

Original Paper

Enhancing Digital Literacy Skills for Students and Teachers

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Abstract

Basic computer skills and the ability to utilize technology-based learning media are essential competencies in the digital era. This program was designed to strengthen community benefits by introducing fifth-grade students to the use of personal computers as a foundation for digital literacy, while simultaneously improving teachers' competence in applying digital learning media at SDN Sukamulya 01. The activities, carried out from April to June 2024 for students and in May 2024 for teachers, included training sessions, hands-on practice, and mentoring. The program demonstrated tangible impacts: 75% of students were able to operate PCs independently, indicating a significant increase in digital literacy skills. In addition, all participating teachers (100%) successfully produced simple digital learning media using available applications, reflecting enhanced teaching competence and the program's overall contribution to community capacity building.

Keywords: digital literacy, technology-based learning, teacher training, elementary students, computer usage

JEL Classification: I25, O35, L31

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1. Introduction

The rapid development of the digital era requires both students and teachers to possess the ability to operate computers and utilize digital learning media as fundamental competencies. Digital literacy encompasses not only technical skills but also critical thinking abilities, the capacity to evaluate credible information, and the ability to participate safely and responsibly in digital environments (Ng, 2012). In the educational context, digital literacy enables learners and teachers to access, assess, use, and create information effectively, thereby reducing the risk of misinformation and improving the quality of learning. This highlights the importance of digital education interventions, especially in elementary schools, as the foundational stage for developing 21st-century competencies.

Elementary education serves as a crucial foundation for developing digital literacy skills from an early age. When these skills are nurtured early on, students are better prepared to adapt to technological advancements and face global challenges in the future. Computers and the internet are no longer supplementary tools; they are now an integral part of daily life, including the education sector. Teachers are not only expected to be instructors but also facilitators who can adapt to technological developments. Their ability to integrate technology into the learning process can provide students with more engaging, interactive, and relevant learning experiences.

However, implementing digital literacy in Indonesian elementary schools remains a significant challenge. Curriculum design and socio-economic factors remain primary obstacles. In many regions, the curriculum still focuses heavily on traditional subjects such as language and science, while computer education is often overlooked or taught separately. In fact, one of the key roles of educators is to prepare students to face future challenges (Risdiyani & Herlambang, 2021). The lack of technological integration in the curriculum makes it difficult for students to connect learning concepts with real-world contexts. Additionally, infrastructure limitations in rural and remote areas hinder access to digital resources (Subroto et al., 2023).

This gap is evident at SDN Sukamulya 01 in Sukamakmur Village, West Java. Computers are available only for administrative use, leaving students with limited opportunities to practice directly. As a result, their digital skills remain minimal. Teachers also face difficulties in creating diverse and engaging learning methods due to inadequate infrastructure. Socio-economic factors exacerbate this gap, as most students do not have personal computers at home. This situation negatively impacts students' confidence in using technology and limits their potential to develop 21st-century skills (Nivia et al., 2024).

According to Mulyasa (2010), learning resources refer to references, objects, or materials used in learning activities. Furthermore, the Association for Educational Communications and Technology (AECT) and Banks in Komalasari (2010) define learning resources as all materials that teachers can use, individually or in combination, to support the learning process. The use of information technology and computers as learning media offers numerous benefits, including improved communication effectiveness, expanded access to learning resources, and enhanced learner autonomy. Technology can stimulate students' thoughts, emotions, interests, and attention, making learning more interactive and meaningful. Moreover, technological media can help overcome communication barriers between teachers and students, including physiological, psychological, cultural, and environmental obstacles (Dewi & Hilman, 2018).

Several studies indicate that digital literacy training for teachers positively impacts their ability to integrate technology into the learning process. Teachers who are accustomed to using technology are better equipped to design adaptive, context-specific learning activities. As a result, students' digital literacy also improves. Training in digital learning media has been shown to enhance teachers' technological competencies as part of their teaching strategies (Hasugian, 2024).

As a rural elementary school, SDN Sukamulya 01 faces significant challenges in advancing digital literacy. Most students have limited computer skills, and teachers are unfamiliar with using digital learning materials, including design platforms such as Canva. To address this gap, this program was designed with two key interventions: (1) introducing fifth-grade students to basic computer usage, and (2) providing training for teachers on how to create and use technology-based learning media. The program aims to strengthen students' digital literacy skills and enhance teachers' capacity to integrate digital learning media into a more modern, inclusive, and sustainable teaching and learning process.

2. Method

The method used in this program was systematically designed to create a tangible impact on improving digital literacy among students and teachers at SDN Sukamulya 01. The chosen approach combined workshops, hands-on practice, intensive mentoring, and regular evaluations,

ensuring that participants not only gained knowledge but also developed practical skills applicable in the learning process. The program was carried out collaboratively between lecturers, university students, teachers, and elementary students, with an emphasis on fostering the habitual use of technology in the school environment.

The implementation for students focused on familiarizing fifth graders with personal computers. Activities were conducted every Thursday from April to June 2024. Students were introduced to and guided in using digital learning materials, including interactive modules and online exercises, through the school's available PCs. During each session, university students and teachers directly assisted students in operating the devices and accessing the learning materials independently. Throughout the process, observations were made regarding students' independence in using the PC and their active participation in digital learning activities. These observations served as the basis for evaluating their progress in digital literacy.

Meanwhile, the teacher-focused program, centered on digital learning media training, was held every Monday throughout May 2024. The training covered the introduction and use of several digital platforms, such as Canva, Quizizz, Wordwall, and Bamboozle. Each training session began with a brief theoretical overview, followed by a platform demonstration, hands-on practice, and a final task in which participants created their own digital learning media. Teachers were encouraged to design materials relevant to their respective subjects so that the outcomes of the training could be directly implemented in classroom teaching.

To ensure program effectiveness, two evaluation approaches were used. First, students' skills were assessed based on changes in their ability to operate PCs and engage in digital learning independently. Second, teachers were evaluated based on their presentation of the digital learning media they created, as well as through participant satisfaction questionnaires. Throughout the activities, university students acted as facilitators and active mentors. Additionally, documentation in the form of photos, recordings, and digital learning materials produced during the program was collected as evidence of implementation and success.

This participatory approach was expected to create a learning environment that is adaptive to technological developments while encouraging innovation in the elementary education learning process.

The success indicators were designed to ensure that the digital literacy strengthening program produced measurable and meaningful outcomes for both students and teachers at SDN Sukamulya 01. The evaluation was not limited to administrative achievements but also included changes in participants' skills, attitudes, and confidence in using digital technology during the learning process.

For fifth-grade students, success was measured using several indicators reflecting their improvement in basic digital literacy. First, at least 70% of students were expected to be able to operate a PC independently, including turning it on and accessing digital learning applications. This is a key benchmark because it serves as the foundation for integrating technology into learning. Second, there should be an increase in students' active participation in digital discussions and activities. Third, at least 60% of students should report feeling comfortable using PCs for learning, indicating a positive shift in their attitude toward technology-based learning.

For teachers, success indicators focused on strengthening technology-based pedagogical competence. At least 80% of participants were expected to create one digital learning medium relevant to their subject area, demonstrating that they not only understood the training materials but could also apply them in real teaching contexts. Furthermore, teachers were expected to demonstrate increased confidence and motivation in using technology as part of their teaching strategies. As an additional measure, the average satisfaction score from the training evaluation was expected to be at least 4 out of 5 for both content and implementation.

These indicators provide a clear, objective framework for measuring the program's effectiveness. Moreover, the evaluation results can serve as a foundation for future improvements and program expansion, ensuring that digital literacy strengthening efforts in elementary schools are sustainable and bring long-term benefits.

3. Results

The implementation of this program to enhance students' and teachers' digital literacy skills at SDN Sukamulya 01 demonstrated a significant positive change, both in technical abilities and in attitudes toward technology use in the learning process. This conclusion was drawn from direct observation, activity documentation, and participant questionnaire results. Overall, the program not only generated short-term benefits but also opened opportunities for the sustainable development of digital literacy in the elementary school environment.



Figure 1. Familiarizing students with computer use

From the perspective of fifth-grade students, the program that focused on familiarizing them with personal computer use achieved encouraging results. Approximately 75% of the students were able to operate a computer independently to access simple digital learning materials such as interactive modules and online exercises. This reflects a substantial improvement in basic technical skills essential for supporting digital-era learning. Moreover, students who were initially passive began to show increased engagement, particularly during Q&A sessions and hands-on practice activities. Some students even began assisting their peers who encountered technical difficulties, indicating the emergence of collaborative learning and peer support. However, around 25% of students still require intensive assistance to address technical issues, such as unstable internet connections or application errors. This finding serves as an important note for refining and strengthening support strategies in future program stages.



Figure 2. Digital learning media training for teachers

On the teachers' side, the results showed powerful outcomes. All participants (100%) successfully created simple digital learning media such as interactive quizzes and visual modules using platforms like Canva, Quizizz, Wordwall, and Bamboozle. Based on the satisfaction questionnaires, the average score was 4.3 out of 5, indicating high satisfaction with the training content, delivery methods, and hands-on practice sessions. Teachers also expressed increased motivation to develop more creative and interactive teaching methods. Most of them stated that they felt more confident integrating digital learning media into their lesson plans (RPP) and were more open to adopting technological innovations in their classrooms.



Figure 3. Digital learning media training for teachers

In conclusion, this program demonstrated clear improvements in both digital literacy and technical skills among students and teachers. The program not only enhanced basic technological competencies but also fostered a shift in mindset regarding the importance of technology in education. Through consistent familiarization and training, the school environment has become more adaptive to technological developments, supporting the creation of a more dynamic, collaborative, and relevant learning ecosystem in today's digital era.

4. Discussion and Benefits

The findings of this program show measurable improvements in both student and teacher digital literacy. The fact that 75% of students were able to operate personal computers independently indicates that structured and repeated exposure to technology effectively enhances digital competence. This pattern is consistent with previous PKM studies showing that early hands-on digital training significantly improves students' operational and cognitive digital skills (Subrata et al., 2024; Anggraini, 2023). These studies emphasize that habituation and direct engagement with digital tools strengthen students' confidence and foster more active participation in technology-supported learning environments.

The improvement in teachers' competence where 100% succeeded in creating digital learning media with an average satisfaction score of 4.3 also aligns with earlier PKM findings. Training programs using platforms such as Canva, Quizizz, Wordwall, and other interactive tools have been shown to improve teachers' creativity and pedagogical effectiveness (Hasugian, 2024; Sondari et al., 2025). Prior community-service initiatives similarly found that technology-focused professional development enhances instructional design quality, leading to higher student engagement and more dynamic classroom interactions (Supratman et al., 2025). The results of this program validate these findings, reinforcing that experiential, practice-oriented workshops substantially strengthen teachers' readiness to integrate digital tools into daily teaching practices.

Nevertheless, the program also faced several challenges, echoing barriers frequently reported in earlier PKM studies. Variations in participants' initial digital abilities, limited access to devices, and technical constraints during implementation were common obstacles (Murdiani et al., 2025; Sudarsana, 2025). These challenges highlight persistent systemic gaps that hinder equitable digital participation in rural schools. As previous research suggests, addressing these barriers requires robust, sustained support systems, including improvements to digital infrastructure and continuous mentoring.

Ensuring long-term sustainability similarly requires strategic follow-up efforts. Prior PKM studies consistently emphasize the importance of ongoing capacity-building, periodic refresher training, and the development of teacher digital literacy communities to prevent skill decline over time (Yohana et al., 2025). Without sustained reinforcement, early gains may weaken, particularly in schools with limited technological readiness or inconsistent access to digital learning tools.

Overall, this program has generated meaningful and wide-ranging benefits. Students have strengthened their foundational digital competencies, enabling them to participate more confidently in digital-based learning activities. Teachers enhanced their ability to design creative, learner-centered digital media, consistent with earlier PKM evidence showing the strong influence of teacher digital competence on instructional quality. For the school, the program helped create a more adaptive and innovative learning environment. By empowering both students and teachers, this initiative lays a strong foundation for cultivating a sustainable culture of digital literacy in elementary education.

5. Conclusion

This activity, which introduced personal computer use to fifth-grade students and provided digital learning media training for teachers at SDN Sukamulya 01, has had a positive impact on digital literacy in the elementary school environment. The program results show that 75% of students were able to operate personal computers independently and became more active in digital learning.

Meanwhile, 100% of participating teachers successfully created simple learning media using applications such as Canva, Quizizz, Wordwall, and Bamboozle, with an average satisfaction score of 4.3 out of 5. Students demonstrated improved ability to operate computers independently, while teachers showed greater confidence in designing and utilizing digital media. These findings confirm that structured, consistent technology-based learning interventions can strengthen digital competence among the two key groups in the educational ecosystem: students and teachers.

However, challenges remain regarding unequal participation and initial skill gaps. Some participants still require additional support to adapt to digital learning technologies fully. Therefore, ensuring the sustainability of this program through continuous training, improved infrastructure, and strong institutional support is essential to achieving long-term success.

Recommendations

Based on the results of this activity, it is recommended that the school strengthen its digital literacy program by fostering sustained computer use. Teachers should be provided with advanced training to develop more varied and interactive learning media, enabling more engaging and technology-integrated classroom practices.

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References

- Angraini, C. N. (2023). *Training for trainers in critical digital literacy*. Prosiding PKM CSR, (2121). <https://prosiding-pkmcsr.org/index.php/pkmcsr/article/download/2121/1206>
- Dewi, S. Z., & Hilman, I. (2018). Penggunaan TIK sebagai sumber dan media pembelajaran inovatif di sekolah dasar. *Indonesian Journal of Primary Education*, 2(2), 48–53.
- Hasugian, P. M. (2024). Pelatihan penggunaan media pembelajaran digital bagi guru sekolah dasar. *PKM: Multidisiplin Pengabdian Kepada Masyarakat*, 3(01).
- Komalasari, K. (2010). *Pembelajaran Kontekstual. Konsep dan Aplikasi*. Bandung: Refika Aditama.
- Mulyasa. (2010). *Kurikulum Tingkat Satuan Pendidikan*. Bandung: PT Remaja Rosdakarya
- Murdiani, J., Wijayanti, R. K., & Markhamah, M. (2025). The role of digital literacy in the Pancasila Learner Profile strengthening project at SD Negeri Gurawan. *Gentala Journal*. <https://online-journal.unja.ac.id/gentala/article/view/44471>
- Ng, W. (2012). *Can we teach digital natives digital literacy?* *Computers & Education*, 59(3), 1065-1078. <https://doi.org/10.1016/j.compedu.2012.04.016>
- Nivia, N., Setiawan, D., Saputro, B. E., Oktariana, P., Claudes, J., Utomo, M. H. T., & Dewi, F. I. R. (2024). Belajar teknologi: Pengenalan komputer untuk anak sekolah dasar. *Journal Serina Abdimas*, 2(3), 1290–1298. <https://doi.org/10.24912/jsa.v2i3.32324>
- Nurjanah, N. E., dkk. (2022). Pelatihan media digital (whiteboard animation) untuk guru PAUD dalam menghadapi Revolusi Industri 4.0. *Journal HMN. Jurnal Universitas Muhammadiyah Surabaya*
- Risdiany, H., & Herlambang, Y. T. (2021). Pengembangan Profesionalisme Guru Dalam Mewujudkan Kualitas Pendidikan Di Indonesia. *Edukatif: Jurnal Ilmu Pendidikan*, 3(3), 817–823. <https://edukatif.org/index.php/edukatif/article/view/434/pdf>
- Sondari, E., Supadi, S., & Hamidah, N. (2025). Digital literacy training for Al-Khoir Foundation teachers to welcome innovative education and improve technology-based learning. *Jurnal PKM: Pengabdian kepada Masyarakat*, 8(1), 150–164. <https://www.journal.lppmunindra.ac.id/index.php/pkm/article/download/27653/7404>

- Subrata, I. M., Citrawan, I. W., Juwana, I. D. P., & Erawati, N. M. P. (2024). Pelatihan literasi digital pada siswa sekolah dasar di Kelurahan Penatih Kota Denpasar. *Jurnal Pengabdian kepada Masyarakat Widya Mahadi*, 4(2), 35–44. <https://doi.org/10.59672/widyamahadi.v4i2.3798>
- Subroto, D. E., Supriandi, S., Wirawan, R., & Rukmana, A. Y. (2023). Implementasi Teknologi dalam Pembelajaran di Era Digital: Tantangan dan Peluang bagi Dunia Pendidikan di Indonesia. *Jurnal Pendidikan West Science*, 1(07), 473–480. <https://doi.org/10.58812/jpdws.v1i07.542>
- Sudarsana, W. (2025). Peningkatan kompetensi literasi digital guru SD melalui pelatihan media pembelajaran interaktif. *Jurnal Pengabdian Pendidikan dan Masyarakat*, (595), 297–306. <https://abdinusa.nusaputra.ac.id/article/view/595/297>
- Supratman, L., Irpan, A. M., Nurramadhani, A., Ningsih, R. D., & Pomares, K. M. R. (2025). Empowering teachers' digital literacy: Training on creating digital learning media at a rural elementary school. *Pedagogia: Jurnal Ilmiah Pendidikan*, 17(1), 151–160. <https://doi.org/10.55215/pedagogia.v17i1.45>
- Yohana, Y., Suroyo, S., & Sukmayadi, D. (2025). The influence of digital literacy and the utilization of online learning media on the competence of elementary school teachers. *International Journal of Learning and Professional Growth*, 4(2). <https://doi.org/10.54099/ijlpg.v4i2.1258>