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Webinar on Enhancing Technological Literacy in Education: Adapting to Rapid Technological Advancements

Dedi Rahman Nur

Universitas Widya Gama Mahakam Samarinda
dedirahmannur@uwgm.ac.id

Abdul Rohman

Universitas Widya Gama Mahakam Samarinda
rohmanuwgm@gmail.com

Godefridus Bali Geroda

Universitas Widya Gama Mahakam Samarinda
defri@uwgm.ac.id

Widi Syahtia Pane

Universitas Widya Gama Mahakam Samarinda
widi@uwgm.ac.id

MG. Adella kornelia Yulianti. H

Universitas Widya Gama Mahakam Samarinda
adellakorneliayulianti@gmail.com

Annisa Rohmah

Universitas Widya Gama Mahakam Samarinda
annisarohmah1007@gmail.com

Abstract

In the era of rapid technological advancements, education has undergone significant transformation, necessitating changes in teaching methods and skills. The International Community Service Webinar “Enhancing Technological Literacy in Education: Adapting to Rapid Technological Advancements” was organized by the Research and Community Service Institution of Universitas Widya Gama Mahakam Samarinda in collaboration with the English Education Department of Universitas Siliwangi. This event, held as a webinar via Zoom Meeting, addressed challenges in integrating digital tools into education. It was supported by Indonesian Education Share-to-Care Volunteers (IES2CV) and featured speakers from V.I. Vernadsky Crimean Federal University (Russia), Bangkokthonburi University (Thailand), Grand-Plus College of Education (Nigeria), Emilio Aguinaldo College (Philippines), and the University of Malakand (Pakistan). The program provided targeted training to equip educators and students with essential skills in utilizing digital platforms, promoting collaborative research, and comprehending digital ethics and data privacy. The primary objectives included

enhancing technological proficiency, increasing access to educational resources, and fostering a culture of innovation in learning environments. A total of 756 participants enrolled in the program, comprising 364 from Indonesia and 392 from various countries, including Pakistan, China, Nigeria, India, Eswatini, Thailand, the Philippines, and Iraq. The diverse participation underscores the global importance of technological literacy in education. By bridging the gap between technological advancements and educational practices, this initiative fostered the development of a more proficient and adaptable cohort of learners, ultimately enhancing the quality of education and research in the digital era.

Keywords: Education; Technological Literacy; Digital Tools

Introduction

In the rapidly evolving digital era, technological advancements have significantly impacted the education sector, particularly in the domains of learning and research. Technology has facilitated access to information and opened new opportunities for educators and students to explore more effective and efficient learning methods (Siringoringo & Alfaridzi, 2024). However, challenges have arisen in adapting to the rapid pace of technological developments, particularly in terms of technological literacy. Many educational institutions have not fully prepared themselves to optimally integrate technology into teaching and research activities Haddar (2023). Strengthening literacy, numeracy, and technological adaptation is essential in addressing these challenges and improving human resources in the digital era (Darwanto et al., 2022)

Technological literacy, encompassing the understanding and ability to effectively utilize digital tools, has become an essential foundational skill. According to (Naufal, 2021), technological literacy includes functional skills, critical thinking, and the ability to interact and communicate effectively in digital environments. Computer upskilling training plays a significant role in enhancing teachers' technological literacy, emphasizing the need for continuous training and professional development (Cantutay & Taganas, 2024). The Community Service Program (PkM) titled "Enhancing Technological Literacy in Education: Adapting to Rapid Technological Advancements" was established to improve technological literacy among educators and students, enabling them to optimally utilize technology to support learning and research activities. This program was organized by the Research and Community Service Institution of Universitas Widya Gama Mahakam Samarinda in collaboration with the English

Education Department of Universitas Siliwangi and was supported by Indonesian Education Share-to-Care Volunteers (IES2CV). Through this program, participants received comprehensive training on various relevant technological tools that support both learning processes and research activities.

Some of the tools introduced included digital learning platforms that facilitate remote interaction between educators and students, enabling structured material organization, task distribution, and evaluation (Sakti, 2023). E-learning platforms, for instance, provide various resources such as video lessons, e-books, and online quizzes that enhance student engagement and comprehension (Zulfikhar et al., 2024). These tools also empower students to learn independently and deepen their understanding through accessible online resources.

In the context of research, participants were introduced to collaboration tools that simplified coordination and document sharing, enhancing communication and tracking research progress efficiently (Jha, 2024). Digital collaboration platforms such as Google Docs and Google Classroom support real-time interaction, allowing for more effective teamwork and project management (Salsabila et al., 2024). This supports productivity and improves research outcomes. Additionally, the program trained participants in using data analysis tools that enabled them to present research findings with engaging and informative visualizations for both academic communities and the public (Musril et al., 2020)

The utilization of Augmented Reality (AR) and Virtual Reality (VR) technologies was also a program focus, aiming to provide interactive learning experiences and facilitate research simulations (Lesmana et al., 2021). AR enhances students' ability to visualize complex concepts, making abstract ideas more tangible (Salsabila et al., 2024), while VR creates immersive environments that allow for hands-on learning and experimentation without physical constraints (Fardani, 2020). The integration of these technologies in education fosters a more engaging and effective learning process (Azmi et al., 2024)

Furthermore, the program introduced reference management tools beneficial for academic writing and research. Careful reference management assisted participants in maintaining academic integrity and organizing resources systematically, supporting the accuracy of data utilized in research (Nuraeni et al., 2022). Beyond technical proficiency, this program emphasized the significance of digital ethics, data security, and privacy awareness, enabling educators and students to utilize technology judiciously and responsibly (Nisa et al., 2023)

Despite the benefits of technology, challenges in implementing it remain. Studies highlight that environmental factors significantly influence students' technological literacy, necessitating strong institutional support for digital skills development (Chasubuta et al., 2024). Additionally, the rapid movement of technological advancements often exceeds the ability of educational institutions to adapt, leading to underutilization of available resources and missed opportunities (Alzankawi, 2024)

With enhanced technological literacy, educators were anticipated to create interactive learning environments, while students became better prepared to confront academic and professional challenges that increasingly necessitate high digital skills (Nova Yanti et al., 2022). Overall, this program contributed substantially to elevating the quality of learning and research, fostering a generation more equipped to navigate an increasingly digital future.

Method

The implementation of the International Community Service Webinar, “Enhancing Technological Literacy in Education: Adapting to Rapid Technological Advancements,” was executed through a structured series of phases. The preparatory phase commenced with the formation of a dedicated organizing team comprising representatives from the Research and Community Service Institution of Universitas Widya Gama Mahakam Samarinda and the English Education Department of Universitas Siliwangi. Coordination was established with supporting organizations, including the Indonesian Education Share-to-Care Volunteers (IES2CV), and partner universities that provided esteemed speakers. The development of

training materials was meticulous, encompassing pertinent topics such as the integration of digital tools into the educational landscape, collaborative research in the digital era, and ethical considerations pertaining to digital literacy and data privacy.

The webinar was conducted virtually via Zoom Meeting, enabling participants from diverse countries to join remotely. The event featured esteemed speakers from V.I. Vernadsky Crimean Federal University (Russia), Bangkokthonburi University (Thailand), Grand-Plus College of Education (Nigeria), Emilio Aguinaldo College (Philippines), and the University of Malakand (Pakistan). Each speaker delivered their presentation through Zoom, sharing valuable insights and best practices on technological literacy in education. Following each presentation, a dedicated question-and-answer session was opened, allowing participants to engage directly with the speakers. Questions raised by the participants were promptly addressed by the respective speakers, fostering interactive discussions and deepening the understanding of the topics presented.

To assess the program's effectiveness, feedback was collected from participants through post-event surveys. The responses facilitated the evaluation of the training's impact and the identification of areas for enhancement in future programs. Additionally, documentation and publication efforts were undertaken to disseminate the insights gained from the webinar, including the preparation of a formal report and academic articles. As a follow-up initiative, efforts were made to establish a collaborative network among educators and researchers to support the ongoing development of digital literacy in education. The success of this event underscored the significance of bridging technological advancements with educational practices, contributing to a more digitally proficient and adaptable academic community globally.



Figure 1 Implementation of International Community Service Webinar

Results and Discussion

The webinar “Enhancing Technological Literacy in Education: Adapting to Rapid Technological Advancements” was successfully held, attracting a substantial number of participants from various countries. The total number of participants reached 756, with 364 originating from Indonesia and 392 from Pakistan, China, Nigeria, India, Eswatini, Thailand, the Philippines, and Iraq. This global representation underscores the paramount importance of technological literacy in the education sector. Participants received comprehensive training on the effective utilization of digital tools in both learning and research endeavors. The training curriculum emphasized the following key areas:

1. Technology-Embedded Education in the 21 st Century
2. Artificial Intelligence (AI) Writing Detection Adopting Digital Intelligence
3. Enhancing Technological Literacy in English Language Learning: Adapting to Rapid Technological Advancements in Critical Reading
4. Formal Education towards Social Mobility: Futureproofing Graduates for a Sustainable Workforce
5. 10 Best Practices in Prompt Engineering: Tips, Tricks, and Tools
6. Boosting Education with the Internet of Things (IoT): Practical Solutions for Smarter Learning Environments

In addition to the training sessions, the webinar also featured interactive discussions between participants and speakers from various international academic institutions. The Q&A sessions held after each presentation provided participants with opportunities to delve deeper into the application of technological literacy in education.

Based on the outcomes of the webinar, it can be concluded that it effectively enhanced participants’ awareness and comprehension of technological literacy in the context of education. Despite the ongoing challenges associated with the adoption of technology in education, such as the lack of institutional readiness for optimal integration and gaps in access

to digital resources, the webinar demonstrated that with appropriate training, educators and students can be adequately prepared to adapt to evolving technology-based learning methodologies.

The inclusion of artificial intelligence (AI), internet of things (IoT), and digital intelligence tools in the webinar provided participants with a comprehensive understanding of how these technologies can support educational and research endeavors. Furthermore, discussions on prompt engineering and social mobility underscored the pivotal role of technology in equipping students with essential future-oriented skills.

The participation of participants from diverse countries underscored the fact that challenges in technological literacy transcend geographical boundaries and constitute global issues that require collaborative approaches. Therefore, not only did the webinar provide technical training, but it also fostered opportunities for educational institutions to engage in continuous improvement of technological literacy through collaborative initiatives.

Conclusion and Recommendations

The findings of this study underscore the paramount significance of technological literacy in contemporary education. The webinar successfully enhanced participants' knowledge and skills, equipping them with the requisite competencies for integrating technology into the learning and research processes. Despite ongoing challenges such as institutional readiness and digital accessibility, the event demonstrated that structured training and international collaboration can significantly enhance technological adoption within the educational sector.

To sustain this progress, educational institutions should prioritize the development of continuous training programs and allocate adequate resources to support technology integration. Strengthening partnerships between universities and technology industries can further enhance learning experiences by providing practical applications of digital tools. Additionally, policymakers should establish clear guidelines for digital education while

addressing ethical concerns such as data security and responsible AI usage. Furthermore, expanding global networking opportunities can foster knowledge sharing and promote best practices in technological literacy.

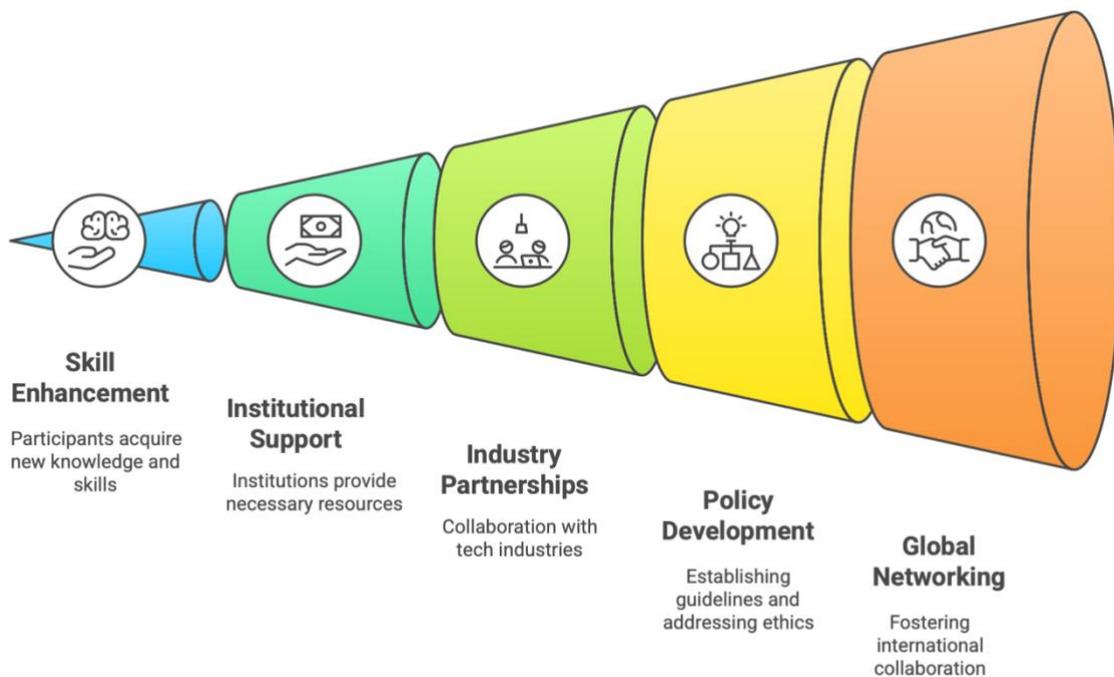


Figure 2 Enhancing Technological Literacy in Education

By implementing these recommendations, educational institutions, educators, and policymakers can ensure that students and teachers remain adequately equipped to navigate the evolving digital landscape. This will ultimately enhance the quality of education in the digital era.

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