indonesia. This study is expected to be a replicable model, to demonstrate the potential of AI to revolutionize education, and to inform how innovative tools can transform traditional learning experiences.

Keywords: AI-Generated Teaching Media; Elementary School; Educational Technology; Learning Innovation

INTRODUCTION

Teaching English to primary school students aged 6-12 years old perceived as a crucial stage for their education and academic prowess. However, preparing teaching media to these primary school students would be more beneficial to enhance their language proficiency and cognitive skills if the teaching methods using various innovative approaches (Astutik et al., 2019; Kusumawardhani, 2020). Therefore, in this digital era, the use of technology or Artificial Intelligence (AI) in teaching and learning seen as one of innovative approach since AI holds significance potential which offers more innovative and interactive teaching experience that suits the students' diverse needs (Moukhlis et al., 2024; Tran & Nguyen, 2021). Integrating AI into primary school teaching and learning activities also raising students' attention and interest as well as improving the teachers teaching and innovation in teaching (Rathore et al., 2023; Fathoni, 2023). These AI-based innovations were able to be practically implemented by developing innovative teaching media, such as comic book and other interactive teaching media, to raise the interest and competence for both teachers and students in English subjects. This was due to the combined traits of visual and textual elements which able to elevate students' interest and understanding, introducing logical thinking, stimulating students creative thinking, which significantly relevant in learning dynamics in 21 centuries learning which emphasized on critical thinking and creativity. (More et al., 2019; Muyassaroh et al., 2019). AI

integrated teaching media bearing significance in English subjects to facilitate and accommodate teaching and learning between languages and language acquisition under the paradigm of bilingual students, the roles of teaching media which possessed textually and virtually attractive qualities effectively contribute to improve the student's literacy, language and vocabulary proficiency (Istighfaroh et al., 2022; Sari et al., 2021). The community service team chose SD Aisyiyah teachers under Pimpinan Dakwah Muhammadiyah (Muhammadiyah Regional Board) in Mataram City, West Nusa Tenggara. In this globalized and digitalized era, learning and teaching innovation was urgently needed to support the teachers' teaching competence and improving students' knowledge. Since all of the teachers were originally serving in Mataram city which located in Lombok Island in West Nusa Province, the most challenging difficulties was how to provide and to accommodate innovative and interactive teaching media in this remote area. This location was selected due the community service team initiative to introduce and to strengthened the use of AI in education which goals were to equipped the teacher's competence with latest innovation in education, as well as providing the students with innovative and interactive teaching media (Tran et al., 2021; Ng et al., 2023; Maznev et al., 2024). Therefore, the objectives of this program were to provide latest innovation in education by introducing AI to Aisyiyah Elementary Level school teachers ini Mataram city. The elementary school teachers who happened to join this workshop were chaperones by the community service team to develop teaching media with the assistance of AI; ChatGPT, Bing images, Copilot, and Gamma.app. These applications serve as the foundation for these school teachers to prepare and develop various teaching materials that suit their need, interest, expertise, and facilities-provided in their region. Most of these AI's also basically free, and easily accessible through any gadgets that they owned. Thus, the use of AI intends to introduce the teachers to develop teaching materials that suit their preferences and the student's interest.
The integration of Artificial Intelligence (AI) into primary school education brings multiple benefits for teachers and the overall educational experience. A significant benefit is the enhancement of AI literacy among educators, which is crucial for enabling them to effectively utilize AI technologies in their teaching practices. Zhao et al. highlight that developing AI literacy can lead to more informed teaching decisions and improved educational outcomes, underscoring that primary and middle school teachers must be sufficiently equipped with knowledge about AI and its applications (Zhao et al., 2022). Furthermore, Uygun's study points out that educators perceive AI as a valuable supplementary tool that can enrich learning environments, emphasizing its potential to improve both teaching techniques and student engagement across various subjects (Uygun, 2024). This perspective is echoed by Fitria, who identifies several practical AI applications, such as adaptive learning systems and automated assessments, which can facilitate personalized education experiences (Fitria, 2023).This shift towards AI-enhanced pedagogical approaches not only fosters individual learning but also allows teachers to focus more on interactive and problem-solving activities instead of being burdened with administrative tasks. As reported by Trang and Thư, the incorporation of AI tools frees up teachers' time, enabling them to engage more meaningfully with their students (Trang & Thư, 2024). Additionally, the potential for tailored educational experiences is illustrated by the scalable solutions AI provides, addressing diverse student needs and promoting inclusivity in the classroom setting (Trang & Thư, 2024). Moreover, the collaborative potential of AI in education cannot be overlooked. It enhances the creation of innovative educational frameworks and curricula that can adapt to evolving educational needs. According to Ayanwale et al., the development of trust in AI tools among teachers is critical to effectively utilizing these technologies (Ayanwale et al., 2024). Continuous professional development programs focusing on AI integration are essential for building this trust and ensuring that educators are confident and skilled in applying these technologies (Ayanwale et al., 2024).

However, it is essential to address the ethical implications and responsibilities surrounding AI use in education. As noted by Karimi and Khawaja, while the integration of AI can streamline administrative processes and create personalized learning experiences, it is crucial to remain vigilant about the ethical concerns and privacy issues that may arise (Karimi & Khawaja, 2023). The balance between leveraging AI's transformative capabilities while safeguarding student and teacher interests is paramount. In conclusion, integrating AI into primary education not only enhances teachers' pedagogical effectiveness and student engagement but also encourages a more personalized and equitable learning environment. Emphasizing AI literacy among educators, fostering trust in AI technologies, and addressing ethical concerns are critical components in implementing AI effectively in primary schools. The integration of Artificial Intelligence (AI) into education presents a multitude of benefits and can significantly impact teaching and learning practices. One primary advantage is the personalization of education, which allows for customized learning experiences tailored to individual student needs. Aghaziarati et al. articulate that AI's capacity for adapting educational content to suit diverse learning styles enhances educational outcomes and fosters student engagement (Aghaziarati et al., 2023). Uygun also supports this perspective, noting that teachers recognize AI's potential to revolutionize education and improve learning practices through its adaptable nature (Uygun, 2024). Furthermore, Zhao et al. highlight the importance of developing AI literacy among educators to leverage these adaptive capabilities effectively (Zhao et al., 2022). Additionally, AI technologies streamline administrative tasks, which can lead to increased efficiency in the educational environment. Suh and Ahn emphasize that AI can enhance workflows by automating grading and assessment processes, thereby allowing educators to devote more time to instructional activities and student interaction (Suh & Ahn, 2022). This sentiment is echoed by Hidayat et al., who note that such automation not only reduces the workload of teachers but can also provide more accurate and timely feedback to students (Hidayat et al., 2022). Moreover, Arvin et al. assert that AI-based educational tools help facilitate smoother classroom operations, allowing teachers to concentrate on pedagogical improvements rather than administrative burdens (Arvin et al., 2023). Moreover, the ethical implications of integrating AI into education must also be considered. Nazaretsky et al. emphasize that while AI holds significant promise, it requires careful implementation to avoid potential risks, particularly regarding student privacy and the accuracy of AI-driven assessments (Nazaretsky et al., 2022). As AI technologies evolve, it is increasingly necessary for educators to balance the utilization of these tools with ethical considerations. Akgün and Greenhow highlight that ethical challenges, such as privacy and bias, must be addressed to foster trust in AI technologies among educators and students (Akgün & Greenhow, 2021). AI also contributes to improved assessment methods and learning outcomes. Nazaretsky et al. present evidence suggesting that AI-based systems can achieve effectiveness comparable to one-on-one human tutoring, particularly in STEM fields (Nazaretsky et al., 2022). This emphasizes AI's role in enhancing learning environments through adaptive systems that tailor educational content to individual progress (Tapalova & Zhiyenbayeva, 2022). However, as Ayala-Pazmiño points out, while AI can enrich assessments, it poses risks, including the potential for academic dishonesty, which underscores the need for instructors to remain vigilant (Ayala-Pazmiño, 2023). This research aimed to provide new perspective into the significance of incorporating AI into teaching and learning processes, including personalized teaching media that pique the students interest. Whilst at the same time, the AI's possessed the capability to further equip teachers with necessary competence and to meet the demand of 21st century learning. In other words, the integration of AI in education stands to offer substantial benefits, including personalized learning experiences, efficient administrative processes, and enhanced assessment techniques. However, it necessitates a cautious approach to navigate ethical challenges and potential risks.

As educational institutions increasingly embrace AI, equipping educators with the necessary skills and awareness becomes essential for maximizing AI's positive impact on teaching and learning dynamics.

METHOD

Research Design

This study undergone qualitative design conducted by the researchers. The researchers inquired several stages to highlight the significance of AI-integrated media as learning innovation in Aisyiyah Primary School. Creswell and Poth (2018) mention that participatory qualitative methods are effective in educational settings as they empower participants to engage meaningfully in the research process. In line with this, the researchers conducted a series of collaborative activities designed to enhancing teacher competence through the use of artificial intelligence as a learning innovation. Initially, Focus Group Discussion was implemented which involves the school representatives and the Head of Primary School Affairs of the Muhammadiyah Regional Boards in Mataram City, West Nusa Tenggara. After mutual conventions were agreed, this program conducted several steps to introduce the significance of AI for education, especially for Aisyiyah Primary School Teachers. The researchers perceive the AI as innovation in education by conducting two series of workshops for the teachers as follow; first, online workshops were done to equip the teachers with ethics and role of AI in education, and Basic Principles of effective teaching media by using AI. Aditionally, Luckin et al. (2016) assert that AI holds transformative potential for teaching and learning when educators are empowered to understand and apply it critically and ethically. After the session, teachers were given several weeks to draft their media products using AI assistance.After this session was done, the teachers were given few weeks to write their drafts on the media by the help of AI's. The follow up workshop series were implemented to assist the teachers to materialize the teaching media by having onsite consultation and discussion, this session help the teachers to put their work in motion and to finalize their work. This is in accordance with the Technological Pedagogical Content Knowledge (TPACK) framework proposed by Mishra and Koehler (2006). The TPACK framework underscores the significance of integrating technological tools into content and pedagogy to facilitate effective instructional design. Afterwards, the teaching media was completed using several AI such as; ChatGPT, Gamma.app, bing-images, and meta.ai. The teachers also required to present their work in front of the community service team and their peers to receive any constructive feedbacks.

Participants

The subjects of this community service research paper involves four Aisyiyah Primary school teachers from various backgrounds. They consisted of three female teachers, and one male teacher. This group of primary school teachers were invited to join this community service program and they were responsible to teach all subjects in their respective grade and institutions.

Instruments

The researchers implemented several tecniques to complete this program; FGD and Observation during the series of workshops. The FGD assisted the researchers to provide clear and specific guidelines for the completions of this programs, and the workshops were the key in assisting the school teachers to integrated AI to their AI-integrated teaching media.

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Data Analysis

The researcher analyzed the result of both workshops by drawing a general concept about the teachers performances and competences regarding their proficiency of using AI's as innovation in teaching and learning.

RESULTS AND DISCUSSION

Results

This part of the community service research article highlighted the series of workshops done for this program, and the result of the teachers' AI-generated teaching media as the product of their intellectual property.

Prior to the workshop series, during the FGD with the head of Muhammadiyah Primary School Affairs, he mentioned that there were lack of support or workshops given to school teachers in remote areas revolving the areas of teaching media development. He also suggested that since their institutions were relatively far from Java island which known as the information and education references in Indonesia, the print-out teaching materials were fairly more expensive compare to their fellow institutions who currently located in Java. Therefore, the community service team, and the head of Muhammadiyah Primary School Affairs came to an agreement to introduce the school teachers to integrate AI's to assist the teachers to develop their own teaching media.

Next, during the first online-mode workshop series was done in 7 December 2024, this community service research program focused on introducing the Ethics and the Role of AI in K-12 Education, and Basic Principles in generating effective AI teaching media. The presenters who delivered these topics were the researchers of this study. This session comprised two series of lectures and discussion sessions for all of the teachers, after this session was done the teachers were tasked with developing their drafts using the following AI: ChatGPT, Bing images, copilot.microsoft.com, and Gamma.app. ChatGPT were utilised to prepare the prompts or the texts that the teachers want to deliver in their teaching media, the teachers were given specific instructions to develop their English as the programming language. Next, bing images, copilot.microsoft.com were employed to develop their unique and preferred images to broaden their AI proficiency which further also included in their teaching media. Lastly, Gamma.app assisted the teachers to further develop the teaching media based on their own preferences since this app lets the users to provide their personal touch.

Afterward, the follow-up session of this workshop were conducted onsite in the teacher's computer laboratory in Mataram City, West Nusa Tenggara on 9 January 2025. During this session, the community service team provide hands-on feedback and instructions to all of the teachers to develop their teaching media that suit their preferences and subjects that want to be delivered. The community service team chaperones the teachers during the walkthrough process when developing their teaching media, starting from correcting their language programming prompts using English in ChatGPT, and integrate the result taken from ChatGPT to be further developed using Bing-images, copilot.microsoft.com, and Gamma.app. The results were as follow:

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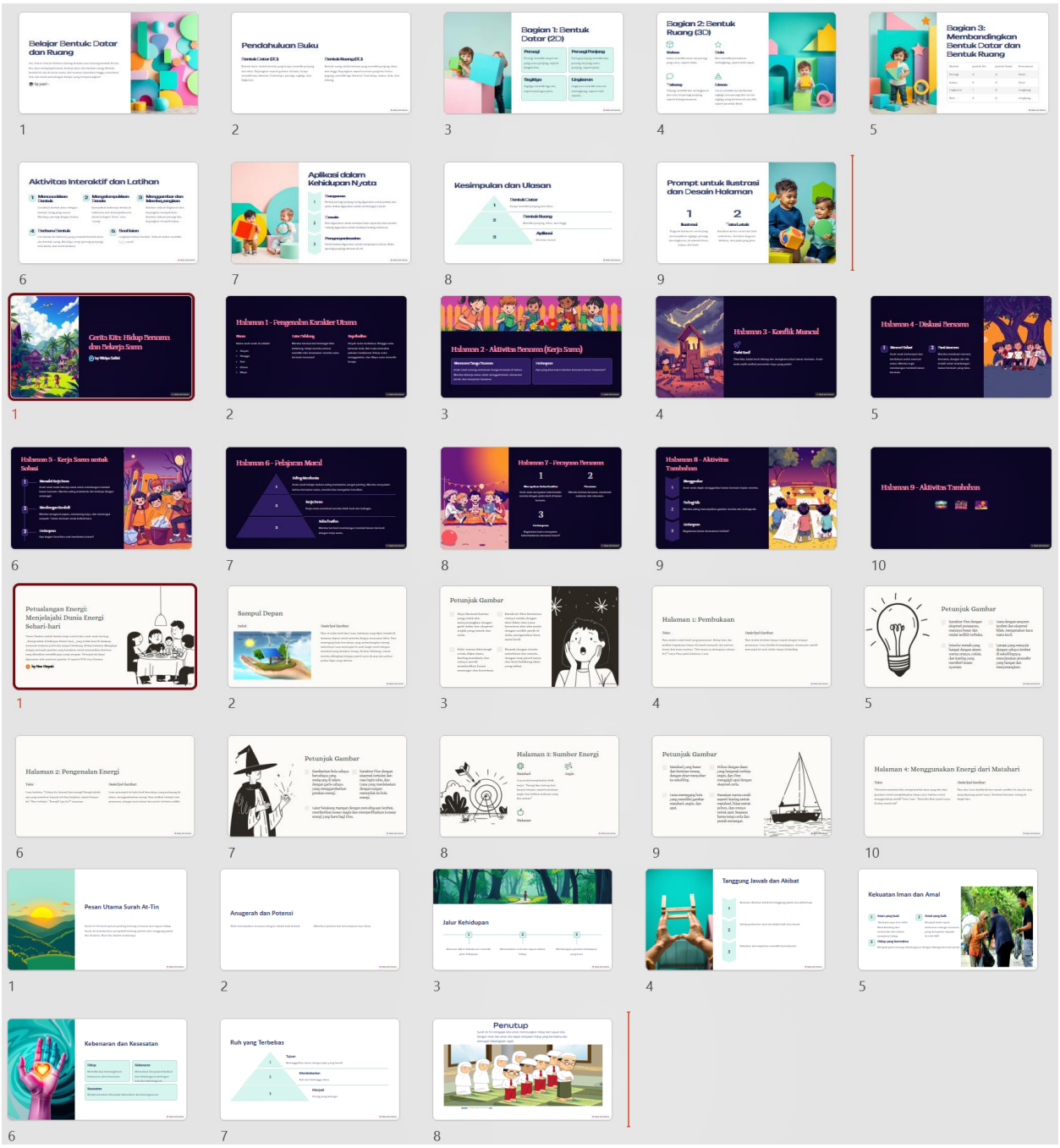

Figure 1. AI-generated teaching media by Aisyiyah Elementary School teachers in Mataram City

Primarily, the teachers were able to follow the whole process, however, since their backgrounds were not English majors graduate they were having difficulty in developing the language programming which considered as the basic notions of this process. Nevertheless, the community service team were able to lessen these challenges by providing them series of language programming in English.

Discussion

The result of this study discovered that the Aisyiyah Elementary School Teachers already had a good understanding regarding the purpose of this community service programs, which was to

deeply ingrained the significance of AI for educations in the near future. The result of both workshops, AI-generated teaching media, indicated that the teachers were able to adapt skilfully to utilize any AI's that had been introduced to them during the workshop series. The teachers expressed that, in the long-term, both of the teachers and students would be greatly benefitted for the integration of AI to teaching and learning process.

Based on the aforementioned premises. Previous research already underlined the significance of integrating technology in general to teach young learners, notably due the high demand of technology integration in the classroom due to Law of Teachers and Lecturers no. 14 2005, and 21st century skills that highly required the teachers to adapt to the latest innovation in science, technology and arts (Sabgini, & Wiraatmaja, 2022). This keypoints also had been mentioned in various literatures that the integration of AI in teaching and learning process can increase teaching techniques and students engagements in various subjects, and enrich the education experiences (Uygun, 2024; Fitria, 2023). Other research papers also highlighted that equipping primary and middle school with AI's literacy may improve educational outcomes, as well as fostering the student-teachers social engagement during the learning and teaching process (Zhao et al., 2022; Trang & Thu, 2024; Aghaziarati et al., 2023). Therefore, the workshop series on intregation of AI for primary education was deemed crucial to maintain continuous professional development for educators (Ayanwale et al., 2024).

AI also possessed significance capacity to transform education to suit diverse learning style and environment, including to tailor educational content to accomodate individual learning styles (Aghaziariati et al., 2023; Tapalova & Zhiyenbayeva, 2022; Uygun, 2024; Zhao et al., 2022). In addition, AI was able to gradually increase efficiency in educational environment to cater various administrative tasks. Including to improve the efficiency of assessment process, reducing the teachers' workload, provide timely feedback to students, increasing students-teacher interactions, and facilitate smoother classroom operations which allowing teachers to focus on pedagogical aspects rather than administrative burden (Arvin et al., 2023; Suh & Ahn, 2022; Hidayat et al., 2022).

Although AI offers various benefit to educators, it also provide extra challenges to the teachers in general. Since the teachers' educational backgrounds were not from English majors, the use of English which considered as the key for the users to implement their thoughts by using AI was also deemed as an obstacles in their own way. English was primarily used as the cornerstone for language programming, and poorly crafted prompts may lead to inadequate result (Hasan et al., 2024; Ulum, 2024)

The exploration of artificial intelligence (AI) in the education field unveil the significant gaps in the current research landscape that require additional and thorough analysis. These gaps encompass multiple facets; the integration of AI in education, ethical issues, supporting facilities, and the effectiveness of AI in across educational contexts. AI integration to education seemingly increasing in the past few years, thus, collaborating AI to education requires collaborative frameworks such as pedagogical objectives and ethical standards from various stakeholders to work together, therefore AI's possessed untapped capability to harness education to its' full potential in the future to come (Ríos-Campos et al., 2023; Al Ali & Wardat, 2024).

However, pointing out from the discussion above, another critical gap was that the teachers' must be ready to willingly embrace AI to education. Ensuring that teachers were properly informed and prepared to utilize AI was crucial as their AI literacy directly correlates with the successful implementation of these highly accessible technologies in educational settings (Aghaziarati, et al., 2023; Chiu & Chai, 2020). In addition, ethical considerations represent another important research gap, particularly surrounding the issues of equity, privacy, and data security. This was in line with how AI holds significance role for education in the upcoming

years, and ethical decision-making in educational contexts must be addressed (Yu & Yu, 2023), besides, integrating AI to education also requires ethical guidelines for educators since the educators were facing multifaceted ethical landscapes surrounding AI integration to education that requires further examinations such as student privacy and the accuracy of AI-driven assessment (Nazaretsky et al., 2022; Akintayo et al., 2024). Lastly, there was also lack of empirical evidence regarding their impact on students learning outcomes and engagement, especially the examination of AI within STEM education (Triplett, 2023), thus, it was remain important to analyze how AI integration may lead to improve learning metrics in realistics classroom environments. Furthermore, deeper analysis and examination on the effectiveness of AI tools in diverse education, especially for students with special needs, students with lower socioeconomic areas, students at bilingual education settings, and students at remote areas had not properly discussed in various research discourses. Expanding this research on the aforementioned discourses may shed light on the versatility and adaptability of AI in ensuring equitable educational opportunities. Wiraatmaja and Sabgini (2024) also urgently addressed the importance of English in related to this research, because language plays a crucial role in shaping identity, as it reflects and influences social, political, cultural, and ethnic dynamics. In the context of AI in education, English as the primary programming language reinforces its global significance, shaping access to technological advancements and digital literacy. This highlights the intersection of language, identity, and technology, where proficiency in English not only facilitates AI integration in education but also influences one's position within the evolving digital landscape.Therefore, it is pivotal to remain vigilant about the ethical concerns and privacy issues surrounding issues that may arise, therefore, balancing the AI's transformative ability while safeguarding the students and the teachers' interest remain the upmost important (Karimi & Khawaja, 2023; Nazaretsky et al., 2022; Akgün & Greenhow, 2021; Ayala-Pazmiño, 2023).

CONCLUSION

Based on the previous premises, incorporating AI as to develop teaching media aim to develop not only the teachers' pedagogical proficiencies, but also to to improve students' interest, and languages proficiency, especially Bahasa and English. The result of the FGD serves as the highlight of this report since the teaching media was generated according to the teachers' initiatives. The products, and the specific vocabularies stated in those teaching media were aimed to improve teachers' creativity and initiatives to create interactive and effective teaching media. However, this program also emphasized on the overused of AI which might limit teachers' creativity or over reliant to AI. In conclusion, although AI generated teaching media offer plenty benefits for teachers, both the community service team and the teachers must put the teachers' creativity due to over reliant to AI into account. Therefore, the purpose of integrating AI-based teaching media will help both of the teachers and students to develop positive attitudes towards learning and teaching processes.

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