Enhancing Digital Competence of SMAIT Qordova Teachers Through IC3 Living Online Training: Impact on Teaching Effectiveness

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ABSTRACT

The integration of digital competencies in education is essential for effective teaching. This study addresses gaps in technology integration at SMAIT Qordova through IC3 Living Online training. To enhance teachers' digital competence in Google collaboration tools and artificial intelligence (AI) applications for teaching. The program involved 28 teachers through three phases: planning (needs assessment, pre-test), implementation (hands-on workshops), and evaluation (post-training surveys). Pre-test results showed strong basic digital literacy (96% understood offline work limitations, 85% grasped AI concepts), but weaknesses in advanced AI utilization and prompt engineering (only 50% understood prompt formulation). Post-training evaluation revealed high satisfaction: 79% rated training relevance as high/very high, 82% reported significant knowledge gains, and 79% expressed high overall satisfaction. Instructors received excellent ratings (64% very good) for subject mastery and guidance. The training successfully strengthened teachers' capacity to integrate digital tools and AI into classroom practices. Future programs should expand AI prompt design sessions, increase interactive approaches, and incorporate qualitative feedback mechanisms.

ARTICLE INFO

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INTRODUCTION

The integration of digital competencies in education is increasingly recognized as a pivotal factor in enhancing teaching effectiveness and student learning outcomes. At SMAIT Qordova, the implementation of IC3 training for teachers aims to elevate their digital skills, particularly in utilizing collaboration tools like Google Workspace and exploring the applications of Artificial Intelligence (AI) for academic preparation. This initiative is crucial as it equips educators with the necessary technological skills and fosters an environment where collaborative learning can thrive and personalized teaching methods can be employed.

Digital competence is essential in modern teaching, as technology supports pedagogical effectiveness and student engagement. Training in this area enhances teachers' technical skills and their ability to integrate digital tools into classroom practices. Research shows that AI integration can enrich learning, and ongoing professional development is crucial for successful technology adoption in schools (Almasri, 2024; Jeon et al., 2024; Leeuwen & Rummel, 2020). In-service teachers also tend to feel more confident in their digital abilities, highlighting the value of practical experience (Li et al., 2022). Technology-supported collaboration further improves learning outcomes (Murithi & Yoo, 2021). Moreover, incorporating AI in teacher training helps bridge competency gaps, supports differentiated instruction, and assists in lesson planning (Berg & Plessis, 2023; Wijaya & Santoso, 2024). Thus, strengthening teachers' digital skills through IC3 training is a strategic step toward building a teaching workforce capable of leveraging technology effectively.

The integration of advanced digital competencies among educators is essential for fostering an effective learning environment in contemporary educational settings. At SMAIT Qordova, the enhancement of teacher capabilities through IC3 training addresses a significant gap in professional development, specifically aimed at improving proficiency in collaboration tools, such as those provided by Google, and in utilizing Artificial Intelligence (AI) for academic preparation. These advancements are crucial, given the evolving demands of modern education, which require teachers not only to possess technological skills but also to engage students in collaborative learning processes.

The problem statement centers on the urgent need for enhanced digital competencies among teachers at SMAIT Qordova. Current discrepancies in technology utilization within classrooms highlight a lack of sufficient training and professional development opportunities that could enable teachers to integrate digital tools effectively into their teaching practices. Dewi et al. argue that institutional support significantly influences the success of professional development initiatives aimed at improving student learning outcomes (Dewi et al., 2024). By proactively focusing on digital competence, this initiative aims to bridge that gap, promoting more effective teaching strategies that can lead to improved student engagement and academic achievement.

There are three primary objectives of the IC3 training program. First, enhancing digital skills to improve the digital literacy of teachers, ensuring they can effectively use collaboration tools and AI technologies in their teaching methodologies. Second, promoting collaborative learning to create a culture of collaboration among educators through the use of online tools that facilitate information sharing and teamwork. Third, improving academic preparation to empower teachers with AI tools that assist in lesson planning and personalized learning strategies tailored to diverse learner needs.

The academic and practical benefits of this initiative are significant. Academically, the training is designed to align with emerging educational technologies and teaching methodologies prevalent in modern classrooms. Research indicates that enhanced digital competencies among teachers correlate

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with improved student learning outcomes and increased engagement (Farisia & Syafi'i, 2024; Gill & Berezina, 2020). Such professional development cultivates a progressive teaching mindset that embraces technology as an integral part of educational delivery; thus, teachers are better equipped to prepare students for a technology-driven world.

Practically, the training boosts teachers' confidence in employing digital tools, leading to more innovative and interactive teaching practices. Skills gained from this program can lead to better classroom management, streamlined communication, and a more inclusive educational environment for students (Fraile et al., 2018). Initiatives like those at SMAIT Qordova can also set a precedent for similar programs in other educational institutions, emphasizing the continuous professional development as a fundamental strategy for integrating technology with pedagogy (Donath et al., 2023).

METHODS

The methodology for implementing the community service program focused on improving the digital competence of SMAIT Qordova teachers is structured into three main activities: planning, implementation, and evaluation as mention on Figure 1. Each component is detailed below, focusing on ensuring thorough preparation, effective execution, and meaningful feedback to optimize the training's impact.
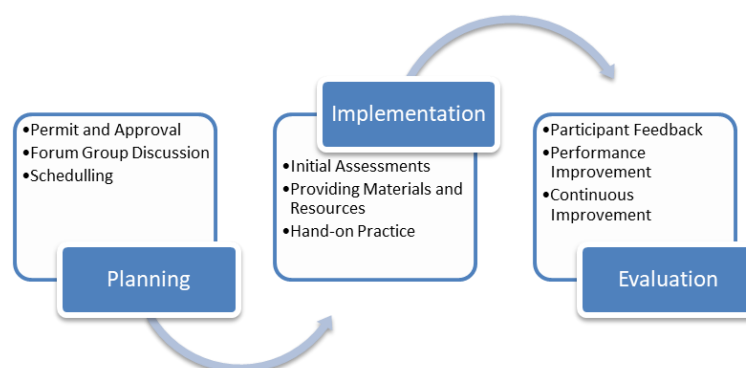

FIGURE 1. Implementation Stages

Planning

Permits and Approvals

As shown in Figure 1, before any training can begin, it is essential to obtain necessary permissions from the educational administration at SMAIT Qordova. Collaborating with school leaders to secure a formal endorsement ensures support for the initiative, thereby enhancing its credibility among the teaching staff. This step also allows time to address logistical considerations and resource allocation.

Group Discussion Forums

Establishing group discussions among teachers before the training helps identify specific areas of need in digital competence. This participatory approach fosters a sense of ownership among the educators, ensuring that the training reflects their needs and concerns. These forums are facilitated online to maximize participation and allow teachers to voice their opinions freely, allowing the program coordinators to gather diverse perspectives on required digital skills.

Scheduling

Developing a detailed schedule that outlines the training sessions, including dates, durations, and topics, is crucial. Each session encompasses practical components alongside theoretical knowledge to help teachers internalize their learning. For instance, sessions alternate between learning about collaboration tools and hands-on training in using AI for academic preparation. Flexibility in scheduling is key, allowing teachers to participate without disrupting their current responsibilities. There are 28 teachers selected to represent each field of study taught at the school. The training activities will be held offline on August 30, 2025, at SMAIT Qordova.

Implementation

Initial Assessments

At the commencement of the training, conducting baseline assessments helps gauge teachers' initial digital competencies. These assessments serve as a reference point for measuring progress later. Utilizing a validated instrument for this assessment provides reliable data that informs the training adjustments as needed.

Providing Materials and Resources

Effective training hinges upon the availability of appropriate materials. Developing user-friendly training manuals, step-by-step guides, and access to online resources is critical. These resources encompass both theoretical knowledge about digital tools and practical applications that teachers can implement in their classrooms.

Hands-On Practice

Practical application of the learned skills is vital. Workshops focus on real-world applications that teachers can easily adopt. For instance, following a tutorial on AI tools, teachers are tasked with creating lesson plans that incorporate AI-driven educational resources. This experiential learning approach is supported by research indicating that effective professional development enhances contextual application in teaching practices, resulting in improved student outcomes.

Evaluation

Participant Feedback

Feedback from participants is essential for evaluating the effectiveness of the training program. Implementing anonymous surveys at the end of each session allows teachers to express their thoughts on what they learned, their comfort level with digital tools, and any areas needing improvement. This feedback is both qualitative and quantitative, providing a comprehensive view of the training's impact.

Performance Assessment

Following the training, a follow-up assessment similar to the initial evaluation helps quantify improvement in teachers' digital competencies. This data demonstrates the training program's effectiveness and provides insights into any subsequent training needs.

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Continuous Improvement

Based on participant feedback and performance assessments, iterating the training content is beneficial. Adjustments are made to address gaps identified by teachers or emergent trends in technology usage within education. Continuous evaluation and adaptation foster a culture of ongoing professional development, making digital competence a priority in the teaching framework.

In summary, the implementation of the community service program at SMAIT Qordova involves careful planning to secure support, systematic implementation of training activities, and robust evaluation mechanisms to assess teaching outcomes. This structured methodology not only aligns with current educational needs but also promotes a culture of professional growth among educators.

RESULTS AND DISCUSSION

The results and outcomes of implementing community service in accordance with the implementation methodology in Figure 1 are as follows.

Training Preparation

At this stage, the proposal team identified both existing teacher competencies and those required for IC3 training at SMAIT Qordova Rancaekek. A needs description was conducted through interviews with school management, yielding several needs related to IC3 training. Based on the identified needs, the proposal team prepared a pre-test form, presentation slides for reference during implementation, and an activity evaluation questionnaire. The pre-test was conducted before the training began. The pre-test questions are listed in Table 1 with the bolded correct answer choice for each question.

TABLE 1. Pretest Questions and Answers

Question	Answer Choices
What is the main weakness of working with documents offline?	Can be accessed from anywhere
	Files are susceptible to being lost or damaged
	Changes are automatically recorded
	Supports real-time collaboration
What is the main function of Google Docs?	Creating interactive presentations
	Processing numerical data and graphs
	Cloud-based collaborative word processor
	Creating automatic schedules in Calendar
What is meant by Suggesting Mode in Google Docs?	Mode for hiding comments
	Mode for giving suggestions without changing the original text
	Mode for deleting version history
	Mode for locking documents so they cannot be edited
What is meant by Artificial Intelligence (AI)?	A robot that can talk like a human
	A system that can imitate human intelligence
	A machine that has natural intelligence
	An application for creating videos, images, and text
What is the basic formula for creating an effective AI prompt?	Input + Output
	Context + Command + Completer
	Data + Coding + Feedback
	Instruction + Action
What is the weakness if teachers are too dependent on AI?	Increasing student creativity
	Reducing the role of AI
	Decreasing basic literacy and teacher reflection
	Making lessons more interactive
What is the biggest challenge in the use of AI in	Electricity costs

Question	Answer Choices
education?	Lack of teaching staff
	Ethics and plagiarism
	Overcrowded classes

The training materials are in the appendix, while the implementation questionnaire is compiled based on the assessment aspects of training activities, instructor performance, and the material presented as detailed in Table 2.

TABLE 2. Content Preparation and Implementation

No.	Statement	Answer Scale
1	The relevance of this training to the current job needs.	Very Low (O O O O O) Very High
2	The level of newness of the knowledge and skills you gained.	Very Low (O O O O O) Very High
3	Your overall satisfaction level with this training.	Very Low (O O O O O) Very High
4	Instructor's punctuality.	Very Poor (O O O O O) Very Good
5	Instructor's appearance and tidiness.	Very Poor (O O O O O) Very Good
6	Instructor's patience and guidance during teaching.	Very Poor (O O O O O) Very Good
7	Instructor's pronunciation/articulation in Indonesian/English.	Very Poor (O O O O O) Very Good
8	Instructor's enthusiasm when teaching and answering questions.	Very Poor (O O O O O) Very Good
9	Instructor's presentation style: structured and easy to understand.	Very Poor (O O O O O) Very Good
10	Instructor's mastery of the training material.	Very Poor (O O O O O) Very Good
11	The training duration was appropriate for the training material.	Strongly Disagree (SD) (O O O O O) Strongly Agree (SA)
12	The training material was logical and well-organized.	Strongly Disagree (SD) (O O O O O) Strongly Agree (SA)
13	The theory taught was easy to understand.	Strongly Disagree (SD) (O O O O O) Strongly Agree (SA)
14	The practical exercises were easy to follow.	Strongly Disagree (SD) (O O O O O) Strongly Agree (SA)

Implementation of Training

The training was conducted in person at SMAIT Qordova Rancaekek on Saturday, August 30, 2025, attended by representatives from the Amal Insan Rabbani Foundation, school leaders, 28 teachers as participants, and the organizing team. The event took place from 09.00 to 12.30 WIB, beginning with an opening speech by Mrs. Hilda Putri Juani, Treasurer of the Amal Insan Rabbani Foundation.

Also present were Mr. Hendi Rochmat, Principal of SMAIT Qordova, teachers from SMAIT Qordova, and representatives from SDIT and SMPIT Qordova. In her remarks, Mrs. Hilda expressed her appreciation for the community service initiative conducted by ULBI, focusing on the IC3 Living Online module, particularly in the use of Artificial Intelligence (AI) tools and Google collaboration applications. She emphasized that disseminating up-to-date knowledge and digital skills is essential for enhancing teachers' ICT competencies and supporting the preparation of learning materials.

Originally planned for SMAIT Qordova teachers only, the program was later expanded to include SDIT and SMPIT Qordova teachers, reflecting the importance of improving digital literacy across all educational levels within the Qordova Integrated Islamic School system to increase teaching

effectiveness.

The session continued with remarks from Mr. Mubassiran, the head of the community service team, who expressed gratitude to the school for its collaboration and participation. As a token of appreciation, the team presented souvenirs and goody bags from the University of Logistics and International Business (ULBI). The hands-on training session, focusing on the use of AI applications and Google collaboration tools, was carried out effectively over two and a half hours and included three main activities: a pre-test session, a material presentation, practical exercises, and a post-training questionnaire.

A pre-test was administered to assess participants' ICT competencies before training. Since the training materials had been distributed in softcopy format a day earlier, participants demonstrated good prior understanding, resulting in favorable pre-test scores. The graphical representation of pre-test results is shown in Figures 2, 3 and 4.
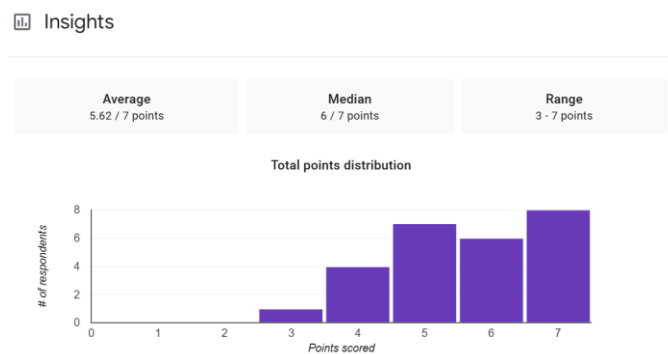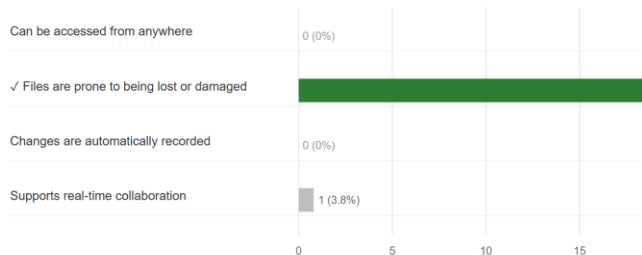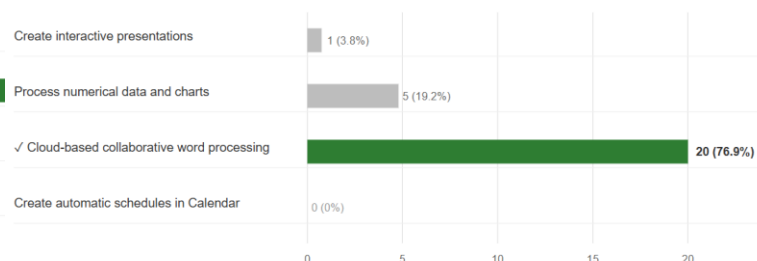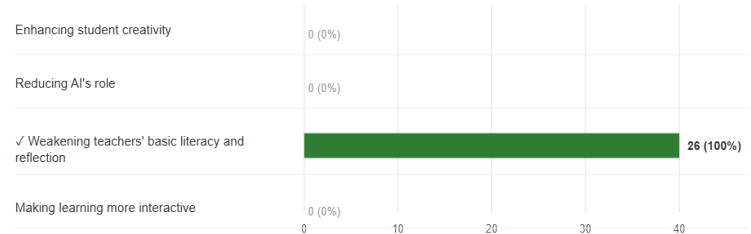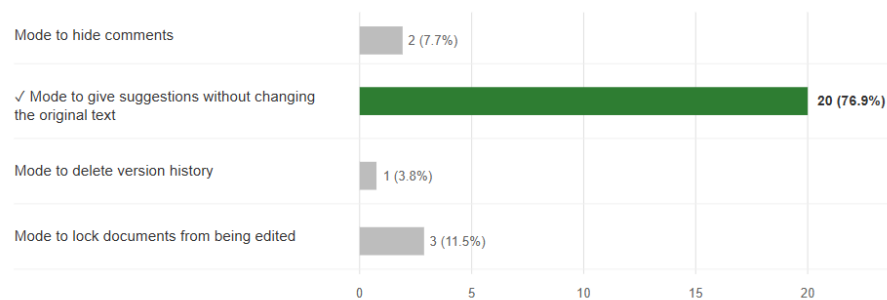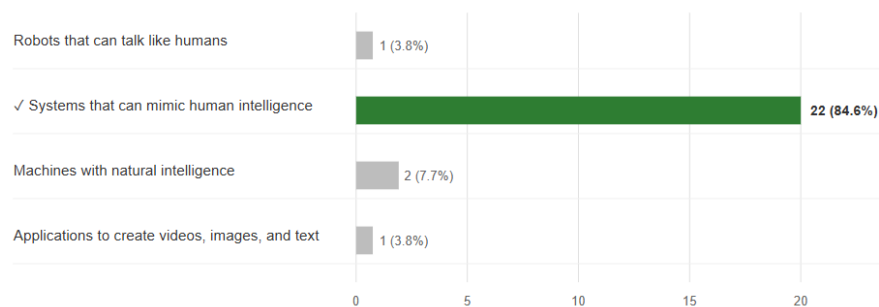

FIGURE 2. Pretest Score Achievement

FIGURE 3. Pretest Score Achievement Part 1
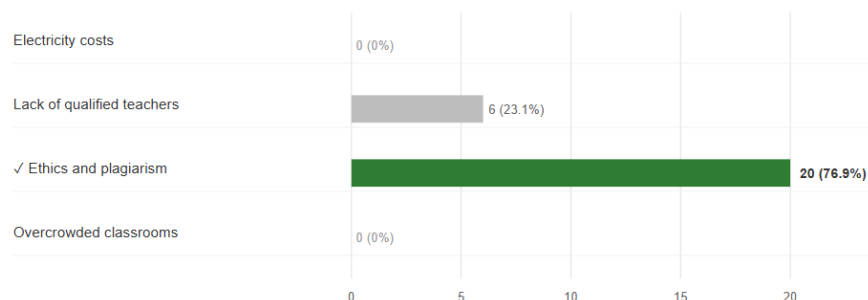
What is meant by Suggesting Mode in Google Docs?

20 / 26 correct responses

Option	Count
Mode to hide comments	2 (7.7%)
✓ Mode to give suggestions without changing the original text	20 (76.9%)
Mode to delete version history	1 (3.8%)
Mode to lock documents from being edited	3 (11.5%)

What is meant by Artificial Intelligence (AI)?

22 / 26 correct responses

Option	Count
Robots that can talk like humans	1 (3.8%)
✓ Systems that can mimic human intelligence	22 (84.6%)
Machines with natural intelligence	2 (7.7%)
Applications to create videos, images, and text	1 (3.8%)

What is the biggest challenge in using AI in education?

20 / 26 correct responses

Option	Count
Electricity costs	0 (0%)
Lack of qualified teachers	6 (23.1%)
✓ Ethics and plagiarism	20 (76.9%)
Overcrowded classrooms	0 (0%)

FIGURE 4. Pretest Score Achievement Part 2

Pre-test and training evaluation results from SMAIT Qordova teachers indicate a solid baseline of digital literacy before the intervention. The majority of participants demonstrated good foundational knowledge, correctly answering questions about collaborative platforms like Google Docs, understanding the risks of working offline, and showing a strong awareness of ethical issues and risks associated with Artificial Intelligence (AI). This foundation suggests the teachers were well-prepared for advanced topics in digital collaboration and AI integration in the classroom. A significant gap was identified in prompt engineering (the technique of creating effective instructions for AI). Only half of the participants showed adequate comprehension in this area. This contrast—high foundational literacy versus low proficiency in advanced technical skills—highlights a need for more in-depth training focused on specific, advanced AI skills.

The findings align with previous research (Almasri, 2024) conclusion that AI holds great potential for enriching learning, provided educators receive a proper understanding. The high enthusiasm and improved comprehension of AI material reflect the teachers' readiness to utilize technology productively.

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Furthermore, this outcome is consistent with (Jeon et al., 2024), who emphasized that teacher digital readiness and structured training are vital for sustainable technology integration. The systematic training at SMAIT Qordova successfully proves that targeted digital competency enhancement is a strategic step toward a modern, collaborative, and technologically responsive educational environment.

TABLE 3. List of Pretest Achievement Scores

Question	Number of correct answers	Number of wrong answers
What is the main weakness of working with documents offline?	25	1
What is the main function of Google Docs?	20	6
What is meant by Suggesting Mode in Google Docs?	20	6
What is meant by Artificial Intelligence (AI)?	22	4
What is the basic formula for creating an effective AI prompt?	13	13
What is the weakness if teachers are too dependent on AI?	26	0
What is the biggest challenge in the use of AI in education?	20	6

Based on the graphical data in Figure 4, Figure 5 and the tabular data in Table 3, the pre-test results indicate that participants generally demonstrated strong foundational digital literacy. Almost all participants (96%) understood the limitations of offline work, such as restricted collaboration and accessibility. Most teachers recognized Google Docs as a cloud-based collaborative platform, though 23% still showed misconceptions, suggesting the need for further emphasis on real-time collaboration features.

Understanding of Suggesting Mode was relatively high (77%), though some were unaware of its function for non-destructive editing suggestions. Knowledge of Artificial Intelligence (AI) concepts was also strong (85%), but additional examples of AI in education were recommended to reinforce understanding. Meanwhile, comprehension of prompt engineering was evenly split (50:50), indicating that this concept remains new and requires more practical guidance. All participants showed critical awareness of potential AI overuse risks, and most (77%) recognized challenges in AI adoption, such as ethics, infrastructure, and digital literacy. Overall, high scores on questions related to digital awareness and AI ethics reflect solid conceptual understanding, while weaker performance on AI prompt formulation highlights the need for deeper hands-on training.

The difficulty in mastering prompt engineering is multifaceted:

▪ It requires a shift from conventional instructional methods to a highly explicit, structured, and parameterized way of thinking that suits machine requirements. Teachers accustomed to writing instructions for students are often unfamiliar with the detailed, parameter-based instructions needed for AI systems.

▪ This skill demands intensive, repetitive practice that cannot be fully acquired through theory alone, limiting the teachers' grasp of quality prompt creation.

Conversely, the high understanding of AI ethics is attributed to the fact that these issues are frequently discussed in educational and public spheres. Teachers' inherent high sensitivity to academic integrity and the impact of technology on student learning make AI ethics material easy to grasp and internalize.

During the session, seven door prizes were awarded to active participants, and documentation of the activities is presented in Figures 5–7.

FIGURE 5. Presentation of Souvenirs to the Foundation and School Principal


FIGURE 6. Door Prize Presentation to Participants

**FIGURE 7**. Group Photo of Team and Participants

Evaluation

The team evaluated the community service activity using questionnaires distributed to participants. The assessment covered three main aspects: the implementation of the training, the performance of the instructors, and the relevance and quality of the training materials.
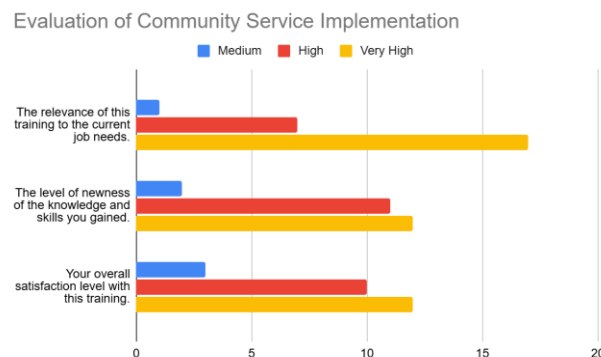
FIGURE 8. Evaluation Results of PkM Implementation

Figure 8 presents the results of the questionnaire evaluating the implementation of the community service training program (PkM). Overall, participants expressed a very positive perception of the training. In terms of training relevance, most participants found it highly aligned with their current professional needs, with 17 respondents rating it High and 7 rating it Very High.

Regarding the novelty of knowledge and skills gained, responses were similarly strong—12 participants rated Very High and 11 rated High. The overall satisfaction level was also excellent, with 12 respondents rating Very High and 10 rating High, indicating that the training effectively met participants' expectations and learning needs.
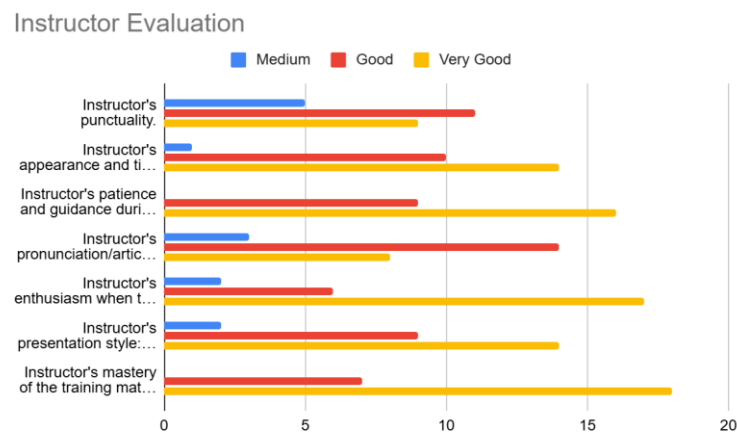
FIGURE 9. Evaluation Results Regarding Instructors

Participants' perceptions of the instructors were highly positive, as illustrated in Figure 9. In terms of subject mastery, most participants (18 respondents) rated the instructors as very good. The instructors also received high scores for appearance and neatness, with 14 participants rating very good, and for patience and guidance, which were rated very good by 16 participants.

However, some areas were identified for improvement. The teaching method and presentation delivery received slightly lower ratings compared to other aspects, with 9 participants rating them good and 14 rating very good. Similarly, pronunciation and articulation were rated somewhat lower in the very good category than the other evaluation criteria.
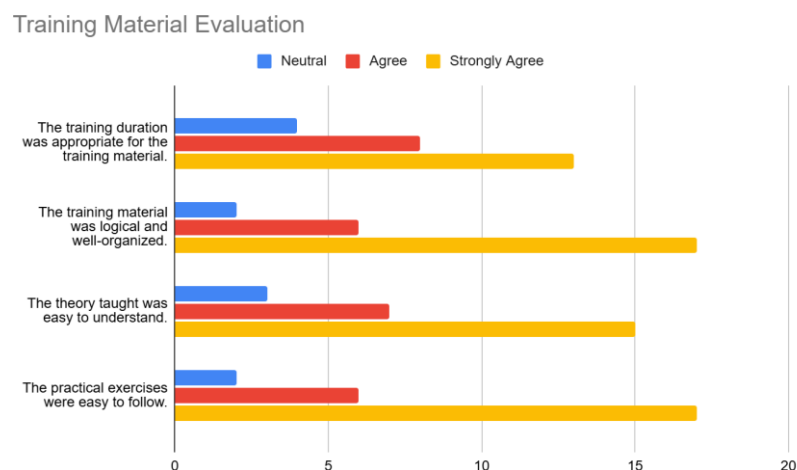
FIGURE 10. Training Material Evaluation Results

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As shown in Figure 10, the evaluation results for the training materials indicate that the content was generally effective and easy to understand. The training duration was considered appropriate for the material, with 13 participants strongly agreeing and 8 agreeing. The materials were perceived as logical, well-organized, and the theoretical concepts were easy to comprehend, while the practical sessions were also found to be clear and easy to follow.

Based on the overall evaluation analysis, several recommendations can be made to improve future activities:

Enhance presentation methods, although already good, instructors could receive additional training to improve the structure, clarity, and delivery of presentations, including articulation and pronunciation.

Increase participant interaction, since instructors have strong mastery of the content, more interactive or discussion-based approaches are encouraged to enhance engagement.

Conduct deeper surveys; future evaluations should include open-ended questions to gather qualitative insights that explain participants' quantitative responses and identify specific areas for improvement.

The findings carry several important implications for the SMAIT Qordova as follows:

- Curriculum Integration: The demonstrated increase in understanding suggests the school can safely begin integrating digital and AI modules into daily teaching practices (e.g., lesson planning, assessment creation).

- Advanced Training: There is a clear opportunity to develop follow-up training programs, specifically focused on prompt engineering and using AI for differentiated learning.

- Policy Development: The high ethical awareness provides a strong basis for the school to establish guidelines for the safe and academically sound use of technology.

- Sustained Program: High satisfaction with the training indicates that such competency programs should become a regular agenda item to continuously strengthen teachers' digital capabilities.

Based on these findings, the following recommendations are proposed:

- Focus on practice with conducting advanced training specifically focused on prompt engineering practice to enable teachers to optimize the use of generative AI.

- The school should implement long-term monitoring (e.g., 3 or 6 months post-training) to assess knowledge retention and the level of technology implementation in classes.

- The school needs to develop internal AI usage policies covering ethics, usage boundaries, and guidelines for both students and teachers.

- Future evaluations should be supplemented with qualitative data (e.g., interviews or open-ended questions) to capture a deeper and more comprehensive understanding of the participants' experiences.

CONCLUSION

The IC3 Living Online training conducted at SMAIT Qordova Rancaekek successfully enhanced teachers' digital literacy and awareness of modern educational technologies. The program focused on developing competencies in Google collaborative tools and Artificial Intelligence (AI) applications for

teaching and learning. Participants demonstrated strong engagement and showed positive improvements in understanding digital collaboration, AI concepts, and responsible technology use.

Pre-test analysis indicated that most teachers already possessed good basic digital literacy and critical awareness of AI. However, the concept of prompt engineering emerged as a new area that required deeper practical learning. The evaluation results further revealed that participants perceived the training as highly relevant, effective, and well-organized. The instructors were rated positively, particularly in content mastery, patience, and guidance, while presentation methods and interaction could still be improved. The training materials were considered clear, logical, and easy to follow, and the allocated time was deemed appropriate.

Overall, this community service activity achieved its objectives by strengthening teachers' ability to integrate digital tools and AI into their teaching practices. For future programs, it is recommended to provide additional sessions on AI prompt design, encourage more interactive learning, and include qualitative feedback mechanisms in evaluations to gain deeper insights into participants' experiences and learning outcomes.

ACKNOWLEDGMENTS

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