

A COMMUNITY-BASED DIGITAL LITERACY MODEL: ENHANCING DIGITAL CITIZENSHIP THROUGH THE *Jiwa Baru* PROJECT

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ABSTRACT

The digital literacy gap among rural communities is a challenge that has received limited research attention, particularly the development of digital citizenship. This research looks at how the digital literacy program is being carried out conducted by the Jiwa Baru Project in Margamulya Village, Bandung Regency through its flagship program, LAKOLING and to determine the program's relevance in enhancing the community's understanding of digital citizenship values. The study used a descriptive qualitative approach that involved data collection through direct observation, in-depth interviews, and the review of archival documentation. The results showed this program has proven effective in improving the community's technical skills in operating digital technology and fostering responsible, ethical, and active attitudes in the digital space. The digital literacy program not only reduces technological illiteracy but also strengthens community awareness of the rights and obligations of digital citizens. In conclusion, the community-based digital literacy model has proven relevant in fostering an understanding of digital citizenship among rural communities. The researchers recommend further studies focusing on analyzing the long-term impact of digital literacy programs on the social and economic changes within these communities.

ABSTRAK

Kesenjangan literasi digital masyarakat desa menjadi tantangan yang belum banyak diteliti, khususnya dalam pengembangan digital citizenship. Penelitian dilakukan bertujuan untuk menganalisis pelaksanaan program literasi digital oleh Jiwa Baru Project di Desa Margamulya Kabupaten Bandung melalui program unggulan bernama LAKOLING, serta mengetahui relevansinya dalam meningkatkan pemahaman masyarakat terhadap nilai kewarganegaraan digital. Penelitian ini menerapkan pendekatan deskriptif kualitatif, dengan data diperoleh melalui kegiatan observasi, wawancara secara mendalam, serta penelaahan dokumen yang relevan. Hasil penelitian menunjukkan bahwa program ini meningkatkan keterampilan teknis masyarakat dalam mengoperasikan teknologi digital, serta membentuk sikap bertanggung jawab, etis, dan aktif dalam ruang digital. Program literasi digital tidak hanya mengurangi buta teknologi, tetapi juga meningkatkan pemahaman publik mengenai hak serta tanggung jawab individu dalam menjalankan perannya sebagai warga negara di ruang digital. Kesimpulannya, model literasi digital berbasis komunitas relevan dalam membangun pemahaman digital citizenship masyarakat desa. Peneliti merekomendasikan penelitian lanjutan yang berfokus pada analisis dampak jangka panjang dari program literasi digital terhadap perubahan sosial dan ekonomi masyarakat desa.

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INTRODUCTION

In today's rapidly evolving digital era, society must be equipped with digital literacy, a skill that is crucial for the community itself. In various countries, such as Indonesia, the integration of digital technology shows great promise in resolving obstacles (Judijanto, 2024). This opinion shows that digital technology can be used as a solution to various obstacles, but its success depends on digital literacy in society, which allows technology to be easily utilized as effectively as possible by the community.

Figure 1. Information Technology User Data in Indonesia



Source: BPS RI (2025)

The results of a national socioeconomic survey conducted by the Indonesian Central Statistics Agency (*Badan Pusat Statistik* or BPS) (2025) regarding the use of information technology are presented in Figure 1. The data confirms that only the internet has experienced significant growth. Observing digital literacy data, this can be seen in how information and communication technology is used that household internet usage reached 87.09% in 2023 followed by data that had accessed the internet 53.73% in 2020 to 69.21% in 2023, while mobile phone ownership reached 90% in 2020-2022 and decreased in 2023 to around 89.02% while computer ownership was around 18.06% in 2023, internet access for the population was around 39.90% in 2018 increasing to 66.48% in 2022, while landline telephone ownership decreased in 2022 by around 1.34% down to 1.17% in 2023. Petrovich & Charikova (2022) explains that the internet is a practical technology in the form of a virtual space containing fast information and electronic information exchange. Thus, this explanation emphasizes the importance of digital literacy because the ability to manage, understand, and utilize information effectively in cyberspace is key in this era of rapid electronic information exchange.

Research conducted by Pitrianti et al. (2023) demonstrates the important role of digital literacy in society by identifying the main categories of digital literacy, their characteristics, and their impacts, which are necessary for rural populations to develop smart villages. The research findings indicate that boosting digital skills is really important for empowering communities and facilitating their adaptation to technological advancements. The study confirms that digital literacy is the foundation for empowering rural communities, encouraging the creation of smart villages and preparing communities for modern technological developments. This aligns with the view of Cantoni & Tardini (2008), who assert that ICT plays a role in the social activities characteristic of a knowledge-based society.

Other digital literacy studies collectively emphasize the importance of digital literacy across diverse demographics and backgrounds, advocating for comprehensive educational strategies to enhance digital competence (Rustandi, 2022). These findings underscore that

digital literacy development is not merely a challenge and obstacle in education, but rather a social imperative that can drive community development and individual empowerment in the digital age.

The demographic perspective of youth explored by Rianto & Sukmawati (2021) research, using a comprehensive framework of ten indicators in assessing digital literacy, shows that young people are not only consumers of digital content but are also transitioning into producers. Seeing this shift requires educational interventions aimed at improving their digital competencies. Therefore, seeing the shift in the role of young people from consumers to producers of digital content, there is an important role for interventions in education based on digital literacy that aims to equip young people with the best competencies in utilizing social media responsibly and productively.

Figure 2. Digital Achievement Index (DAI) for 34 countries

No.	Nation*	Sub-Indexes					DAI	No.	Nation*	Sub-Indexes					DAI
		DAV	DAD	DAF	DSP	DIS				DAV	DAD	DAF	DSP	DIS	
1	SGP	0.88	1.00	0.99	0.79	0.93	1.00	18	KAZ	0.69	0.70	0.94	0.13	0.78	0.67
2	HKG	0.87	0.98	1.00	0.72	0.88	0.99	19	AZE	0.54	0.92	0.80	0.09	0.47	0.66
3	KOR	0.84	1.00	0.92	0.98	0.86	0.98	20	MYS	0.74	0.82	0.81	0.27	0.46	0.64
4	CYP	0.73	1.00	0.91	0.65	0.89	0.97	21	IRN	0.65	0.70	0.95	0.07	0.59	0.61
5	JPN	0.96	1.00	0.90	0.61	0.73	0.95	22	IDN	0.46	0.96	0.54	0.03	0.46	0.56
6	KWT	0.76	1.00	0.99	0.80	0.70	0.94	23	LKA	0.21	0.74	0.93	0.02	0.46	0.54
7	ARE	1.00	1.00	0.96	1.00	0.65	0.92	24	IND	0.02	0.96	0.72	0.11	0.30	0.51
8	ISR	0.61	0.95	0.97	0.48	0.72	0.92	25	MMR	0.17	0.88	0.38	0.04	0.25	0.50
9	CHN	0.56	1.00	0.95	0.83	0.64	0.91	26	KGS	0.48	0.79	0.21	0.08	0.54	0.47
10	BHR	0.82	1.00	0.87	0.55	0.63	0.91	27	MNG	0.31	0.66	0.73	0.09	0.69	0.45
11	SAU	0.82	0.95	0.88	0.70	0.83	0.90	28	BGD	0.07	0.82	0.68	0.05	0.26	0.43
12	THA	0.52	0.96	0.74	0.61	0.76	0.89	29	UZB	0.58	0.42	0.70	0.08	0.38	0.33
13	QAT	0.77	1.00	0.95	0.92	0.51	0.86	30	PHL	0.03	0.78	0.50	0.20	0.43	0.31
14	OMN	0.76	0.97	0.76	0.33	0.61	0.85	31	KHM	0.11	0.70	0.12	0.04	0.08	0.24
15	TUR	0.65	0.96	0.85	0.14	1.00	0.79	32	NPL	0.01	0.00	0.61	0.10	0.26	0.17
16	BRN	0.49	0.92	0.96	0.29	0.45	0.78	33	PAK	0.05	0.52	0.47	0.00	0.00	0.10
17	ARM	0.54	0.99	0.74	0.12	0.54	0.77	34	LAO	0.15	0.40	0.00	0.05	0.16	0.01

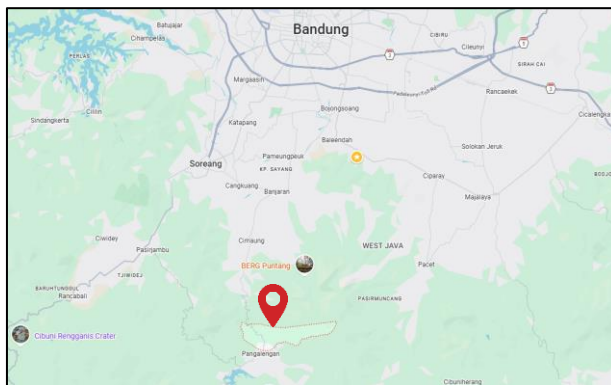
Source: Kim (2025)

Over the past two decades, improvements in internet technology have changed many parts of society, such as the economy, schools, medical care, and how governments work. However, a gap remains in the utilization of this technology in rural areas, primarily due to limited digital infrastructure such as uneven internet access, poor connection quality, and a lack of technological devices. Furthermore, people have low knowledge about using digital tools and lack the ability to work with information technology hinder efforts to leverage the internet for improving rural well-being. Research by Kim (2025) on the Digital Achievement Index (DAI) places Indonesia 22nd with a total score of 0.56. A DAI score approaching 1 indicates superior ICT quality, whereas a score approaching 0 signifies very poor quality, reflecting a wider digital divide. Figure 2 provides a detailed overview of the 34 countries studied and their respective DAI scores. The situation in the aforementioned countries, particularly those with a Digital Achievement Index (DAI) < 1 has created a digital divide between urban and rural populations, preventing the optimal use of technology to support rural development. The DAI comprises five sub-indicators: first, the digital availability sub-index (DAV) reflects the ease of accessing information within a country; second, the digital mobile adoption sub-index (DAD) mirrors the state of communication and internet

infrastructure (previous studies have utilized indicators such as penetration rates for xDSL broadband, cable modems, and wireless connections); third, the digital affordability sub-index (DAF) indicates the cost of information devices; fourth, the digital speed sub-index (DSP) assesses speed, providing an overview of overall internet network quality; and fifth, the digital internet skills sub-index (DIS) relates to education levels, using secondary and tertiary education participation ratios. Consequently, upgrading telecommunications infrastructure, coupled with strengthening human resource capacity through digital literacy programs, represents a strategic approach to fostering inclusive digital transformation in rural areas.

Rural communities have not yet fully realized these benefits due to limitations in digital infrastructure, network quality, devices, and digital skills. In other words, a rural resident might own a smartphone but lack a stable internet connection, an adequate device, or the ability to use technology productively and safely. The Digital Access Index (DAI) demonstrates that digital disparities are shaped not only by access to internet services but also by differences in the capacity to use digital technologies effectively; it also encompasses accessibility, affordability, quality of access, and human capacity. In the context of rural Indonesia, this situation means that technology is not being fully utilized to support economic activities, education, public services, or social interaction. The digital infrastructure gap between urban and rural areas is a primary reason for the low participation of rural communities in the digital economy (World Bank, 2021). According to data published by the Indonesian Internet Service Providers Association (APJII) confirms that internet usage remains dominated by urban populations compared to rural ones; urban residents account for 69.6% of users, whereas rural residents make up 30.5% (Siregar et al., 2025). Koswara (2024) concludes that this indicates a lack of adequate digital infrastructure in rural areas. Consequently, various efforts are required to bridge this digital technology divide. Margamulya Village, Bandung Regency, West Java Province, like many other villages in Indonesia, faces challenges in understanding and accessing technology. The location of the *Jiva Baru* Project is shown in One form of low digital literacy identified is computer illiteracy, where some residents are unfamiliar with or unskilled in using computers for daily needs or work. Therefore, a digital literacy program is necessary to deal with the low level of digital skills people have in the community. One such program is the *Jiva Baru* Project, a community-initiated digital literacy program. This program aims to ensure effective implementation and community empowerment. Figure 3 illustrates the key locations within Margamulya Village that serve as the program's primary focus areas.

Figure 3. *Jiva Baru* Project Location Map



Source: Google Maps (2025)

Earlier studies, including research conducted by Oktafiani et al. (2025), indicates an improvement in public digital literacy specifically regarding technical skills for operating devices or applications, critical thinking, digital ethics, and communication methods. Additionally, research by Hamdiah et al. (2026) demonstrates that character-education-based digital literacy programs are crucial for fostering responsible digital behavior and cultivating discipline and empathy in technology use. The various digital literacy programs being implemented align with the Indonesian government's intensive initiative known as the National Digital Literacy Movement. According to research by Hikmah et al. (2024), this program has reached at least 24 million citizens as part of efforts to realize the vision of the 2030 Sustainable Development Goals (SDGs)—specifically reducing inequalities, ensuring quality education, fostering collaboration to achieve goals, and promoting healthy lives and well-being. Another study examines how a community-based digital reading platform can integrate concepts of digital citizenship, encompassing an understanding of technology-related risks, online self-protection, respect for the rights of others, and responsible technology use (Utomo et al., 2023). These studies demonstrate the importance of integrating digital citizenship values into digital literacy programs. However, existing initiatives tend to emphasize specific competencies or program outcomes, while limited attention has been given to how the nine elements of digital citizenship by Ribble & Bailey (2011) can be integrated holistically into a community-based digital literacy model, particularly in rural settings.

In general, government-led digital literacy programs are implemented using a top-down strategy. However, the diverse demographic characteristics of rural communities create obstacles in reaching all segments of society to carry out these programs, even though the negative impacts of a lack of digital literacy are already evident in many areas. This indicates that the digital transformation process cannot be driven solely from the top-down without the engagement of the social ecosystem at the grassroots level. Rural residents possess mindsets, paces, and development priorities that differ from and do not always align with central government digitalization programs (Astuti & Binu, 2022; Sutopo, 2025). Insufficient digital literacy within the community mean that many individuals lack the adequate knowledge and skills to use digital technology safely. This situation leaves people more vulnerable to various forms of cybercrime, particularly phishing scams that employ social engineering to steal personal and financial data. Consequently, efforts to strengthen digital literacy must be sustained so that the public can recognize phishing tactics, protect their personal data, and navigate the digital space more safely and wisely. Furthermore, the public does not fully grasp the high security risks associated with using pirated software. Such software is often modified or infected with malware capable of stealing personal data, damaging systems, or granting unauthorized access to third parties. These results are backed by a study done by Li et al. (2024) across six provinces in Eastern China, which demonstrated that higher digital literacy levels correlate with a reduced risk of financial loss due to online fraud. Similarly, a study by Guess et al. (2020) involving samples from the United States and India found that programs aimed at improving digital media literacy helped people better recognize the difference between real news and false news.

Existing research indicates that digital literacy programs can enhance technical skills, critical thinking abilities, digital ethics, digital security, and an understanding of digital citizenship. However, these studies tend to focus on specific achievements or aspects of digital literacy, with limited examination of how these various dimensions can be integrated into a digital literacy model developed through a bottom-up, participatory, and contextual approach tailored to the characteristics of rural communities. Furthermore, the limitations

of top-down approaches in reaching rural populations highlight the need for a model that positions the community as the primary actor in the planning, implementation, and shaping of the program. Consequently, digital transformation cannot depend solely on the delivery of centrally designed programs but requires the involvement of local social ecosystems. Rural communities need opportunities to participate in identifying their digital needs, determining appropriate learning strategies, and applying digital competencies within their everyday social and economic contexts. From the perspective of Ribble & Bailey (2011) framework, such community participation is important because digital citizenship encompasses not only access and digital fluency but also communication and working together, knowing how to behave online, understanding your rights and duties in the digital world, and keeping your information safe and private. This gap serves as the foundation for the development of the *Jiwa Baru* Project a community-based digital literacy model that integrates training, mentoring, digital citizenship, and community empowerment into a single, adaptive, and sustainable learning ecosystem in Margamulya Village, Bandung Regency. This project is significant because rural communities face not only a digital skills gap but also disparities in access, varying levels of capability, and limited digital learning infrastructure.

METHOD

Based on the object of study, this research is included in the type of research using a qualitative approach the purpose is to better understand the phenomenon of digital literacy in the community located in Margamulya village, as well as to explore its impact on the understanding of digital citizenship in the village community, namely Margamulya village. According to the definition by Denzin & Lincoln (2009), qualitative research is an approach that investigates phenomena within their natural context. As stated in the article by Joubish et al. (2011) the aim of qualitative research is to uncover reasons and explanations, rather than merely describing research methods and quantitative results. The qualitative approach is a type of research aimed at examining or understanding social issues (Creswell, 2018). The main goal was to look into and explain how the *Jiwa Baru* Project was carried out as a community-based digital literacy model and to understand how participants develop digital citizenship within their social and technological contexts.

The research approach employed is descriptive-qualitative. According to Creswell (2012), descriptive research aims to collect data on current situations and to obtain detailed explanations and illustrations regarding the research subject in a structured manner. Therefore, this study examines unstructured information and focuses on the behaviors, attitudes, values, aspirations, and culture of the community. Fraenkel et al. (2012) state that qualitative research involves directly approaching the specific location or context under study to conduct observations and collect data. By using this qualitative approach, researchers can explore the views, understanding and social dynamics of the Margamulya village community, Bandung Regency. This approach was chosen because the researcher wanted to understand how people interact with each other in social situations and changes in residents' understanding, in a deep and natural manner as they participated in the *Jiwa Baru* Project. This approach also enabled the researchers to examine how the bottom-up model responded to the diverse digital capabilities, needs, and contextual conditions of rural communities..

This research will focus on understanding how the community appreciates and implements digital knowledge and digital citizenship through the *Jiwa Baru* project. A qualitative descriptive approach was utilized in this study. It aimed to describe and interpret the implementation process of the digital literacy program and its impact on the understanding of digital citizenship in the community through the *Jiwa Baru* project.

Qualitative descriptive methods allow researchers to depict the reality of what is happening without manipulating existing variables or conditions. Meanwhile, the methods used to collect data are: 1) Observing, 2) Talking to people through interviews, and 3) Document studies. The study involved 13 key informants, comprising 1 program initiator, 2 volunteer teachers, and 10 villagers who participated in the training. The participants were selected using purposive sampling. This technique was considered appropriate because the study required participants with relevant knowledge and firsthand experience of participating in and contributing to the *Jiwa Baru* Project. The people who provided information were chosen according to specific rules that matched the goals of the study, including the program initiator, volunteer instructors, and community members who had participated in the digital literacy activities. All informants were aged between 20 and 45 and were selected due to their direct involvement in the implementation of the digital literacy program and their receipt of its benefits.

The researcher employed an observation technique, acting as a non-participant observer from August to September 2025. The observations aimed to assess the condition of facilities and infrastructure, the instructional process, and participant behavior during digital literacy activities. Regarding the document study technique, the researcher examined learning module files, the *Jiwa Baru* Project brochure, and activity implementation reports. Researchers did detailed interviews to find out about people's experiences while learning within the digital literacy program. Additionally, the interviews sought to understand changes in the knowledge, attitudes, and behaviors demonstrated by participants as responsible digital citizens. Data were gathered using semi-structured interviews to understand the participants' experiences, perceptions, and behavioral changes related to the implementation of the *Jiwa Baru* Project. This metode were selected because they provided a steady set of questions that lets researchers ask more questions and look into new topics in more detail.

For the interview instrument, a deductive coding approach was employed whereby codes were established based on a theoretical framework while still allowing for the emergence of new codes (inductive) from the interview findings. This study draws on Bandura's Social Learning Theory to provide a framework for understanding the learning process, while Ribble's nine elements of digital citizenship are used to measure the outcome specifically the forms of understanding and digital citizenship behavior that developed after participants took part in the *Jiwa Baru* Project. This technique yields a systematic coding process, as each interview finding can be analyzed based on both the mechanisms of behavioral change and the dimensions of digital citizenship undergoing enhancement. Combining these two frameworks also facilitates the formulation of analytical themes consistent with the research objective: explaining how the *Jiwa Baru* Project fosters public understanding of digital citizenship, as shown in Table 1.

Table 1. Interview Framework Integration Code

No	Social Learning Theory CODE	Learning Process Indicator	Element of Digital Citizenship Code	Digital Behavior Indicators
1.	Attention (SLT-A)	Observing how technology is used	Digital Fluency (DC-05)	The ability to understand and use technology
2.	Retention (SLT-R)	Remembering observed information or behavior	Digital Fluency (DC-05)	Recalling and understanding digital skills

3.	Reproduction (SLT-RP)	Applying the skills learned	Digital Commerce (DC-02)	Using technology for transactions or economic activities
4.	Observational Learning (SLT-O)	Observing digital security practices	Digital Security & Privacy (DC-09)	Protection of passwords, accounts, and personal data
5.	Reinforcement (SLT-RF)	Receiving support, recognition, or benefits	Digital Rights & Responsibility (DC-08)	Demonstrating responsibility in the use of technology
6.	Self-Efficacy (SLT-SE)	Confidence in being able to solve digital problems	Digital Security & Privacy (DC-09)	Capable of managing digital security risks
7.	Social Interaction (SLT-SI)	Learning through interaction with others	Digital Communication & Collaboration (DC-03)	Collaboration and digital knowledge sharing

Source: Research Results (2025)

Table 1 presents the Social Learning Theory code (Rumjaun & Narod, 2025), which explains in depth how behavior is formed, whereas the digital citizenship elements code (Ribble & Bailey, 2011) outlines what digital behavior is formed. To translate and interpret the code within the context of the interview results for instance, Informant 6 stated:

When the instructor taught us not to immediately forward news from WhatsApp, I paid close attention to how they checked the information before sharing it. After observing the instructor, I began checking the source and verifying the information first, which made me more careful and responsible when sharing digital content (Informant 6, training participant, 25 y/o).

The informants statements will be analyzed using two layers of coding: social learning codes and digital citizenship element codes. The results can be interpreted through the meanings presented in Table 2 below. Thus, it can be concluded that participants not only possess the ability to evaluate information, but also that this ability is acquired through the processes of observation, retention, and reproduction of behaviors modeled by the mentor.

Table 2. Interpretation Code

No	Social Learning Theory Code	Meaning	Element of Digital Citizenship Code
1.	SLT-A	Paying attention to the instructor	Digital Fluency (DC-05)
2.	SLT-R	Recalling the method that was taught	Digital Fluency (DC-05)
3.	SLT-RP	To put back into practice	Digital Commerce (DC-02)
4.	SLT-O	Learning through observation	Digital Security & Privacy (DC-09)

Source: Research Results (2025)

Data analysis in this study employs the interactive analysis model developed by Miles, Huberman & Saldaña (2013), as the framework for analyzing the collected data with the

process has three main steps: first, condensing the data, then showing the data, and finally drawing conclusions and checking them to make sure they are correct. The analysis was done step by step as the data was being collected, allowing emerging findings to inform subsequent observations and interviews. During data condensation, interview transcripts, observation notes, and documentation were selected, coded, and categorized according to their relevance to the research objectives. Ribble's nine elements of digital citizenship were used as initial deductive coding categories, while inductive codes were also developed when recurring themes emerged from the field data beyond the predetermined framework.

During the data display phase, the coded data were arranged into thematic matrices and written descriptions to identify patterns across the experiences of the program initiator, volunteer instructors, and community participants. The findings were then interpreted by examining relationships between the implementation of the *Jiwa Baru* Project and participants' digital citizenship practices. In the final stage, Conclusions were made and kept checked by looking at information from different sources and data collection techniques. Triangulation of interviews, non-participant observations, and documentation was conducted to strengthen the credibility of the findings. This interactive analytical process enabled the researchers to develop a contextual understanding of how the *Jiwa Baru* Project facilitates the development of digital citizenship within a rural community.

Methodological triangulation involves comparing data collected using different methods to study the same thing. According to Setyawati & Aulia (2023), this form of triangulation entails verifying data obtained via interviews through observation and reinforcing it with documentation. In this study, information regarding the implementation of the *Jiwa Baru* Project, the digital literacy learning process, and shifts in public understanding of digital citizenship was initially gathered through in-depth interviews with informants, including program managers, facilitators, village officials, community leaders, and training participants. Interview data were then scrutinized through direct observation during the training sessions observing interactions between facilitators and participants, the use of gamification methods, community participation, and the implementation of materials covering digital ethics, digital security, information literacy, and digital collaboration. Finally, the findings from interviews and observations were substantiated by documentation such as training modules, participant attendance lists, event photos and videos, presentation materials, program implementation reports, and evaluation documents thereby ensuring the credibility of the data.

To ensure that qualitative research findings are trustworthy, reflect the actual conditions of the community, and are not merely the researcher's subjective interpretations, Lincoln & Guba assess credibility based on four key criteria of trustworthiness (Schwandt, 2007): credibility, transferability, dependability, and confirmability. Credibility was improved by checking information from different sources and methods, especially by comparing details from the person who started the program, volunteer instructors, and community participants and by corroborating interview findings with non-participant observations and documentation. Member checking was also conducted to confirm the accuracy of the researchers' interpretations with selected informants. Transferability was addressed through thick descriptions of the research setting, participant characteristics, program implementation, and the social and technological context of the rural community, helping readers understand if the results can be used in similar situations. Dependability was kept by having an audit trail that recorded all the steps of the research, like how participants were chosen, how interviews were done, and how data was gathered, transcription, coding, data condensation, and interpretation. Confirmability was strengthened by grounding

interpretations in participants' statements and observational evidence, maintaining an audit trail, and conducting researcher reflexivity to minimize the influence of personal assumptions on the findings.

To minimize researcher bias and enhance credibility, the study used three methods to make sure the results were reliable: checking information from different sources, using different research methods, and confirming findings with the people involved. Information from different groups of people was compared to find the source, particularly program facilitators and community participants, to identify converging and divergent perspectives regarding the implementation and outcomes of the *Jiwa Baru* Project. Technique triangulation involved comparing interview findings with non-participant observations and relevant documentation. Differences between sources were not treated as errors but were examined as potentially meaningful variations in participants' experiences and perceptions. Additionally, member checking was done by sharing selected interview summaries and early interpretations with the participants to make sure the researchers' understanding matched their own experiences. This process was particularly applied to interpretations related to Social Learning Theory and Ribble's digital citizenship elements. When informants provided clarification or correction, the researchers revised the relevant codes, categories, or interpretations accordingly. These steps helped make sure the results came from what the people involved went through, instead of just being based on what the researchers thought.

The reduced data is then systematically presented through narrative descriptions, matrices, thematic tables, and charts illustrating inter-category relationships to facilitate interpretation. Data display highlights the connections between the *Jiwa Baru* Project model components, the activity implementation process, participants' learning experiences, and changes in public understanding regarding digital citizenship principles. Furthermore, interview excerpts from key informants are used to reinforce the interpretation of the digital literacy model's effectiveness in fostering public awareness regarding the safe, ethical, critical, and responsible use of technology. The final stage involves deriving meaning from the patterns, themes, and relationships within the presented data. The researcher draws conclusions regarding how the *Jiwa Baru* Project contributes to building public understanding of digital citizenship, the factors supporting or hindering program implementation, and the changes in digital behavior demonstrated by participants.

RESULTS AND DISCUSSION

1. Social Learning Process in the *LAKOLING* program

Jiwa Baru Project was established in 2021 by Mr. AR and his colleagues, driven by a strong passion for and commitment to community empowerment in the digital era. The initiative was founded upon an awareness of the digital literacy gap and the community's urgent need for access to technological knowledge and social activities that directly address fundamental needs. Against this backdrop, the *Jiwa Baru* Project began designing various programs aimed at making a tangible contribution to the capacity building of both individuals and communities.

Technology is a primary focus of the *Jiwa Baru* Project, with its flagship initiative known as *LAKOLING* (*Lab Komputer Keliling*; English: Mobile Computer Laboratory). This program was developed to address the limited access rural communities have to digital technology, computer facilities, and information and communication technology (ICT) training. *LAKOLING* operates as a mobile digital learning unit that reaches remote villages, enabling residents to participate in computer and digital literacy training without needing

to travel to urban centers. Given the mountainous geography of Margamulya village, and in line with the views of Vaishar & Št'astná (2021), community services must adapt to settlement characteristics and utilize modes of transport that offer rapid, flexible mobility. Through hands-on learning activities, participants learn important digital skills like using computers, browsing the internet, and communicating online, and the responsible use of digital technology.

Figure 4. Program in *Jiwa Baru* Project



Source: Research Results (2025)

Throughout its journey, the *Jiwa Baru* Project has served as a collaborative and inspiring space for various stakeholders including volunteers, community leaders, and organizations dedicated to community development. This aligns with the view of Uzoagu (2019) that self-reliant community organizations can strengthen citizen participation, uphold social inclusion, deepen solidarity, and reinforce a sense of ownership over development outcomes. These efforts generate widespread impact, encourage others and lead the changes needed so that sustainable development becomes a strong part of the community. It is well known that government digital literacy programs often rely on top-down strategies. Research by Utomo et al., (2023) indicates that local communities still show little interest in visiting digital reading corners (POCADI Program), resulting in suboptimal program utilization. This situation demonstrates that an approach centered merely on providing facilities does not necessarily drive community participation unless accompanied by active community engagement. Consequently, this study develops a bottom-up strategy that positions the community and volunteers as key actors in the planning, implementation, and development of digital literacy programs. Such active engagement allows programs to be tailored to the specific needs, characteristics, and real-world challenges faced by local communities. This approach not only boosts community participation but also fosters a sense of ownership, transforming the community from passive beneficiaries into active drivers of the learning process. Thus, the bottom-up strategy is expected to support the sustainability of digital literacy programs by creating a participatory, adaptive, and community-based learning ecosystem. By balancing technological and social approaches, the *Jiwa Baru* Project is committed to acting as an agent of change, one that adapts to the times while remaining grounded in humanitarian values. The founders' enduring spirit continues to fuel every program, establishing the *Jiwa Baru* Project as a powerful and relevant force for literacy and social solidarity to this day.

Several challenges and obstacles were encountered during the program's implementation, the first being unstable internet infrastructure. This instability frequently disrupted internet-based learning processes, preventing digital practice sessions from proceeding optimally. These difficulties were particularly acute when participants needed to access online materials, use internet-based applications, or conduct live simulations of

digital activities. To address this issue, the *Jina Baru* Project adopted a blended learning approach combining online and offline instruction to ensure training could continue despite unstable internet connections. According to Kaliaskarova et al. (2022), this method is an appropriate learning strategy that will continue to be used to mitigate technological limitations. Facilitators provided learning modules in both printed and offline-accessible digital formats, allowing participants to engage with the material without relying entirely on an internet connection. This situation aligns with the statement of one of the informants:

As a resident of Pangalengan, I still face difficulties accessing the internet because the available network quality is inadequate. Even networks from widely known providers are limited to 3G connections in my area. This situation hinders optimal access to information, communication, and various digital services (Informant 2, instructor, 38 y/o).

Furthermore, all training materials were downloaded and prepared prior to the sessions, resulting in a smoother, more effective learning process that minimized obstacles caused by limited digital infrastructure. To implement the program, trainers use motorcycles equipped with carriers to transport computers, learning materials, and other training equipment to the target communities, as shown in Figure 5. This mobile approach enables the training team to reach participants in areas where access to digital learning facilities is limited. The use of motorcycles also provides flexibility for trainers to deliver the program directly to different community locations according to local needs and conditions.

Figure 5. LAKOLING Program Operational Motorcycle



Source: Research Results (2025)

A second factor is the low level of motivation among some members of the public; many still do not view digital literacy as an urgent necessity in their daily lives, resulting in relatively low participation rates in training programs. This situation stems from a lack of public understanding regarding the practical benefits of digital technology for economic activities, education, and public services. Therefore, outreach efforts need to be more engaging, communicative, and contextual to boost public interest in digital literacy programs (Harackiewicz et al., 2016). To address low public motivation, *LAKOLING* provides contextual stimulation through demonstrations, simulations, local success stories, practical exercises, and real-life case studies. These activities allow participants to observe relevant digital practices, practice them directly, receive reinforcement from facilitators and peers, and gradually develop confidence in using digital technologies. Through this approach, it is hoped that the public will realize that digital literacy not only enhances

digital-based business opportunities and facilitates access to public services but also strengthens their ability to conduct secure digital transactions and protect themselves against various forms of fraud and cybercrime.

A third challenge encountered during the implementation of the *Jiwa Baru* Project was the disparity in age and digital proficiency among the training participants. The majority of participants fell within the 30–50 age range, requiring more time to grasp the use of digital devices compared to younger participants; this aligns with findings by Yap et al. (2022) indicating that older adults tend to adopt new technologies more slowly than younger adults. Variations in prior experience with technology also resulted in differing learning speeds among participants, necessitating a more flexible learning strategy. To address this, facilitators employed an adaptive learning approach, tailoring methods, materials, and the pace of instruction to each participant's capabilities. Furthermore, participants were organized into small learning groups supported by peer tutoring and individual guidance, making the learning process more effective and participatory while boosting participants' confidence in mastering digital skills.

The instructors adapted their communication styles to participants' age and digital proficiency by using simple and contextual language, providing step-by-step instructions, connecting new digital concepts with participants' everyday experiences, and offering supportive feedback. For older participants with limited prior digital experience, facilitators reduced the use of technical terminology and provided repeated demonstrations and individualized guidance. Meanwhile, participants with greater digital proficiency were encouraged to assist peers through peer tutoring. This adaptive communication strategy created an inclusive learning environment, strengthened participants' self-efficacy, and facilitated social learning through modeling and interaction. Hamdiah et al. (2026) concluded that digital literacy programs for children and adolescents foster effective behavioral development by integrating character education shifting the focus beyond mere technical skills to the cultivation of positive attitudes and behaviors in the digital realm. Consequently, these findings can complement and expand upon research involving adults as participants in digital literacy enhancement programs. This expansion offers the perspective that the formation of positive digital behavior is not only relevant to the younger generation but is also crucial for adults as they navigate the demands and risks of life in a digital environment.

Overall, the various obstacles encountered during the implementation of the *Jiwa Baru* Project shows that a digital literacy program can only be successful if there is both access to technology and a willingness from the community to adopt it, the quality of learning strategies, and adequate infrastructure support. By adopting an adaptive approach, utilizing blended learning methods, providing flexible learning materials, and conducting outreach that is contextual and responsive to community needs, these challenges can be effectively minimized. These findings confirm that a digital literacy model one that is inclusive, participatory, and grounded in local needs can enhance community engagement while strengthening understanding of digital citizenship principles. To ensure the sustainability of the *LAKOLING* program in there, the village government has formulated a policy that integrates digital literacy into its community development and empowerment initiatives. This approach is highly relevant, given that the Ministry of Villages and Disadvantaged Regions Strategic Plan for 2025-2026 in Republic of Indonesia.

2. Internalization of Digital Citizenship Values in the Community

A digital literacy theory developed by Van Dijk (2020) focuses on how individuals interact with digital technology and the resulting impact on society. According to his perspective digital literacy extends beyond the ability to use digital tools effectively, but it also involves understanding how social and cognitive factors affect how we interact with and think about technology how individuals utilize such technology (Guath & Nygren, 2022). Van Dijk's theory aligns closely with the objectives of the *Jiwa Baru* Project, which aims to enhance the understanding of digital citizenship in Margamulya Village; the project encourages responsible and ethical community engagement with technology and emphasizes consistent that digital literacy encompasses more than technical competencies, incorporating an understanding of social and cognitive dimensions. According to Hidayah et al. (2025) engagement-based learning serves as the strategic foundation for cultivating a future generation of leaders capable of navigating the complexities of the digital world through creative and inclusive approaches particularly in the era of digital citizenship, which demands the ability to use technology effectively, safely, responsibly, and wisely. Furthermore Susanto & Budimansyah (2022) emphasize that digital citizenship education aims to develop the ability of adolescents to participate actively in communication communities within the digital world. Thus, digital citizenship education can be described as equipping adolescents with digital citizenship skills, enabling them to participate actively, ethically, and responsibly in digital communities.

Digital literacy program implemented in Margamulya Village demonstrates a well-developed curriculum structure that responds to the needs of village communities as they adapt to digital transformation. The curriculum accommodates participants from diverse backgrounds and varying levels of understanding, enabling an inclusive learning process. The combination of technical and creative materials, such as graphic design and web programming, is a distinct advantage, broadening participants' horizons and opening up digital economic opportunities. Therefore, Sari & Alfiyan (2023) emphasized that the implementation of gamification elements and hands-on practice in the learning process can strengthen participants' learning experiences and increase the effectiveness of digital literacy programs at the village level. Furthermore, by incorporating gamification elements such as rewards, tasks, and interactive challenges, the environment seeks to stimulate curiosity, boost motivation, and sustain participant engagement (Candel et al., 2025).

The relaxed yet focused approach adopted in the training also demonstrates that the program organizers understand the importance of psychological climate in the learning process, community involvement in *LAKOLING* program is shown in Figure 6. The non-pressurizing classroom atmosphere allows participants to feel freer to express confusion and new ideas, thus creating a collaborative learning space. Emotional engagement of participants is also crucial in fostering positive attitudes toward technology and learning, which can ultimately contribute to sustainable improvements in digital literacy beyond the classroom. This aligns with Zupti & Fathurrahman (2025) who argued that further interventions in the form of digital literacy training and information literacy programs that are based in the community are necessary to help ensure long-term sustainability. Therefore, the success of a digital literacy program depends not only on the materials and methods used, but also on creating a learning environment that supports emotional engagement and community participation as part of a long-term strategy.

Figure 6. Community Participation in *LAKOLING* Program

Source: Research Results (2025)

Significant changes in public understanding of digital ethics principles demonstrate that the training successfully addresses fundamental aspects of digital citizenship. Awareness of not indiscriminately taking digital content without permission and attention to copyright reflect the internalization of responsible values in everyday digital activities. This is crucial, given that copyright infringement practices such as the unauthorized use of images or pirated software are still common, especially in communities new to technology. This concept aligns with Hamdi & Junidar (2023) who argued that digital literacy training with an emphasis on ethics and cybersecurity encourages participants to understand the responsibilities of using digital content and respect copyright. It can be asserted that digital technology can play a significant role in enhancing participation through the provision of support and the expansion of access to learning resources and educational activities (Forsström et al., 2025; Rizk & Hillier, 2022). Therefore, participatory training based on the values of digital responsibility can foster positive attitudes toward the ethical use of technology. According to Saputra & Saputra (2024), digital responsibility encompasses mutually agreed-upon ethical boundaries, which include ensuring the accuracy of content, avoiding harmful content, refraining from illegal activity, assessing the importance of content, and ensuring courtesy in content delivery. These components help maintain ethical standards and a comfortable environment in digital usage.

The digital ethics dimension addressed in this program has also expanded to include legal awareness and technological security. Participants are increasingly aware that the use of digital technology involves not only technical skills but also compliance with applicable rules and respect for the rights of others. Their willingness to shift from using illegal software to licensed or legal alternatives reflects a change in how they perceive technology as a resource that must be used responsibly and protected from misuse. This behavioral change indicates the development of greater awareness regarding software legality, copyright, data security, and the potential risks associated with unauthorized software. This change in perspective is reflected in the statement provided by one of the informants:

I am now more cautious when using images or videos from the internet, as I recognize the importance of respecting copyright. Before using any content, I always verify whether it is available for free use or requires specific permission. This practice fosters a greater sense of responsibility and respect for others' work in my digital activities (Informant 4, training participant, 30 y/o).

Thus, the role of social technology is increasingly influencing the formation of the public sphere, although these systems were not originally designed as democratic infrastructure. This dimension is not simply conveyed as rules, but as values that must be upheld in everyday digital interactions. Digital literacy means being able to make and check

information carefully, and also having a good sense of responsibility when using digital tools in disseminating information, given the risk of spreading hoaxes (Dyanggih et al., 2022; Permana et al., 2023). This confirms that comprehensive digital ethics education can foster legal awareness, responsibility for information, and resilience in the face of the spread of hoaxes among rural communities. This concept is part of the digital literacy framework introduced by Kyrychenko & Linden (2026) as a societal alignment oriented toward procedural justice, to mitigate the risk of technology's continued development and conflict with societal values.

Awareness of digital security is growing alongside improvements in participants' information literacy. Participants have begun to demonstrate behavioral changes, people should make sure to change their passwords often, be careful about giving out personal details, and not click on any strange or unknown links. These changes indicate that participants are increasingly aware of the potential risks associated with digital activities and the importance of managing those risks responsibly. The development of this awareness also suggests that the program has contributed not only to participants' technical knowledge but also to their ability to apply digital security practices in everyday life. This realization is reflected in the statement provided by one of the following informants:

Ever since my social media account posted something without my knowledge, I have become more aware of the importance of digital account security. Following that incident, I immediately changed my password and started using a stronger one to make it harder to hack. I have also become more cautious about sharing personal data online, realizing that such information could be misused by irresponsible parties (Informant 7, training participant, 22 y/o).

This trend reflects the core dimensions identified by Suriaman et al. (2026), which emphasize that digital citizenship entails is not just about learning technical skills and knowledge; it also includes important values, the ability to think critically, and taking action for positive change in the digital world. All of these can be developed through education and training. Individuals are moving beyond the mere functional use of technology; they are beginning to recognize that safeguarding personal identities and devices is part of their responsibility as digital citizens. Because the low levels of digital literacy in rural communities increase vulnerability to cybercrime (Anam et al., 2025; Bulya & Izzati, 2024; Hariyanto et al., 2023).

The understanding of the Margamulya Village community towards the concept of digital citizenship has shown a significant increase. Digital literacy training not only equips participants with technical skills but also instills ethical values, responsibility, and legal awareness in daily digital activities. Participants began to demonstrate wiser behavior, such as not spreading hoaxes, respecting copyright, maintaining personal data security, and actively engaging in digital communities productively. In accordance with the digital citizenship framework developed by Ribble & Bailey (2011), it includes nine main elements: access, communication, literacy, etiquette, commerce, law, rights & responsibility, security, and health & wellness, which are the foundation for today's digital literacy and politeness. This confirms that the success of the program in Margamulya Village reflects the comprehensive implementation of the nine elements of digital citizenship and can provide a framework for strengthening responsible digital literacy at the village level.

The program's success in providing solutions to everyday digital challenges further reinforces the value of this model as a means of fostering digital citizenship. When individuals feel capable of utilizing technology for meaningful and productive purposes, their confidence as members of the digital community grows. This confidence is crucial, as

it cultivates the mental and social readiness to engage more deeply in the digital world—including in complex activities such as online collaboration, digital civic engagement, and technology-driven decision-making. Consequently, digital citizenship means more than just knowing how to use technology; it also involves being responsible, thinking about the right things to do online, and taking part in the community and society around us (Suriaman et al., 2026). The digital skills acquired are not merely technical abilities but also a pathway toward shaping an identity as an active and responsible digital citizen. According to Pitrianti et al. (2023), this process can foster a strong digital identity and boost public confidence in using technology for productive daily activities.

By equipping participants with both technical and moral grounding, this program fosters a comprehensive understanding of digital citizenship. Participants learn not only to use technology for personal needs but also to grasp their responsibilities regarding digital ethics, respect for the work of others, and the protection of personal information. These elements constitute the “Digital Rights and Responsibilities” dimension of digital citizenship a space that includes the liberties and privileges that people have when they are online, as well as the accompanying obligations (Ribble & Bailey, 2011). In the long run, this approach will produce digital citizens who are not only technologically proficient but also contribute to building a healthy, equitable, and inclusive digital ecosystem. According to Ibrahim et al. (2025), enhancing the quality of human resources in the digital era must also be supported by strengthening administrative transparency and the local economy.

The findings indicate that *LAKOLING* facilitated the development of digital citizenship not merely by providing access to computers and digital technologies, but by creating a social learning environment in which participants could observe, practice, receive feedback, and reproduce responsible digital behaviors. Facilitators functioned as behavioral models, while interactions among participants created opportunities for peer learning and reinforcement. Through these processes, participants gradually developed practices corresponding to elements of digital citizenship (Ribble & Bailey, 2011), encompassing digital access, communication and collaboration, digital etiquette, being able to use digital tools well, knowing your rights and duties in the digital world, and ensuring your safety and privacy online. For example, participants who initially tended to share digital information without verification began to check sources before disseminating information after observing and practicing the verification procedures demonstrated by facilitators. The behavioral change occurred through a social learning process in which facilitators first demonstrated how to verify information before sharing it, providing participants with a concrete behavioral model. Participants then paid attention to the demonstrated procedure, retained the steps involved in checking information sources, and practiced the procedure when encountering news on WhatsApp. Through repeated practice, facilitator feedback, and reinforcement, participants gradually developed greater confidence in verifying information independently before disseminating it. This process changed participants’ behavior from immediately forwarding unverified information to checking sources and evaluating credibility before sharing, thereby indicating the development of digital fluency and digital rights and responsibility within Ribble’s digital citizenship framework. This process reflects Bandura’s social learning mechanisms (Rumjaun & Narod, 2025) including observation, retention, practice, and reinforcement, while supporting the development of digital fluency and digital rights and responsibility. Thus, *LAKOLING* goes beyond technical skills by creating a community-based learning environment where responsible digital practices can be learned, practiced, and applied in everyday life.

The presence of the community as active supporters demonstrates that digital training has become part of the village's social dynamics, not merely a technical activity imposed from the outside. This process indirectly strengthens digital citizenship values such as digital collaboration, social participation, and concern for the digital rights of others. This is because, according to digital learning framework, learning is understood as a dynamic process shaped by active participation and meaningful engagement within a particular environment (Lave & Wenger, 1991). Village development is directed at efforts to develop human resources holistically by improving the quality of life, enhancing skills in utilizing technology, and improving community welfare through self-help and mutual cooperation (Humairo et al., 2023). The integration of mutual cooperation values into digital literacy programs is key to building a technologically literate and socially responsible village community.

Participants learn digital ethics not only through the delivery of instructional material but also by observing the mentors' behavior during the training process. Mentors set an example by downloading software from official sources, citing sources when using images or digital materials, verifying information before sharing it, and safeguarding personal data by avoiding the display of sensitive information and using strong passwords. Furthermore, mentors demonstrate courtesy in digital communication, respect differing opinions, seek permission before sharing photos or information, and disseminate only beneficial, verified content. By observing these practices, participants gain concrete learning experiences, making digital ethical values easier to understand, emulate, and apply in daily digital activities aligning with the principles of observational learning found in Bandura's social learning theory (Fuente et al., 2023).

The digital literacy program model implemented in Margamulya Village has proven relevant and effective in addressing the community's need for the development of contextual digital citizenship. The program not only equips participants with technical skills ranging from basic to advanced digital competencies, but also actively instills values such as digital ethics, social responsibility, and legal awareness. Training materials are designed based on the community's actual needs, addressing everyday issues and creating space for participants to become active agents in the village's digital transformation. This relevance is evidenced by an impact that extends beyond individual knowledge enhancement; it fosters a strong digital identity and community participation, while also enabling alumni to emerge as agent of changes who organically and sustainably expand the program's reach. This is reinforced by Bandura's Social Learning Theory, as discussed by Rumjaun & Narod (2025) which highlights the importance of social interaction, observational learning, and modeling in shaping the learning process. According to this theory, individuals can learn by observing the behavior of others without needing to perform the actions themselves first. This process allows learners to understand the consequences of an action before actually carrying it out. It underscores that the program's success stems not merely from the direct transfer of knowledge, but also from a social learning process driven by examples, interactions, and the collective contributions of participants, alumni, and volunteers within the village community. Thus, the model tangibly reflects the principles of community-based digital citizenship that are inclusive, collaborative, and sustainable.

CONCLUSION

A digital literacy program model in Margamulya Village is designed to be holistic, inclusive, and contextual. It integrates technical and social approaches through adaptive training methods, gamification, and community-based strategies. The program's

effectiveness is evidenced by high participation rates, the involvement of various age groups, and support from diverse stakeholders, including local figures and external partners. The community's understanding of digital citizenship showed significant growth following their participation in the program. Participants not only grasped technical aspects but also internalized values regarding ethics, responsibility, and security in their daily digital activities. Awareness of copyright, information verification, and personal data protection indicates that residents are beginning to act as active and prudent digital citizens. The novelty of this research lies in the development of a community-based digital literacy model that integrates technical and social approaches with digital citizenship values in a context-specific framework. Unlike conventional digital literacy programs that primarily emphasize technology skills, this model incorporates community-needs-based training, gamification, multi-stakeholder collaboration, and nine elements of digital citizenship. The integration of Bandura's theory of social learning and Ribble's conceptual framework for digital citizenship emphasizes observation, modeling, and humanistic guidance as strategies to address digital literacy gaps in rural communities beyond merely providing internet infrastructure. The model provides conceptual and practical contributions by strengthening digital ethics, information security, social responsibility, and digital collaboration, while offering potential for replication in rural communities with similar characteristics. This study was limited to the specific social, technological, and community context of Margamulya Village, which may limit the generalizability of the proposed digital literacy model to other rural communities. In addition, the relatively short implementation period and reliance on observations and interviews limited the assessment of long-term behavioral changes and the model's effectiveness across different contexts.

DECLARATIONS

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2. Authors Contributions

Conceptualization: AS; Methodology: AS and EJ; Formal Analysis: AS and DM; Investigation: DM, LI, and RF; Writing—Original Draft Preparation: AS and EJ; Writing—Review and Editing: AS, EJ, DM, LI, and RF. All authors have read and agree to the final published version of the manuscript.

3. Conflicts of Interest

The authors declare that there are no conflicts of interest whether financial, professional, institutional, or personal that could have influenced the planning, execution, data analysis, manuscript preparation, or publication of this research. All stages of the research were conducted independently in accordance with scientific standards, upholding the principles of objectivity, academic integrity, and research ethics. Accordingly, the authors affirm that the results, interpretations, and conclusions presented in this article are the product of objective research and are free from the influence of any external interests.

2. Generative AI and AI-Assisted in the Writing Process

The authors utilized Generative Artificial Intelligence (GenAI) systems during the writing and revision of this manuscript to check spelling and grammar, identify typos and grammatical errors, suggest paraphrasing, reduce the use of passive voice, and eliminate redundant words, sentences, and non-essential details. GenAI inputs were critically evaluated and adjusted to ensure the final version remained a reflection of the authors' original work. All use of Generative AI in this article was carried out by the authors in accordance with the IJITL Policy on the Use of GenAI Tools, with the authors assuming full responsibility for the authenticity, accuracy, and integrity of the work.

3. Data Availability Statement

The data supporting the findings of this study were obtained through fieldwork conducted in Margamulya Village. These data comprise observations, documentation, and/or research instruments collected in accordance with the study's objectives. The data are not publicly available in order to protect the confidentiality of information and the privacy of the research participants. However, the data supporting these findings may be obtained from the corresponding author upon reasonable request, subject to research ethics guidelines and the consent of relevant parties.

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