

Empowering Community Digital Literacy through Participatory Artificial Intelligence Training Using Participatory Action Research in South Jakarta

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Abstract. Digital literacy has become a fundamental competency for communities in responding to the rapid advancement of Artificial Intelligence (AI) technologies. However, many community members still have limited knowledge and practical skills in utilizing AI productively, ethically, and responsibly. This community service program aimed to empower community digital literacy through participatory Artificial Intelligence training using a Participatory Action Research (PAR) approach in RT 05, Cikoko Urban Village, South Jakarta. The program was implemented through four stages of PAR, including problem identification, collaborative planning, participatory action, and reflection. Training activities consisted of interactive lectures, live demonstrations, guided hands-on practice, group discussions, and mentoring on AI applications, digital ethics, information verification, and online security. Program evaluation was conducted using observations, reflective discussions, and post-training questionnaires involving sixteen participants. The findings revealed three major outcomes. First, the participatory learning approach successfully increased community engagement, with 75% female participants and 69% of participants aged 12–20 years actively involved throughout the learning process. Second, the training achieved high participant satisfaction, with information delivery, training materials, presenter performance, and event organization each receiving an 81% satisfaction score. Third, the program significantly improved community digital literacy and readiness for AI adoption. Participants reported that the program provided substantial benefits (88%), increased their knowledge (81%), improved practical AI utilization skills (81%), and enhanced their overall satisfaction (81%), while sustainable technology utilization, practical relevance, systematic implementation, and willingness to participate in future activities each achieved 75% positive responses.

Keywords: Artificial Intelligence; Community Empowerment; Digital Literacy; Participatory Action Research; Community-Based Training

1. Introduction

The rapid advancement of digital technology has fundamentally transformed the way individuals communicate, learn, work, and access information. Alongside this

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transformation, Artificial Intelligence (AI) has emerged as one of the most influential technologies driving innovation across various sectors, including education, business, healthcare, and public services (Chen et al., 2020; Korteling et al., 2021; Mannuru et al., 2025; Shahzad et al., 2024). AI-powered applications such as intelligent search engines, virtual assistants, automated content generation, and decision-support systems have become increasingly accessible to the public. Consequently, digital literacy is no longer limited to the ability to operate digital devices but also encompasses the capacity to understand, evaluate, and responsibly utilize AI technologies in everyday life. Therefore, strengthening community digital literacy has become an essential strategy for ensuring that society can effectively participate in the digital transformation era.

Despite the widespread availability of digital technologies, Wang et al. (2025) found that disparities in digital literacy remain evident at the community level. Many community members primarily use smartphones and internet services for communication and entertainment, while their understanding of productive digital technologies, particularly Artificial Intelligence, remains limited. This gap restricts opportunities to utilize AI for educational purposes, entrepreneurship, information management, and community development. In addition, inadequate understanding of AI increases the risk of misinformation, unethical technology use, and excessive dependence on automatically generated information. These challenges highlight the importance of community-based educational initiatives that not only introduce AI technologies but also promote responsible and critical digital practices (Banh & Strobel, 2023; Barredo Arrieta et al., 2020; Fang et al., 2023; Kalota, 2024).

Previous community service and educational studies have demonstrated that participatory digital literacy programs significantly improve technological competencies, community engagement, and self-confidence in adopting emerging technologies (Choudhary & Bansal, 2022; Heryatun & Septiana, 2023; Oktaviani & Setiawati, 2025). Practical learning approaches that combine demonstrations, mentoring, and collaborative problem-solving enable participants to develop practical skills while increasing motivation to apply digital technologies in their daily activities. Furthermore, participatory learning encourages knowledge sharing among community members, creating sustainable learning environments that extend beyond formal training sessions. These findings suggest that community participation plays a crucial role in ensuring the effectiveness and sustainability of digital literacy programs.

Among various community empowerment approaches, Participatory Action Research (PAR) has been widely recognized as an effective framework for addressing community problems through collaborative learning and collective action (Baum et al., 2006; Castro-Diaz et al., 2025; Mallory, 2024; Omodan & Dastile, 2023). Unlike conventional training programs where participants merely receive information, PAR actively involves community members in identifying local problems, planning interventions, implementing activities, and reflecting on the outcomes. Such participation strengthens community ownership of the program and enhances the sustainability of empowerment initiatives. In the context of AI literacy, the PAR approach enables participants to explore practical applications of Artificial Intelligence that are directly relevant to their social and economic activities while fostering collaborative learning experiences.

RT 05 of Cikoko Urban Village, Pancoran District, South Jakarta, represents a



community experiencing increasing access to digital technologies but limited utilization of Artificial Intelligence applications. Preliminary observations and discussions with community leaders revealed that most residents were familiar with smartphones and internet services; however, their use of digital technology remained largely confined to social media, instant messaging, and online entertainment. Knowledge regarding AI-based applications, digital ethics, information verification, and technology-supported productivity was still relatively low. This condition indicates the need for a structured community empowerment program that introduces AI technologies through practical, participatory, and context-based learning activities (Sardjono & Perdana, 2019; Wahdini et al., 2025).

Based on the identified community needs, a participatory Artificial Intelligence training program was designed to strengthen community digital literacy through collaborative learning and practical experience. Rather than focusing solely on technology introduction, the program emphasized empowering participants to independently utilize AI applications for information searching, content creation, communication, and daily productivity while maintaining ethical awareness and digital responsibility. The implementation adopted the Participatory Action Research approach to ensure active community involvement throughout every stage of the program, from needs assessment to evaluation and reflection. Such an approach is expected to encourage greater community ownership and promote sustainable digital capacity development.

Therefore, this community service program aimed to empower community digital literacy through participatory Artificial Intelligence training using a Participatory Action Research approach in RT 05, Cikoko Urban Village, South Jakarta. Specifically, the program sought to improve participants' knowledge and practical skills in utilizing AI technologies, increase awareness of digital ethics and information verification, strengthen community participation in digital learning, and promote sustainable digital empowerment to support community readiness for ongoing digital transformation.

2. Methods

This community service program employed the Participatory Action Research (PAR) approach, which emphasizes collaborative problem-solving through active participation of community members throughout the entire intervention process (Feekery, 2024; Fine & Torre, 2019; Smit et al., 2024). PAR was selected because it enables communities to become active partners rather than passive recipients of knowledge, thereby strengthening program ownership and sustainability. The implementation was conducted in RT 05, Cikoko Urban Village, Pancoran District, South Jakarta, involving sixteen community members representing diverse occupational backgrounds, including students, homemakers, private employees, online transportation drivers, and small business owners. The diversity of participants enriched collaborative learning and facilitated knowledge exchange during the training activities.

The implementation of the program followed four interconnected stages: problem identification, collaborative planning, participatory action, and reflection. During the problem identification stage, observations, informal interviews, and discussions were conducted with community leaders and residents to identify existing digital literacy challenges and training needs related to Artificial Intelligence. The collaborative planning



stage involved preparing learning materials, practical modules, training schedules, and AI applications relevant to participants' daily activities. Community representatives were encouraged to provide input regarding the training topics and learning methods to ensure that the intervention addressed actual community needs.

Dancis *et al.* (2023) found that the participatory action stage consisted of face-to-face training sessions employing interactive lectures, live demonstrations, guided hands-on practice, group discussions, and direct mentoring. The learning materials included fundamental concepts of Artificial Intelligence, practical applications for information retrieval, AI-assisted content generation, prompt writing techniques, digital ethics, information verification, and online security awareness. Throughout the implementation, facilitators continuously assisted participants in practicing AI applications and encouraged peer learning to improve confidence and independent technology utilization.

Program evaluation was conducted during the reflection stage using direct observation, participant discussions, and post-training questionnaires to assess participant engagement, satisfaction, perceived knowledge improvement, practical skill development, and overall program effectiveness. Reflection activities involved both facilitators and community members in discussing the strengths, limitations, and future development of the program. The PAR cycle enabled continuous learning and generated recommendations for sustaining community-based digital literacy initiatives beyond the completion of the training program.

Table 1 Stages of Participatory Action Research Implementation

PAR Stage	Activities	Expected Outcomes
Problem Identification	Observation, interviews, focus group discussions, identification of digital literacy needs	Identification of community problems and priority needs
Collaborative Planning	Preparation of learning modules, selection of AI applications, scheduling, community consultation	Training program designed according to community needs
Participatory Action	Interactive lectures, demonstrations, hands-on practice, mentoring, group discussions	Improved AI knowledge, practical skills, and participant engagement
Reflection and Evaluation	Observation, questionnaires, participant reflection, program review	Evaluation of program effectiveness and recommendations for sustainability

Table 1 illustrates the implementation cycle of Participatory Action Research adopted in this community service program. Each stage was designed as an interconnected process in which community members actively participated in identifying local problems, planning appropriate interventions, implementing learning activities, and evaluating program outcomes. This cyclical process ensured that the training remained responsive to community needs while promoting collaborative learning, community ownership, and sustainable digital empowerment. Furthermore, the reflection stage provided valuable feedback for improving future community-based Artificial Intelligence literacy programs



and strengthening long-term community engagement in digital transformation initiatives.

3. Results and Discussion

The community service program was implemented using the Participatory Action Research (PAR) approach to empower residents of RT 05, Cikoko Urban Village, South Jakarta, in improving their digital literacy through the practical utilization of Artificial Intelligence (AI). Throughout the implementation process, community members were actively involved in identifying their learning needs, participating in interactive training sessions, practicing AI applications, and reflecting on the benefits and challenges of technology adoption. This participatory approach encouraged collaborative learning while fostering a sense of ownership toward the digital literacy program.

The evaluation of the program focused not only on the successful implementation of the training activities but also on the extent to which the intervention contributed to improving participants' knowledge, practical skills, engagement, and readiness to adopt Artificial Intelligence technologies. Data were collected through participant observations, post-training questionnaires, and reflective discussions conducted at the end of the activity. The findings were analyzed descriptively to identify changes in participants' perceptions, learning experiences, and overall responses toward the community empowerment program.

The results are organized into three major findings that represent the primary outcomes of the community service intervention. The first finding describes community participation and engagement throughout the participatory learning process. The second finding presents participants' evaluation of the training implementation, including their satisfaction with the learning activities and facilitation process. The third finding discusses the impact of the program on improving digital literacy, Artificial Intelligence competencies, and community readiness for digital transformation. Together, these findings demonstrate the effectiveness of the Participatory Action Research approach in strengthening community empowerment through digital literacy initiatives.

3.1. Participatory AI Training Successfully Increased Community Engagement and Learning Participation

The implementation of the participatory Artificial Intelligence (AI) training program successfully fostered active community engagement throughout the learning process. A total of 16 residents of RT 05, Cikoko Urban Village, South Jakarta, participated in the community service activity. Participants represented diverse demographic and occupational backgrounds, including students, homemakers, private employees, online transportation drivers, and small business owners. This diversity created an inclusive learning environment where participants could exchange perspectives and discuss the practical relevance of AI technologies in their respective daily activities. Unlike conventional training programs that rely primarily on one-way knowledge transfer, this program emphasized collaborative participation, enabling participants to contribute actively during every stage of the learning process.

Participant characteristics indicate that the training successfully attracted broad community interest, particularly among younger residents. Of the sixteen participants, twelve participants (75%) were female, while four participants (25%) were male.



Furthermore, 69% of participants belonged to the 12–20-year age group, demonstrating that younger generations are highly motivated to acquire knowledge related to emerging digital technologies. This finding reflects the increasing awareness among young community members regarding the importance of Artificial Intelligence as a fundamental competency in the era of digital transformation. At the same time, the participation of adults from various occupations suggests that AI literacy is increasingly recognized as a practical necessity across different segments of society rather than being limited to students or technology professionals.

The success of participant engagement was strongly influenced by the implementation of the Participatory Action Research (PAR) approach. During the problem identification stage, participants were encouraged to express their experiences, challenges, and expectations regarding the use of digital technology in everyday life. These discussions revealed that although most participants routinely used smartphones and internet services, their digital activities were generally limited to communication through messaging applications and social media platforms. Very few participants had previous experience using Artificial Intelligence applications for educational, professional, or entrepreneurial purposes. These initial findings became the basis for designing learning materials that directly addressed participants' actual needs and digital literacy gaps.

The participatory learning process continued during the implementation stage through interactive lectures, live demonstrations, guided practice, group discussions, and direct mentoring. Rather than acting solely as recipients of information, participants actively explored various AI applications by practicing prompt writing, generating text, searching for information, and discussing ethical issues related to AI-generated content. The facilitators continuously encouraged participants to ask questions, solve practical problems collaboratively, and share successful experiences with fellow participants. This collaborative learning environment significantly increased participants' confidence in experimenting with unfamiliar technologies while promoting peer learning as an important component of community empowerment.

The PAR-based training approach successfully created a highly participatory learning environment that encouraged active engagement, collaboration, and knowledge sharing among community members. The demographic diversity of participants, combined with interactive learning strategies, enabled the program to reach different social groups while strengthening collective awareness regarding the importance of Artificial Intelligence in supporting education, employment, entrepreneurship, and everyday digital activities. These findings indicate that participatory approaches not only improve learning engagement but also strengthen community ownership of digital literacy initiatives, thereby increasing the potential sustainability of future community empowerment programs.

Table 2 Demographic Characteristics of Training Participants

Characteristics	Category	Number (n)	Percentage (%)
Gender	Female	12	75
	Male	4	25
Age Group	12–20 years	11	69
	>20 years	5	31
Occupation	Students, homemakers, private employees,	16	100



online transportation drivers, and small business owners

Table 2 presents the demographic profile of participants involved in the participatory AI training program. The data indicate that female participants constituted the majority of attendees, while adolescents and young adults represented the largest age group. Nevertheless, the presence of participants from various occupational backgrounds demonstrates that the training successfully reached diverse community segments. This diversity enriched classroom discussions and collaborative learning because participants were able to relate Artificial Intelligence applications to different professional and social contexts. Consequently, the participatory learning environment not only facilitated knowledge acquisition but also encouraged the exchange of experiences, strengthened social interaction, and increased participants' motivation to adopt AI technologies responsibly in their daily lives.

3.2. The Training Achieved High Levels of Participant Satisfaction

Participant satisfaction was evaluated to determine the quality and effectiveness of the Artificial Intelligence (AI) training program implemented through the Participatory Action Research (PAR) approach. The evaluation was conducted immediately after the completion of the training using a structured questionnaire that measured participants' perceptions of six key aspects of the program, namely information delivery, training materials, presenter performance, event organization, facilities and infrastructure, and training theme relevance. Assessing participant satisfaction is an important component of community service evaluation because it reflects not only participants' learning experiences but also the extent to which the program successfully addressed community expectations and learning needs. High satisfaction levels indicate that the training methods, learning materials, and facilitation strategies were appropriate for the characteristics of the target community.

The evaluation results revealed a consistently positive assessment across all measured indicators. Four evaluation components achieved the highest satisfaction score of 81%, namely information delivery, training materials, presenter performance, and overall event organization. These findings suggest that participants highly appreciated the clarity of explanations provided by the facilitators, the relevance of the instructional materials, and the systematic organization of the training activities. Participants reported that the facilitators presented complex AI concepts in a simple and understandable manner while providing sufficient opportunities for questions, discussions, and direct practice. Furthermore, the structured sequence of learning activities from theoretical introduction to practical application helped participants gradually develop confidence in utilizing Artificial Intelligence technologies.

Meanwhile, the evaluation aspects of facilities and infrastructure and training theme relevance each obtained a satisfaction score of 75%, which also reflects positive participant perceptions. Although these indicators received slightly lower scores than the others, they still demonstrate that participants considered the available learning environment adequate to support effective training implementation. The facilities, including presentation equipment, internet connectivity, and practice materials, enabled participants to complete practical exercises successfully. Likewise, the AI training theme was regarded as highly relevant to current technological developments and participants'



daily digital activities, particularly in relation to information searching, content generation, educational purposes, and productivity enhancement. The slightly lower score may indicate opportunities for further improvement by expanding practical sessions, providing additional learning resources, or introducing more advanced AI applications in future training programs.

The high satisfaction achieved in this community service program can also be attributed to the participatory learning strategy adopted throughout the implementation process. Unlike conventional lecture-based training, participants were encouraged to actively engage in demonstrations, collaborative discussions, guided practice, and peer learning activities. This interactive learning environment enabled participants to immediately apply newly acquired knowledge while receiving direct feedback from facilitators and fellow participants. Such collaborative interactions not only improved participants' understanding of Artificial Intelligence applications but also increased their motivation and confidence to continue exploring AI technologies independently after the completion of the program. These findings further demonstrate that participatory learning contributes significantly to improving the quality of community-based digital literacy initiatives.

The AI training program successfully delivered a positive learning experience for community members. High participant satisfaction across all evaluation indicators reflects the effectiveness of combining participatory facilitation, practical learning activities, and context-based instructional materials within the PAR framework. The positive responses also suggest that community members perceived the program as relevant to their needs and beneficial for improving their digital competencies. Therefore, participant satisfaction not only serves as evidence of successful program implementation but also supports the feasibility of replicating similar community-based AI literacy programs in other communities seeking to strengthen digital inclusion and technological empowerment.

Table 3 Participant Satisfaction toward the AI Training Program

Evaluation Aspect	Satisfaction Score (%)	Interpretation
Information delivery	81	Very satisfactory
Training materials	81	Very satisfactory
Presenter performance	81	Very satisfactory
Event organization	81	Very satisfactory
Facilities and infrastructure	75	Satisfactory
Training theme relevance	75	Satisfactory

Table 3 summarizes participants' evaluations of the six major components of the AI training program. The highest satisfaction scores were obtained for information delivery, training materials, presenter performance, and event organization, each achieving 81%, indicating that participants highly valued the quality of facilitation and the organization of learning activities. Meanwhile, facilities and infrastructure as well as the relevance of the training theme each received 75%, demonstrating that participants considered the learning environment and program content appropriate and supportive of their learning needs. Collectively, these findings confirm that the participatory training model provided an engaging, well-organized, and community-oriented learning experience that effectively supported participants' understanding of Artificial Intelligence and strengthened the overall quality of the community empowerment program.



3.3. *The Program Improved Community Digital Literacy and Readiness for AI Adoption*

The most significant outcome of this community service program was the improvement of participants' digital literacy competencies and their readiness to adopt Artificial Intelligence (AI) technologies in daily activities. The effectiveness of the program was evaluated through a post-training questionnaire that measured participants' perceptions regarding the benefits of the training, knowledge improvement, practical skill development, technology adoption, and overall satisfaction. The evaluation results demonstrate that the participatory learning model implemented through the Participatory Action Research (PAR) approach successfully generated positive learning outcomes across multiple dimensions of digital literacy. These findings indicate that community-based AI training can effectively bridge the knowledge gap between technological innovation and practical community utilization while fostering greater confidence in using emerging digital technologies.

Among all evaluated indicators, the highest achievement was recorded for the statement that the training program provided substantial benefits to participants' daily lives, which received a positive response of 88%. This finding suggests that participants perceived the training as directly applicable to their personal, educational, and professional activities. During reflective discussions conducted at the end of the program, many participants reported that they had gained new insights into how AI applications could simplify routine tasks such as searching for reliable information, drafting written documents, generating digital content, organizing ideas, and supporting learning activities. The high level of perceived usefulness indicates that the training successfully demonstrated the practical value of Artificial Intelligence beyond theoretical concepts, making the technology more accessible and meaningful for community members.

The evaluation also revealed substantial improvements in participants' knowledge and practical competencies related to Artificial Intelligence. Approximately 81% of participants reported increased understanding of AI concepts and digital literacy after completing the training. Likewise, 81% indicated that they had acquired practical skills in utilizing AI applications effectively, while another 81% expressed overall satisfaction with the learning experience. These findings demonstrate that the participatory learning strategy successfully transformed participants from passive technology users into individuals who were more confident in applying AI tools to solve everyday problems. The combination of interactive lectures, live demonstrations, guided practice sessions, and continuous mentoring enabled participants to immediately apply newly acquired knowledge in practical situations, thereby strengthening both conceptual understanding and technological self-efficacy.

In addition to improving knowledge and technical competencies, the program also contributed to strengthening participants' readiness for long-term AI adoption. Four evaluation indicators namely sustainable technology utilization, provision of practical solutions, systematic implementation, and willingness to participate in future AI literacy activities each achieved 75% positive responses. These results indicate that most participants not only appreciated the current training but also recognized the importance of continuous learning and future digital capacity development. The willingness to participate in similar activities reflects participants' growing motivation to continuously improve their technological competencies and adapt to the rapidly evolving digital environment. Furthermore, participants demonstrated greater awareness of responsible



AI utilization, emphasizing the importance of information verification, ethical content generation, digital security, and critical evaluation of AI-generated outputs before applying them in everyday contexts.

The Participatory Action Research approach effectively empowered community members by improving digital literacy, strengthening AI competencies, and increasing readiness for digital transformation. Rather than merely transferring technical knowledge, the program fostered collaborative learning, critical thinking, and responsible technology adoption through continuous interaction between facilitators and participants. The improvement observed across all evaluation indicators suggests that participatory AI literacy programs have considerable potential to become sustainable community empowerment strategies capable of supporting digital inclusion, enhancing community resilience, and preparing local communities to respond effectively to future technological developments. Consequently, integrating participatory learning with practical AI applications represents an effective model for strengthening community digital capacity in the era of Artificial Intelligence.

Table 4 Evaluation of Training Outcomes and Community Readiness for AI Adoption

Training Outcome	Percentage (%)	Interpretation
Program provides substantial benefits	88	Very high perceived benefit
Increased participant knowledge	81	Significant improvement
Increased participant skills	81	Significant improvement
Overall participant satisfaction	81	High level of satisfaction
Sustainable technology utilization	75	Positive readiness for continuous adoption
Providing practical solutions	75	Practical relevance to daily activities
Systematic implementation	75	Positive perception of program organization
Interest in future participation	75	Strong willingness for continued learning

Table 4 summarizes the outcomes of the post-training evaluation conducted after the implementation of the participatory AI literacy program. The highest score (88%) was obtained for the perceived benefits of the training, indicating that participants regarded the program as highly valuable for supporting their daily activities. Three additional indicators namely knowledge improvement, practical skill development, and overall satisfaction each achieved 81%, demonstrating that the training effectively strengthened participants' digital competencies while creating a positive learning experience. Meanwhile, four indicators related to long-term program sustainability each obtained 75%, reflecting participants' readiness to continue utilizing AI technologies and their interest in participating in future community empowerment initiatives. Collectively, these findings provide strong evidence that the Participatory Action Research approach not only improved immediate learning outcomes but also established a foundation for sustainable digital literacy development and broader community readiness for Artificial Intelligence adoption.



3.4. Discussion: Participatory Artificial Intelligence Training as a Community Empowerment Strategy for Strengthening Digital Literacy

The findings of this community service program demonstrate that the Participatory Action Research (PAR) approach effectively strengthened community engagement, participant satisfaction, and digital literacy outcomes. Active participation throughout the stages of problem identification, collaborative planning, implementation, and reflection enabled participants to become directly involved in the learning process rather than merely acting as recipients of information. This finding is consistent with the fundamental principles of Participatory Action Research proposed by Kemmis et al. (2014), who argue that community participation is a central element in generating sustainable social change because participants actively construct knowledge through cycles of planning, action, observation, and reflection. The high level of participant engagement observed in this study indicates that collaborative learning environments contribute significantly to strengthening community ownership of empowerment programs.

The successful implementation of the training also supports the concept of community empowerment proposed by Kruahong et al. (2023), who explains that empowerment involves increasing individuals' capacity to understand problems, make informed decisions, and utilize available resources independently. In this study, participants were not only introduced to Artificial Intelligence applications but also acquired practical competencies that enabled them to integrate AI into everyday activities, including information searching, document preparation, and digital content creation. The improvement in participants' knowledge and confidence demonstrates that empowerment-oriented training can increase technological self-efficacy, allowing communities to become more adaptive in responding to rapid digital transformation.

The improvement in participants' digital literacy further aligns with the framework developed by Özer & Kuloğlu (2023), which defines digital literacy as a multidimensional competency encompassing the ability to access, evaluate, create, and communicate digital information responsibly and effectively. The present findings indicate that participants experienced not only increased technical knowledge regarding Artificial Intelligence but also enhanced awareness of digital ethics, information verification, and responsible technology utilization. This broader understanding reflects that digital literacy extends beyond operational skills toward critical thinking and ethical decision-making, both of which are increasingly essential in the era of AI-driven information ecosystems.

The participatory learning model adopted in this program also supports Mezirow (1981) theory of adult learning (andragogy), which emphasizes that meaningful learning occurs when participants are actively involved in solving practical problems relevant to their daily experiences. Throughout the training, participants engaged in demonstrations, guided practice, peer discussions, and collaborative problem-solving activities using AI applications. These interactive learning strategies enabled participants to connect theoretical concepts with practical situations encountered in education, work, and household activities. Consequently, participants perceived the training as highly beneficial, as reflected by the 88% positive response regarding the usefulness of the program and 81% improvement in knowledge and practical skills.

The high level of participant satisfaction supports the Technology Acceptance Model (TAM) by Venkatesh & Davis (2000). According to TAM, individuals are more likely to adopt new technologies when they perceive them as useful (*perceived usefulness*) and easy to use (*perceived ease of use*). The high satisfaction scores recorded for information



delivery, training materials, presenter performance, and overall organization indicate that participants found the AI applications understandable and directly relevant to their daily activities. Practical demonstrations, facilitator guidance, and opportunities for immediate application reduced technological anxiety and increased participants' willingness to explore Artificial Intelligence independently after completing the training. These findings suggest that participatory learning environments positively influence community acceptance of emerging digital technologies.

The findings also reinforce previous studies on community-based digital literacy and Artificial Intelligence education. Kolomaznik *et al.* (2024) argues that digital literacy development requires the integration of technical, cognitive, and socio-emotional competencies rather than focusing solely on technological operation. Similarly, Redecker (2017), through the European Digital Competence Framework (DigCompEdu), emphasizes that digital competence should include critical evaluation, ethical awareness, communication, collaboration, and continuous learning. The improvements observed in participants' understanding of information verification, ethical AI utilization, and collaborative learning demonstrate that the present program successfully addressed multiple dimensions of digital competence rather than merely introducing AI software. This multidimensional approach increases the potential sustainability of digital empowerment initiatives within local communities.

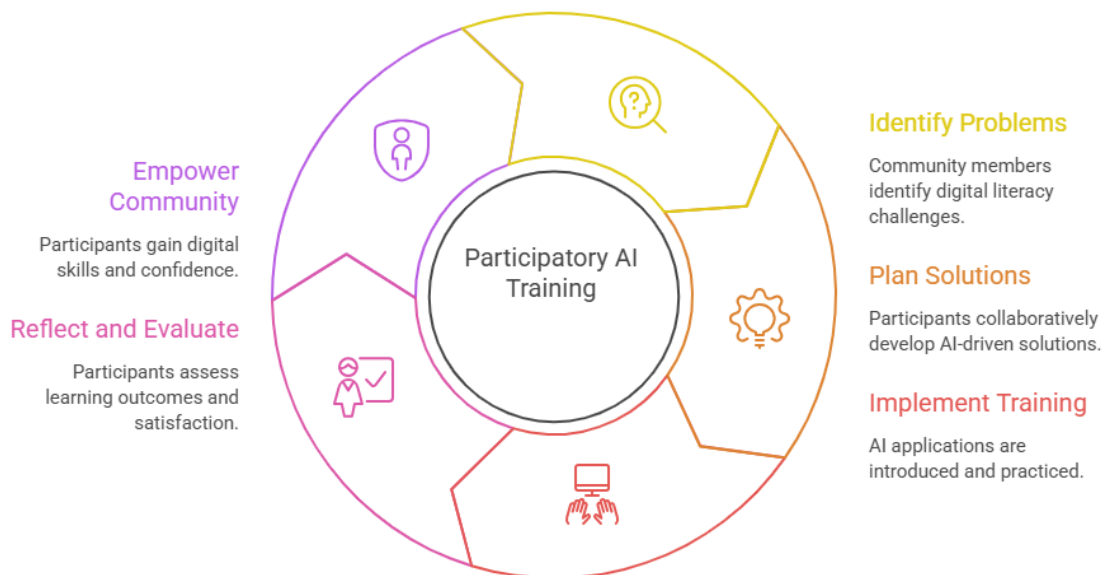


Figure 1 Participatory AI Training Cycle

Figure 1 illustrates the participatory Artificial Intelligence (AI) training cycle adopted in this community empowerment program to strengthen digital literacy. The model demonstrates a continuous and collaborative learning process that begins with the identification of digital literacy challenges by community members, followed by the joint development of AI-based solutions tailored to local needs. The next stage involves the implementation of training activities, where participants are introduced to and practice the use of AI applications in real-life contexts. Subsequently, participants engage in reflection and evaluation to assess learning outcomes, experiences, and program effectiveness. The cycle culminates in community empowerment, characterized by

improved digital skills, technological confidence, and readiness to adapt to digital transformation. This iterative process highlights the principles of participatory learning, emphasizing active community involvement, shared decision-making, and sustainable capacity building in the context of AI literacy development.

Participatory Artificial Intelligence training represents an effective community empowerment strategy for strengthening digital literacy and preparing communities for digital transformation. The combination of Participatory Action Research, collaborative learning, and practical AI applications created meaningful learning experiences that improved participant engagement, satisfaction, knowledge, practical competencies, and readiness for long-term technology adoption. These findings contribute to the growing body of literature on community-based digital empowerment by demonstrating that AI literacy programs become more effective when community members actively participate throughout the empowerment process. Therefore, future community service initiatives should continue integrating participatory methodologies with emerging digital technologies to foster inclusive, sustainable, and resilient digital communities capable of adapting to the rapidly evolving technological landscape.

4. Conclusions

This community service program demonstrates that the Participatory Action Research (PAR) approach effectively empowered community digital literacy through participatory Artificial Intelligence (AI) training. Three major findings emerged from the implementation. First, the program successfully fostered active community participation, involving 16 participants, of whom 75% were female and 69% were aged between 12 and 20 years, indicating strong engagement among younger community members. Second, participant satisfaction toward the training implementation was consistently high, with 81% satisfaction recorded for information delivery, training materials, presenter performance, and event organization, while facilities and training relevance each achieved 75%. Third, the program significantly improved digital literacy and AI readiness, as reflected by 88% of participants acknowledging substantial program benefits, 81% reporting increased knowledge, 81% demonstrating improved practical AI skills, and 81% expressing overall satisfaction, while indicators related to sustainable utilization and future participation each reached 75% positive responses.

The discussion confirms that these findings are consistent with theories of community empowerment, participatory learning, digital literacy, and technology acceptance. The Participatory Action Research approach enabled participants to become active contributors throughout the learning process, thereby strengthening community ownership and collaborative learning. Furthermore, the integration of practical AI applications, digital ethics, and hands-on mentoring enhanced participants' confidence, technological self-efficacy, and readiness to adopt Artificial Intelligence responsibly. These results indicate that participatory AI literacy programs extend beyond technology training by fostering sustainable community empowerment and strengthening local capacity to adapt to ongoing digital transformation.

Despite these positive outcomes, this community service program has several limitations. The intervention involved a relatively small number of participants from a single neighborhood and employed descriptive post-program evaluation without measuring long-term behavioral changes or digital competency retention. Consequently, the findings should be interpreted within the context of the participating community.



Future community service programs are recommended to involve larger and more diverse participant groups, implement longitudinal evaluations using pre- and post-intervention assessments, and develop sustainable community-based digital mentoring initiatives through local digital ambassadors, AI learning communities, and partnerships with educational institutions and local governments. Such efforts will contribute to expanding the long-term impact of participatory AI literacy programs and strengthening community resilience in the era of digital transformation.

Conflict of Interest

The authors declare no conflict of interests.

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