

ASSISTANCE IN CREATING INNOVATIVE TECHNOLOGY-BASED LEARNING MEDIA FOR ELEMENTARY SCHOOL TEACHERS

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Abstract

Rapid technological advancements have highlighted the importance of integrating innovative digital tools into education, particularly at the elementary level. However, many teachers face challenges in leveraging technology due to limited training and resources, resulting in a reliance on traditional teaching methods that may not engage students. This community service activity aims to empower elementary school teachers by helping them create innovative technology-based learning media tailored to the needs of their classrooms. The community service program uses a Participatory Action Research (PAR) approach, which involves a cyclical process of planning, acting, observing, and reflecting. Teachers participate in workshops to learn practical skills in designing digital teaching tools, such as interactive presentations, gamified learning resources, and digital storytelling. They then implement these tools in their classrooms, followed by a reflection session to assess effectiveness and identify areas for improvement. The community service results showed significant improvements in teachers' ability to design and integrate technology-based learning media, which increased student engagement and participation. Teachers also reported increased confidence in using digital tools and formed peer support networks to maintain and expand their skills. In conclusion, this program successfully addressed the challenges of technology integration in elementary education by equipping teachers with practical skills and developing a collaborative learning environment. Future initiatives should focus on scaling up the program and addressing infrastructure challenges to maximize its impact.

Keywords: Mentoring, Media Learning, Innovative Technology.

Abstrak

Kemajuan teknologi yang pesat telah menyoroti pentingnya mengintegrasikan perangkat digital yang inovatif ke dalam pendidikan, khususnya di tingkat dasar. Namun, banyak guru menghadapi tantangan dalam memanfaatkan teknologi karena keterbatasan pelatihan dan sumber daya, yang mengakibatkan ketergantungan pada metode pengajaran tradisional yang mungkin tidak melibatkan siswa. Kegiatan pengabdian ini bertujuan untuk memberdayakan guru sekolah dasar dengan membantu mereka dalam menciptakan media pembelajaran berbasis teknologi yang inovatif yang disesuaikan dengan kebutuhan kelas mereka. Program pengabdian ini menggunakan pendekatan Participatory Action Research (PAR), yang melibatkan proses siklus perencanaan, tindakan, observasi, dan refleksi. Guru berpartisipasi dalam lokakarya untuk mempelajari keterampilan praktis dalam merancang perangkat pengajaran digital, seperti presentasi interaktif, sumber belajar gamifikasi, dan penceritaan digital. Mereka kemudian menerapkan perangkat ini di kelas mereka, diikuti dengan sesi refleksi untuk menilai efektivitas dan mengidentifikasi area yang perlu ditingkatkan. Hasil pengabdian menunjukkan adanya peningkatan yang signifikan dalam kemampuan guru untuk merancang dan mengintegrasikan media pembelajaran berbasis teknologi, yang meningkatkan keterlibatan dan partisipasi siswa. Guru juga melaporkan peningkatan kepercayaan diri dalam menggunakan perangkat digital dan membentuk jaringan dukungan sebaya untuk mempertahankan dan memperluas keterampilan mereka. Sebagai kesimpulan, program ini berhasil mengatasi tantangan integrasi teknologi dalam pendidikan dasar dengan membekali guru dengan keterampilan praktis dan mengembangkan lingkungan belajar yang kolaboratif. Inisiatif di masa mendatang harus difokuskan pada peningkatan skala program dan mengatasi tantangan infrastruktur untuk memaksimalkan dampaknya.

Kata kunci: Pendampingan, Media Pembelajaran, Teknologi Inovatif.

INTRODUCTION

Education plays a pivotal role in shaping the future generation, especially at the elementary level, where foundational knowledge and skills are developed. In the current era of rapid technological advancements, integrating innovative, technology-based learning media into teaching has become

increasingly essential (Sarwanti, 2015). This integration not only enriches the learning experience but also aligns with the evolving needs of 21st-century education (O'Connor et al., 2023). However, many elementary school teachers face challenges in adapting to and creating such media due to limited access to resources, inadequate training, and unfamiliarity with the latest educational technologies (Ramlah et al., 2022).

One of the pressing issues observed in elementary schools is the reliance on conventional teaching methods, which often fail to fully engage students in interactive and meaningful learning experiences (Saha, 2023). This gap is particularly evident in schools located in less developed areas, where teachers struggle to innovate beyond traditional methods (Mogale & Malatji, 2022). Despite various training programs, many initiatives remain generic and fail to address the specific needs of teachers in developing practical and contextually relevant technology-based tools (Asfahani et al., 2023).

The novelty of this community service lies in its tailored approach to empowering elementary school teachers to create their own innovative technology-based learning media. Unlike previous efforts that primarily focused on providing ready-made tools, this program emphasizes capacity building and creativity, ensuring that teachers acquire sustainable skills (Marsan et al., 2022). By bridging the gap between theoretical knowledge and practical application, this program aspires to transform the classroom experience into a dynamic, student-centered environment (Zaim et al., 2020).

The primary goal of this initiative is to assist teachers in understanding and utilizing technology to enhance their teaching strategies. It aims to provide hands-on training and mentorship, enabling them to design effective, engaging, and innovative learning media suited to their students' unique needs. Furthermore, this program seeks to instill confidence and independence among teachers in adapting to technological advancements. The expected benefits include improved teaching quality, enhanced student engagement and learning outcomes, and the long-term development of a technology-savvy teaching workforce. This effort aligns with global educational goals of fostering innovation and creativity in classrooms, ultimately contributing to the broader aim of creating a more inclusive and future-ready education system.

METHOD

This research method uses Participatory Action Research (PAR), which in this program is to ensure active collaboration between facilitators (service teams) from Nusa Putra University and 25 Elementary School (SD) teachers in Sukabumi Regency. This service is by conducting training for elementary school teachers in Sukabumi Regency in September-October 2024. PAR emphasizes the process of planning, action, observation, and reflection cycles, which allows participants to become co-creators of knowledge and solutions rather than passive recipients (Ainis Rohtih et al., 2023). This method is very effective in fostering ownership and sustainability of results. In the initial stage, a needs assessment was conducted through focus group discussions and surveys to identify specific challenges faced by teachers in utilizing technology-based learning media. The findings became the basis for designing a workshop specifically designed to address these challenges. During the workshop, teachers participated in practical activities, where they learned to develop innovative learning media using easy-to-use devices and software.

The action phase involved teachers applying newly acquired skills by creating and testing learning media in the classroom. Facilitators observed this implementation and provided constructive feedback. This is followed by a reflection session, where participants share experiences, discuss media effectiveness, and identify areas for improvement. Through repeated PAR cycles, teachers not only gain technical skills but also develop critical thinking and problem-solving skills, which empower them to continue to innovate in their teaching practices. The collaborative nature of this method fosters a sense of community and mutual support among participants, ensuring the sustainability and scalability of the program's impact.

RESULT AND DISCUSSION

The implementation of the Assistance in Creating Innovative Technology-Based Learning Media for Elementary School Teachers yielded several significant outcomes that highlight the program's success in addressing the challenges faced by teachers.

Firstly, the teachers demonstrated a marked improvement in their ability to use and develop technology-based learning media. Many participants, who initially expressed apprehension about integrating technology into their teaching, gained confidence through hands-on training and practical

guidance. By the end of the program, teachers successfully created various types of innovative learning media, including interactive presentations, educational games, and digital storytelling tools, tailored to the subjects they teach.

Secondly, the integration of these media into classroom activities resulted in noticeable changes in student engagement. Teachers reported increased student enthusiasm and participation during lessons, as the use of interactive and visually appealing tools captured students' attention more effectively than traditional methods. For example, subjects like mathematics and science, often perceived as challenging, became more accessible and enjoyable for students through the gamified learning resources developed by the teachers.

Another key finding was the establishment of a collaborative learning culture among the participants. The program fostered an environment where teachers shared ideas, provided feedback to one another, and discussed best practices (Akinwamide & Oguntade, 2023). This sense of community extended beyond the duration of the program, as many participants formed peer support groups to continue exploring and refining their use of technology in teaching (Bray et al., 2023).

Finally, the reflective sessions revealed that teachers gained not only technical skills but also a deeper understanding of how to align technology-based media with pedagogical goals. Many teachers expressed their intention to mentor their colleagues in developing similar skills, amplifying the program's impact across their schools (Jamiah et al., 2019). Overall, the program successfully empowered elementary school teachers to harness the potential of technology in enhancing their teaching practices, ultimately improving the quality of education in their classrooms (Abdurahman et al., 2023).



Figure 1. Community service team meeting with teachers



Figure 2. Learning Media Training Workshop for teachers

The results of the training conducted for 3 (three) days with 25 participants of Elementary School (SD) teachers in Sukabumi Regency showed quite good results. This can be seen from the practice of teaching skills before the training was carried out, they still did not understand the innovation of learning media and after the training was carried out, namely being able to carry out learning with various media innovations with the addition of teacher ability development (Abdurahman, 2024a), it

can be seen that there is a significant difference between teacher skills before and after the training, this is summarized in the table below.

Table: Key Outcomes of the Assistance Program

No	Aspect	Details	Impact
1	Teacher Skill Development	Training on creating interactive presentations, games, and digital tools.	Increased confidence and technical skills in integrating technology into teaching.
2	Student Engagement	Implementation of interactive and visually appealing learning media in classrooms.	Enhanced student participation and enthusiasm in learning activities.
3	Collaborative Culture	Formation of peer support groups and collaborative idea-sharing among teachers.	Strengthened professional networks and ongoing skill enhancement within the teaching community.
4	Reflective Practices	Reflective sessions to align technology with pedagogical goals.	Improved understanding of the educational value of technology-based media.
5	Scalability	Teachers mentoring peers and sharing knowledge post-program.	Broader dissemination of skills and practices across schools.

The assistance program demonstrated measurable success in empowering elementary school teachers to utilize innovative technology-based learning media effectively. Teachers gained practical skills through workshops, resulting in the creation of engaging educational tools tailored to their classroom needs. These tools significantly enhanced student engagement, making learning more interactive and enjoyable.

A notable outcome was the fostering of a collaborative environment among participants, leading to the establishment of peer support groups. This ensured the program's sustainability, as teachers continued to share and refine their practices beyond the formal sessions (Putrie et al., 2024). Reflective practices further deepened teachers' understanding of the integration of technology and pedagogy, ensuring the relevance and effectiveness of the tools developed (Abdurahman, 2024b). By mentoring their colleagues, the participants helped expand the program's impact, creating a ripple effect in improving teaching quality across schools.



Figure 3. Learning Practices with Media Innovation in Class

The results of this assistance program highlight the transformative potential of equipping elementary school teachers with skills to create innovative technology-based learning media. The findings align with existing research on the benefits of technology integration in education, emphasizing its ability to enhance student engagement, foster interactive learning environments, and develop critical thinking skills (Barizi et al., 2023).

Previous community service initiatives have often focused on providing ready-made digital resources or conducting general training without considering the specific needs of teachers. While these approaches introduced teachers to technology, they lacked sustainability and a focus on capacity-building (Miliyanti et al., 2022; Nugroho et al., 2023). In contrast, this program prioritized active teacher participation in designing their own learning media, a strategy supported by constructivist learning theory, which posits that individuals learn more effectively by actively engaging in the learning process (Nolan & Molla, 2017). By doing so, teachers not only gained technical competencies but also developed a deeper understanding of how to tailor media to their specific classroom contexts.

The increase in student engagement reported by the participants aligns with the theory of engagement pedagogy, which emphasizes that interactive and visually stimulating content can significantly enhance learning outcomes (Heilporn et al., 2021). Educational media such as gamified resources and digital storytelling align with Vygotsky's social constructivist framework, as these tools promote collaborative and active learning (Newman & Latifi, 2021). The observed improvement in student enthusiasm and participation demonstrates how technology-based media can bridge the gap between traditional teaching methods and the digital literacy demands of modern education.

The establishment of collaborative learning communities among teachers resonates with Wenger's theory of Communities of Practice, which highlights the importance of shared learning and mutual support among practitioners (Desrianita, 2018). This sense of collaboration ensured that the skills gained during the program were continuously refined and disseminated, amplifying the program's impact across schools (Misbah et al., 2015). Moreover, the participants' reflective practices were consistent with Schön's concept of the reflective practitioner, which underscores the importance of ongoing reflection in professional development to improve practical application (Hordvik et al., 2020).

Despite these successes, the program also revealed challenges, such as varying levels of digital literacy among teachers and limited access to technological resources in some schools (Ungerer, 2016). These challenges mirror findings from previous studies, which highlight the digital divide as a barrier to effective technology integration in education (Naibaho, 2022). To address these gaps, the program encouraged the use of cost-effective, user-friendly tools and provided continuous mentorship, ensuring inclusivity and accessibility for all participants (Abdurahman et al., 2024).

The program's approach of empowering teachers to create and implement innovative technology-based learning media has proven effective in enhancing educational quality. By aligning practical outcomes with theoretical underpinnings such as constructivism, engagement pedagogy, and reflective practice, this initiative not only addressed immediate classroom challenges but also contributed to the broader discourse on sustainable professional development in education. The findings underscore the importance of context-specific, participatory approaches in bridging the gap between theory and practice in technology integration for elementary education.

CONCLUSION

The Assistance in Creating Innovative Technology-Based Learning Media for Elementary School Teachers program successfully addressed the challenges of integrating technology into elementary education. By equipping teachers with practical skills and fostering a culture of collaboration, the initiative empowered them to design engaging and contextually relevant learning media. The program not only enhanced teaching practices but also significantly improved student engagement and participation, demonstrating the transformative potential of technology in creating dynamic, interactive classroom environments. Furthermore, the establishment of peer support networks and reflective practices ensured the sustainability of the program's impact, enabling participants to continue innovating and sharing their knowledge.

Future community service initiatives should focus on scaling this program to reach more schools, particularly in underserved and rural areas, to bridge the digital divide. Providing follow-up support and advanced training in emerging educational technologies would further enhance teachers' capabilities. Additionally, integrating partnerships with local governments or educational institutions can help secure resources and infrastructure to ensure equitable access to technology. Encouraging continuous research and feedback loops will also allow for iterative improvements, ensuring that such programs remain responsive to evolving educational needs.

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