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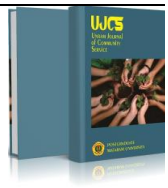

Digital Literacy for Rural Teachers Through Optimization of Learning Applications to Support the Implementation of the Kurikulum Merdeka

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Abstract: This community service initiative focuses on enhancing digital literacy among teachers at SDN Semongkat, Sumbawa Regency, in an effort to support the implementation of the Merdeka Curriculum in remote areas. The program was executed through a series of workshops and intensive mentoring sessions on the utilization of learning applications such as Canva, Google Classroom, Quizizz, and Kahoot. The implementation method comprised three main stages: preparation, execution (consisting of socialization, training, and mentoring), and evaluation. The outcomes of the service demonstrated a significant improvement in teachers' abilities to use and integrate digital applications into their teaching practices. The primary challenge of infrastructure limitations was addressed through adaptive learning strategies. This program successfully enhanced the quality of learning at SDN Semongkat and fostered a digital-based professional learning community among teachers. This community service initiative made a tangible contribution to bridging the digital divide in remote areas and effectively supporting the implementation of the Merdeka Curriculum.

Keywords: Digital Literacy; Merdeka Curriculum; Learning Application.

Introduction

The digitalization era has brought about significant changes in various aspects of life, including the field of education. This digital transformation demands adaptation and the enhancement of competencies across all educational elements, particularly educators, who are at the forefront of the learning process (Falloon, 2020; Yurinova et al., 2022). However, the reality reveals a substantial digital gap, especially in the remote areas of Indonesia, including Sumbawa Regency, West Nusa Tenggara, where SDN Semongkat is located (Onitsuka et al., 2018; Ramadhanti & Astuti, 2020). SDN Semongkat, situated in one of the remote regions of Sumbawa Regency, serves as a concrete representation of the challenges of educational digitalization in rural areas. Like many other schools in rural regions, it faces various obstacles in adopting and integrating digital technology into the learning process (Dike et al., 2022; Rupinus et al., 2023).

The implementation of the Merdeka Curriculum, which aims to provide flexibility and autonomy to educational units in developing their curriculum, further emphasizes the urgency of enhancing digital literacy among educators (Iskandar et al., 2023; Neliwati et al., 2023; Nisa et al., 2024). This curriculum prioritizes project-based learning and the holistic development of students, which, in practice, requires strong support from digital technology (Sari, 2023; Martatiyana et al., 2023; Purwati & Sukirman, 2024). However, at SDN Semongkat, the implementation of this curriculum faces significant challenges due to limited infrastructure and the digital competencies of the teachers.

Teachers at SDN Semongkat, as well as their counterparts in other remote areas, often encounter difficulties in accessing and optimally utilizing digital

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technology (Anita & Astuti, 2022). Infrastructure limitations, inadequate training, and the lack of exposure to the latest technological developments are major barriers to enhancing their digital competencies (Rasidi et al., 2021; Pratiwi et al., 2022). This condition has the potential to create disparities in educational quality between SDN Semongkat and schools in urban areas of Sumbawa Regency, which could lead to long-term social and economic inequalities.

The optimization of learning applications offers a potential solution to bridge this digital gap (Hazizah & Rigianti, 2021; Ariwibowo & Hidayat, 2023). Learning applications designed with the conditions of remote areas, such as SDN Semongkat, in mind can serve as an effective tool to enhance teachers' digital literacy. Through the use of learning applications, teachers at SDN Semongkat can access various educational resources, participate in online training, and collaborate with colleagues without being hindered by geographical distance.

Therefore, community service activities focused on enhancing the digital literacy of teachers in remote areas through the optimization of learning applications at SDN Semongkat are crucial. This effort aims not only to improve the individual competencies of the teachers at this school but also to support the more effective and equitable implementation of the Merdeka Curriculum in Sumbawa Regency. Furthermore, this initiative is expected to contribute to the improvement of educational quality at SDN Semongkat and the surrounding remote areas, which will ultimately have a positive impact on human resource development in Sumbawa Regency and Indonesia as a whole.

The main objective of this activity is to improve the digital literacy of the teachers at SDN Semongkat through the optimization of learning applications, to support the effective implementation of the Merdeka Curriculum. Specifically, this program aims to equip the teachers of SDN Semongkat with the skills and knowledge required to leverage digital technology for the learning process, enhance their ability to access and manage digital educational resources, and develop innovative teaching strategies that align with the demands of the digital era. Additionally, this activity also aims to reduce the digital gap between the teachers of SDN Semongkat and their counterparts in urban areas, facilitate collaboration among educators through digital platforms, and encourage the continuous professional development of teachers. By achieving these objectives, it is expected that the quality of education at SDN Semongkat and the surrounding remote areas will improve, which in turn will contribute to the equitable access to quality education and the development of more competitive human resources in Sumbawa Regency, in the context of the digital era.

Method

To ensure the successful implementation of this Community Service Program (PKM) and achieve the expected outcomes, a systematic methodology is developed to assist and simplify the resolution of the identified issues. The method can be explained as follows in a step-by-step manner:

Preparation Phase

In this phase, the PKM team coordinates with the SD Negeri Semongkat partners regarding the information and activities to be conducted. The partner provides data related to the needs of the activity, such as the number of teachers participating in the PKM, which amounts to 12 teachers. The initial coordination aims to strengthen the partner's commitment to the PKM activity. Additionally, preparations are made for the activity's location, the training materials, and the duplication of training materials. To further prepare for the implementation of the activity, the PKM team conducts a Focus Group Discussion (FGD), inviting two teacher representatives from the partner school and students involved in the program.

Implementation Phase

In this phase, the PKM team and the partner school conduct a workshop Socialization andMentoring/Assistance Phase This phase involves three mentoring sessions aimed at providing teachers with optimal knowledge to address the challenges faced by the partner school. The materials covered in this phase include: Conducting a workshop to strengthen the implementation of the Merdeka Curriculum based on digital technology for teachers. Socialization and introduction to various software/learning applications that teachers can use in their teaching activities. Training and mentoring on the use of learning applications, enabling teachers to create digital teaching materials, presentations, and evaluation tools. The implementation steps can be explained as follows:

a) Socialization and Workshop Program This activity is conducted at the beginning of the program and involves the entire partner group of 12 teachers. The aim of this activity is to provide a general overview of how to implement the Merdeka Curriculum and introduce various software/learning applications that can be used to develop teaching media. The methods used in this activity include lectures, discussions, and demonstrations.
b) Training, Mentoring, and Application of Technology. This phase takes place after the socialization activity and also involves all 12 teachers from the partner school. This phase is the

core of the PKM program, as it focuses on teaching teachers how to operate learning applications to produce digital teaching materials such as digital modules, digital evaluation/assessment tools, digital classroom management tools, and even game-based digital products. The application of technology is demonstrated through how the teachers operate the applications and create useful products for classroom learning. The methods used include discussions at the beginning of the activity, followed by demonstrations, training, mentoring, and additional discussions.

Evaluation Phase

The evaluation phase aims to assess the success level of the PKM activities implemented. Evaluation is conducted at each stage of the program to measure the success rate and provide input for future activities. A comprehensive evaluation is carried out after the PKM program is completed. This evaluation aims to assess the level of partner participation at each stage of the program, which can be done through monitoring and evaluating the attendance of the partner teachers by checking the attendance list and their enthusiasm during the activities. To assess the level of understanding among the partners, interviews and surveys (pre-tests and post-tests) are administered at the beginning and end of the activities. To measure the teachers' skills in using the applications, direct observation methods are employed using observation sheets as instruments.

Result and Discussion

This community service activity was conducted at SDN Semongkat, a school located in a remote area of Sumbawa Regency. SDN Semongkat faces significant challenges in optimally implementing the Merdeka Curriculum, especially in utilizing digital technology for learning. Based on initial observations and interviews with the school, several key issues were identified. First, most teachers at SDN Semongkat have relatively low digital literacy, which is reflected in their limited ability to use technology devices and learning applications. Second, the technology infrastructure at the school and in the surrounding area is still limited, with unstable internet access and a shortage of technological devices. Third, there is a lack of ongoing training and mentoring related to the use of digital technology in education, making it difficult for teachers to keep up with the latest developments in digital education. Fourth, there is a significant gap in digital competency between the teachers at SDN Semongkat and their counterparts in urban areas, potentially creating disparities in educational quality. Fifth, the implementation of the Merdeka Curriculum, which requires project-based learning and the holistic development of students' competencies, has not been fully realized due to limited digital resources.

These issues hinder efforts to improve the quality of education at SDN Semongkat and in the surrounding area, potentially widening the educational gap between remote and urban areas in Sumbawa Regency. Therefore, a community service program focused on enhancing teachers' digital literacy through the optimization of learning applications is highly relevant and urgent to implement at SDN Semongkat, as a strategic step in supporting the Merdeka Curriculum and improving the quality of education in the remote areas of Sumbawa Regency. The activities that have been carried out are outlined as follows:

Figure 2. Coordination with the school

The first phase is the Preparation Phase, which includes a series of pre-implementation activities. In this phase, the community service team conducts a thorough needs analysis, prepares relevant training materials, and sets up the necessary infrastructure to support the program. Intensive coordination with SDN Semongkat is also carried out to ensure the teachers' readiness and optimal participation.

Figure 3. Workshop Implementation

The second phase, the core of the community service program, is the Implementation Phase (Figure 3). This phase consists of two main components that are carried out consecutively and integrated. The first component is Socialization and Workshop Program, where teachers are introduced to the concept of digital literacy and the

importance of integrating technology into learning. In this session, four digital learning applications—Canva, Quizizz, Google Classroom, and Kahoot—are introduced comprehensively (Figure 4). The workshop focuses not only on the technical aspects of using these applications but also on pedagogical strategies for integrating them into the Merdeka Curriculum.

Figure 4. Introduction to Learning Applications

The second component of the Implementation Phase is Training, Mentoring, and Application of Technology (Figure 5). This activity takes place across three separate meetings, allowing teachers to deepen their understanding and gain practical experience in using these applications. Each meeting focuses on two applications: the first session covers Canva and Google Classroom, the second session delves into Quizizz and Kahoot, and the third session integrates all four applications into a comprehensive learning scenario. Intensive mentoring is provided throughout this process to ensure that teachers can overcome both technical and conceptual barriers in applying the technology.

Figure 5. Intensive Training and Mentoring

The third phase is the **Evaluation Phase**, which is conducted continuously throughout the program. Formative evaluation is carried out at each stage of implementation to identify areas for improvement and adjust strategies as needed. At the end of the program, a summative evaluation is conducted to assess the overall success of the program, including the improvement in teachers' digital literacy, their ability to integrate learning applications into the curriculum, and the impact on the teaching and learning process at SDN Semongkat. The evaluation methods used include pre-tests and post-tests, direct observations, analysis of learning products generated by the teachers, and in-depth interviews with participants and school stakeholders.

The community service program focusing on improving teachers' digital literacy through the optimization of learning applications was successfully implemented with active participation from all teachers at SDN Semongkat. The pre-test results showed that most teachers (approximately 80%) had low to moderate digital literacy before the program. However, after a series of workshops, training, and mentoring, there was a significant improvement in the teachers' understanding and skills in using digital learning applications.

In the use of Canva, the teachers showed encouraging progress. Initially, only 15% of teachers were familiar with the platform. After training, 90% of the teachers were able to create engaging and relevant learning materials, such as educational posters and infographics. Some teachers even developed customized templates tailored to their subject needs, showing a high level of creativity and adaptability.

Google Classroom became one of the most quickly adopted applications by the teachers. The evaluation results showed that 95% of teachers were able to independently create and manage their virtual classrooms. They were able to upload learning materials, create assignments, and interact with students through the platform. Several teachers reported increased student engagement and improved task management after implementing Google Classroom.

The use of Quizizz and Kahoot in the learning process showed positive effects on student motivation and participation. About 85% of teachers reported an increase in student enthusiasm when these two applications were used for formative assessments and material reviews. Teachers also appreciated the ease of analyzing student comprehension through the analytics features provided by both applications.

Observations during the mentoring sessions indicated that the teachers were becoming more confident in integrating technology into their teaching. They began to develop learning scenarios that utilized combinations of all four applications, creating more interactive, student-centered learning experiences. This aligns with the principles of the Merdeka Curriculum, which emphasizes active learning and the holistic development of students' competencies.

The main challenge faced during the program was the limited technology infrastructure at the school and unstable internet access. However, the teachers

demonstrated resilience and creativity in overcoming these challenges, for example by developing blended learning strategies that combined the use of digital applications at school with offline assignments at home.

The final evaluation showed an average increase of 65% in the teachers' digital literacy scores compared to the pre-test. More than 90% of participants expressed satisfaction with the program and felt more prepared to implement technology-based learning. The school also reported an improvement in the quality of learning outcomes, as seen from the increased creativity in presenting materials and the use of more varied assessment methods.

The long-term impact of this program is reflected in the school's initiative to develop a professional learning community based on digital platforms among the teachers (Figure 6). They regularly share best practices and digital resources through an online group established after the program. This indicates the sustainability and multiplication of knowledge expected from this community service program.

Figure 6. Formation of a Digital-Based Professional Learning Community

This community service program has successfully enhanced the digital literacy of teachers at SDN Semongkat. The teachers are not only able to use digital learning applications competently but also integrate them effectively into the implementation of the Merdeka Curriculum. This success is expected to serve as a model for similar programs in other remote schools, contributing to the overall improvement of education quality in rural areas.

Conclusion

The community service activity focusing on improving teachers' digital literacy through the optimization of learning applications has successfully achieved its goals with highly positive outcomes. This program effectively enhanced the digital competencies of teachers at SDN Semongkat, as evidenced by a significant improvement in their understanding and skills in using digital learning applications such as Canva, Google Classroom, Quizizz, and Kahoot.

Evaluation results indicated an average increase of 65% in teachers' digital literacy scores, highlighting the effectiveness of the training and mentoring methods employed. The teachers not only became proficient in operating these applications but also successfully integrated them into daily teaching practices, aligning with the principles of the Merdeka Curriculum.

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