

Digital Literacy Assistance for Senior Citizens: Bridging the Generational Tech Gap

Rena Augia Putrie^{1*}

¹⁾ Universitas Buana Perjuangan Karawang, Indonesia

* Correspondence e-mail; rena.putrie@ubpkarawang.ac.id

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Abstract

This community service initiative aimed to improve digital literacy among senior citizens, addressing the growing gap in technological access and usage that often marginalizes older adults in an increasingly digital world. The goal was to equip seniors with the necessary skills to navigate essential digital platforms for communication, healthcare, and daily activities. The service used a Participatory Action Research (PAR) approach, combining hands-on workshops with peer collaboration and continuous support. Participants engaged in practical tasks such as sending messages, making video calls, and accessing health services online. The results showed a significant improvement in participants' digital confidence, with many expressing increased autonomy and enhanced social connections. However, challenges such as limited access to devices and internet connectivity, along with physical impairments like poor eyesight and reduced dexterity, remained barriers. Despite these challenges, the program successfully fostered an environment of digital empowerment for senior citizens, demonstrating the positive impact of tailored digital literacy programs. In conclusion, this initiative highlights the importance of teaching technical skills and ensuring long-term access to technology for seniors. Future programs should address these barriers through partnerships and inclusive technology design to enhance the sustainability of digital literacy among older adults. This initiative contributes to the broader conversation on digital inclusion and empowerment, emphasizing the need for community-driven solutions to bridge the digital divide.

Keywords

Digital Literacy, Senior Citizens, Digital Inclusion, Community Empowerment, Digital Divide.



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INTRODUCTION

In the modern digital era, technology has rapidly transformed how individuals communicate, access information, and perform daily tasks. From smartphones and social media to online banking and telemedicine, digital tools are now embedded in nearly every aspect of daily life. While younger generations have seamlessly adapted to these technological shifts, senior citizens are often excluded from the digital ecosystem (Al-Ababneh, 2022). This

exclusion can lead to feelings of isolation, frustration, and even dependency on others for tasks now considered basic, such as booking medical appointments, managing finances, or staying in touch with family (Soliati, 2019). As such, digital literacy is no longer a luxury but a necessity, especially for older people, who must navigate a world increasingly driven by technology (Matli & Ngoepe, 2020).

Despite the widespread availability of technology, many senior citizens struggle with basic digital skills. Factors such as cognitive aging, lack of prior exposure to digital tools, and physical limitations like poor eyesight or reduced dexterity can significantly hinder their ability to engage with technology (Ramlah et al., 2022). Additionally, many seniors harbor anxieties or mistrust about technology, further compounding their reluctance to adopt it. These challenges create a significant digital divide between older adults and the rest of the population, raising concerns about inclusivity, equality, and the wellbeing of elderly individuals in an increasingly digital society (Legi et al., 2023). Without targeted intervention, this gap is likely to widen, exacerbating issues of social isolation, mental health, and access to critical services.

What makes this issue particularly urgent is the growing dependency on digital platforms in essential services, especially after the COVID-19 pandemic. Public services, healthcare, and even basic communication have migrated online, leaving behind those without the requisite skills (Lee et al., 2021). Interestingly, senior citizens represent one of the most vulnerable yet underserved groups in this regard. While various digital literacy programs exist, most are designed for younger demographics or are not tailored to older adults' specific learning needs and pace (Stephenson, 2023). Moreover, existing solutions often assume a baseline familiarity with technology that many seniors do not possess, thus failing to address the root of the problem effectively.

This community service article is unique in that it approaches digital literacy training for senior citizens not merely as a technical endeavor but as a holistic, human-centered intervention. The program proposed and implemented through this project considers the emotional, cognitive, and physical characteristics of elderly learners (Zaim et al., 2020). It focuses on teaching the "how" of technology and building the confidence and trust necessary for seniors to feel empowered in using digital tools independently. The assistance is personalized and empathetic, emphasizing patience, repetition, and practical relevance to ensure sustainable learning outcomes (Sebsibe et al., 2023).

There exists a noticeable gap in previous community engagement programs aimed at promoting digital literacy among senior citizens. Many initiatives lack continuity, adequate follow-up, or real-world applicability. Sometimes, the programs are too short, overly technical, or delivered by facilitators who do not fully understand the unique barriers older adults face (Adam et al., 2024). Furthermore, there is limited documentation and scientific evaluation of the effectiveness of such programs, making it difficult to replicate successful models or refine existing ones. This article seeks to fill that gap by providing a detailed, evidence-based account of a structured digital literacy assistance program tailored specifically for senior citizens

(Pratama et al., 2023).

The primary goal of this community service initiative is to bridge the generational digital divide by equipping senior citizens with the basic digital skills necessary to participate fully in today's society. Through workshops, hands-on training, and continuous mentorship, the program aims to foster technological independence, enhance social connectivity, and improve overall quality of life for older adults. Beyond the technical skills, the program also aspires to instill digital confidence and curiosity among senior participants. The hope is that this initiative will improve the immediate lives of its participants and serve as a replicable model for other communities seeking to support their elderly populations in becoming digitally literate.

The significance of digital literacy for senior citizens cannot be overstated. As technology continues to evolve and permeate all aspects of life, older generations mustn't be left behind. This article contributes to the academic and practical discourse on digital inclusion by presenting a thoughtfully designed, community-based intervention that addresses the specific needs of senior learners. By documenting the program's process, challenges, and outcomes, the article aims to provide insights that can inform future research, policy, and community service efforts to foster a more inclusive digital society.

METHOD

The method employed in this community service project is based on the Participatory Action Research (PAR) approach, which emphasizes collaborative engagement between facilitators and participants to identify problems, plan interventions, implement solutions, and evaluate outcomes together. The program was carried out over three months, from July to September 2024, at a local community center in Karawang, which serves as a social gathering space for elderly residents. The target participants were senior citizens aged 60 and above, most of whom reside in the surrounding neighborhood and are members of a senior community group. The selection of participants was coordinated in collaboration with the local neighborhood association (RT/RW) and community health workers (kader posyandu lansia), who acted as our primary partners and field informants.

The project was implemented in several key stages. It began with a preliminary needs assessment, where informal interviews and focus group discussions were held with potential participants to explore their challenges with digital technology. This was followed by coordination and permission-seeking processes involving the local village office and community leaders to secure official support and facility access. Once approvals were granted, the team proceeded with preparatory activities, including developing training materials, recruiting volunteer facilitators (mostly university students with IT backgrounds), and scheduling the training sessions. The training phase involved weekly hands-on workshops on practical digital skills such as smartphone usage, messaging apps, online health services access, and internet safety. Data collection techniques used throughout the project included pre- and post-training surveys, participant observation, and in-depth interviews. The data

sources included both the senior participants and the volunteer facilitators. Quantitative data from surveys were analyzed using descriptive statistics and **correlation tests** to measure the relationship between participation frequency and digital literacy improvements. Qualitative data were analyzed through thematic coding to capture participant feedback and learning progress.

During the monitoring phase, the facilitators regularly observed and recorded participant engagement. At the same time, reflective meetings were held at the end of each week to evaluate the effectiveness of the sessions and adjust methods as needed. The program culminated in an evaluation and feedback session, where participants demonstrated their newly acquired digital skills and provided testimonials about their experiences. The program's success was measured by improvements in digital competency and increased confidence and independence among the elderly participants. The final evaluation also involved a joint review session with community partners to assess the program's sustainability and explore future collaboration or scale-up opportunities. Through this participatory and cyclical process, the project ensured that the voices and experiences of the elderly were central to every phase of the initiative, from planning to implementation and beyond.

FINDINGS AND DISCUSSION

The findings from this community service initiative reveal significant progress in digital literacy among the senior participants, demonstrating the effectiveness of the Participatory Action Research (PAR) approach in addressing their unique needs. After analyzing the pre- and post-training survey data, we observed a marked improvement in the participants' self-reported confidence in using digital technology. Before the training, many of the senior citizens expressed discomfort and anxiety when dealing with smartphones, social media, or navigating the internet. However, by the end of the three-month program, most participants reported feeling more confident performing basic tasks such as sending messages via WhatsApp, accessing healthcare portals, and using video calling apps like Zoom. This shift in attitude was also reflected in the increased frequency with which participants engaged with technology, as observed by the facilitators.

The quantitative data collected through surveys were analyzed using correlation tests to assess the relationship between the number of training sessions attended and improvements in digital literacy. The results revealed a positive correlation between attendance and skill acquisition. Participants who attended more sessions tended to improve their ability to use digital tools independently. The data indicated regular, hands-on practice was essential for boosting the participants' competency and confidence. This correlation supports the notion that digital literacy is not a one-time intervention but requires ongoing exposure and practice to yield lasting results (Novitasari et al., 2023). Furthermore, the improvement was not just in technical skills but also in the participants' comfort level and trust in using technology to perform daily activities.

The qualitative data, gathered through participant interviews and facilitator

observations, further emphasized the importance of personalized, empathetic teaching approaches. Many seniors initially had reservations about using technology, often citing fear of making mistakes or feeling overwhelmed by the complexity of digital devices. However, as the program progressed, participants began to express a sense of empowerment, noting that the supportive environment created by the facilitators made them feel safe to ask questions and experiment with new tools (Nugraha et al., 2022). One common theme that emerged from the interviews was the desire for digital inclusion, where participants mentioned that gaining these skills had helped them feel more connected to their families, friends, and communities, reducing their feelings of isolation. Additionally, several participants reported a newfound interest in continuing to learn and explore other technological applications, such as online shopping and accessing government services through digital platforms (García-Peñalvo, 2016).

Another significant finding was the role of peer support in facilitating the learning process. During the workshops, seniors who had grasped certain concepts more quickly often assisted others, creating a collaborative learning environment (Ainis Rohtih et al., 2023). This peer-to-peer interaction fostered a sense of community among the participants and helped build their confidence. Some seniors who initially struggled to operate smartphones and computers later took on informal roles as "digital mentors" within the group, demonstrating how the program built digital skills and encouraged a supportive social dynamic among participants (Junaid et al., 2023).

While the project was largely successful, several challenges and areas for improvement were identified during the evaluation phase. One of the main obstacles encountered was the physical limitations faced by some participants, such as poor eyesight or reduced motor skills, which made certain digital tasks more difficult. To address this, the facilitators adjusted their teaching methods by using larger font sizes, screen magnifiers, and voice commands to ensure inclusivity for all participants (Obloberdiyevna D S, 2022). Another issue was the digital divide that persisted even after the training. While many participants gained confidence and skills, some still lacked access to personal devices or reliable internet connections, limiting their ability to practice independently outside the training sessions. This highlighted the need for sustainable solutions, such as providing low-cost devices or internet subsidies, to ensure that senior citizens can continue to benefit from digital engagement in the long term (Barizi et al., 2023).

The findings from this community service initiative suggest that targeted, empathetic digital literacy training can profoundly impact senior citizens, both in terms of their technical abilities and overall sense of digital inclusion. The program successfully enhanced the participants' ability to use technology for communication, accessing services, and engaging with their communities. Moreover, it fostered a sense of empowerment and social connection among the elderly, vital in combating isolation and promoting mental well-being. Despite some ongoing challenges, the results indicate that older adults can become active, confident participants in the digital world with continued support. Future iterations of this program

could further refine the approach by addressing physical barriers, expanding access to digital devices, and strengthening community partnerships to ensure digital literacy is accessible to all seniors.

Here is a simple table summarizing the key aspects of the community service initiative focused on improving digital literacy among senior citizens:

Table 1. The key aspects of the community service initiative

No	Aspect	Description
1	Target Group	Senior citizens, particularly those with 2minimal prior experience with technology.
2	Objective	T3o enhances digital literacy skills, including communication, accessing healthcare, and daily tasks through technology.
3	Methodology	Participatory Action Research (PAR) combines hands-on workshops, peer collaboration, and continuous facilitator support.
4	Key Activities	Smartphone training, using communication apps (e.g., WhatsApp), navigating online health platforms, and accessing local services.
5	Results	Increased digital confidence and independence in using technology for communication, healthcare, and accessing services.
6	Challenges	Limited access to devices and the internet, physical impairments affecting device use, and difficulty applying skills outside the training setting.

This table concisely overviews the community service project's focus, approach, and outcomes. It highlights the importance of digital literacy for senior citizens and how the Participatory Action Research (PAR) methodology was used to create an interactive, hands-on learning environment. The results indicated a notable improvement in participants' ability to use technology for practical purposes, such as communication and healthcare access. However, challenges such as device accessibility and physical limitations pointed to the need for continued efforts in sustaining digital engagement through collaborations that address the digital divide. These findings emphasize that digital literacy programs for older adults must be multifaceted, focusing on skills and ensuring long-term access to technology and inclusive design.



Figure 1. The digital literacy workshop on smartphone

The image above depicts an intergenerational digital literacy workshop in which a young instructor is actively helping senior citizens with their smartphones. The scene captures an atmosphere of patience and engagement, with each participant focused on learning. The elderly individuals are absorbed in using their devices, showcasing their active participation in the learning process. The young instructor offers guidance, reinforcing the importance of intergenerational support in bridging the digital divide. This image underscores the central theme of the initiative, where digital literacy not only empowers seniors but also fosters a sense of connection between generations, highlighting the collaborative nature of the training and its effectiveness in providing seniors with the tools they need to engage in the digital world.

The findings from this community service initiative present a compelling case for the effectiveness of personalized, empathetic digital literacy training for senior citizens. Compared with previous community service initiatives aimed at improving digital literacy among older adults, the outcomes of this project demonstrate both similarities and significant advancements. Prior studies, such as those conducted by (Eraku et al., 2023), showed that digital literacy programs often struggled with engagement, particularly among senior citizens who felt overwhelmed by technology or had minimal prior experience with digital tools. This project, however, benefitted from a tailored approach that accounted for the cognitive, emotional, and physical characteristics of the elderly learners. By incorporating a supportive, hands-on methodology that prioritized continuous practice and peer support, the program yielded more promising results in terms of participant engagement and skill acquisition (Otto & Dunens, 2021).

The most striking finding from our analysis was the positive shift in participants' confidence and digital competence. Many seniors began the program without experience using digital devices, expressing reluctance or fear about navigating the digital world. However, after three months of targeted training, most participants showed significant improvement in their ability to use smartphones for everyday tasks such as communication, accessing information, and even online healthcare services. This shift aligns with the Theory of Technological Acceptance (Uyar et al., 2021), which posits that an individual's perceived ease of use and usefulness of technology significantly influence their willingness to adopt it. In this case, participants' growing confidence can be attributed to the fact that the training was designed to be both accessible and relevant to their everyday needs, ensuring that they saw immediate value in using digital tools (Jannah et al., 2020).

When comparing these results with prior initiatives, it is evident that many earlier programs did not achieve the same level of success. For example, a study by (Sholeh et al., 2019) found that while many senior citizens attended digital literacy workshops, the lack of follow-up and personalized learning left participants disillusioned and unable to continue practicing independently. In contrast, the PAR approach used in this project allowed for continuous engagement and reflection, which was crucial for maintaining motivation. The participants were taught technical skills and encouraged to share their experiences and learn from each other, creating a more collaborative and sustainable learning environment. This

aligns with Vygotsky's Social Development Theory, which highlights the importance of social interaction in cognitive development (Yoshikawa et al., 2018). By fostering a sense of community within the training program, participants were able to reinforce their learning through peer support, making the process more enjoyable and less intimidating.

From a theoretical perspective, the findings also reflect the principles of Digital Literacy Theory, as discussed by Martin (2008), which emphasizes the multidimensional nature of digital literacy. This theory argues that digital literacy is not simply about knowing how to use a device but involves the ability to critically engage with and navigate digital environments. In this program, while participants improved their technical skills, the broader goal of fostering digital inclusion was also achieved. Many seniors reported using their newfound skills to communicate more effectively with family members, access health services online, and stay informed about local news and events. This is consistent with research by (Rajadurai et al., 2018), which suggests that digital literacy programs should prioritize practical applications that enhance the daily lives of older adults rather than focusing solely on technical training. Our program succeeded in this aspect by aligning the training content with real-world needs, such as communication and accessing healthcare, thus making the digital tools feel more relevant and less abstract to the participants.

However, there were also areas where this project encountered challenges, similar to previous initiatives. The issue of physical limitations, such as poor eyesight or reduced dexterity, was a barrier that several seniors faced during the training. This challenge has also been noted in previous literature, with studies (Rusmulyani, 2021) highlighting how such physical constraints can hinder the effective use of technology, especially for tasks requiring precise motor skills. The facilitators adjusted the training materials to mitigate this by incorporating larger fonts, simplified interfaces, and voice-activated commands. These accommodations successfully made the technology more accessible, but they also underscored the need for inclusive design in digital tools, as recommended by Shneiderman's Principles of Universal Usability (2000). Future digital literacy programs should continue to address these physical barriers and advocate for developing more inclusive digital platforms.

Additionally, the issue of the digital divide persisted even after the training. Despite the improved skills, some seniors still struggled with access to devices and reliable internet connections, limiting their ability to practice and apply what they had learned outside the training environment. This mirrors the findings of previous research, such as (Bray et al., 2023), which noted that the lack of access to technology remains one of the most significant barriers to digital inclusion. While this project made efforts to ensure all participants had access to devices during the workshops, it highlighted the need for longer-term solutions that extend beyond training. Future programs could explore partnerships with local organizations or government initiatives to provide low-cost devices or subsidized internet access for elderly residents, ensuring that digital literacy can be sustained after the program concludes.

The findings from this community service initiative reinforce the importance of addressing the digital divide and offer a comprehensive understanding of how personalized,

community-driven approaches can enhance digital literacy programs for senior citizens. By incorporating elements of the PAR method, the program succeeded in engaging participants, fostering confidence, and providing them with the skills necessary to navigate the digital world. Compared to prior initiatives, the results of this project demonstrate that a more holistic, inclusive, and supportive approach is essential for achieving long-term success in digital literacy training for older adults. Moreover, the theoretical frameworks of technological acceptance, digital literacy, and social development were reflected in the outcomes, confirming the relevance of these models in guiding future community-based digital literacy efforts for senior citizens.

CONCLUSION

In conclusion, this community service initiative successfully addressed the initial concerns regarding the digital divide and technological reluctance among senior citizens. The positive transformation observed in participants' confidence, digital skills, and ability to navigate everyday digital tasks, such as communication and healthcare access, confirms that older adults can become competent digital users with the right approach. The program demonstrated that a supportive, practical, and community-driven learning environment can effectively overcome barriers to technology adoption among seniors. However, the research also highlighted ongoing challenges, primarily around access to technology and the physical limitations that some seniors face when using digital devices, which continue to hinder their ability to fully engage with the digital world outside of structured training sessions.

While the initiative succeeded in many aspects, it also revealed certain limitations. The issue of access to devices and reliable internet connections for participants was a recurring challenge, emphasizing that digital literacy programs must go hand-in-hand with efforts to provide ongoing, equitable access to technology. Moreover, despite adjustments made for physical limitations, the need for more inclusive device designs remains critical. For future community service programs, it is crucial to focus on skill-building and work towards collaborative solutions with local stakeholders, such as technology providers and government agencies, to ensure sustained access to devices and internet services. Additionally, further research could explore long-term follow-up mechanisms to track the retention of digital skills and ensure that seniors continue to benefit from the program in their everyday lives.

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