

Developing Digital Competence and Social Inclusion for Madrasah Teachers in Malang Regency

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Keywords

Digital
competence,
Social Inclusion,
Inclusive
Education,
SDGs, Teacher
Development.

Abstract

Quality education is a crucial foundation for realizing a prosperous and competitive society, as outlined in the Sustainable Development Goals (SDGs), particularly Goal 4: Quality Education. In Malang Regency, Islamic schools (madrasah) play a significant role in providing education to the community, with the number of elementary, junior high, and senior high schools (Madrasah Ibtidaiyah, Tsanawiyah, and Aliyah) continuing to increase. However, efforts are still needed to strengthen teachers' digital competencies and promote a greater understanding of social inclusion and inclusive educational practices. This community service program aims to improve digital competency and social inclusion among madrasah teachers in Malang Regency. Planned activities include training in the use of digital technology for learning, including Google Classroom, and increased understanding of the importance of social inclusion in education. This program is expected to help madrasah teachers adopt digital technology and create a more inclusive and equitable educational environment. Partners face several challenges, including limited digital access and skills, limited understanding of social inclusion, and insufficient ongoing teacher training. Through this training, it is hoped that teachers will be able to utilize technology for more creative and effective learning and apply the principles of inclusivity in the teaching process. This program will support the transformation of madrasah education in Malang Regency towards more adaptive, inclusive, and sustainable education.

INTRODUCTION

Quality education is a fundamental pillar in building a prosperous and competitive society, as outlined in the Sustainable Development Goals (SDGs), specifically Goal 4: Quality Education. The SDGs emphasize the importance of providing inclusive, equitable, and high-quality education for all, including groups often underserved by formal education systems (Siahaan, Arianti, and Thalib 2023). Given the 2030 deadline for achieving these SDGs, it is crucial to leverage synergies and manage trade-offs to generate mutually beneficial impacts (Rimba, Ichiro, and Kei 2025). Hidayah and Nugraheni (2024) state that these targets are projected to accelerate national progress by fostering a high-quality and inclusive educational ecosystem. This challenge is particularly relevant in the Indonesian context, especially regarding madrasah, which serve as influential institutions in shaping community character and knowledge. The challenges facing madrasah in the 21st century necessitate a "mental revolution" among teachers and the integration of technology to equip "digital native" students with relevant, modern skills (Bahrudin and Sirozi 2025; Kurniawan 2019; Zuariah et al. 2024).

Data from the Ministry of Religious Affairs indicates that over 60% of rural pesantren-based madrasah lack stable internet access; consequently, government policy and private sector support, including from colleges, are required to accelerate the digitalization of learning (Malik 2025). Data from Statistics Indonesia (BPS) for Malang Regency shows that in 2025, there were 371 Islamic elementary schools and 214 Islamic junior high schools. Additionally, 524 madrasah operate under the auspices of the Ma'arif NU Educational Institution in Malang Regency (LP Ma'arif NU Kapaten Malang, 2025). These figures demonstrate the significant role that madrasah education plays in the educational development of Malang Regency. Indeed, madrasah have long served as a vital pillar in providing in-depth, religion-based education. However, amid rapid technological advancement, this institution faces challenges in adopting digital technologies into its teaching and learning processes. These challenges include limited access to technology, insufficient teacher training, and a digital divide that affects educational effectiveness. According to Amanulloh (2024), education serves as an essential foundation for personal development in the pursuit of true perfection, with human beings both the subjects and the primary focus.

Digital competence is essential for teachers, who serve as the frontline in interacting with students (Sitompul 2022). Teachers play a vital and active role in pedagogical practices, facilitating the delivery of professional education to students (Ratnasari and Nugraheni 2024). Amid rapid technological advancements, teachers are required to integrate subject-matter expertise with the ability to effectively use digital tools in teaching (Syarifah, Maymanah, and Raudah 2025; Triyunita et al. 2025). Consequently, interventions are needed to bridge the educational needs of madrasah with developments in information technology, thereby fostering inclusivity and broader access to education. It is therefore necessary to accelerate the digital transition through technological synergy within educational institutions, specifically madrasah and Islamic boarding schools, to facilitate immediate strategic adaptation (Fahrurrosi, Siregar, and Muzedi 2025).

This community service program aims to empower madrasah teachers through digital competency training and social inclusion education to enhance learning quality. Through this program, teachers gain technical proficiency in information technology and skills for managing social media safely and educationally. Integrating these technological skills is crucial for creating an interactive and engaging learning ecosystem while accelerating a digital transformation that adapts to the dynamics of modern education (Wijanarko et al. 2024). In doing so, pedagogical activities can provide leadership, supervision, and guidance that meet quality standards (Nurfatimah, Hasna, and Rostika 2022), ultimately contributing to achieving SDG 4: ensuring equitable access to quality education.



In the long term, integrating digital technology into the learning process is expected to expand the reach of educational content and build an inclusive, sustainable, and relevant religious education ecosystem in Indonesia (Maulida et al. 2025; Mufidah, Miftahunaning, and Habib 2025). This transformation simultaneously shifts the role of teachers in the digital era from mere instructors of subject matter to managers of classroom technology that is efficient, accessible, and high-quality. Addressing the learning challenges faced by the younger generation requires comprehensive strategic solutions, including continuous, intensive training for educators, adequate infrastructure, and the implementation of adaptive blended learning models (Eryandi 2023; Gusmana 2025; Wahyuni, Supriyatno, and Widodo 2025; Zebua 2023).

Discussions with partners revealed multifaceted obstacles facing madrasah teachers. First, a digital literacy gap stemming from limited access and a lack of familiarity with technology hinders teachers' ability to adapt to modern educational practices. Second, low technical proficiency in using digital platforms such as Google Classroom impedes classroom transformation. Third, the paradigm of social inclusion has yet to take root in pedagogical awareness, preventing the learning ecosystem from ensuring equity for students from diverse backgrounds, including vital social development pillars such as economic status and poverty (Ningrum et al., 2024). These issues are compounded by the lack of platforms for continuous professional development, leading to stagnation in teachers' digital competencies and sensitivity toward inclusion.

To address these challenges, this community service initiative focuses on four primary objectives: enhancing teachers' technological skills for creative instruction, fostering awareness of the importance of inclusivity within the madrasah, and providing practical training on the use of digital platforms for instructional materials. Finally, the program aims to equip teachers with concrete strategies to engage all students, regardless of their social or economic backgrounds, in inclusive learning.

METHOD

The community service program employed a participatory workshop approach that combined expert-led presentations, hands-on digital learning activities, and collaborative group discussions to strengthen teachers' digital competencies and understanding of social inclusion. The program consisted of two sessions. The first session focused on developing digital competency through training and hands-on practice with educational technologies such as Google Classroom, internet-based quizzes, and other digital learning tools, followed by group discussions on opportunities and challenges in implementing digital learning. The second session addressed social inclusion in education, where participants engaged in group discussions to identify strategies and challenges for fostering inclusive school environments. The program was conducted on August 23, 2025, at MTs NU Pakis, Malang Regency, East Java, Indonesia. The demographic profile of the participants is presented in Table 1.

Table 1.
Participant Profile of the Training Program (n = 37)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	12	32.4
	Female	25	67.6
Age	17–24 years	1	2.7
	25–34 years	12	32.4
	35–44 years	11	29.7
	45–55 years	10	27.0

	>55 years	3	8.1
Highest Educational Attainment	Bachelor's Degree (S1)	35	94.6
	Master's Degree (S2)	2	5.4
Teaching Level	Madrasah Ibtidaiyah (MI)	24	64.9
	Madrasah Tsanawiyah (MTs)	13	35.1
Teaching Experience	0–5 years	8	21.6
	6–10 years	7	18.9
	11–20 years	12	32.4
	>20 years	10	27.0

Source: Authors' own survey (2025)

The data presented in the table above comprehensively outlines the profile and composition of all workshop participants. This community service initiative is an integral part of the higher education institution, designed to ensure its implementation delivers a significant impact on the participants (Zunaidi, 2024). In general, the community service program was implemented through the following stages:

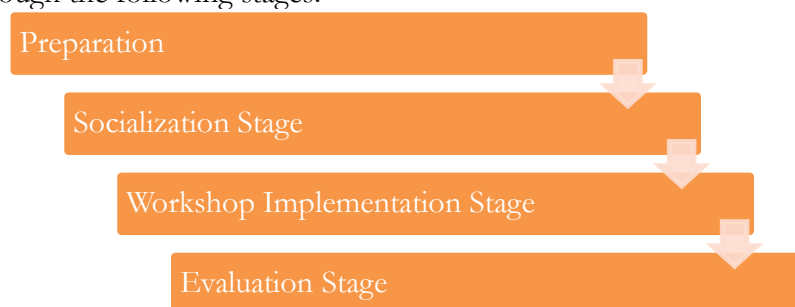


Figure 1
Stages of the Implementation Process

The community service program was implemented through four integrated stages: preparation, socialization, workshop implementation, and evaluation. During the preparation stage, the team collaborated with the Ma'arif NU Educational Institution of Malang Regency to identify training needs, conduct a baseline assessment of participants' digital competencies and understanding of social inclusion, recruit participants, and prepare training materials and logistics. Participants consisted of teachers from Madrasah Ibtidaiyah (MI) and Madrasah Tsanawiyah (MTs) located in Pakis District, Malang Regency. They were selected in coordination with madrasah principals and recommended by their respective principals for their active involvement in teaching and learning activities.

The workshop implementation stage consisted of two main sessions: the first focused on strengthening digital literacy, educational technology utilization, and digital lesson planning, while the second emphasized social inclusion through discussions, case analyses, and simulations of inclusive teaching practices. To assess program outcomes, participants completed an initial assessment before the workshop and a post-training evaluation afterward, focusing on perceived knowledge acquisition, competency development, confidence in using digital tools, and understanding of inclusive educational practices rather than on identical pre-test and post-test measures. Finally, the evaluation stage involved completing evaluation questionnaires to assess participants' perceptions of the workshop, including its relevance, implementation, and contribution to their professional development.

RESULTS AND DISCUSSION

Partner Conditions and Initial Situation Analysis

The Ma'arif NU Educational Institution (Lembaga Pendidikan Ma'arif NU) of Malang Regency is a religious-based educational body overseeing 524 madrasah. This substantial scale positions the institution as a strategic actor in achieving the Sustainable Development Goal (SDG) 4 targets at the regional level. As institutions that integrate religious values, the madrasah under this umbrella play a vital role in developing students' potential. Field observations reveal a significant digital disparity: while students are categorized as "digital natives," educators still face limitations regarding digital literacy. Preliminary findings indicate that the majority of teachers encounter psychological and technical hurdles when using learning management platforms such as Google Classroom. This gap represents more than just an operational issue; it constitutes a strategic deficit in integrating digital tools into classroom instructional models, thereby preventing the optimal realization of learning efficiency and quality.

Beyond digitalization, another fundamental challenge lies in the limited implementation of social inclusion principles within the madrasah educational ecosystem. Understanding of inclusive education tends to be superficial; the diversity of students' social and economic backgrounds, as well as their physical conditions, has not yet been systematically accommodated within an ethical framework. The absence of pedagogical awareness of inclusivity risks fostering latent exclusion, in which the learning process fails to fully meet each student's unique needs in a fair and equitable manner. To address these issues, this community service program is designed as a strategic intervention to bridge existing gaps. The program focuses on integrating digital competencies and fostering sensitivity to social inclusion to drive a madrasah transformation that is not only adaptive to technological advancements but also inclusive from a socio-religious perspective.

Digital Competency Transformation and Internalization of the Social Inclusion Paradigm

The opening session on the first day of training began with welcoming remarks and an introduction to the material by the lead facilitator. He provided initial guidance to align perspectives and motivate participants before they proceeded to the technical sessions. His presence at the podium marked the start of the instructional activities, supported by a team of service staff and students stationed in the technical area to ensure the equipment was ready. This moment is clearly documented in Figure 2, capturing the enthusiasm and initial readiness of the madrasah teachers as the stage was set for the scheduled interactive learning agenda.



Figure 2.
Opening of the 2025 Doctor Serves Workshop

Following the opening session that officially launched the program interventions, the core phase of the community service initiative focused on strengthening the participants' foundational paradigms. Outcomes from this initial phase demonstrate that internalizing values of inclusion and morality is crucial, serving as a filter to ensure that digital transformation within the madrasah remains grounded in its religious character. These efforts also establish a credible educational basis for mitigating the overwhelming flow of information characteristic of the Society 5.0 era.

Following the introduction of these core values, the practical phase shifted focus to mastering the Google Workspace for Education ecosystem as a hub for efficient digital learning management. Participants received intensive guidance on configuring Google Classroom, including online class management, systematic material distribution, and the use of integrated automated assessment features. This practical application is designed to reduce administrative burdens, thereby allowing teachers greater scope to act as interactive facilitators rather than merely conventional instructors. The following images illustrate the participants' practical use of Google Classroom.



Figure 3.
Participants Practicing Google Classroom Features

To further boost educators' creativity, an instructional design workshop was conducted using the Quizizz platform. Madrasah teachers were trained to transform monotonous, text-based teaching materials into visual media that are attractive and interactive for the "digital native" generation. This creative process involved reconstructing religious content into aesthetically pleasing infographics and developing gamified quiz instruments to enhance student engagement in the classroom. The highlight of the first day was a simulation of creating an adaptive, digital-based Lesson Plan (RPP). Each participant received structured guidance from the community service team and university students in formulating instructional steps that combined face-to-face methods with online resources. During this phase, in-depth discussions focused on technology and content, ensuring that every digital tool employed was grounded in sound pedagogical principles.

To conclude the first series of sessions, a collective reflection was conducted to map performance achievements and technical obstacles encountered during the independent simulation. This transformation in digital competence boosted teachers' confidence in navigating technological disruptions within the madrasah environment. The resulting digital lesson plan drafts and instructional media artifacts serve as empirical indicators of a shift in the teachers' paradigm, moving from a passive stance regarding technological advancements to becoming creative producers of instructional content. These outputs are expected to consistently support the ongoing digital transformation of madrasah in Malang Regency.

The second session focused on disseminating the concept of social inclusion as a pillar of distributive justice within the madrasah education system, one that extends well beyond mere physical presence in the classroom. Through discussion forums, educators were guided to reshape their understanding of inclusion, viewing it as a normative ethical framework that guarantees equal access and quality learning for every individual, regardless of socioeconomic disparities or disabilities. This session served a strategic purpose: to reduce the stigma and sociocultural barriers that can lead to the latent exclusion of vulnerable groups during pedagogical processes in religious educational institutions. The internalization of these inclusive values was reinforced through participatory case studies that encouraged participants to analyze the dynamics of student diversity within their respective madrasah.

Subsequently, pedagogical strategies were implemented through Universal Design for Learning (UDL) training, a framework for developing flexible instructional materials that accommodate learner diversity. At this stage, participants learned to integrate the digital tools mastered on the first day to support inclusivity. Practical applications included using text-to-speech features for visually impaired students and providing instructional videos with explanatory text for hearing-impaired students. This integration underscores the role of educational digitalization as a tool for humanization, helping to eliminate barriers to inclusion within the classroom. The culmination of this phase was the incorporation of inclusion principles into gender-responsive, child-friendly Lesson Plans (RPPs).

Through structured guidance, teachers modified their instructional methods to be more adaptive, for instance, by designing group activities that fostered interaction across socioeconomic lines and developing non-discriminatory assessment tools. This process of module reconstruction and critical reasoning is illustrated in Figure 4 below, which depicts the workshop's six working groups and shows a representative from one group presenting a collaboratively created mind map. Guided by prompts on the projector screen about the urgency and challenges of technology, the teachers successfully mapped out key determinants of digital learning, ranging from efficiency and accessibility to real-world sociocultural factors, such as parental resource availability and limitations in teaching materials.



Figure 4.
Presentation of Group Discussion Results and Concept Mapping for Digital-Inclusive Learning

The problem analysis and formulation of tactical solutions outlined in the group worksheets served as a crucial foundation for participants before they proceeded to the practical stage. Outcomes from the teaching simulations (micro-teaching) conducted following this

presentation session revealed significant shifts in pedagogical interaction patterns within the classroom. Based on the inclusive material mapping, the teacher's role was shown to evolve from one dominated by conventional, one-way instruction into that of an interactive facilitator. Educators demonstrated greater responsiveness in managing classroom dynamics, integrating assistive media that accommodate student diversity, and ensuring psychological well-being and a comfortable learning environment for all students without exception.

This second series of sessions concluded with the formulation of a collective commitment to implement principles of inclusivity within every classroom instructional policy. Participants recognized that integrating the digital competencies they had acquired served a broader purpose: building an equitable and sustainable educational ecosystem. This shift in awareness represents a strategic social asset for LP Ma'arif NU Malang Regency in advancing inclusive education in the 21st century.

Program Success Analysis

The success of this community service program is underscored by post-training evaluation data that capture participants' perceptions and satisfaction levels. Responses to the distributed questionnaires revealed that 100% of participants agreed or strongly agreed that the material was relevant to the actual needs of madrasah teachers. Consistent with this outcome, 90.3% of participants reported gaining new knowledge regarding digital technology, while 93.5% indicated a better understanding of social inclusion concepts in teaching. These figures demonstrate that the program did more than simply transfer technical skills; it also fostered a shift in teachers' understanding toward more equitable and inclusive teaching models.

Regarding management and facilitation, performance levels were also optimal. The facilitators' clarity and communication style during the delivery of material received positive feedback from 96.8% of participants. This assessment aligns with the event's overall satisfaction rate of 96.8%. However, the indicator regarding the adequacy of time to delve into the material recorded the lowest percentage at 80.6%. While this figure still falls within the "very good" category, the result offers a significant insight for the organizing team. The complexity of integrating digital content with social inclusion issues indicates that future programs should provide more comprehensive workshop sessions to strengthen participants' understanding and practical skills.

Table 2.
Results of the Post-Training Evaluation (n = 37)

Indicator	Agree + Strongly Agree (%)
The training materials were relevant to my needs as a madrasah teacher.	100.0
I gained new knowledge regarding the use of digital technology for learning.	90.3
I understand the concept of social inclusion in the context of learning in madrasah.	93.5
The facilitator delivered the material clearly and effectively.	96.8
The training duration was sufficient to explore the topics covered.	80.6
I am satisfied with the overall implementation of the training program.	96.8

Source: Authors' own survey (2025)

In addition to measuring satisfaction levels, the service team evaluated how teachers perceived improvements in their own competence following the training (n=37). Regarding psychological aspects, the results showed a significant boost in confidence: 90.3% of teachers reported feeling much more self-assured when using digital tools in the classroom. This confidence directly influenced their long-term commitment, as evidenced by 96.8% of participants pledging to implement the workshop outcomes in their respective madrasah. Furthermore, every single participant (100%) expressed interest in attending future training sessions. These high figures are a positive indicator that the program fosters sustained internal motivation among teachers.

However, a different picture emerged regarding the ability to design inclusive lessons. This indicator recorded the lowest figure, at "only" 67.7%. While this still reflects a positive response from the majority of participants, the figure lags significantly behind the other indicators. The teachers' notably lower confidence in creating inclusive lesson plans highlights a tangible challenge in the field. Translating socio-religious values into a concrete, child-friendly, and non-discriminatory curriculum proves far more complex than simply learning to operate applications or laptops. For the service team, this data provides a compelling argument that madrasah classrooms still require more targeted support, particularly in dissecting instructional design for students with special needs.

Table 4.

Participants' Perceived Competency Improvement Following the Training (n = 37)	
Indicator	Agree + Strongly Agree (%)
I feel more confident using digital tools in teaching and learning activities.	90.3
I am able to design more inclusive learning activities for students.	67.7
I intend to apply the knowledge and skills gained from this training in my teaching practice.	96.8
I am interested in participating in advanced training programs related to this topic.	100.0

Source: Authors' own survey (2025)

Cumulatively, the success of this community service program is reflected in the integration of satisfaction with activity management and the participants' commitment. A 100% positive response regarding material relevance translated into high teacher confidence (90.3%) in using digital tools in the classroom. Data synergy demonstrates the success of the workshop's curriculum in overcoming educators' mental barriers to technological disruption. Program sustainability is also empirically supported by the unanimous (100%) interest of all participants in follow-up training.

However, the disparity between participants' high interest in applying the workshop outcomes (96.8%) and their confidence in designing inclusive learning modules (67.7%) highlights an important area for future capacity-building programs. While participants demonstrated strong motivation to implement digital and inclusive teaching practices, additional opportunities for hands-on practice and collaborative learning may be needed to strengthen their confidence in designing inclusive learning materials. These findings suggest that future community service programs should allocate more time for practical activities and interactive discussions to better support teachers in applying digital and inclusive pedagogical approaches in their respective madrasah.

Discussion

Empirically, the achievements of this community service program align with Sustainable Development Goal (SDG) 4, particularly the pursuit of an inclusive and equitable quality education system. By integrating digital proficiency with social sensitivity, madrasah in Malang Regency are not only updating their instructional materials but also beginning to establish a more equitable learning system. These efforts align with global targets to enhance teachers' qualifications in information technology while simultaneously honing their ability to manage student diversity in the classroom without discrimination. This synthesis of technological aspects and the values of inclusion underscores that digital transformation in religious educational institutions requires a strong moral foundation.

Compared with earlier programs by Bahrudin and Sirozi (2025), this activity's results offer a novel contribution to a more holistic teacher-training model. While Bahrudin tended to focus on macro-level innovation challenges, this program offers tactical solutions through participatory workshops that marry digital aspects with issues of social inclusion. Field findings indicate that teachers' psychological barriers can be addressed through empathetic, periodic mentoring rather than through one-off technical training sessions. This discussion also reinforces Malik's (2025) argument regarding the digital readiness of madrasah, which is often hindered by geographical factors. However, this program offers an alternative perspective: limited internet connectivity is not an insurmountable obstacle if teachers can implement hybrid learning models. The introduced asynchronous learning strategy proved effective in mitigating the digital infrastructure gap in the rural areas of Malang Regency.

Furthermore, this program reflects a shift in the teacher's role from being the sole source of information to becoming a designer of accommodating learning experiences. This transformation aligns with the demands of 21st-century education, which require teachers to be cognitively flexible in managing technological resources in the classroom. By utilizing platforms such as Google Classroom, madrasah educators have demonstrated that the nature of religious institutions does not hinder technology adoption; rather, it allows for the enrichment of digital content with relevant moral values. Furthermore, integrating inclusive materials addresses sociological criticisms of the potential for exclusion in traditional madrasah. The results indicate that awareness of students' diverse backgrounds, including gender, socioeconomic status, and physical condition, can be effectively fostered through case study simulations. These findings offer valuable insights for the Ministry of Religious Affairs' Continuous Professional Development (CPD) program, highlighting the need to position social competence on par with pedagogical competence in the context of Society 5.0.

The use of interactive media in this training also sheds light on the learning motivation dynamics of "digital native" students. Teacher reports indicate that visual and interactive teaching materials effectively reduced boredom while boosting active student participation in the classroom. This supports the theory that visual appeal is a crucial prerequisite for effective knowledge transfer in the digital age. Furthermore, teachers' ability to independently develop digital learning media can reduce reliance on external resources that may not fully align with madrasah values. From an educational leadership perspective, collaboration with the Ma'arif NU Educational Institution of Malang Regency played an important role in supporting the program's successful implementation by coordinating participants and providing support. Organizational support manifested through mass mobilization and the provision of facilities accelerated the diffusion of innovation at the grassroots level. This demonstrates that systemic change within madrasah cannot rely solely on individual teacher initiatives but requires the collective commitment of the parent institution.

Theoretically, the program's implementation underscores the urgent need for an adaptive curriculum. The digital lesson plan drafts prepared by participants reveal a systematic effort to

align the learning pace with each student's individual capacity. This embodies the essence of quality education as defined in SDG 4, where quality is measured not merely by the sophistication of the technology employed, but by the extent to which that technology facilitates equitable access to learning for all students. In conclusion, this community service initiative offers a prototype for an integrative capacity-building model for madrasah teachers. The findings suggest that digital competence can support the promotion of social inclusion in madrasah education. Ultimately, the program highlights the importance of educators' ability to adapt to digital technology while maintaining the humanistic values of madrasah education.

Despite achieving positive results, this community service program faced certain contextual limitations in the field that warrant attention. The relatively short duration of the training proved a primary obstacle to the deep internalization of social inclusion concepts, as shifting instructional paradigms requires a longer period of adaptation than mastering digital technical skills. Furthermore, translating workshop outcomes into actual classroom practice encountered infrastructural realities, such as unstable internet connectivity in rural areas and unequal access to devices among students from economically vulnerable backgrounds. If not properly addressed, these conditions could create a new digital divide. These limitations underscore the fact that immediate post-workshop evaluations cannot guarantee long-term success; consequently, a sustained monitoring and mentoring scheme is essential to assess the consistency with which teachers implement these methods in their respective madrasah.

CONCLUSION

This community service program strengthened the pedagogical capacity of madrasah teachers in Malang Regency by integrating digital competencies and social inclusion principles into teaching and learning practices. Through participatory workshops, participants gained practical experience with digital learning tools and in designing more inclusive learning activities. The evaluation results indicate positive participant perceptions of the program's relevance, perceived improvements in digital competencies and understanding of social inclusion, and increased confidence in applying these concepts in their teaching practices. These findings suggest that integrating digital competency development into social inclusion initiatives can support more inclusive and effective learning environments in madrasah while advancing the objectives of SDG 4 (Quality Education). Future programs are recommended to provide more opportunities for hands-on practice and collaborative discussion to further strengthen teachers' capacity to implement inclusive digital learning.

Based on the dynamics observed during the program's implementation, it is recommended that the administrators of LP Ma'arif NU in Malang Regency initiate the establishment of digital learning resource centers at the sub-district level. These centers would serve as spaces for the continuous sharing of best practices among teachers, ensuring that the innovations initiated do not cease once the service period concludes. Managerial support, specifically through policies mandating the gradual integration of digital platforms across all madrasah, is crucial to sustaining the habit of using technology in daily instructional processes. Local governments and relevant stakeholders need to prioritize the equitable distribution of internet infrastructure and the provision of devices for students from low-income backgrounds in rural areas. Without adequate infrastructure support, efforts to digitize teaching risk creating a new digital divide between students with access and those without. Therefore, collaboration among madrasah, parents, and local internet service providers is an urgent necessity to ensure that technological advancement serves as an instrument for inclusion rather than a tool for social exclusion.

Finally, future researchers and practitioners are encouraged to delve deeper into evaluating the long-term impact on student learning outcomes following the implementation of digital-based inclusive teaching methods by teachers. Further studies could focus on developing Artificial Intelligence (AI)-based teaching modules specifically designed to address particular learning challenges such as dyslexia or autism within the madrasah environment. Through a deeper exploration of assistive technologies, the vision of the madrasah as an educational institution "friendly to all" can be realized more holistically and sustainably in the future. Moreover, this could pave the way for innovative measures within the madrasah system, thereby facilitating the acceleration of a modern, technology-driven madrasah framework.

Acknowledgment

The authors gratefully acknowledge the financial support and technical assistance provided by the Directorate of Research and Community Service (DRPM), Universitas Brawijaya, through the Doktor Mengabdikan Program 2025, which enabled the implementation of this community service project. The authors also extend their sincere appreciation to the Ma'arif NU Educational Institution of Malang Regency for its valuable partnership, coordination, and support throughout the planning and implementation of the program.

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