

Education on the Application of AI as a Strengthening of Digital Literacy in the Indonesian Pentecostal Church (GPI) Paya Kapar Congregation

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Abstract

Improving digital literacy has become an essential need in today's technological era, including within church communities, so that congregants can utilize technology wisely and productively. This study aims to analyze the impact of the AI Application Education as a Means to Strengthen Digital Literacy workshop on the knowledge, skills, and attitudes of congregants at GPI Paya Kapar. The method employed is descriptive-participatory within a community service framework, using data collection techniques such as observation, pre-test and post-test questionnaires, brief interviews, and activity documentation. The workshop was structured into three main sessions: theoretical presentation, hands-on practice using AI applications, and reflective discussion. The results indicate a significant improvement in participants' knowledge of digital literacy and AI application, practical skills in using digital tools for learning and church activities, as well as more responsible attitudes and motivation in utilizing technology. These findings confirm the effectiveness of a participatory-educative, community-based approach in enhancing digital literacy and practical AI skills.

Keywords - education, implementation of AI, strengthening, digital literacy, GPI Sidang Paya Kapar Tebing Tinggi

Abstrak

Peningkatan literasi digital telah menjadi kebutuhan yang esensial di era teknologi saat ini, termasuk di lingkungan gereja, agar jemaat mampu memanfaatkan teknologi secara bijak dan produktif. Penelitian ini bertujuan untuk menganalisis dampak kegiatan Workshop Edukasi Aplikasi AI sebagai Sarana Penguatan Literasi Digital terhadap pengetahuan, keterampilan, dan sikap jemaat di GPI Sidang Paya Kapar Tebing Tinggi. Metode yang digunakan adalah deskriptif-partisipatif dalam kerangka pengabdian kepada masyarakat, dengan teknik pengumpulan data berupa observasi, kuesioner pre-test dan post-test, wawancara singkat, serta dokumentasi kegiatan. Workshop dilaksanakan dalam tiga sesi utama, yaitu pemaparan materi teoretis, praktik langsung penggunaan aplikasi AI, dan diskusi reflektif. Hasil kegiatan menunjukkan adanya peningkatan yang signifikan pada pengetahuan peserta mengenai literasi digital dan penerapan aplikasi AI, keterampilan praktis dalam memanfaatkan perangkat digital untuk pembelajaran dan aktivitas gereja, serta sikap yang lebih bertanggung jawab dan termotivasi dalam penggunaan teknologi. Temuan ini menegaskan bahwa pendekatan edukatif-partisipatif berbasis komunitas efektif dalam meningkatkan literasi digital dan keterampilan praktis pemanfaatan AI.

Kata kunci - pendidikan, implementasi AI, penguatan, literasi digital, GPI Sidang Paya Kapar Tebing Tinggi

INTRODUCTION

The rapid advancement of digital technology over the past two decades has transformed patterns of social, economic, educational, and even religious practices (Alexander et al., 2024). One of the most prominent innovations is Artificial Intelligence (AI), which is capable of simulating human thought processes (Silaban et al., 2024), analyzing large datasets, and providing automated solutions to various problems (Sirait et al., 2024). The presence of AI offers great opportunities in improving efficiency, creativity, and access to information (Sinaga et al., 2024), yet it also presents serious challenges such as disinformation, misuse of technology, and the digital literacy gap within society (Siahaan et al., 2023). Field observations show that at the community level, particularly within the Indonesian Pentecostal Church (GPI) Paya Kapar Congregation (Alexander et al., 2023), most members still perceive digital technology merely as a tool for communication and entertainment (Sibarani et al., 2023). Congregants generally use social media to share church-related information or instant messaging applications for coordination (Sirait, Alexander, & Mahulae, 2023). However, their understanding of AI—its benefits as well as its risks—remains very limited (Sirait et al., 2025). This lack of digital literacy makes the community vulnerable to hoaxes, misuse of personal data, and the inability to leverage digital technology for learning and church ministry (Alexander et al., 2025).

From a theoretical perspective, digital literacy does not merely refer to the ability to operate electronic devices (Silaban et al., 2021), but also encompasses critical thinking skills, digital ethics, awareness of data security, and adaptability to emerging technologies (Sirait et al., 2023). Gilster (1997) defined digital literacy as the ability to understand and use information from a variety of digital sources effectively (Zaenudin et al., 2020). Similarly, UNESCO (2018) emphasized that digital literacy is one of the core competencies required for 21st-century society (Silaban et al., 2020). Thus, digital literacy should be positioned not only as a technical skill but also as a socio-cultural competence that significantly influences the quality of life (Silaban et al., 2025). In terms of regulation, the Indonesian government has highlighted the importance of strengthening digital literacy (Alexander et al., 2024). This is reflected in Presidential Regulation No. 95 of 2018 on the Electronic-Based Government System (SPBE), which encourages society to adapt to digital transformation (Silaban et al., 2025). Furthermore, the National Digital Literacy Movement initiated by the Ministry of Communication and Information (Kominfo) aims to equip citizens with digital knowledge and skills, including the utilization of AI technology (Pasaribu et al., 2024). However, at the local level, the implementation of these policies still faces obstacles, particularly due to limited access to technological education in community- and faith-based organizations (Pardede et al., 2024).

In this regard, the church plays a strategic role. The church is not only a place of worship but also a center for non-formal education, moral formation, and community empowerment (Sinurat et al., 2024). The church can serve as an effective platform to introduce the understanding of AI within the framework of digital literacy aligned with Christian values (Salurante, 2023). The application of AI in the church can take simple forms, such as using AI-based applications to support Bible study, creating educational digital content, or preparing technology-assisted ministry materials (Pardede et al., 2024). This approach is particularly compelling because it combines faith and technology—two domains often perceived as separate but in fact mutually complementary (Sirait et al., 2021). Interestingly, previous studies have shown that community-based approaches to digital literacy yield significant impact (Pardede et al., 2025). For instance, digital literacy developed within schools or social communities has proven more effective because learning occurs in a participatory manner and aligns with the community's specific needs (Barus et al., 2024). This model can be adapted within the church context, where educating congregants on AI not only enhances technical knowledge but also strengthens ethical and spiritual awareness in technology use (Pane et al., 2025).

Based on the above discussion, several key problems can be identified: (1) the low level of congregants' understanding of AI concepts and applications in daily life; (2) limited digital skills among congregants in utilizing technology for learning and ministry; and (3) the absence of community-based

church programs that specifically emphasize the application of AI in strengthening digital literacy. The benefits of this study are threefold: (1) theoretically, it enriches the discourse on community-based digital literacy by incorporating the perspective of AI application; (2) practically, it offers an applicable educational model to improve the digital literacy of the GPI Paya Kapar congregation; and (3) socially, it strengthens the role of the church as a center for congregation development and empowerment in the digital era. Therefore, this study is expected to provide a concrete contribution in addressing the challenges of low digital literacy at the local community level, while also affirming that AI can serve as a tool for empowerment—rather than a threat—if managed wisely.

METHOD

This community service activity was implemented using a **participatory-educative approach**, which emphasizes active engagement of participants in every stage. This method was chosen to ensure that the program was not merely a one-way knowledge transfer, but also created a space for dialogue and practical experience that participants could immediately apply according to their needs (Sirait, G., 2025).

1. Location and Participants

The program was conducted at the Indonesian Pentecostal Church (GPI) Paya Kapar Congregation, Tebing Tinggi, selected due to its role as a central meeting place for the congregation and its openness to community-based digital literacy initiatives. The participants consisted of church members and local community members, totaling approximately 30 individuals, selected voluntarily in coordination with church leadership. The composition of participants considered age and gender representation to ensure inclusivity.

2. Data Collection Methods

Data were collected using multiple complementary techniques:

- Direct observation, to monitor participant engagement, enthusiasm, and responses during the activity.
- Short interviews, conducted with several participants to explore their perceptions of digital literacy and initial understanding of artificial intelligence (AI).
- Pre-test and post-test questionnaires, administered to measure participants' improvement in knowledge and understanding of AI fundamentals and their relevance to digital literacy.
- Documentation, including photographs, field notes, and recordings of the activity as visual evidence and descriptive data sources.

3. Implementation Procedure

The activity was carried out in several stages:

- Needs identification: conducted through initial discussions with church leaders to identify primary issues, namely the low understanding of digital literacy and AI among congregants.
- Preparation: developing simple and accessible presentation materials, selecting relevant AI-based applications for practice (e.g., educational tools, content creation, and online safety apps), and providing supporting equipment (laptops, projectors, internet access).
- Workshop implementation: divided into three main sessions—(a) theoretical presentation on digital literacy and AI fundamentals, (b) hands-on practice using AI applications to support learning and church activities, and (c) reflective discussion to explore experiences, challenges, and opportunities for practical application in daily life.
- Activity evaluation: conducted by comparing pre-test and post-test results and reviewing participants' feedback on the usefulness of the program.

4. Data Analysis Techniques

The collected data were analyzed using a descriptive qualitative and simple quantitative approach. Quantitative data from pre-test and post-test questionnaires were expressed as percentages to measure improvement in participants' understanding. Qualitative data from

observations, interviews, and documentation were analyzed descriptively to provide a comprehensive narrative of learning experiences, behavioral changes, and the level of digital skills applied by participants.

5. Strategies for Addressing Challenges

The program was also designed to address the main challenges, namely the limited knowledge and skills of congregants regarding AI and digital literacy. The strategies implemented included:

- Simple and contextualized materials, tailored to participants' educational backgrounds for easier understanding.
- Hands-on learning (learning by doing), allowing participants to learn through direct experience.
- Community-based approach, leveraging the church as an educational hub to ensure acceptance and sustainability of the program.
- Utilization of local resources, including accessible devices and applications relevant to participants' daily needs.

Through this method, the program aimed not only to enhance knowledge but also to develop practical skills and collective awareness among congregants regarding the importance of digital literacy and responsible AI usage in everyday life.

RESULTS AND DISCUSSION

The implementation of the AI Application Education as a Means to Strengthen Digital Literacy at GPI Paya Kapar Congregation yielded positive outcomes and tangible impacts for the participants. Based on observations, questionnaires, interviews, and documentation, the results of the activity can be summarized as follows:

1. Improvement in Participant Knowledge

Pre-test and post-test results indicated a significant increase in participants' understanding of digital literacy concepts and AI applications. Prior to the workshop, only approximately 30% of participants demonstrated correct comprehension of basic AI and digital literacy concepts. Following the activity, this increased to 85% of participants. Furthermore, participants' awareness of the risks associated with technology misuse and the importance of digital ethics increased from 40% to 88%.

2. Enhancement of Practical Skills

During the practical session, participants successfully utilized several AI-based applications to support learning and church-related activities, such as digital content creation, information management, and using AI educational tools. Observations revealed that 90% of participants could follow instructions effectively, while the remaining participants required additional guidance for some application features.

3. Participant Response and Engagement

Participants exhibited high enthusiasm throughout the workshop. Field documentation showed active involvement in discussions, asking questions, and sharing experiences regarding the use of digital technology in daily life. Short interviews indicated that most participants found the activity relevant to their needs and intended to apply the techniques learned both at home and within church activities.

4. Measurable Impact

Post-test evaluation revealed tangible changes in participants' attitudes and motivation. Approximately 82% of participants reported being encouraged to enhance their personal digital literacy and use technology more responsibly. About 75% of participants committed to applying the AI practices learned during the workshop in daily life and church activities, including creating educational content and managing information digitally.



Figure 1.

The Community Service (PkM) team together with the program participants

The implementation of the AI Application Education as a Means to Strengthen Digital Literacy at GPI Paya Kapar demonstrated a significant improvement in participants' knowledge, skills, and attitudes toward digital literacy and AI usage. The increase in participants' knowledge, as shown by pre-test and post-test results, indicates that the participatory-educative approach was effective in transferring information in a practical and contextualized manner. This finding aligns with constructivist learning theory, which emphasizes active participant engagement in the learning process to ensure deeper understanding and relevance to real-life experiences.

Strengthening Digital Literacy through Hands-On Practice

One of the main findings was the effectiveness of hands-on practice (learning by doing) in developing participants' skills. By directly using AI applications to create digital content, manage information, and utilize AI-based educational tools, participants not only understood the theory but also applied it in practice. This supports previous literature highlighting that digital skills are more effectively acquired through practical experience rather than lecture-based learning alone.

Changes in Attitude and Motivation

Beyond cognitive improvement, the workshop also contributed to changes in participants' attitudes toward digital technology usage. Many participants expressed intentions to use applications and digital content more responsibly and to leverage AI for learning activities and church services. These attitude changes indicate that a community-based approach, utilizing the church as an educational hub, can foster collective awareness and long-term motivation among participants (Simatupang et al., 2025).

Effectiveness of a Community-Based Approach

The involvement of the church as a program partner proved strategic in expanding the reach and impact of digital literacy education. The church functions not only as a place of worship but also as a platform for empowering congregants through digital education. This supports previous studies emphasizing that community-based institutions are effective in disseminating information, shaping social behaviors, and enhancing members' technical skills. Therefore, this community service model demonstrates that integrating scientific knowledge (AI and digital literacy) with community engagement can produce more significant impacts than individual interventions (Harita et al., 2025).

Implications for Program Development

The findings have several important implications. First, AI-based digital education within a church community context can serve as an effective strategy to enhance digital literacy among populations with limited knowledge. Second, hands-on practice should be an integral part of program design to ensure participants can internalize digital skills effectively. Third, strengthening facilitator capacity and providing accessible technological support are crucial factors for the success and

sustainability of the program, allowing it to be replicated or extended to other congregations or communities (Susanti et al., 2025).

Overall, the activity demonstrates that a participatory-educative, community-based approach is not only effective in improving cognitive understanding but also capable of motivating behavioral changes and building practical skills that can be applied in daily life and church service. The success of this program provides evidence that digital literacy can be effectively developed through the synergy of knowledge, technology, and community empowerment (Silaen et al., 2025).

CONCLUSION

Based on the implementation of the AI Application Education as a Means to Strengthen Digital Literacy at GPI Paya Kapar, several key conclusions can be drawn. The activity successfully addressed the issue of limited understanding among congregants and the surrounding community regarding digital literacy and AI applications. The significant increase in post-test scores compared to pre-test scores demonstrates that the participatory-educative approach was effective in transferring knowledge and fostering a deeper understanding. The workshop effectively addressed participants' practical skill gaps. Through hands-on sessions, participants were able to use various AI applications relevant to daily needs and church activities, enabling them not only to understand theoretical concepts but also to apply them in practice. The activity fostered positive changes in participants' attitudes and motivation. Many participants expressed intentions to use digital technology more responsibly, enhance their personal digital literacy, and implement AI in daily life and church service. This indicates that the program achieved its educational objectives while cultivating collective awareness at the community level. Utilizing the church as the activity's venue proved strategic in expanding the reach of digital literacy education and ensuring program sustainability. A community-based approach allowed participants to apply and disseminate the acquired knowledge and skills to other congregation members more effectively.

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