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Enhancing Participatory Learning at SMP Negeri 2 Jaten Karanganyar through the Integration of Technology

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Abstract

Technology development and advanced knowledge significantly influence literacy. Intellectual progress and school adjustment will only be possible with them. Technical literacy is a crucial essence in sensitizing and supporting academics. On the other hand, academic sustainability can be relinquished by lack of or poor technological knowledge. Hence, belajar.id was designed by The Indonesian Government in conjunction with Google Suite for Education (GSE) to ease academic activities during the COVID-19 pandemic. Even though a bounded interaction between students and their teachers persists, knowledge sharing can be enhanced and more effective using electronic media and diverse educational materials. RG DIKE team at UNS utilizes Participatory Rural Appraisal to address the weaknesses at the teacher level, build the community's technological capacity, and ensure effective knowledge dissemination. The subject concerning students at SMP Negeri 2 to explore IT literacy had already been chosen. This exploration gave place for technology as a part of disaster management and prevention and was strategic regarding technology-oriented education. The first two trainings were conducted on August 15 and October 26, 2023, respectively, and the topics were the integration of belajar.id, GSE, and Open Broadcaster Software (OBS). Teachers were the most crucial agents in students' GSE and OBS education.

Keywords Technology, Educational Challenges, belajar.id, Google Suite.

1. INTRODUCTION

While knowledge and technology have become the core issues of our time-bound society, the intersection between them has a tremendous impact on our world. Technology literacy is vital because it helps us keep pace with the latest technological developments. Technological literacy causes significant personal growth and adds to the progress and development of organizations in education. Information technology competency is pivotal for widening the horizons. It helps develop and implement instructional and learning activities in the academic domain (Bankovska et al., 2023).

On the contrary, more attention and knowledge regarding the importance of technology literacy will be needed to maintain progress and development. Thus, this can affect the teaching and learning situation–the very heart of educational institutions. Technology literacy and education are the dependent components that complement one another. Technology today is essential in education, and technology literacy is of the essence in the education area. When schools are not digitally competent, it can cause problems such as lessened students' desire for higher education and difficulties with reading comprehension and writing ability (Sa'dan, 2023). Different kinds of selective government programs, like training courses and educational collaborations, are used to enrich technical expertise.

The Government of Indonesia, through the Ministry of Education, Culture, Research, and Technology (*Kemendikbudristek*), responded to this challenge by developing the @belajar.id platform, integrating Google Suite for Education (GSE) for all stakeholders in the field of education by the end of 2020. This @belajar.id platform is based on the Secretary-General Regulation of the Ministry of Education and Culture Number 18 of 2020 and aims to bridge academic activities during the pandemic (*Sekretaris Jendral Kementerian Pendidikan*, 2022). The @belajar.id platform will still be helpful for students after they return to traditional classrooms in early 2022, as it is the primary online learning platform with many other supporting educational services. To fully use these services, a @belajar.id account is required. Although the @belajar.id platform holds great potential, challenges must be overcome. One of these is the limited interaction between teachers and students in distance learning(Koay & Poon, 2023). Moreover, documenting a course of learning in electronic format is likewise a problem attributed to the learners. On the other hand, though, teaching materials in electronic formats like PDF, PowerPoint, or videos have a vast area of improvement, which can be helpful in teaching and learning in schools, not only for the teachers but also for the students (Ruggeri et al., 2024).

Some challenges, such as the basic digital skills much needed among the teachers of SMP Negeri 2 Jaten Karanganyar, have been addressed by the Community Engagement Team by arranging a training session related to fundamental technology skills. The training aims to enrich perception by bringing up the issue of digital literacy. Consequently, these efforts shall contribute to enhancing the teaching and learning processes. SMP Negeri 2 Jaten Karanganyar was selected as the venue due to its reputation for academic excellence in Jaten Subdistrict, Karanganyar Regency, Central Java Province. With the support of 36 teachers, 653 students, and the highest accreditation status, A (Kemdikbud, n.d.), SMP Negeri 2 Jaten Karanganyar has strategic potential to support schools nearby.

The PkM RG DIKE at SMP Negeri 2 Jaten Karanganyar is a follow-up of our previous actions in a pandemic context (Setiadi et al., 2021) and on post-pandemic recovery (Cahyono et al., 2022). The activities of the PkM RG DIKE at SMP Negeri 2 Jaten Karanganyar are essential for enhancing the schools' resilient capabilities, sustainability, and the contribution of all the stakeholders with a technical approach. Technological tools have been the savior during significant challenges that came with the pandemic in the world, as per the research by (Cuello-Garcia et al., 2020). This technology-based normative framework exemplifies the school's preparedness and resilience in the context of the COVID-19 pandemic and future outbreaks, which were developed through the trial run results.

2. METHODS

To gain insights into the stepping stones to upgrade the academic activities in a school, the PkM RG DIKE and SMP 2 Jaten Karanganyar held an in-depth interview. At the preliminary stage, we interviewed four people: the headmaster and the heads of the technology development, academic, and student affairs departments. This interview aimed to determine which technology needs of the school should be addressed, whether they are met or not, and the possible technological obstacles they face. After the interview procedure, teachers and other school staff will attend a series of training sessions. Then, after the knowledge had been obtained, challenges and solutions have been recognized. After all, this assessment's data is used to develop and implement the technology plan and introduce the solutions as a response to the need to offer complete support to teachers, students, and parents in the most convenient and accessible way. Therefore, we must use a gradual approach with simple and advanced technology at all process points to succeed. In this manner, both addressees and users of the system will have easy access.

Technological assistance provided at every step together with policymakers at SMP Negeri 2 Jaten Karanganyar support is the prime factor for the effectiveness of this program. Collaborating with regulatory experts will enable us to develop regulatory-compliant solutions to satisfy existing education requirements. Optimal results are more likely to be attained with the help of appropriate documentation. Sufficient documentation allows managers to make all stages of implementation visible and calculable, thus making it possible to identify critical areas and find ways for further enhancement. Periodic assessments are necessary to keep the program in tune with the changing times and ensure it retains relevance (Figure 1). To make SMP Negeri 2 Jaten Karanganyar's academic activities successful and achieve good results, the research role, solution creators, policy maker support, and proper keep-up records of daily activities are vital.

2.1. Technology-Based Approach

To enhance education in secondary schools in Indonesia, integrating Google Suite and Open Broadcaster Software (OBS) can be highly beneficial. Google Suite provides tools like Google Docs, Sheets, and Slides that support collaborative work among students and teachers (Biantoro, 2020). As an enabling technology, OBS Studio offers features not commonly found in standard video conferencing software such as MS Teams or Zoom, enabling capabilities in live streaming, recording, and creating dynamic multimedia presentations (Kristandl, 2021). Integrating digital technology, including software applications like OBS, is a growing trend in Indonesian secondary schools, aligning to improve teaching practices and enhance student learning experiences (Mailizar & Fan, 2020). Efforts to explore hybrid learning methods utilizing OBS demonstrate a proactive approach to leveraging technology for educational purposes (Raharjo et al., 2023).

The COVID-19 pandemic significantly impacted online learning in Indonesian schools, prompting a closer examination of challenges at various levels, from macro policies to micro-level student experiences (Tarigan & Stevani, 2021). This highlights the importance of adopting innovative tools like OBS to ensure educational continuity during challenging times. The pandemic has accelerated the adoption of digital technologies like OBS in education, allowing teachers to maintain continuity in learning and ensure that students have access to quality education despite the restrictions imposed by the health crisis (Pokhrel & Chhetri, 2021). OBS has played a crucial role in supporting teachers in delivering lessons effectively and engaging students in virtual learning environments (Ali, 2020). Understanding the impact of

such technologies on student learning outcomes can provide valuable insights for optimizing their integration into educational settings.

This method relates to the utilization of technology needed to achieve maximum results. The technology must be accessible, open for use, provide adequate security, and support academic activities at SMP Negeri 2 Jaten Karanganyar. The appropriate technology services based on these criteria are video learning based on Open Broadcaster Software (OBS) and services based on GSuite along with Google Classroom (GClassroom) (Christanto et al., 2023).

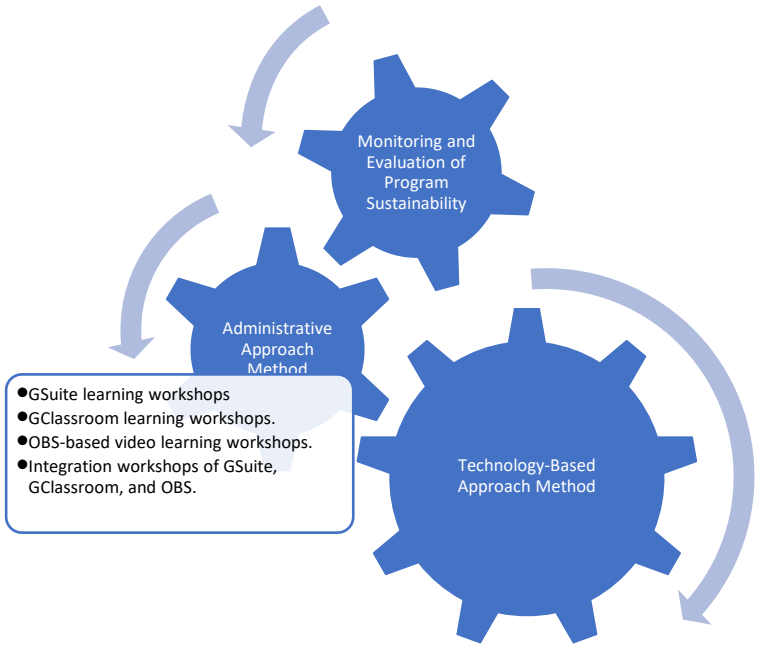

Figure 1. The RG DIKE activities and methodologies for technological-based approach at SMP Negeri 2 Jaten Karanganyar.

2.2. *Administrative Approach*

Both software applications (OBS and GSE) can be used by the entire academic community of SMP Negeri 2 Jaten Karanganyar. However, technology literacy remains challenging, and ensuring that both software applications support teaching and learning activities is complex. The PkM RG DIKE UNS team and SMP Negeri 2 Jaten Karanganyar jointly conducted the training to overcome this challenge. The PkM RG DIKE UNS team prepared appropriate and integrated materials, while SMP Negeri 2 Jaten Karanganyar prepared participants consisting of teachers. To ensure maximum absorption of the material, the PkM RG DIKE UNS team designed a 32-hour training consisting of:

- GSuite learning workshops.
- GClassroom learning workshops.

- OBS-based video learning workshops.
- Integration workshops of GSuite, GClassroom, and OBS.

This training ensures that software users understand the utility and features available. To support these training activities, the PkM RG DIKE team designed learning modules accessible to training participants. In addition to the available modules, the participants are assisted in accomplishing tasks and assignments related to teaching and learning activities.

2.3. Monitoring and Evaluation of Program Sustainability

To look at integrating technology into education during and after the COVID-19 pandemic, the participatory rural assessment (PRA) can be a great strategy. PRA facilitates the involvement of local stakeholders in the monitoring and evaluation processes, hence its suitability in evaluating the technological integration in rural educational surroundings (Moore et al., 2023; Zhang et al., 2023). By including local stakeholders in the assessment process, PRA ensures that they are heard and their opinions are considered, which translates to more effective and sustainable development interventions that focus on the era of the COVID-19 pandemic. Technology has been adopted very fast in education. Therefore, the PRA study can help identify the challenges and successes associated with the transition (Hermanto et al., 2022; Kusuma, 2022). Through using PRA approaches, teachers, alongside their principals and other key stakeholders, could jointly evaluate the positive effects of technology in supporting online learning, help identify challenges that rural schools may not be able to overcome, and develop ways to address them (Hermanto et al., 2022; Wulandari et al., 2022).

Here, there will be a participatory component, meaning that different parties stand in a row and influence the evaluation process, for example, teachers, students, and parents (Churiyah et al., 2020). Furthermore, PRA can assist in determining the location-specific problems that rural areas have with access to and usage of technology, enabling these to deal with and help decrease the digital divide (Saktiningtiyas et al., 2022; Silva et al., 2022). Learning and understanding the challenges and experiences that teachers in rural schools face, as exemplified in the participatory rural appraisal (PRA) assessments, can help to forecast the required policy makes policy intervention by providing tailored support systems (Hermanto et al., 2022; Kusuma, 2022). In addition, PRA will help yield qualitative data on the technology's effects on learners' outcomes, engagement, and teachers' professional development (Nikolopoulou, 2022; Zieher et al., 2021). This data-driven approach

constitutes the grounds for concluding that information is a force that backs up data-driven decisions to stimulate educational technology plan reforms (Okoye et al., 2021; Wildan Suyuti et al., 2022).

3. FINDINGS AND DISCUSSION

This chapter discusses the results achieved up to the writing of this article. The results are divided into two parts: reporting our activities and discussing the results of our findings. The method descriptions of the activity implementation are as follows:

3.1. Activity Findings

Implementation of Training

The First Training

This training was conducted at SMP Negeri 2 Jaten Karanganyar on August 15, 2023 (Figure 2). The training discussed the @belajar.id platform initiated by Kemdikbud Ristek. Before the implementation, participants were expected to have activated and owned @belajar.id accounts for platform access. Account ownership is crucial for accessing this learning platform. With school encouragement, account ownership increased. All difficulties were encountered in obtaining accounts on the day of implementation. Therefore, assistance for registration and account activation still needs to be provided. Before implementation, SMP Negeri 2 Jaten Karanganyar collected participant data to prepare for the training.

There were initially 25 registered participants consisting of teachers with @belajar.id accounts. Participant selection and the number of teachers were limited due to space constraints and active teaching hours. Not all teachers could participate, and the aim was for participants to teach colleagues who are actively teaching, as well as students and parents.

SMP Negeri 2 Jaten Karanganyar provided the participant list to the PkM RG DIKE UNS Team and venue and time analysis. Subsequently, the PkM RG DIKE UNS Team prepared materials and non-materials for the offline training. This training was guided and delivered by five lecturers and supported by five PkM RG DIKE Team students, which is essential for gaining field experience. The primary focus of this training was GSuite, especially GClassroom service, enabling teachers to conduct online teaching. Additionally, GClassroom training material supported online teaching activities, ensuring comprehensive understanding before merging GSE and OBS material in the next workshop.

Training at UPT TIK UNS Surakarta

This training took place on October 26, 2023, as a follow-up to the first meeting conducted offline and deepening GClassroom and OBS material conducted online (Figure 3). This training discussed the integration of OBS into GSuite as an application for creating instructional videos. The training was held at Lab 4 UPT TIK UNS. Before the training, the PkM RG DIKE UNS Team prepared a series of materials.

To facilitate material engagement by participants, the PkM RG DIKE UNS Team confirmed data collection from 33 teachers at SMPN Negeri 2 Jaten Karanganyar. This confirmation aimed to ascertain the exact number of participants for optimal training. In this training, the formation of lecturers and students was consistent, as it was the first to facilitate the smooth running of the training.

Participation of SMP Negeri 2 Jaten Karanganyar and the DIKE UNS Team

In this activity, teachers at SMP Negeri 2 Jaten Karanganyar were involved. Teacher involvement utilized participatory rural appraisal (PRA). Participation includes:

- Teachers engaged in online and offline discussion and identification of technical teaching issues.
- During implementation, teachers provided input regarding using GSuite and OBS.
- In module development for GSE, the DIKE RG Team, we discussed urgent services for immediate application. The involvement of SMP Negeri 2 Jaten Karanganyar is crucial in determining necessary services before module preparation. Inputs from teachers are needed for module utilization guidance, ensuring continuity of GSE use for teachers and students.
- SMP Negeri 2 Jaten Karanganyar teachers participated in participant coordination and GSE and OBS service training.
- SMP Negeri 2 Jaten Karanganyar supports the sustainability of GSE and OBS services for schools and educational environments.

In addition, SMP Negeri 2 Jaten and the DIKE RG Team played equal roles in facilitating training activities. Further, SMP Negeri 2 Jaten played a crucial role in participant allocation. The DIKE RG UNS Team prepared mentorship for teachers and students. Mentorship includes various GSE and OBS services that still need to be understood or discussed due to time constraints. GClassroom supported this

mentorship and facilitated communication with SMP Negeri 2 Jaten Karanganyar. This mentorship effort by the DIKE RG UNS Team with policymakers at SMP Negeri 2 Jaten Surakarta aimed to support teachers and students in conducting independent learning. We initiated a comprehensive plan involving needs analysis, communication with stakeholders, and the implementation of workshops to achieve our objectives.

Figure 2. The first workshop was arranged at SMP Negeri 2 Jaten Karanganyar.

Table 1. Needs analysis summary

Needs Identifying	Actions Taken
Technology Literacy	Conducted workshops for GSE and OBS proficiency
Academic Enhancement	Developed modules to supplement learning activities
Stakeholder Support	Established communication channels for feedback

Table 2. Activity outcomes

Outcome	Impact

Enhanced Technology Literacy	Improved integration of technology in classrooms
Academic Advancement	Increased student engagement and learning outcomes
Stakeholder Satisfaction	Positive feedback and ongoing support from partners

Figure 3. The second workshop was held at the UPT TIK UNS on October 26, 2023.

Needs Analysis and Stakeholder Communication

First, we developed a detailed planning methodology and an exhaustive needs assessment system. Our primary goal was to encourage the proper usage of GSuite and Open Broadcaster Software (OBS) technologies in SMPN SMA Karanganyar. Considering stakeholders' needs and expectations, we aimed at a smooth and valuable incorporation of technology tools. By directly communicating with SMP Negeri 2 Jaten Karanganyar, we support a collaborative work culture that helps us successfully get through our technology literacy programs. Thus, an interactive strategy was established to facilitate understanding each actor, such as teachers, students, and parents, in comprehending the positive aspects of technology infusion (Table 1).

3.2. Discussing The Results

The training activities that RG DIKE UNS executes at SMP Negeri 2 Jaten Karanganyar and UPT TIK UNS Surakarta aim to elaborate the technology problems by conducting workshops such as integrating GSuite and OBS. The mode of engagement comprised teachers in discussions, pointing out practices to improve competence on GSuite, providing input on the usage of GSuite and OBS by teachers, and providing teacher notes and module development for GSuite. The SMP Negeri 2 Jaten-CDID RG partnership played a primary role in mentoring teachers and students. The results showed higher dyings literacy, a positive effect on academic achievement, and the stakeholders' satisfaction, which can be interpreted as the outcome of a successful program (Achmad & Utami, 2023).

The research has shown that the effectiveness of planning technology literacy projects depends on how robustly the needs analysis and communication with stakeholders are carried out. Deliberative planning and understanding of stakeholder needs to streamline the relationship and the smooth transition of technology tools like GSUite and OBS. The delivered workshops are experience-based and can equip teachers with the knowledge and skills to utilize technology in classrooms (Achmad & Utami, 2023). Different results were attained when all the educators were involved, which laid a solid foundation for academic improvement within SMP Negeri 2 Jaten Karanganyar.

The close cooperation and the stated continuous aid are within the realistic consideration of the literature on using partnerships in educational efforts. A sustainable partnership approach and broadening program reach will be definitive factors for achieving and scaling academic programs (Marinucci et al., 2023). Further, the aspect of technology literacy and its relationship with teaching effectiveness that sounds like the concept of outcome-based education (OBE) and its capacity to improve students' achievement and faculty's teaching effectiveness is expressed (Impact of Outcome Based Education (OBE) on Teaching Effectiveness of Faculty Members of Professional Program,2020).

We were part of the team whose performance indicators reflected satisfactory results, as the teachers welcomed technology adoption in the classrooms. Stepping up the implementation of technology literacy programs became a prelude to the academic improvement of Negeri 2 Jaten Karanganyar (Table 2). We envision the continuity and advancement of our tech-literacy activities, where they observed significant progress in the implemented technological courses (Cahyono et al., 2022; Setiadi et al., 2021). We forecast that the teams' cooperation and support will, in the long run, reinforce our

interaction and allow us to enlarge our projects, thus reaching as many people as possible.

4. CONCLUSION

The technology literacy workshops at SMP Negeri 2 Jaten Karanganyar confirmed that participatory learning significantly improved. Leveraging both Google Suite for Education (GSE) and Open Broadcaster Software (OBS) integrated into the program has led educators to acquire the necessary technical skills to apply in their teaching practices. Teachers have acted as critical agents in championing the innovative use of technology in teaching methodologies. This process has entrenched the culture of academic advancement within the institution. The achieved program has not just positively impacted the integration of technology in classes but has also been shown to improve student engagement and assist in understanding. In the future, the joint work and the continuous support from stakeholders will play a vital role in expanding these technology literacy initiatives. Additionally, it should be used to ensure that SMP Negeri 2 Jaten Karanganyar continues to enjoy all the positive impacts of GSE and OBS in terms of academic progress and the proper preparation of its students.

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