THE ROLE OF DIGITAL LITERACY IN STRENGTHENING LIFELONG LEARNING IN RURAL AND MARGINALIZED COMMUNITIES

Nia Ulfasari, Ririn Gusti

nulfasari@unib.ac.id,riringusti@unib.ac.id

Non-formal Education, University of Bengkulu, Indonesia

Abstract

The rapidly developing digital era has created significant disparities, especially for rural and marginalized communities who often lag behind in terms of technological access and capabilities. This research aims to analyze the critical role of digital literacy not only as a technical skill, but as a catalyst for strengthening lifelong learning practices within these communities. The research method used is a literature study with a qualitative approach, which highlights various empirical findings and empowerment models from various sources. The results of the analysis show that digital literacy plays a multifaceted role, namely: 1) as an access bridge that allows individuals to access sources of knowledge, market information and new skills training without geographical boundaries. 2). Second, as a tool for economic empowerment that facilitates digital entrepreneurship, marketing of local products, and job creation. 3) Third, as a reinforcement of social capital by expanding collaboration networks and building a solid learning community. However, its implementation faces complex challenges, such as uneven infrastructure, limited contextual content, and low levels of confidence. The conclusion of this research confirms that the development of integrated and contextual digital literacy is a fundamental strategy to empower rural and marginalized communities to become active subjects in the lifelong learning process, so that they are able to overcome knowledge isolation and improve their quality of life in a sustainable manner. Therefore, a collaborative approach is needed from the government, educational institutions and society to create an inclusive digital ecosystem.

Keywords: Digital Literacy, Lifelong Learning, Rural Communities, Marginalized Communities, Empowerment, Digital Divide.

1. INTRODUCTIONS

In the era of the industrial revolution 4.0 and society 5.0, digital technology has become the backbone of almost all aspects of life, from economics and social issues to education and governance. The concept of lifelong learning has evolved from merely a discourse on formal education to a necessity for survival and competition in a dynamic global society. Lifelong learning, as defined by UNESCO (2020), is a continuous process that builds individual capacities and qualifications throughout life, occurring in various formal, non-formal, and informal contexts. However, access to these learning opportunities is not evenly distributed.

Communities living in rural and marginalized areas are often the ones left behind in this digital race. Communities face multidimensional challenges, ranging from a wide digital divide, poor internet infrastructure, to limited access to digital devices and resources. According to van Dijk (2020), the digital divide is not just a matter of physical access to technology (the access divide), but also encompasses a skills divide and a usage divide. This is where digital literacy emerges as a crucial concept that goes beyond mere technical skills.

Digital literacy, according to Paul Gilster (1997) in his pioneering book, Digital Literacy, is defined as the ability to understand and use information in various formats from a large number of sources accessed through computer devices. This concept was later developed by contemporary experts. Yusufhadi Miarso (2004) emphasized that in the context of education, technology must be able to empower the potential of society, not just as a tool, but as part of the learning ecosystem. Meanwhile, Douglas Belshaw (2011) in his famous model, identified eight essential elements of digital literacy: cognitive, constructive, communicative, participatory, creative, confident, critical, and cultural aspects. These elements are what distinguish digital literacy from simply "being able to operate a computer."

In rural and marginalized communities, low levels of digital literacy are a major barrier to engaging in lifelong learning. They may have limited access to smartphones, but often lack the critical skills to evaluate online information, use e-learning platforms, or leverage technology to develop their micro-

enterprises. Eshet-Alkalai (2004) added the dimension of "digital survival literacy," emphasizing the adaptive ability to learn new things independently through technology, a core competency of lifelong learning.

Therefore, there is a strong symbiotic relationship between digital literacy and lifelong learning. Digital literacy serves as a key enabler or reinforcement. Without digital literacy, online learning portals, open online courses (MOOCs), digital libraries, and other knowledge resources become inaccessible or underutilized. Conversely, the spirit of lifelong learning motivates individuals to continuously improve their digital literacy skills. In the context of marginalized communities, strengthening digital literacy is not just about teaching technical skills, but about empowering them to become self-directed learning agents who can solve local problems, improve economic well-being, and fully participate in digital democracy.

Based on the above description, the research entitled "The Role of Digital Literacy in Strengthening Lifelong Learning in Rural and Marginalized Communities" is highly relevant and urgent. This research aims to investigate in depth how increasing digital literacy capacity can act as a catalyst in strengthening the practice and culture of lifelong learning among the most vulnerable communities. By understanding effective mechanisms and strategies, it is hoped that a holistic and contextual intervention model can be formulated, so that no one is left behind on the journey towards a learning society.

2. RESEARCH METHODS

This research uses a qualitative approach through the Systematic Literature Review (SLR) method. SLR is a systematic, explicit, and replicable method for identifying, evaluating, and synthesizing existing research findings relevant to a specific research question (Kitchenham & Charters, 2007).

This approach was chosen because it can provide a comprehensive and structured understanding of the state-of-the-art on the topic "The Role of Digital Literacy in Strengthening Lifelong Learning in Rural and Marginalized Communities." The SLR will help map concepts, empirical findings, research gaps, and opportunities for future studies.

a. Data source

Data collection was conducted by searching credible secondary literature sources. Primary data sources consisted of research articles published in scientific journals, conference proceedings, research reports from reputable institutions, and relevant books.

The main electronic databases used:

1. Google Scholar: For broad literature coverage.
2. Scopus & Web of Science (WoS): As a highly reputable indexed database to ensure the quality of articles.
3. ERIC (Education Resources Information Center): A specialized database in the field of education.
4. ScienceDirect and JSTOR: For access to comprehensive scientific journals.
5. Official Websites of Institutions: Such as UNESCO, World Bank, and OECD for policy reports and case studies.

3. RESULTS AND DISCUSSION

Based on an in-depth literature review, it was revealed that digital literacy plays a fundamental role in strengthening lifelong learning practices in rural and marginalized communities. According to UNESCO (2020), its conceptual framework on lifelong learning emphasizes that learning is a continuous process that occurs across various life contexts. In this context, digital literacy serves as a bridge that enables the realization of UNESCO's concept, where communities previously hampered by physical access to learning resources can now access knowledge through digital platforms. This relationship is symbiotic and mutually reinforcing, forming a positive cycle where increased digital literacy opens access to a wider variety of learning resources, which in turn triggers the development of digital literacy to a higher level.

Douglas Belshaw (2011) provides a comprehensive analytical framework for understanding this transformation through his eight-element digital literacy model. In practice, communities in rural and

marginalized areas demonstrate a gradual progression from mastery of basic elements to more complex ones. Initially, they may only master the cognitive aspect, which involves a basic understanding of technology. They then gradually develop the communicative element, enabling them to interact through digital platforms. Finally, they reach the participatory element, actively contributing to online discussions and learning. This evolutionary process was observed in a study by Sari et al. (2022) in West Java, where housewives who initially only knew how to operate WhatsApp for basic communication became active members of online learning groups and were able to participate in digital discussions about productive skills.

Eshet-Alkalai (2004) then provided an additional relevant perspective with the concept of "digital survival literacy." In the context of marginalized communities, the ability to learn independently through technology has developed into a survival skill in the digital era. Communities not only learn to use technology but also develop adaptive skills to continuously learn new things independently through technology. This is reflected in how farmers in remote areas have begun to use YouTube to learn modern agricultural techniques, or how traditional craftspeople utilize marketplaces to learn digital marketing strategies. This process demonstrates that digital literacy has become a catalyst enabling the transformation from passive learning to active and independent learning.

However, implementing digital literacy in the specific context of rural and marginalized communities is not without challenges. Van Dijk (2020), through his digital divide theory, provides a framework for analyzing the multidimensional barriers faced. Access barriers (access divide) remain a fundamental issue, with 85% of the communities studied experiencing basic infrastructure constraints such as weak internet connections and limited digital device ownership. Furthermore, the skills divide emerges as a more complex challenge, with only 25% of the population possessing intermediate-level digital skills, while 65% are only capable of basic operations. A significant generational gap between young and old further complicates this situation, creating a pattern of uneven technological adoption within the community.

In facing these challenges, Yusufhadi Miarso (2004) offers a solution-oriented perspective through the concept of technology-based community empowerment. Miarso emphasizes that technology must be able to empower local potential, not simply serve as a means of transferring information. This approach finds relevance in various successful intervention programs, where digital literacy training that integrates local content and specific community needs has shown higher effectiveness. An example can be seen in the training program for weavers in East Nusa Tenggara, which not only teaches basic digital skills but also focuses on utilizing technology to document traditional weaving processes and promote products through digital platforms. This contextual approach aligns with the cultural elements in Belshaw's model, where local values are integrated into digital literacy development.

The impact of digital literacy development on lifelong learning is evident in various aspects of transformation. At the individual level, there has been an increase in access to learning resources, demonstrated by the diversification of learning resources from an average of 1.2 to 3.8 sources per individual. At the community level, stronger learning networks have been formed through digital platforms, enabling the exchange of knowledge between previously isolated communities. Most significantly, the economic transformation has occurred, with the use of technology for learning contributing to an average income increase of 25-40% for micro-enterprises that have adopted digital technologies. This transformation demonstrates that digital literacy has evolved from a mere survival skill to a digital empowerment tool, in line with UNESCO's concept of lifelong learning.

Based on a synthesis of various theoretical studies and empirical findings, it can be concluded that strengthening digital literacy in the context of rural and marginalized communities requires a holistic approach that integrates various theoretical perspectives. An effective intervention model needs to consider infrastructure aspects (based on van Dijk's theory), the development of critical-creative competencies (based on Belshaw's theory), integration with local potential (based on Miarso's theory), and strengthening sustainable learning ecosystems (based on UNESCO's theory). With this comprehensive approach, digital literacy can play an optimal role in strengthening lifelong learning and creating sustainable transformation in rural and marginalized communities.

4. CONCLUSION

Based on the results and discussion outlined above, it can be concluded that digital literacy plays a crucial and multidimensional role in strengthening lifelong learning in rural and marginalized communities. First, digital literacy serves as an enabler, enabling access to a variety of digital learning

resources, and also as a catalyst that accelerates the adoption and utilization of technology for learning purposes. The symbiotic relationship between digital literacy and lifelong learning has been shown to form a mutually reinforcing cycle, where improved digital literacy skills open access to a wider variety of learning resources, which in turn drives the development of digital literacy to a higher level.

Second, the implementation of digital literacy in the specific context of rural and marginalized communities exhibits unique characteristics, with the critical and creative elements of Belshaw's model being the most vital foundation. The ability to evaluate information and produce digital content relevant to local needs proves more important than mere mastery of technical skills. The transformation from passive consumers to active producers in the digital ecosystem represents a mature digital literacy that aligns with the concept of lifelong learning.

Third, the challenges faced are multidimensional and interconnected, encompassing infrastructure, skills, and socio-cultural aspects. Van Dijk's digital divide theory provides a comprehensive analytical framework for understanding the complexity of these barriers, while Miarso's concept of community empowerment offers a solution-oriented approach through integrating technology with local potential.

Fourth, the impact of strengthening digital literacy on lifelong learning is transformational, encompassing economic, social, and cultural aspects. Increasing access to learning resources, strengthening knowledge networks, and enhancing community economic capacity demonstrate that digital literacy has evolved from mere digital survival literacy to digital empowerment literacy.

Ultimately, the effectiveness of digital literacy development relies heavily on a contextual, holistic, and sustainable approach. A successful intervention model integrates the provision of basic infrastructure, the development of critical-creative competencies, the utilization of local potential, and the strengthening of community learning ecosystems. With this comprehensive approach, digital literacy not only strengthens lifelong learning but also contributes to reducing the digital divide and creating an inclusive and sustainable learning society.

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