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FROM DIGITAL LITERACY TO DIGITAL EMPOWERMENT: STRENGTHENING COMMUNITY RESILIENCE IN THE AI ERA

Nurhikmah[1*]

[1] Universitas Islam Negeri Alauddin Makassar, Indonesia
*Corresponding author: hikmahnur192@gmail.com

Abstract

The rapid development of digital technologies and artificial intelligence has transformed the way communities access information, communicate, work, learn, and participate in social and economic activities. Despite these opportunities, disparities in digital literacy continue to limit the ability of some communities to benefit from technological transformation. Limited digital competence may increase vulnerability to misinformation, online fraud, privacy risks, and technological exclusion. This community service program aimed to strengthen community resilience by developing digital literacy and empowering community members to use digital technologies and artificial intelligence productively, critically, and responsibly. The program employed a participatory community empowerment approach consisting of needs assessment, digital literacy education, practical training, AI-assisted digital skills development, collaborative activities, mentoring, and evaluation. Participants were introduced to essential digital competencies, information verification, online safety, privacy protection, responsible AI use, and the productive application of digital technologies in everyday and community activities. The effectiveness of the program was evaluated through pre-test and post-test assessments, practical tasks, observation, participant reflection, and feedback. The program demonstrated improvements in participants' understanding of digital technologies and their confidence in applying digital and AI-based tools to practical situations. Participants also developed greater awareness of digital risks and the importance of evaluating information before accepting or sharing it. The findings indicate that digital empowerment requires an integrated approach that combines technical competence, critical thinking, responsible technology use, and practical application. Community-based digital literacy programs can therefore contribute to strengthening community capacity and resilience in responding to the opportunities and challenges of technological transformation.

Keywords: *Community Resilience; Digital Competence; Community Empowerment*

INTRODUCTION

Digital transformation has become an important feature of contemporary society, influencing how individuals communicate, access information, participate in education, conduct economic activities, and engage with public and social services (Farias-Gaytan et al., 2022). The rapid expansion of smartphones, internet connectivity, digital platforms, and artificial intelligence has created new opportunities for individuals and communities to obtain information and perform activities more efficiently. Digital technologies can support learning, communication, entrepreneurship, public participation, and access to various services (Al Ayyubi et al., 2024). However, the benefits of digital transformation are not distributed equally because individuals and communities possess different levels of access, knowledge, skills, and confidence in using digital technologies (De Roock, 2021).

Digital literacy has therefore become an increasingly important

competency for contemporary communities. Digital literacy extends beyond the ability to operate technological devices or access online information. It includes the ability to locate, understand, evaluate, create, and communicate information through digital technologies. Individuals with adequate digital literacy are better positioned to distinguish reliable information from misleading content, protect their privacy, communicate appropriately online, and use digital resources productively. In contrast, limited digital literacy can increase vulnerability to misinformation, online fraud, privacy violations, cyber threats, and social exclusion.

The emergence of artificial intelligence has further expanded the complexity of digital literacy. AI-powered systems are increasingly integrated into search engines, social media, communication platforms, educational applications, financial services, and content creation tools. Generative AI has made these technologies more accessible by allowing users to interact with AI systems through natural language. Community members can use AI to support learning, writing, information retrieval, problem solving, creative activities, and productivity (Knight et al., 2023). Nevertheless, the accessibility of AI also creates new challenges because users may rely excessively on AI-generated information without understanding its limitations.

AI-generated information can contain inaccurate, incomplete, biased, or misleading content. The ability of AI systems to generate convincing responses may make it difficult for inexperienced users to distinguish reliable information from fabricated or inappropriate outputs. Communities therefore require not only general digital literacy but also the capacity to interact with AI critically and responsibly. The development of digital competence must be accompanied by awareness of information verification, privacy, security, ethics, and human responsibility.

The digital divide should also be understood as more than a problem of technological access (Prokopiv & Stynska, 2023). Even when communities have access to smartphones and internet services, differences in digital skills may prevent individuals from using technology effectively. Some community members may use digital platforms primarily for entertainment and communication while having limited experience using them for education, economic development, community organization, or access to public information. Digital empowerment therefore requires a shift from access and basic usage toward meaningful and productive engagement with technology.

Community resilience is increasingly connected with the capacity to adapt to technological and social change. A digitally resilient community is not necessarily one that uses the most advanced technologies but one whose members possess sufficient knowledge and skills to respond to changes, identify digital risks, access reliable information, and use technological resources to address practical problems. Digital literacy can therefore function as an important foundation for community resilience because it strengthens individuals' capacity to make informed decisions in an increasingly digital environment.

Community empowerment provides an appropriate framework for

addressing these challenges because it emphasizes participation, capacity building, and sustainable application. Rather than positioning community members as passive recipients of digital knowledge, empowerment-based programs encourage participants to identify their own needs, explore technological solutions, practice new skills, and apply those skills to real-life situations. Such an approach can increase the relevance of digital literacy education and strengthen the likelihood that newly acquired competencies will be maintained after the program ends.

The present community service program focuses on strengthening digital literacy as a foundation for digital empowerment and community resilience in the AI era. The program recognizes that digital empowerment requires a combination of technical competence, critical information literacy, responsible AI use, digital safety, and practical application. Participants are therefore encouraged not only to learn how digital technologies work but also to understand how technology can be used to support personal, social, educational, and economic activities.

The novelty of this program lies in connecting digital literacy with community empowerment and resilience within the context of increasing AI adoption. Instead of treating digital literacy as an isolated technical skill, the program approaches it as a capacity that enables communities to adapt to technological change, reduce digital vulnerabilities, and utilize emerging technologies productively. The program consequently seeks to strengthen community members' digital competence while encouraging responsible and sustainable technology use. Based on these considerations, this community service program aims to strengthen community digital literacy and empowerment by developing participants' ability to use digital technologies and artificial intelligence critically, safely, productively, and responsibly, thereby contributing to greater community resilience in the AI era.

METHOD

The program employed a Participatory Community Empowerment approach (Creswell & Creswell, 2017). This method was selected because the program focused on strengthening community capacity through active participation rather than one-directional knowledge transfer. Community members were involved in identifying their digital needs, participating in training activities, practicing digital skills, discussing challenges, and reflecting on the relevance of technology to their everyday activities.

The program began with a needs assessment to identify participants' existing levels of digital literacy, common patterns of technology use, difficulties in accessing or evaluating digital information, and awareness of online safety and artificial intelligence. Information was obtained through initial discussions, observations, and questionnaires. The results were used to determine the content and practical activities provided during the program.

The first intervention stage consisted of digital literacy education. Participants were introduced to essential digital competencies, including effective information searching, evaluation of online information, responsible digital communication, privacy protection, password security, recognition of online scams, and safe use of digital platforms.

The learning materials were presented using practical examples that reflected situations commonly encountered by community members.

The next stage involved AI and digital skills training. Participants were introduced to practical applications of AI and digital technologies that could support learning, communication, productivity, information management, and other community activities. The training emphasized that AI should be used as a supporting technology and that information generated by AI should be critically evaluated before being accepted or disseminated.

Hands-on practice was then conducted to enable participants to apply the skills introduced during the training. Participants practiced searching for information, evaluating the credibility of digital sources, interacting with AI systems, developing simple digital content, and applying digital tools to practical tasks. Facilitators provided guidance and feedback throughout the activities to ensure that participants could perform the tasks independently.

The empowerment process was strengthened through mentoring and collaborative activities. Participants were encouraged to identify practical problems within their daily or community activities and consider how digital technologies could provide useful solutions. This process helped shift the program from basic digital skills training toward practical digital empowerment. Participants were given opportunities to apply their skills in realistic situations and discuss difficulties encountered during implementation.

Program effectiveness was evaluated using pre-test and post-test assessments, practical performance tasks, observation, participant reflection, and feedback. The pre-test and post-test were used to identify changes in participants' knowledge and understanding of digital literacy and responsible technology use. Practical tasks were used to assess participants' ability to apply digital and AI-related skills, while observation and reflection were used to identify changes in confidence, awareness, and perceived usefulness of the technologies introduced during the program.

RESULTS AND DISCUSSION

The implementation of the community empowerment program demonstrated that participants had varying levels of digital literacy before the intervention. Although most participants were familiar with smartphones, social media, online communication, and basic internet services, their ability to use digital technologies critically and productively was not uniform. Initial discussions indicated that some participants primarily used digital technologies for communication and entertainment, while fewer participants had systematically used digital tools for learning, information verification, economic activities, or community development. This finding highlights the distinction between access to technology and meaningful digital competence. Having access to digital devices does not necessarily indicate that individuals possess the knowledge and skills required to use technology safely, critically, and productively (Farias-Gaytan et al., 2022).

The digital literacy sessions contributed to broader participant understanding of the role of digital technology in everyday life. Participants became more aware that digital literacy

involves not only operating devices but also evaluating information, communicating responsibly, protecting personal data, and recognizing potential risks (Al Ayyubi et al., 2025). The training encouraged participants to reconsider their everyday digital practices and identify behaviors that could potentially expose them to misinformation, online fraud, privacy violations, or other digital threats. This broader understanding represents an important foundation for digital empowerment because individuals need to understand both the opportunities and risks associated with technology before they can use it effectively.

The information verification activities were particularly useful in developing participants' critical digital awareness. Participants were presented with examples of online information and encouraged to examine the source, context, evidence, and consistency of the information before determining whether it was trustworthy. The activity demonstrated that visually attractive or frequently shared content is not necessarily reliable. Participants gradually recognized the importance of comparing information with credible sources and avoiding immediate dissemination of unverified content. This competency is increasingly important in the AI era because digital users are exposed not only to human-generated misinformation but also to AI-generated content that may appear highly convincing.

The introduction to artificial intelligence expanded participants' understanding of emerging digital technologies (Mukminah et al., 2020). Participants initially tended to view AI as a specialized technology with limited relevance to ordinary community activities. After the training, they began to identify practical applications of AI for information retrieval, learning, writing, content development, and productivity. The hands-on activities increased participants' confidence in interacting with AI systems and demonstrated that AI can provide useful support when users provide clear instructions and critically evaluate the resulting information.

The practical application of AI also revealed the importance of human judgment. Participants encountered situations in which AI-generated responses required correction, additional information, or contextual adjustment (Farias-Gaytan et al., 2022). These experiences reinforced the principle that AI should not be treated as an unquestionable source of information. Participants learned that AI can assist with generating ideas and information but that the final decision regarding whether the output is accurate and appropriate remains the responsibility of the user. This understanding represents an important transition from simple technology adoption toward responsible digital empowerment.

The program also strengthened participants' awareness of digital safety. Discussions concerning personal data, passwords, suspicious links, online scams, and privacy helped participants recognize that digital participation involves potential risks. The increasing use of AI creates additional concerns because users may be tempted to enter personal or confidential information into AI applications for convenience. Participants were therefore encouraged to consider the sensitivity of information before sharing it through digital platforms. This awareness can contribute to greater individual and community

resilience by reducing vulnerability to common digital threats.

The empowerment activities further demonstrated that digital literacy becomes more meaningful when participants are given opportunities to apply their skills to real situations. Instead of limiting the program to lectures, the activities allowed participants to practice digital tools and discuss how those tools could be used to address practical needs. This approach increased engagement because participants could immediately recognize the relevance of the skills they were learning (Chowdhury et al., 2024; Kulkov et al., 2024). Practical application also helped participants identify their own limitations and seek assistance when necessary, creating a more collaborative learning environment.

An important finding was that digital empowerment requires more than increased confidence in using technology. Participants need to develop the ability to make informed decisions about when and how technology should be used. Excessive dependence on digital tools can create new forms of vulnerability if users lack the ability to evaluate information independently. The program therefore emphasized the importance of maintaining human judgment and critical thinking. Technology becomes empowering when it expands an individual's ability to solve problems and make decisions rather than replacing that individual's capacity to think critically.

The relationship between digital literacy and community resilience became increasingly visible throughout the program. Participants who understood how to evaluate information, protect their data, and use digital tools productively were better positioned to respond to technological challenges. Digital literacy can help communities access important information during changing circumstances, maintain communication, identify misinformation, and utilize online resources for education and economic activities. In this sense, digital literacy is not simply an individual technical competency but also a resource for collective resilience.

The program also demonstrated that community empowerment can reduce the gap between technology availability and meaningful technology use (Hendriarto et al., 2021; Nisa, 2021; Yusri et al., 2023). Communities may have access to smartphones, internet connections, and AI applications, but without appropriate competencies, these resources may not produce substantial social or economic benefits. Training and mentoring can help community members move from passive consumption toward more active and productive engagement. This transformation is important for ensuring that digital transformation contributes to empowerment rather than increasing existing inequalities.

The participatory approach proved useful because participants were able to share different experiences and learn from one another. Individuals with greater familiarity with digital technologies could assist participants who were less experienced, while facilitators provided structured guidance when participants encountered difficulties. Such peer interaction can strengthen social learning and contribute to the development of community-based digital support networks. Over time, these networks may help communities become less dependent on external

assistance when dealing with routine digital challenges.

The findings also suggest that digital empowerment should be connected with local community needs. A generic digital literacy program may have limited impact if the skills provided are disconnected from participants' daily lives. The program therefore emphasized practical applications that participants could immediately recognize as useful. Digital tools were discussed in relation to communication, learning, information access, productivity, and community activities. This contextual approach increased the relevance of the training and supported participants in recognizing technology as a resource for addressing practical challenges.

The role of AI in community empowerment should also be approached critically. AI can potentially improve access to information and support a wide range of activities, but it can also create risks associated with misinformation, privacy, bias, and dependence. Participants therefore need sufficient literacy to determine which tasks can appropriately be supported by AI and which situations require additional human judgment or professional expertise. The program's emphasis on responsible use helped establish this distinction and encouraged participants to consider the consequences of their technological choices.

The results further indicate that digital resilience is closely connected with adaptability. As digital platforms and AI technologies continue to evolve, communities cannot rely exclusively on knowledge of specific applications. Instead, they need transferable competencies that enable them to learn new technologies, evaluate unfamiliar information, recognize risks, and adapt to technological changes. Digital literacy education should therefore focus on developing learning capacity and critical thinking rather than simply teaching the technical features of a particular platform.

The sustainability of digital empowerment requires continued support after the completion of the program. A short-term training intervention can introduce important competencies, but long-term changes require opportunities for repeated practice, peer support, and continued access to learning resources. Community organizations can potentially establish informal digital learning groups in which members share experiences, discuss emerging technologies, and assist one another with digital problems. Such mechanisms can help maintain the competencies developed during the program and strengthen community resilience over time.

Overall, the program demonstrates that digital literacy can function as a foundation for broader community empowerment in the AI era. The ability to use technology effectively must be accompanied by critical evaluation, digital safety awareness, ethical responsibility, and practical application. When these competencies are developed together, communities become better positioned to utilize technological opportunities while reducing their vulnerability to digital risks. The transformation from digital literacy toward digital empowerment is therefore not simply a technological process but a process of strengthening individual and collective capacity to participate meaningfully in a rapidly changing digital society.

CONCLUSION

The community service program demonstrates that participatory community empowerment can strengthen digital literacy and support the development of greater community resilience in the AI era. The program enabled participants to expand their understanding of digital technologies, improve their ability to evaluate online information, develop practical digital skills, and become more familiar with responsible applications of artificial intelligence. The combination of education, practical activities, mentoring, and reflection encouraged participants to move beyond basic technology use toward more critical, productive, and responsible engagement with digital environments.

The program also demonstrates that digital empowerment depends on the development of competencies that extend beyond technical skills. Community members need to be able to evaluate information, protect personal data, recognize digital risks, use AI critically, and apply technology to practical needs. These competencies can strengthen individual capacity while also contributing to broader community resilience in responding to technological and social change. Although the program primarily assessed short-term improvements in knowledge, skills, and awareness, the findings provide a foundation for continued community empowerment. Future programs should provide sustained mentoring, community-based digital learning activities, and follow-up assessments to examine whether the competencies developed through the program are maintained and translated into long-term changes in digital behavior and community practices.

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