ASSISTING TEACHERS IN USING THE INTERACTIVE APPLICATION MENTIMETER TO ENHANCE CREATIVITY IN TEACHING

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Abstrak: Kemampuan guru dalam menguasai dan memanfaatkan teknologi digital menjadi hal yang sangat penting dalam menghadapi tantangan pembelajaran abad ke-21. Membekali pendidik dengan aplikasi interaktif yang dapat mendorong kreativitas menjadi langkah strategis dalam meningkatkan kualitas proses belajar-mengajar. Program pengabdian kepada masyarakat ini bertujuan untuk meningkatkan kreatviitas mengajar guru di SMK Negeri 1 Percut Sei Tuan melalui pemanfaatan aplikasi interaktif Mentimeter. Program ini menggunakan pendekatan Participatory Action Research (PAR) dan Service Learning (SL), yang mencakup tahapan identifikasi masalah, perencanaan, pelatihan langsung, praktik microteaching, serta evaluasi melalui pre-test dan post-test. Hasil kegiatan menunjukkan peningkatan signifikan pada kemampuan guru dalam menggunakan Mentimeter, yang tercermin dari peningkatan rata-rata nilai post-test (dari 2.393,8 menjadi 3.739,63). Hal ini menunjukkan adanya peningkatan pemahaman dan keterampilan yang nyata. Kesimpulannya, integrasi aplikasi interaktif seperti Mentimeter terbukti dapat mendukung guru dalam menciptakan suasana pembelajaran yang lebih menarik dan kreatif. Implikasi dari kegiatan ini adalah potensi replikasi di sekolah-sekolah lain untuk mendorong literasi digital dan pengembangan profesional guru secara lebih luas.

Kata Kunci: mentimeter, profesionalisme guru, pembelajaran interaktif, kreatifitas pengajaran

Abstract: The ability of teachers to master and utilize digital technology is crucial in facing the challenges of 21st-century learning. Equipping educators with tools that foster creativity and interactivity is essential in improving the quality of education. This community service program aims to enhance SMK Negeri 1 Percut Sei Tuan teachers' creativity using the interactive application Mentimeter. This program utilized a combination of Participatory Action Research (PAR) and Service Learning (SL), which involved several stages: problem identification, planning, hands-on workshops, microteaching practice, and evaluation. The program significantly improved teachers' ability to use Mentimeter, as reflected in the increased average post-test score (from 2,393.8 to 3,739.63). This result indicates a measurable improvement in both understanding and skill. In conclusion, this program proved that integrating interactive applications like Mentimeter can support teachers in developing more engaging and creative learning experiences. Its implication is the potential for replication in other schools to foster wider digital literacy and professional growth among educators

Keywords: mentimeter, teacher professionalism, interactive learning, teaching creativity

Introduction

SMK (Sekolah Menengah Kejuruan) Negeri 1 Percut Sei Tuan, located in Deli Serdang Regency, was established in 1955. Initially situated on Jalan Kampung Baru Medan, which now serves as the SMK Negeri 2 Medan workshop, the school underwent significant development in 1992. The development included the enhancement of practice facilities and buildings through a collaboration involving the Indonesian government, ADB loans, and Germany's federal government (Mutoharoh, Prastyawan, & Daryono, 2024; Wiriadidjaja, Andriasanti, & Jane, 2019). Due to the original location's limitations and insufficient area, the school was relocated to Jalan Kolam No. 3 Medan Estate, encompassing an area of approximately 4.5 hectares. As a

vocational high school, SMK Negeri 1 Percut Sei Tuan offers a variety of programs, including computer-related majors such as Computer and Network Engineering (TKJ), Multimedia Broadcasting, and Information Technology. The school has 71 classrooms, one library, four laboratories, and a computer lab with LAN internet connectivity. These facilities enable students to learn with the support of modern technology. The school has implemented the Merdeka Curriculum and achieved an A accreditation, reflecting its high standard of educational quality (Dapodik, 2024).

For the 2024/2025 academic year, SMK Negeri 1 Percut Sei Tuan has 2,294 students, comprising 1,623 males and 671 females. The school is supported by 169 teachers (70 males and 99 females) and 28 administrative staff, resulting in a student-to-teacher ratio of approximately 13.6:1. The adequate infrastructure, including classrooms, a library, and laboratories, supports the learning process effectively (Dapodik, 2024). Despite having sufficient facilities, challenges persist, particularly in the pedagogical competence of teachers to creatively utilize digital tools.

A key issue identified through initial observations and needs analysis is the lack of creativity among teachers in using interactive technology during instruction. Many educators still rely on conventional lecture methods and have limited exposure to engaging, tech-based learning platforms, reducing student participation and interactivity in the classroom (Baharudin, Chandrasegaran, & Rajasegaran, 2024; Maraisa, Olinda, & Santos, 2024). As education evolves toward digital and student-centered models, teachers are expected to adapt by incorporating modern tools that foster active learning environments (Arvind, 2024; El-Sabagh, 2021; Mohanty et al., 2024). Without these competencies, learning remains passive and fails to meet the needs of today's digital-native students.

This community service initiative follows a previous program titled Strengthening Youth Creativity through CapCut: Innovative Visual Media Creation. Upon the completion of that program, SMK Negeri 1 Percut Sei Tuan requested further support, not only for students but also for teachers. This challenge aligns with the school's vision and mission, particularly mission number 10, which focuses on enhancing the professionalism of educators and staff. Teacher professionalism in utilizing modern technology is crucial for creating an adaptive learning environment that meets contemporary demands. Limited understanding of interactive technological tools can hinder teachers from delivering engaging and relevant learning experiences, especially in today's fast-paced digital era. Addressing this issue requires concrete efforts to equip teachers with the skills needed to engage students effectively and improve learning outcomes (Lestari & Kurnia, 2023).

This community service program aims to equip teachers with the necessary skills and knowledge to creatively utilize digital technology, thereby improving the quality of teaching and student learning outcomes. Through face-to-face mentoring sessions, teachers at SMK Negeri 1 Percut Sei Tuan are expected to enhance their teaching creativity, enabling them to address modern educational challenges with innovative approaches. To address this challenge effectively, the community service team from Universitas Mikroskil has planned a series of continuous training sessions for the teachers. As an initial step toward fostering creativity in

teaching, the first training session will focus on using Mentimeter, an interactive platform that enables teachers to create more dynamic and engaging teaching materials. Mentimeter offers various features, such as polls, quizzes, and word clouds, which can stimulate active student participation and foster a more motivating learning experience (Gökbulut, 2020; Mohamed, et al., 2022; Mohin, Kunzwa, & Patel, 2022).

Mentimeter was chosen for its ability to increase student engagement and assist teachers in assessing students' understanding in real-time (Maro, Kondoro, & Mtebe, 2023; Tarazi & Ortega-Martín, 2023). The community service team will introduce the application, as it is deemed effective in supporting the digitalization of the learning process (Ranjbaran, Al-Abri, & Sobhanifar, 2022). With its interactive features and widespread use among educators, Mentimeter has proven to be a valuable tool for enhancing teaching practices (Zhang, 2022). Its user-friendly interface and online accessibility allow teachers to design and manage interactive teaching materials tailored to their classroom needs. Additionally, the platform provides reports and analytics that help teachers evaluate their teaching effectiveness (Ambawani et al., 2024; Wahyuni et al., 2024). Therefore, this community service program aims to equip teachers with the necessary skills and knowledge to creatively utilize digital technology, thereby improving the quality of teaching and student learning outcomes.

Methods

This community service program was grounded in the principles of Participatory Action Research (PAR) and Service Learning (SL). The PAR approach was reflected through collaborative problem identification, iterative planning, stakeholder engagement, and reflective evaluation to address context-specific educational challenges (Sales, Moliner, & Traver, 2021). Concurrently, the SL approach guided the integration of academic expertise with community needs, promoting reciprocal learning between the academic team and teachers through structured and participatory training (Resch & Schrittesser, 2023). The implementation proceeded through several systematic stages to ensure the training was purposeful, contextually relevant, and pedagogically effective (see Figure 1).

Figure 1. Community Service Implementation Stages

Preliminary Discussion

The team held a preliminary discussion with the Vice Principal of Curriculum Affairs, Mr. Hari Purwoko, at SMK Negeri 1 Percut Sei Tuan. This session aimed to understand the school's specific training needs, identify existing challenges, and determine the focus of the training based on the teaching context and institution's requirements.

Development of Implementation Plan

Based on insights from the initial discussion, the team developed a comprehensive implementation plan. This plan outlined the schedule, objectives, and stages of the activity, ensuring systematic and efficient delivery of the training.

Training Module Development

The team created a tailored training module focused on utilizing Mentimeter for interactive learning. The module covered detailed explanations of Mentimeter's features and their applications in fostering creativity and engagement in teaching.

Training Implementation

The training was conducted in the following steps.

1. Data Collection

The team gathered data on the number of teachers participating in the training and their teaching backgrounds to customize the session effectively.

2. Presentation Session

The team delivered a comprehensive presentation to the teachers, explaining the features and benefits of Mentimeter in creating interactive learning environments. This session also included a live demonstration showcasing practical applications of Mentimeter in teaching.

3. Practical Assistance

Teachers practiced using Mentimeter under the team's guidance. This hands-on session allowed teachers to create and manage interactive teaching modules.

4. Micro-Teaching

Teachers conducted micro-teaching sessions using the modules they developed, providing them with direct experience in applying Mentimeter in a classroom-like environment.

Discussion and Q&A

A discussion and Q&A session was held to address questions, share experiences, and exchange ideas about implementing Mentimeter. This interactive session aimed to deepen the teachers' understanding and resolve any uncertainties.

Evaluation

At the end of the training, an evaluation was conducted to assess both the effectiveness of the training and the applicability of Mentimeter in teaching practice. The evaluation used Mentimeter's built-in quiz feature as the primary instrument, enabling real-time pre-test and post-test assessments. Each test consisted of 7 multiple-choice questions designed to evaluate participants' understanding of Mentimeter's core features, pedagogical applications, and strategies for fostering interactive learning. Scoring combined accuracy and response time,

where participants earned higher points for correct and faster responses. The instrument was developed to align with the learning objectives of the session and to capture both cognitive understanding and practical application.

The key indicator of training effectiveness was the increase in post-test scores relative to the pre-test. The program was considered successful if at least 15 percent of participants showed improvement. This benchmark was set to account for technical challenges, such as unstable internet connections, low battery levels, and limitations arising from the use of personal devices. Despite these constraints, the evaluation provided immediate feedback and facilitated reflection on participants' learning outcomes. The results will inform the design of future training sessions, particularly in addressing technical accessibility and improving participant engagement. This structured and context-sensitive evaluation ensured that the training remained evidence-based, participatory, and aligned with the specific needs of SMK Negeri 1 Percut Sei Tuan.

Results and Discussion

Based on discussions with the partner institution, the activity was scheduled for Saturday, January 18, 2025, in the second-floor hall of SMK Negeri 1 Percut Sei Tuan. During the preparation stage, the team developed training modules designed to support participants' practical understanding and prepared pre-test and post-test questions to evaluate the participants' initial and final comprehension. The team also ensured that participants were informed about technical requirements, such as laptops and internet connectivity, to facilitate smooth implementation.

On the day of the event, the program commenced promptly at 9:00 AM WIB, attended by 30 teachers out of 35 invitees. The activities were structured according to a detailed schedule in Table 1.

Table 1. Training Stages Schedule

Stage	Time	Activity Session
Opening	09.00 – 09.10	The school representative gave welcome remarks, and an introduction was given to the community service (PKM) team.
Pre-test	09.10 – 09.25	Initial assessment of participants' understanding using the Mentimeter application.
Training Session I	09.25 – 10.25	A presentation by Ms. Tri Wulandari Ginting on the introduction to the Mentimeter application, its benefits, strengths, and weaknesses, and its presentation features.
Break	10.25 - 10.35	Short break for participants.
Training Session II	10.35 - 11.35	A technical guide on using Mentimeter by Mr. Rivaldi Lubis, covering features for creating quizzes, polls, and interactive presentations.
Independent Practice and Q&A	11.35 - 12.00	Hands-on practice by teachers with guidance from the PKM team, followed by a question-and-answer session.
Lunch Break	12.00 - 13.00	Break and lunch for participants to recharge before continuing with the next session.
Microteaching	13.00 - 13.30	Implementation of materials in small groups, with two groups presenting and receiving feedback.

Stage	Time	Activity Session
Post-test	13.30 - 13.45	Evaluasi akhir untuk mengukur peningkatan pemahaman peserta
Closing	13.45 - 14.00	Sambutan penutup dan pemberian apresiasi kepada peserta terbaik

The event opened with a welcome speech from the school's representative (see Figure 2). He emphasized the significance of this training in enhancing educators' skills in utilizing modern technology in the classroom. He also expressed his hope that the training would positively impact the learning process at SMK Negeri 1 Percut Sei Tuan and encourage teachers to integrate technology into their teaching practices actively.

Figure 2. Welcome remarks from the school's representative

After the opening remarks, participants immediately took part in a pre-test aimed at assessing their initial understanding of the Mentimeter application and its potential application in teaching. This pre-test also served as an evaluation tool to measure how familiar participants were with the application before undergoing further training. The training session began with a presentation by speaker 1 (see Figure 3). In the first session, she explained the importance of digital transformation in education and the benefits of using the Mentimeter application. Additionally, participants were guided to understand the strengths and weaknesses of the application, such as the ease of creating interactive quizzes, live polling features, and its limitations, including its dependency on a stable internet connection.

Figure 3. Presentation session from speaker 1

The second session was led by speaker 2 (see Figure 4), who provided technical guidance on using Mentimeter, covering topics such as creating an account, designing interactive presentations, and sharing links with students. During both sessions, participants not only listened to the theory but also directly practiced what they learned using their laptops. The community service team actively assisted participants, helping those who faced technical difficulties, such as logging in, navigating features, or running interactive presentations. This approach aimed to ensure that all participants thoroughly understood the material.

Figure 4. Presentation session from speaker 2

After the material was delivered, a Q&A session was held for the training participants. Some participants raised questions such as, "What will the screen look like from the students' perspective?", "How do you start a class using this application?", and "Is there a preview feature before beginning the presentation?" All questions were addressed with direct simulations by Mr. Rivaldi Lubis, where teachers were asked to act as students to experience Mentimeter from a student's point of view. Additionally, features like the preview option were explained in detail, showcasing the differences between the teacher's and students' views on the platform.

Following the Q&A session, the teachers were given the opportunity to test the Mentimeter application themselves (see Figure 5). Participants were asked to set up their presentations and try various features of the application, including polling and interactive quizzes, to assess its functionality and responsiveness. This activity aimed to ensure that they could confidently use the application in their teaching activities.

Figure 5. Participant Session tries to use Mentimeter features

In the next stage, participants were divided into small groups to implement their learning through microteaching activities. Each group was tasked with creating and presenting teaching materials they would typically deliver to students, utilizing Mentimeter in accordance with the provided guidelines. Due to time constraints, only two groups managed to present their work (see Figure 6 and Figure 7). During the microteaching sessions, the PKM team provided immediate feedback to help participants refine and optimize their use of the application in teaching.

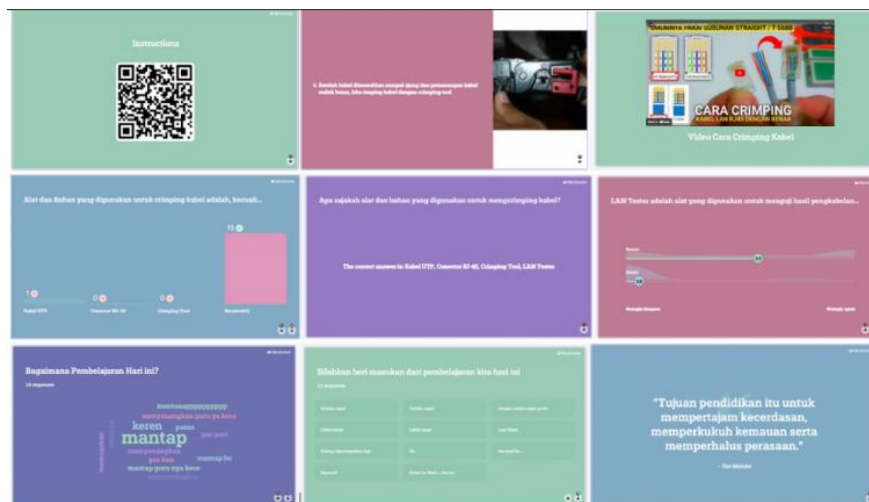**Figure 6.** two participant teams conducting micro-teaching

Figure 7. One of the Teacher Materials compiled using the Mentimeter feature

After the microteaching session, all participants took a post-test to measure the extent of their understanding following the training. The post-test results were used to evaluate participants' knowledge improvement and the overall effectiveness of the training provided. As a token of appreciation, the PKM team presented awards to the teachers who achieved the highest scores in both the pre-test and post-test (see Figure 8). Additionally, the group that delivered the most creative and innovative microteaching presentation within the limited preparation time also received recognition.

Figure 8. Giving appreciation to participants

The activity concluded at 2:00 PM WIB with a closing speech delivered by the Vice Principal (see Figure 9), who had been unable to attend the opening session. In the closing remarks, the Vice Principal expressed gratitude to the PKM team for the valuable training and encouraged the teachers to continue applying technology in their teaching and learning activities (see Figure 10).

Figure 9. Closing from the Vice Principal

Figure 10. Group Photo of PKM Team and Participants

The pre-test and post-test in this training were conducted using the Mentimeter application, designed to provide participants with an interactive experience. In both tests, participants were given seven questions covering theoretical and practical aspects of using the Mentimeter application. The assessment was based on the speed and accuracy of responses, with participants who answered correctly and most quickly earning higher scores. This approach

encouraged participants to respond promptly while understanding the concepts presented. Table 2 illustrates the results of the pre-test and post-test activities.

Table 2. Pre-test and Post-test results

Pre-test			Post-test		
Rank	**Name**	**Score**	**Rank**	**Name**	**Score**
1st	Siska	4192	1st	Gita	5777
2nd	Nani	4129	2nd	Mhd Faiz Zamzah A Hsb Skom	5639
3rd	Fitri	3955	3rd	Nani	4717
4th	Ronald	3507	4th	Ch's	4698
5th	Wolfmeister	3404	5th	QinQin	4621
6th	Gita Ramadhani	3206	6th	Fitri	4578
7th	Montana	3118	7th	Widya	4556
8th	Syaidah	2982	8th	Mulia	4482
9th	WS 01	2772	9th	Ginagor	4424
10th	Ade Puteri Febrina	2668	10th	Faisal aja	4373
11th	Mars	2579	11th	Jwita	4369
12th	Vote Goat	2458	12th	Aft	4316
13th	Casper	2422	13th	Cahyadi	4177
14th	Grace	2317	14th	Dragonite	3800
15th	Mhd Faiz Zamzah A Hsb S	2314	15th	Astrini	3758
16th	Pingu	2286	16th	Dewirisna Rangkuti	3671
17th	Zendi	2178	17th	Adis	3330
18th	Mulia Tirawanto	2162	18th	Siska	2881
19th	Tigerbaby	2151	19th	Joel	2839
20th	Ribbit	2122	20th	Syaidah	2773
21st	Johanna	2045	21st	MIRZA	2034
22nd	Faisal	1774	22nd	Nurkamaria	1613
23rd	Adistiani	1561	23rd	Nicolaus	1516
24th	Ginagor	1509	24th	susilaningsih	809
25th	Anne Droid	1505		**Average**	**3739,625**
26th	Ucok	1301			
27th	Metal	1227			
28th	Johnny	874			
29th	Stingilicious	705			
	Average	**2393,8**			

The results show a clear difference between the average pre-test and post-test scores. The average pre-test score was 2393.8, while the average post-test score was significantly higher at 3739.625. The lower pre-test scores reflect limited initial knowledge of the Mentimeter

application, whereas the higher post-test scores indicate an improvement in understanding after participating in the training, which included material presentations, Q&A sessions, and hands-on exercises.

However, discrepancies and incomplete data were observed, such as names recorded only for one of the tests (pre-test or post-test) or the use of inconsistent names. Such data cannot be further analyzed as it may compromise the integrity and accuracy of the analysis. To ensure a valid comparison between the pre-test and post-test results, the PKM team only utilized data that was complete and matched across both tests. Therefore, the analysis was conducted exclusively on participants whose data appeared in both tests, namely: Faisal Aja, Fitri, Ginagor, Gita, Mhd Faiz Zamzah A Hsb Skom, Mulia, Nani, Siska, and Syaidah. The results are presented in Table 3 and Figure 11 below.

Table 3. Comparison of Pre-test and Post-test Scores

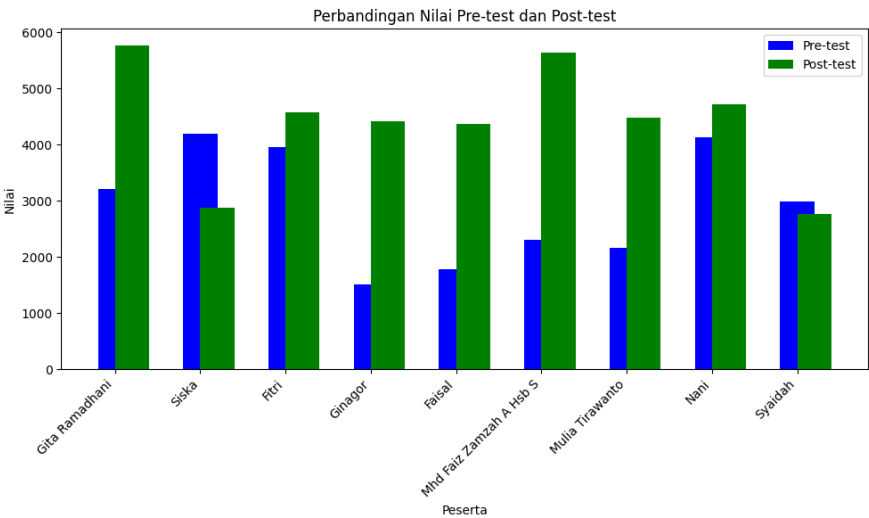| Pre-test			Post-test			Score Difference
6th	Gita Ramadhani	3206	1st	Gita	5777	2571
1st	Siska	4192	18th	Siska	2881	-1311
3rd	Fitri	3955	6th	Fitri	4578	623
24th	Ginagor	1509	9th	Ginagor	4424	2915
22nd	Faisal	1774	10th	Faisal aja	4373	2599
15th	Mhd Faiz Zamzah A Hsb S	2314	2nd	Mhd Faiz Zamzah A Hsb Skom	5639	3325
18th	Mulia Tirawanto	2162	8th	Mulia	4482	2320
2nd	Nani	4129	3rd	Nani	4717	588
8th	Syaidah	2982	20th	Syaidah	2773	-209

Figure 11. Pre-test and Post-test comparison

Based on the results presented in Table 3 and Figure 11, several analyses and conclusions can be drawn as follows. Some participants demonstrated significant improvements, such as

Gita Ramadhani, who increased her score by 2,571 points (from 3,206 to 5,777), and Mhd Faiz Zamzah A. Hsb S., who achieved a remarkable gain of 3,325 points (from 2,314 to 5,639). These substantial improvements indicate that both participants likely benefited significantly from the Mentimeter training sessions between the pre-test and post-test. Conversely, participants such as Siska and Syaidah experienced score decreases of 1,311 points and 209 points, respectively. These declines suggest that they may have faced challenges or barriers in understanding the material tested after the pre-test, or external factors may have influenced their outcomes. This variation in results reflects the diversity in the effectiveness of the teaching strategies employed. The significant improvements observed in some participants underscore the success of the methods used, while the declines highlight the need for adjustments to better cater to individual learning needs. Participants with lower initial rankings, such as Ginagor and Faisal, exhibited notable progress, demonstrating that even those with limited initial understanding were able to improve their performance significantly. On the other hand, participants with higher initial scores, such as Siska, experienced a decline, warranting further analysis to identify the underlying causes.

These findings are consistent with constructivist learning theory, which emphasizes the importance of active learner engagement and the use of interactive tools in the construction of knowledge (Chitti et al., 2020; Sulaiman & Abdulla, 2024). In the context of this community engagement initiative, the interactive features of the Mentimeter application likely contributed to increased learner motivation and participation, particularly among participants who initially demonstrated lower levels of understanding or skill. These results align with the following research (Prince, 2004), which found that digital interactive technologies significantly enhance learner engagement and comprehension. Furthermore, the variation in participant outcomes reflects the findings of (Ertmer & Ottenbreit-Leftwich, 2010), who argue that individual readiness, contextual conditions, and the availability of ongoing post-training support strongly influence the successful integration of technology by educators. The setbacks experienced by several participants highlight the necessity of differentiated training approaches to accommodate varying levels of digital literacy. Drawing on previous community service programs, this principle was operationalized by tailoring digital literacy workshops to align with participants' individual needs and learning pace (Antonietti et al., 2023; Depita, 2024). These cases underscore the importance of contextualized support mechanisms to ensure that digital tools are not merely introduced but meaningfully embedded into teaching practice.

Conclusion

The training on utilizing Mentimeter as an interactive teaching tool effectively enhanced participants' understanding and application of the platform, as evidenced by the significant improvement in average post-test scores (3,739.63) compared to pre-test scores (2,393.8). Hands-on practice, microteaching sessions, and real-time feedback played key roles in fostering practical skills and confidence among participants, with notable progress observed in several individuals. While some participants faced challenges reflected in score reductions, the training

overall demonstrated the potential of Mentimeter to transform classroom interactions and boost engagement. Addressing diverse learning needs and ensuring data consistency in future sessions will further optimize outcomes.

Acknowledgement

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