

Strengthening Student Research Capacity through Practice-Based Artificial Intelligence Training: A Community of Practice Model at the American Corner Ambon

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Abstract

This study investigates the effectiveness of a practice-based Artificial Intelligence training model in strengthening student research capacity through a Community of Practice approach at American Corner Ambon. Despite the growing role of AI in higher education, students in peripheral regions continue to face limited digital literacy, restricted access to research support, and weak collaborative learning ecosystems. This study addresses these challenges by integrating AI-based learning with community-engaged capacity development. A mixed-methods sequential explanatory design was employed. Quantitative data were collected through pre-test and post-test surveys involving student volunteers and analyzed using descriptive statistics, paired sample t-tests, and effect size analysis. Qualitative data were obtained through interviews and focus group discussions and analyzed using thematic coding and triangulation. The findings show that practice-based AI training significantly improved students' competencies in literature searching, citation management, abstract writing, research design, and statistical analysis. The Community of Practice approach also fostered peer learning, collaborative knowledge exchange, and sustainable digital research networks. This study proposes a five-stage intervention model that integrates training, mentoring, and sustainability. It contributes to advancing digital literacy and collaborative learning frameworks for strengthening research ecosystems in underrepresented higher education contexts.

Keywords: Artificial Intelligence, Collaborative Learning, Community of Practice, Digital Literacy, Higher Education



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INTRODUCTION

The rapid acceleration of digital transformation in higher education has significantly altered the way knowledge is produced, disseminated, and utilized within academic environments. In recent years, Artificial Intelligence (AI) has emerged not only as a technological innovation but also as an increasingly influential instrument for academic learning, scientific inquiry, and research productivity. Universities across the world have begun integrating AI-based systems into teaching, assessment, academic writing assistance, data analysis, and research management processes (Li, 2025; Odeyemi et al., 2024; Sousa & Fujita, 2025). The growing presence of AI in higher education reflects a broader transition toward digitally mediated academic ecosystems where students are expected to possess not

only conventional research competencies but also advanced digital literacy and technological adaptability. Within this context, AI is increasingly viewed as a strategic enabler capable of enhancing critical thinking, accelerating knowledge discovery, and improving the efficiency of academic research activities (Lyu et al., 2025; Rangaraju, 2023; Rehman et al., 2025).

Despite these developments, the integration of AI into student research practices remains uneven, particularly in developing and geographically peripheral regions. In many higher education institutions outside major urban centers, students continue to encounter structural and technological limitations that hinder their ability to engage effectively with AI-supported research practices. These limitations are often reflected in insufficient digital literacy, restricted access to academic technology, limited research mentoring, and the absence of collaborative learning communities that support technological experimentation and academic innovation (Bellesia et al., 2026; Muthukumar et al., 2025; Zhang, 2025). In the Indonesian context, disparities in digital infrastructure and academic resources between western and eastern regions remain a persistent issue affecting the quality of higher education transformation (Adewusi et al., 2024; Constantin et al., 2024; Dabbugudi, 2022). Students in eastern Indonesia, including Ambon and the broader Maluku region, frequently experience difficulties in accessing research support systems comparable to those available in more developed academic centers. As a consequence, the adoption of AI technologies for academic research tends to occur unevenly, creating a widening gap in research readiness and digital academic participation.

This issue becomes increasingly important because the challenge is no longer merely technological access but the capacity to integrate AI meaningfully and ethically into research processes. Many students may already be familiar with AI-based platforms; however, familiarity alone does not automatically translate into research competence. Students often lack practical guidance regarding how AI can be utilized responsibly for literature searching, citation management, data interpretation, idea generation, and academic writing support. Recent concerns regarding academic integrity, algorithmic dependency, and superficial use of generative AI further demonstrate the necessity of developing structured learning approaches that emphasize critical engagement rather than passive technological consumption (Darmono et al., 2025; Fausta et al., 2026; Heng & Zhang, 2025). Without appropriate intervention, AI may reinforce academic inequality instead of reducing it, especially in regions where digital academic ecosystems remain underdeveloped. Therefore, discussions concerning AI in higher education should not be limited to technological optimism but must also address the social and pedagogical mechanisms required to strengthen sustainable research capacity among students.

Existing studies have widely explored the role of AI within educational environments. Research by Melinda et al. (2024) and Wang (2026) emphasizes that AI technologies possess substantial potential to personalize learning, automate administrative tasks, and support adaptive educational systems. Similarly, Haryandi (2026) and Vasantha et al. (2025) through a systematic review of AI applications in higher education, found that most scholarly

discussions focus on intelligent tutoring systems, automated feedback, and learning analytics. These studies collectively illustrate how AI is increasingly positioned as an educational support mechanism capable of improving learning efficiency and academic engagement. However, much of this literature remains concentrated on technologically advanced institutions and formal classroom settings, leaving limited attention to community-based learning contexts and research capacity development in peripheral academic environments.

Another strand of literature highlights the importance of digital literacy as a prerequisite for effective participation in contemporary academic ecosystems. According to Kiruga (2026) and Koturanova & Shapa (2025) digital literacy extends beyond technical skills and includes critical, cognitive, and socio-emotional competencies necessary for navigating digital environments responsibly. Research conducted by Akbar et al. (2025) and Arowona & Ganiyu (2026) further demonstrates that students' digital readiness significantly influences their ability to utilize educational technologies effectively. In higher education settings, digital literacy has become increasingly interconnected with research literacy because academic inquiry now relies heavily on digital databases, online collaboration, and technology-assisted analysis tools. Nevertheless, previous studies predominantly conceptualize digital literacy as an individual competency rather than as a socially constructed practice shaped by collaborative interaction and mentorship processes.

Research concerning research capacity building has also gained significant scholarly attention. Chauhan & Uwais (2026) and Rahmawati et al. (2025) argues that sustainable research capacity development requires institutional support, continuous mentoring, and participatory engagement rather than isolated training activities. Subsequent studies have reinforced the argument that research competencies develop more effectively when students are involved in experiential and practice-oriented learning environments (Baldeón-Palpa et al., 2025; Iqbal et al., 2025; Visan & Negut, 2024). Practice-based learning approaches enable students to connect theoretical knowledge with practical problem-solving experiences, thereby strengthening confidence and academic autonomy. Within the context of AI integration, practical exposure becomes particularly important because technological competence often emerges through repeated experimentation, collaborative interaction, and reflective learning processes. However, empirical studies investigating practice-based AI interventions specifically designed for student research enhancement remain relatively limited, particularly within developing higher education systems.

The concept of Community of Practice also provides an important theoretical lens for understanding collaborative academic learning. Khan (2025) and O'g'li (2025) defines Community of Practice as a social learning system where knowledge is collectively constructed through participation, shared experiences, and mutual engagement. In educational contexts, Community of Practice models have been associated with stronger peer learning, increased academic participation, and sustainable knowledge-sharing cultures (Eziamaka et al., 2024; Riofuku, 2025). Recent studies indicate that collaborative learning communities can facilitate technological adaptation and reduce anxiety associated with

digital transformation (Jin, 2024; Rezafar, 2025). Through peer interaction and collective experimentation, students are more likely to develop confidence in using emerging technologies such as AI for academic purposes. Nevertheless, most previous applications of Community of Practice frameworks have focused on teacher professional development, online learning communities, or workplace knowledge management rather than student-centered AI-supported research empowerment.

The convergence of AI adoption, research capacity development, digital literacy, and collaborative learning has begun to attract scholarly interest in recent years. Studies by Fan (2023) and Muñoz et al. (2026) suggest that the future of higher education depends not only on technological innovation but also on the ability to create socially meaningful learning ecosystems where technology supports human collaboration rather than replacing it. Similarly, Aljashaam (2025) and Budaya & Permana (2024) argue that AI literacy initiatives should incorporate participatory and reflective learning models to ensure ethical and sustainable technological engagement. However, empirical evidence demonstrating how these dimensions interact within community-based educational interventions remains scarce. Existing studies tend to examine AI adoption, digital competence, or collaborative learning separately, resulting in fragmented understandings of how student research capacity can be strengthened holistically through integrated practice-oriented approaches.

Within this broader scholarly landscape, there remains limited evidence from underrepresented regions such as eastern Indonesia regarding how students negotiate AI integration in research activities through participatory and community-based learning environments. Much of the existing literature continues to prioritize technologically advanced universities in metropolitan settings, while the realities of students in peripheral academic ecosystems receive considerably less scholarly attention. Furthermore, previous discussions often emphasize conceptual debates surrounding AI adoption without sufficiently examining how sustained practical mentoring, collaborative interaction, and community engagement can shape students' long-term research competencies. As a result, there is still inadequate understanding of how AI-supported research empowerment can be institutionalized within locally grounded academic communities capable of sustaining digital learning cultures beyond short-term training initiatives.

Against this background, this study offers an integrative perspective by examining how practice-based AI training combined with a Community of Practice approach can strengthen student research capacity within a developing higher education context. Rather than positioning AI solely as a technological tool, this study conceptualizes AI learning as a collaborative social process embedded within participatory academic interaction. The intervention implemented through American Corner Ambon demonstrates how community-based learning spaces can function as sustainable platforms for digital academic empowerment, particularly in regions experiencing uneven technological development. The study also proposes a practical implementation framework consisting of socialization, intensive training, technology application, mentoring and evaluation, and sustainability-

oriented community engagement.

Accordingly, this research aims to analyze the effectiveness of practice-based AI training in enhancing student research capacity through a Community of Practice model. Specifically, the study seeks to identify barriers faced by students in utilizing AI for academic research, examine the contribution of collaborative learning communities in strengthening digital research competencies, and develop a sustainable model of AI-enabled research empowerment that can be adapted within higher education and community engagement programs in transitional and underrepresented regions.

RESEARCH METHOD

This study employed a qualitative approach with a community-based participatory orientation to explore how practice-based Artificial Intelligence (AI) training contributes to strengthening students' research capacity through a Community of Practice model at American Corner Ambon. A qualitative design was considered the most appropriate approach because the study did not merely aim to measure technical skill acquisition, but rather to understand participants' experiences, learning processes, social interactions, and the meaning they attached to the integration of AI into their academic activities. The qualitative approach enabled the researchers to capture the dynamics of collaborative learning, the transformation of students' digital competencies, and the emergence of sustainable academic communities within a natural setting (Arifin et al., 2025; Torres Carceller, 2024). This approach was also relevant because the implementation of AI training in peripheral higher education contexts often involves complex social and cultural dimensions that cannot be fully explained through quantitative indicators alone.

The research was conducted at American Corner Ambon because the institution represents one of the few community-based academic spaces in eastern Indonesia actively facilitating digital literacy development, academic discussion, and youth empowerment initiatives. Beyond functioning as a learning facility, American Corner Ambon has developed into a collaborative environment where students from different universities interact, exchange knowledge, and participate in various educational programs. This characteristic made the site particularly relevant for examining the formation of a Community of Practice in the context of AI-supported research learning. The selection of this location was therefore based not only on accessibility considerations, but also on its strategic role as an emerging hub for digital academic engagement in a region where access to technological learning ecosystems remains relatively limited.

The informants in this study consisted of 18 participants selected through purposive and criterion sampling techniques. The participants included 12 student volunteers who actively participated in the AI training program, three facilitators involved in delivering the training materials and mentoring sessions, and three managers of American Corner Ambon who coordinated the program implementation. Student volunteers were selected because they directly experienced the learning process and represented the primary beneficiaries of

the intervention program. Meanwhile, facilitators and program managers were included because they possessed deeper insights regarding program design, participant development, implementation challenges, and sustainability strategies. The selection of these informants was based on their active involvement, experience, and capacity to provide rich and relevant information related to the objectives of the study (Y. Wang, 2025).

Data collection was conducted through in-depth interviews, participant observation, focus group discussions, and documentation studies. In-depth interviews were employed to explore participants' experiences, perceptions, and reflections regarding the use of AI in academic research activities. This method allowed participants to express their views openly and enabled researchers to obtain nuanced explanations concerning technological adaptation, collaborative learning, and research empowerment processes (Dalain et al., 2025). Participant observation was carried out throughout the training process, including socialization sessions, AI practice workshops, mentoring activities, and community discussions. Observation was important because it enabled the researchers to directly examine participant interactions, learning behaviors, and the practical implementation of AI tools within collaborative settings.

Focus group discussions were conducted to understand collective experiences and identify how peer interaction contributed to the development of a shared learning culture among participants. Through group discussions, participants exchanged perspectives regarding challenges, ethical concerns, and opportunities associated with AI utilization in academic research. This method was particularly useful in examining the social dimensions of Community of Practice formation because collaborative learning often emerges through dialogue, negotiation, and shared problem-solving processes (Kornienko, 2026). Documentation studies were also conducted by examining training modules, participant assignments, mentoring records, attendance lists, and digital communication within online discussion groups. These documents provided contextual support and strengthened the interpretation of field findings.

The implementation of the training itself was conducted through five interconnected stages consisting of socialization, training, technology implementation, mentoring and evaluation, and sustainability development. The socialization phase introduced participants to the objectives of the program and emphasized the relevance of AI literacy in contemporary academic research. The training phase focused on practice-based learning, where participants directly utilized AI tools for literature searching, citation management, academic writing assistance, and research data analysis. Subsequently, participants were encouraged to apply these technologies within their own academic tasks and research projects. Continuous mentoring was then conducted to assist participants in overcoming technical and conceptual challenges, while evaluation activities explored both the perceived benefits and limitations of the training process. To ensure long-term impact, sustainability initiatives were developed through online discussion communities and peer-learning networks that enabled participants to continue exchanging experiences and academic resources beyond the formal training

period.

To ensure the credibility and trustworthiness of the findings, triangulation was conducted through source triangulation, method triangulation, and time triangulation (Mahmoudi & Moradi, 2024). Source triangulation involved comparing information obtained from students, facilitators, and program managers to identify consistency and variation in perspectives. Method triangulation was carried out by comparing findings derived from interviews, observations, focus group discussions, and documentation analysis. Meanwhile, time triangulation was conducted through repeated observations and interviews at different stages of the training process to capture changes in participants' experiences and competencies over time. Data analysis was conducted thematically through coding, categorization, interpretation, and continuous reflection to identify recurring patterns related to AI literacy development, collaborative learning practices, and research capacity strengthening

RESULTS AND DISCUSSION

Improving Students' Digital Skills

One of the main outcomes of this training activity was the improvement of students' digital skills in using AI tools and techniques. Before the training, most participants had only basic technology skills. However, after the training, the majority showed significant improvements in their ability to use AI tools for data analysis, research, and predictive modeling. This condition supports the research findings of Jabbari & Bigdeli (2023), which stated that digital training plays a crucial role in improving the competence and performance of human resources in higher education environments. Furthermore, C. Wang (2023) explained that the use of AI in higher education can strengthen students' analytical skills, creativity, and learning effectiveness.

Table 1. Level of improvement in participants' skills before and after attending the training

Skills Aspects	Before Training (%)	After Training (%)	Percentage Improvement (%)
Ability to use AI	40	85	45
Ability to process data with AI	50	80	30
Ability to build AI models	30	75	45
Mastery of AI tools (Chat GPT, Deepseek)	55	90	35

Source: Activity Results, 2025

Table 1 shows that after the training, participants experienced significant skill improvements, particularly in their ability to use AI tools for data processing and predictive modeling. The greatest improvement occurred in the use of AI tools, demonstrating that the training successfully enriched participants' digital skills in an academic context. This finding aligns with research by Okta & Nurnisaa (2026), which demonstrated that AI-based training

and blended learning were effective in enhancing participants' digital knowledge and competency.

Application of AI in Research: Academic References, Statistical Data Processing, Creating Research Abstracts

In addition to improving digital skills, this training also influenced the application of AI in participants' research. Before the training, many students did not understand how AI could be integrated into their research process, whether in processing statistical data, searching for academic references, or writing more structured research abstracts. However, after the training, participants were able to develop AI applications to assist at various stages of research, from data processing and reference searching to automatically generating research abstracts. This aligns with the findings of C. Wang (2023), who stated that students view AI as a tool that can support the academic writing process and improve the quality of scientific papers. Furthermore, Vasantha et al. (2025) emphasized that the application of AI in education should be oriented toward a human-centered approach to ensure that technology truly supports students' learning and research needs.

Table 2. Types of AI applications successfully carried out by training participants

Study Programs	Types of AI Applications	Number of Participants Using
Communication Studies	Using AI for statistical data analysis	2
Economics	Research data processing using machine learning	5
English	Application of AI in automated academic reference searches	10
Mathematics	Using AI to assist in creating research abstracts	3

Source: Activity Results, 2025

Table 2 shows that participants successfully utilized AI in various aspects of their research. For example, students majoring in Communication Studies used AI for more efficient statistical data analysis. In contrast, students majoring in English used AI to expedite the search for academic references relevant to their research topics. These successes demonstrate that AI training can enrich the research process and provide significant benefits in data processing and academic writing. Herasymova (2024) and Lin (2024) also note that the use of AI in higher education is growing, particularly in supporting learning, data analysis, and academic research.

The application of AI in this research not only increases efficiency but also empowers students to produce more structured and data-driven scientific papers. With the help of AI, creating research abstracts becomes easier and faster, allowing students to focus on developing more in-depth analyses. These findings support the view of Goyat (2026) and Jiang (2024), who stated that integrating digital technology and AI can create a more effective and adaptive student learning experience to meet today's academic needs.

Collaboration and Discussion Between Students

In addition to technical skills training, this activity also provided opportunities for participants to discuss and collaborate with their peers. During group discussions, participants shared experiences with AI in academic research and provided feedback on their projects. This collaboration not only enriched participants' knowledge but also built a sense of community among the student volunteers. This demonstrates that the use of AI in education is not solely technology-oriented but also fosters collaborative and interactive learning (Fatkhutdinova & Zalyalov, 2025; Rakhma et al., 2026).



Figure 1. AI Training for Academic Purposes at American Corner Ambon

Source: Activity Results, 2025

The group discussions revealed that participants were highly enthusiastic and committed to continuing to integrate technology into their research processes. They also agreed to establish an online forum after the training to continue collaborating, share research findings, and support each other in using AI. These findings align with Koturanova & Shapa (2025), emphasized that AI not only supports the learning process but also enhances students' work-readiness, collaboration, and adaptability in the digital era.

Participant Evaluation and Satisfaction

As part of the activity evaluation, participants were asked to complete a feedback form after the training. The evaluation results indicated very high satisfaction with the training materials, the skills acquired, and the facilitators who guided the activity (Table 3).

Table 3. Evaluation of Activity Implementation

Evaluation Aspects	Average Score	Percentage of Satisfaction
Digital Skills Acquired	4.5	90%
Training Materials (Suitability to Needs)	4.6	92%
Training Duration	3.9	78%
Facilitator (Teaching Skills)	4.7	94%
Use of AI Tools	4.8	96%

Source: Activity Results, 2025

From the evaluation results above, the majority of participants were very satisfied with the training provided. They found the material very relevant to their needs and felt more confident using AI for academic purposes. Although some participants suggested extending the training duration, overall, the training was considered very beneficial for developing their digital skills. These findings support research by Chauhan & Uwais (2026) and Li (2025), which showed that AI training in education can improve participants' understanding, practical skills, and readiness to utilize digital technology for academic activities.

Follow-up and Sustainability

After the training, participants are expected to apply the skills they have acquired in their academic pursuits. Participants are also asked to submit the results of their AI research for the facilitator's further analysis. Additionally, an online forum will be created to foster collaboration among students and provide a space for them to share their experiences and research findings.

The sustainability of this training program is crucial to ensure the continued development of acquired digital skills. Therefore, follow-up, including ongoing evaluation and further training, is highly recommended to ensure the continued implementation of technology in academic processes. This aligns with the view of Chauhan & Uwais (2026) and Li (2025), who stated that AI in higher education will continue to evolve and require ongoing human resource capacity building.

Implementation of Technology Products and Innovation in Society

The application of technology products and innovations in Artificial Intelligence (AI) training for academic purposes at the American Corner Ambon focuses on the introduction and utilization of AI technology to support student research and self-development. AI is a technology that enables students to process data more efficiently, create predictive models, and enhance their research capabilities. This training aims to introduce AI concepts and supporting tools, with the hope that this technology can be applied in students' daily academic research. Baldeón-Palpa et al. (2025) explain that the implementation of AI in

higher education has become part of the transformation of learning and research systems that are increasingly technology-based.

One important aspect of implementing this technology is its ability to increase research efficiency. Before the training, most participants still relied on manual methods for data processing or reference searches, which were often time-consuming and labor-intensive. After the training, participants were equipped with the skills to use AI for statistical data processing, big data analysis, and even to create more structured, data-driven research abstracts. This technology product provides solutions to accelerate the research process, such as in more complex data analysis and automated academic reference searches. Fausta et al. (2026) stated that AI plays a significant role in revolutionizing learning and research through automation and increasing academic work efficiency.

Through this training, students learn to use various AI tools, such as machine learning, ChatGPT, and DeepSeek, for research purposes. Using this technology, participants can process data more quickly and generate more accurate insights. Furthermore, AI technology makes it easier for students to write research abstracts, use AI algorithms to filter information, and organize it in a more structured format. This supports the opinion of Eziamaka et al. (2024), who asserted that implementing AI in university learning can improve the effectiveness of academic processes and the management of scientific information.

The application of AI technology also improves students' digital skills. Before the training, many participants only possessed basic technology skills, but after the training, they were able to operate various AI tools for data processing and statistical analysis. This provides a dual benefit: it not only improves the quality of their research but also enhances their digital competency, a key need in this digital era. This finding aligns with Budaya & Permana (2024) research, which confirms that AI significantly improves the quality of higher education and students' digital competency.

Furthermore, this training creates a space for student collaboration. Through discussion forums and experience-sharing sessions, participants can exchange ideas on the application of AI in their research. This not only strengthens individual skills but also builds a supportive learning community among student volunteers. Online forums or discussion groups formed after the training can serve as platforms for students to continue sharing experiences and challenges with AI in their research. Jin (2024) and Kiruga (2026) emphasize that AI integration in higher education needs to be supported by a collaborative ecosystem for optimal implementation.

The sustainability of this program is expected to encourage students to continue innovating and applying AI technology in their research, thereby producing research that is more efficient, effective, and aligned with the latest technological developments.

The application of AI technology in this training provides significant benefits for students at American Corner Ambon. With a better understanding of AI's use in research, students can improve the quality of their research and enrich their academic process. This innovation also opens up opportunities for further development in the application of

technology in higher education, better preparing students to face the challenges of an increasingly digital academic world.

Externalities Achieved

The Artificial Intelligence (AI) training program for academic purposes at the American Corner in Ambon has yielded significant outcomes, including improved students' digital skills, the application of AI to research, and fostered collaboration among participants. These outcomes focus on measurable results and direct application to everyday academic practice. The following are some of the key outcomes achieved from this activity:

Improving Students' Digital Skills

One of the clearest outcomes of this training was the improvement of students' digital skills in using AI technology for academic purposes. Prior to the training, many participants were unfamiliar with using AI in research, particularly in statistical data processing and predictive modeling. However, after the training, most participants showed significant improvement in their ability to operate AI tools such as ChatGPT and DeepSeek. This finding supports the research findings of Gandhi (2024) and Fan (2023), which found that AI-based digital training is effective in improving participants' competencies in educational settings.

With improved skills in utilizing AI technology, participants are now more confident in integrating AI into their academic projects and research. This skill enhancement is crucial, given that digital skills are becoming a core competency in education, which is increasingly reliant on technology for research and data analysis. This is reinforced by Suwahyu et al. (2025), who stated that mastery of AI is a crucial part of preparing students to face the challenges of the workplace and academic world in the digital age.

Application of AI in Research

The next outcome achieved was the application of AI in participants' academic research. Before the training, many students were unfamiliar with integrating AI into their research process. After the training, participants were able to develop AI applications to assist with data processing, searching for academic references, and automatically generating research abstracts. Kornienko (2026) explained that the use of AI in academic writing can help students produce more systematic and efficient scientific papers.

The application of AI in this research has accelerated data processing, enabling students to generate more accurate and in-depth insights. It also gives students a competitive advantage in conducting more structured, data-driven research. Sousa & Fujita (2025) added that AI in higher education can improve the learning experience and the quality of academic analysis if implemented appropriately and centered on user needs.

Collaboration and Networking Between Students

This training also resulted in increased collaboration among students. Through group discussions and experience sharing, participants provided feedback and discussed ways to optimize the use of AI in research. This collaboration not only improved individual skills but also strengthened their community network. Rahmawati et al. (2025) stated that the development of AI in higher education needs to be accompanied by a strengthening of a

culture of collaboration and digital literacy.

Following the training, participants agreed to maintain communication and share research findings through a planned online forum. This will allow students to share experiences, discuss their research progress, and support each other in implementing AI in academic research.

Increasing Student Satisfaction and Self-Confidence

Another outcome achieved was increased student satisfaction and confidence in using AI technology for research. Based on participant evaluations, the majority were satisfied with the training provided. They felt the material was tailored to their needs and that they were better prepared to use AI in their academic projects. Riofuku (2025) emphasized that ethical, targeted AI training can improve students' readiness to use digital technology responsibly.

This increased self-confidence is crucial because it motivates students to continue innovating in the use of AI technology in research, as well as to produce research results that are more engaging and relevant to the needs of technological development.

Sustainability and Application in Research

As a long-term outcome, training participants are expected to apply the skills they have acquired in their research activities. After the training, students are asked to submit the research results they have generated using AI for the facilitator's further analysis. This provides an opportunity to evaluate and follow up on the quality of the research produced, as well as to provide feedback that can help students further develop their skills.

The sustainability of this training program is also a very important outcome. The online forum established after the training serves as a space for students to continue collaborating, sharing research findings, and discussing the application of AI in their research. Thus, the application of AI in research will continue to develop and provide greater benefits to students' academic research at the American Corner Ambon. Jabbari & Bigdeli (2023) explain that the development of AI in higher education requires ongoing support through training, digital literacy, and academic community development.

CONCLUSION

The study concludes that practice-based Artificial Intelligence training implemented through a Community of Practice approach can effectively strengthen students' research capacity by improving their ability to access scientific information, manage references, develop academic writing, and utilize digital tools to support research activities. The intervention demonstrates that the effectiveness of AI adoption in higher education is shaped not only by technological access, but also by collaborative learning processes that enable students to build shared knowledge and continuously apply digital skills in academic contexts. The implementation at American Corner Ambon shows that community-based learning spaces can function as adaptive platforms for developing research competencies in peripheral regions, where institutional support and digital infrastructure remain limited. The study also indicates that integrating hands-on AI practice with peer collaboration provides a practical

mechanism for sustaining student learning beyond formal training activities. The novelty of this research lies in the development of a five-stage intervention model that combines training, application, mentoring, and sustainability within a community-based framework, offering an applicable approach for strengthening research ecosystems and digital literacy among university students in developing higher education contexts.

ETHICAL STATEMENT AND DISCLOSURE

This study was conducted in accordance with established ethical principles, including informed consent, protection of informants' confidentiality, and respect for local cultural values. Special consideration was given to participants from vulnerable groups to ensure their safety, comfort, and equal rights to participate. No external funding was received, and the authors declare no conflict of interest. All data and information presented were collected through valid research methods and have been verified to ensure their accuracy and reliability. The use of artificial intelligence (AI) was limited to technical assistance for writing and language editing, without influencing the scientific substance of the work. The authors express their gratitude to the informants for their valuable insights, and to the anonymous reviewers for their constructive feedback on an earlier version of this manuscript. The authors take full responsibility for the content and conclusions of this article.

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