

STRATEGY TO INCREASE TECHNOLOGY AWARENESS THROUGH THE USE OF VARIOUS DIGITAL MEDIA AMONG MADRASAH IBTIDAIYAH WONOMERTO TEACHERS

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ABSTRACT

This research explores strategies to increase technological awareness among Madrasah Ibtidaiyah teachers in Wonomerto through the utilization of digital media. This research aims to fill the void of studies on teachers' technological awareness in the madrasah context by using a descriptive qualitative approach with a single case study design applied, involving observation, semi-structured interviews, and document analysis for two months (May-June 2025). Data were obtained directly through semi-structured interview techniques, open-ended questionnaires, and review of relevant documents, and then analyzed using an interactive model. The results show four main findings: First, awareness arising from practical needs in the classroom, second, the contribution of internal learning communities in accelerating technology adoption, third, structural challenges along with adaptive response mechanisms, and fourth, the insertion of Islamic values in digital materials. The findings show that the combination of collaborative practices, locally developed innovations and reinforcement of moral values plays an important role in building teachers' confidence in supporting the sustainable use of technology. In conclusion, the integration of these three elements forms the foundation for a resilient and effective digital learning ecosystem.

Keywords: technology awareness, digital literacy, digital media

INTRODUCTION

In modern education, the integration of digital media is an important component to enrich technological literacy among teachers and educators. Digital media now functions as a strategic pillar in an effort to improve the quality of learning in elementary schools and madrasas. Various previous studies have highlighted the implementation of digital media at both levels, confirming the role of technological innovation in encouraging the effectiveness of the teaching and learning process. For example, research by Kartika & Arifudin (2023) and Ambiyar et al. (2024) Exploring the contribution of ICT training in improving teacher competence, although both are still focused on the technical dimension of device operation.

Darmansah et al. (2025) Exploring teachers' perceptions of e-learning and identifying gaps between motivation and digital capabilities, although this study only focuses on public schools and has not yet reached madrasas. Meanwhile, research Ismael & Supratman (2023) In the context of religious education, the strategy of increasing technological awareness has not been discussed as a whole, especially through a case study approach in madrasas. The use of information and communication technology plays a crucial role in Madrasah Ibtidaiyah (MI), because when implemented optimally, it can encourage an improvement in the quality of the teaching and learning process. The ICT revolution has reformed the global education landscape, shifting the role of teachers from facilitators to facilitators of dynamic learning interactions.

At MI Wonomerto District, although infrastructure and supporting devices in some schools are already available, digital media integration is still limited to initial initiatives, so the gap between the potential of technology and daily pedagogical practices is still visible. For example, the use of

animated videos of prophetic stories and interactive quizzes whose effectiveness has been shown to increase student participation is still sporadically implemented by educators. However, many MI teachers in rural areas, such as the MI Miftahul Ulum Tunggak Cerme teacher located in Wonomerto District, also still face various obstacles in accessing and utilizing digital technology to the fullest. Therefore, it is very important to formulate effective strategies to increase awareness and technology literacy among MI educators.

Until now, there is still very little research that explores in-depth studies on how MI teachers can develop special strategies in the use of digital media as part of the formation of technological awareness. Although a number of studies have examined ICT training and teachers' perceptions of elearning, studies investigating strategies for increasing technology awareness in depth within Madrasah Ibtidaiyah (MI) are still limited (Asror, 2020). In several MIs in Wonomerto District, infrastructure constraints and lack of professional training often hinder the process of integrating technology into daily learning practices. Based on the results of observations in the field which revealed that the technology awareness of MI teachers is still low, as evidenced by the frequency of integration of digital devices in the learning implementation plan which has not reached 50%.

This condition poses challenges, how teachers design technology awareness systematically and what strategies they apply to deal with technical and cultural obstacles. The research conflict is focused on identifying the cognitive and affective processes that affect the formation of teachers' technological awareness along with the strategic practices they develop, considering the urgency of exploring digital media utilization strategies in supporting educational transformation accelerated by government policies and responsive demands to the times. This research has high urgency because it is able to present a comprehensive picture of strategies for increasing technological awareness that are adaptive and contextually appropriate for Madrasah Ibtidaiyah (MI) teachers. Based on this, this study is designed to explore in depth strategies to increase technology awareness among MI teachers through the use of digital media, with a focus on case studies on several Ibtidaiyah Madrasah in Wonomerto District.

Thus, the results of this study are expected to make an empirical contribution to the understanding of the dynamics of technology adoption in faith-based educational institutions and become the basis for recommendations for the development of digital training programs for MI teachers (Yuningsih, 2025). This research provides practical guidance for madrasah managers and policymakers in designing training modules that integrate case studies with contextual practices, so that other madrasahs can adapt and adapt similar strategies to improve teachers' digital literacy in a sustainable manner (Muzaini, Najib, Mahmudah, & Nisa, 2023). Thus, this framework not only serves as an operational tool in the field, but also enriches academic treasures as a foundation for the development of technology awareness theory and practice in educational institutions.

Conceptually, this research is based on Rogers' theory of innovation diffusion which maps the stage of innovation adoption in the context of madrasahs, *Technology Acceptance Model* which emphasizes the importance of the perception of the usability and ease of use of digital modules, as well as Vygotsky's social constructivism which explains the interactive role between teachers in the transfer and internalization of digital knowledge (Abidah et al., 2024). The synthesis of these three theories allows an in-depth analysis of the internal, social, and technical factors that shape the technological awareness of MI teachers in Wonomerto, thus providing a comprehensive picture of

the dynamics of technology adoption in the primary education environment.

RESEARCH METHODS

This study uses a descriptive qualitative approach with a phenomenological study design to understand the teaching practices carried out by MI teachers in Wonomerto District in real field conditions. The design of the phenomenological study we chose because this approach excels in exploring the deep meaning and real context behind various pedagogical phenomena. By focusing on teachers' experiences and perceptions, this research is in line with the results of the study Nur'aini (2020), which also uses a phenomenological qualitative research design to explore learning practices. Through this method, researchers can conduct comprehensive exploration, ranging from in-depth interviews to repeated reflection to understand how teachers in several Madrasah Ibtidaiyah Wonomerto District design and implement teaching activities in concrete situations. As a result, the analysis presented is not only descriptive, but also reveals the layers of subjective meaning that underlie daily pedagogical actions. Phenomenology is included in one of the qualitative research approaches that also aims to examine and explore the experiences experienced by a single individual, a group of people, or certain living things in depth (Nasir et., al 2023).

This approach allows researchers to explore in detail the patterns of student teacher interaction, classroom management strategies, and the use of learning media that are developing in madrasahs, in line with the recommendations of Rahmawati et al. (2023) who emphasize the importance of contextual understanding to improve the quality of teaching practices in schools. In addition, this framework also considers the principle of data validity through triangulation of interview sources, observations, and documentation so as to ensure the accuracy of findings (Putri & Utami, 2024). This research was conducted in several Madrasah Ibtidaiyah in Wonomerto District, Probolinggo Regency, such as MI Miftahul Ulum Tunggak Cerme which is one of the schools located in Wonomerto for the research location in the May-June 2025 period, to ensure the depth of data according to field research procedures.

The research subjects consisted of ten teachers who had integrated digital media in learning at least once a semester, selected by purposive sampling to cover the variety of subjects and the level of technological readiness among Madrasah Ibtidaiyah. The data collection techniques in this study include several complementary approaches; *First*, semi-structured interviews were conducted to explore the in-depth narrative of each teacher's experience of using technology in learning. *Second*, participatory observation was applied to directly capture the dynamics of interaction and the practice of using digital media in the classroom. *Third*, the distribution of questionnaires is open to teachers to accommodate broader and context-rich answers related to their perceptions and challenges in the field of educational technology.

Data analysis follows an interactive cycle Huberman (2019) It includes three main stages; the process of simplifying data, presenting information, and formulating and drawing conclusions. To ensure the validity of the results, this study applied source trigation (involving several sources), triangulation methods (combining interviews, observations, and questionnaires), and member checking with participants to ensure the accuracy of the researcher's explanation (Endarto & Martadi, 2022).

RESULTS AND DISCUSSION

Based on the results of the data analysis, there are four main findings, from the strategy of increasing technology awareness among MI Wonomerto teachers, namely *first*: technology awareness due to practical needs in the classroom, *second*: the role of the community, *third*: obstacles and solutions in digital awareness, *fourth*: integration and religious values.

First, that technological awareness grows through practical needs in the classroom. MI Wonomerto teachers showed that awareness of the importance of technology in learning grew not only because of policy demands, but rather because of the practical need to increase student involvement. Some teachers stated that digital media is a way to visualize teaching materials and stimulate interest in learning, especially in integrated thematic learning and Islamic religious lessons. Technology awareness here is reflective and develops along with teachers' experience of facing pedagogical needs in the classroom. Digital media is perceived as a solution to concrete challenges, not just a tool for modernizing learning.

"I started to be interested in using learning videos because children get bored quickly if they just give lectures. When I show animations about the prophet's story, they become more enthusiastic and understand his moral message more easily." (Teacher A, May 12, 2025)

Second, that the role of the teacher learning community in increasing the digital awareness of the internal teacher community, including informal discussions and regular training facilitated by school principals, is an important factor in encouraging the improvement of digital literacy. Teachers feel more motivated to try new technologies when they have social support from their peers. This practice shows the importance of a collective approach in building a culture of technology in madrasas. Awareness is not only individual, but is built through collaborative practice and professional dialogue between teachers.

"At first, I didn't know how to make a PowerPoint, but my fellow teachers helped me, even holding a small training in the teacher's room every Friday. So I became more confident using the laptop in front of the class." (Teacher B, interview, May 14, 2025)

Third, that structural constraints and adaptive solutions in the field despite the enthusiasm to adapt to digital media, teachers face infrastructure obstacles such as unstable internet access, lack of projectors, and limitations of personal devices. However, some teachers showed innovative responses, such as using personal phones to display materials or storing learning videos offline. This adaptive strategy reflects teachers' creativity and resilience in overcoming technical constraints, and shows that increased technology awareness can thrive despite limited resources.

"Since there was only one LCD, I sometimes used my phone to play videos, and then I directed the kids to sit closer. It's not ideal, but it helps." (Teacher D, interview, June 20, 2025)

Fourth, namely about the integration of Islamic values in the use of digital media, teachers of Wonomerto, not only utilize technology for teaching effectiveness, but also as a means of internalizing Islamic values. They selectively choose digital content that strengthens the religious character of students, and some even develop locally-based materials with religious content. These findings show that teachers' technological awareness is framed by spiritual and moral values, which are an integral part of their pedagogical identity as educators in madrasas.

"I downloaded a video from YouTube about manners for parents, then I asked the students how they

applied it at home. So learning not only to watch, but also to reflect." (Teacher E, interview, June 20, 2025)

Based on the results of the research, Practical Needs in the Learning Classroom is the dominant factor that triggers technology awareness among MI teachers in Wonomerto District. Based on data analysis, as many as 82% of respondents (45 codes) stated that the application of digital media such as animated videos is very useful to convey material effectively. The teacher emphasized that practical needs in the classroom are the main trigger for technological awareness. The majority of MI Miftahul Ulum Tunggak Cerme teachers (9 out of 10) emphasized that the use of these media not only makes it easier to deliver material, but also increases student participation and motivation. For example, the use of videos in the 5th grade of MI Miftahul Ulum Tunggak Cerme which is very useful and can make students more enthusiastic and interested in learning.

In addition, the Role of the Internal Learning Community has proven to be important in encouraging technology mastery. Regular discussions and informal workshops between teachers facilitate knowledge transfer, with 70% of participants (38 code) reporting an improvement in their technical competence. Most of the teachers of MI Miftahul Ulum Tunggak Cerme (7 out of 10) felt more confident after participating in the online training. Nonetheless, Structural and Adaptive Solution obstacles such as unstable internet connections and the availability of one projector for the entire class are significant obstacles. To address this, 65% of participants (29 code) developed adaptive solutions, for example by downloading learning materials for offline use and using personal phones as presentation devices. Such a strategy is possible.

For example, at MI Miftahul Ulum Tunggak Cerme which always includes teachers in online workshop for technology trainings held by the government, despite the many obstacles experienced in the use of technology such as lack of infrastructure and expertise in the IT field, but based on organizing the interview results into a frequency table, teachers can still use technology in learning with various strategies. In addition, at MIS Raudlatul Hasan also experienced almost the same thing as the previous MI, namely the limitations of infrastructure and teacher knowledge in the field of technology, but it is undeniable that technology is also very useful for learning to be more effective. Clarify the pattern of teachers' responses to each of these strategies, making it easier to identify intervention priorities in the field.

Integration of Islamic Values Finally, the integration of Islamic values in digital content is an important effort in shaping the character of students. As many as 60% of teachers (25 codes) selected and developed materials that contained moral teachings and local spiritual values. Some teachers even adapt local resources to be more relevant to the cultural context and needs of students, so that learning not only emphasizes cognitive aspects, but also affective and spiritual aspects. Overall, these findings show that practical needs in learning and the existence of internal community of teachers have the most significant role in shaping awareness of the use of technology. The results of the researcher's in-depth reflection indicate that technology awareness among teachers does not only come from individual thinking processes, but also grows in a social context that involves values that live in the environment of educational institutions. This is in line with the theory of innovation diffusion put forward by Rogers, where the affirmation of technology adoption is accelerated when the benefits are felt directly by users (Ivanka & Sakariah, 2025).

This study also found that teachers' creativity in adapting to real conditions in the field is an important determinant in the use of technology, support from the community of practice plays an important role in collective trust which ultimately strengthens teacher literacy (Johnston & George, 2018). The adaptive creativity of teachers proves that the availability of infrastructure is not the only critical factor, flexibility of use is also important. In addition, the integration of religious values in digital content adds a moral and spiritual dimension, as well as answering the pedagogical needs of Madrasah Ibtidaiyah. The results of this study show that teachers are more motivated to integrate digital media into learning if they directly feel the impact on the effectiveness of the teaching process. These findings are in line with the view Paling et al., (2024), which emphasizes that the use of media such as animated videos can reduce learning preparation time without reducing the quality of material delivery. Thus, digital literacy training programs for teachers should focus on the application of concrete case studies that reflect the original situation in the classroom, so that their relevance is more pronounced.

Furthermore, the role of informal social networks has proven to be significant in accelerating the technology adoption process. Interaction through platforms such as WhatsApp groups as well as internal workshop activities support the theory *weak ties* from Granovetter, who emphasized that loose social relationships are actually able to open access to new information and knowledge. The same findings were also revealed by Munawaroh & Syarifudin, (2024) which states that peer support in online forums can increase teachers' confidence in applying learning technology. As a strategic implementation step, it is recommended that the formation of a Official regional portal which serves to organize and expand the collaboration network between educators. This effort is one of the adaptive responses to infrastructure challenges that are still obstacles. On the ground, it appears that teachers' technical flexibility, such as downloading materials for offline use or utilizing personal devices, suggests that adaptive skills are just as important as the availability of infrastructure.

Therefore, training design should integrate the *problem solving* to increase its relevance and effectiveness. In addition, collaboration with internet service providers or through programs *Corporate Social Responsibility* (CSR) can provide long-term solutions to improve the quality and stability of connections The Islamic aspect was identified as a significant moderation variable in the technology adoption process. The emphasis on the integration of Islamic values in digital learning content adds a religious dimension to the framework *Diffusion of Innovations* from Rogers. by Ali and Syahputra, (2024) shows that material based on religious values can improve Usage engagement up to 70%, indicating the importance of contextual value in the development of learning media.

Conceptually, the discussion began by associating teachers' practical needs for technology with the concept of *relative advantage* in the theory of innovation diffusion. This concept explains that technology adoption tends to occur faster if the benefits are felt directly by teachers. Furthermore, *the peer learning approach* is analyzed through the perspective of Vygotsky's social constructivism, which emphasizes the importance of interaction between teachers as a form of *collective scaffolding* in building self-efficacy. Adaptation to infrastructure limitations was evaluated using *the Technology Acceptance Model* (TAM) framework, especially in *the perceived ease of use* dimension, which affects the sustainability of the use of technology in the learning process.

On the other hand, the integration of religious values is positioned as a pedagogical innovation that not only answers academic needs, but also strengthens moral and spiritual values in

the context of madrasah learning. Finally, *thematic network analysis* is used to map the relationships between elements of the strategy. The results of this mapping reveal an interrelated iterative cycle between practical experiments in the classroom, collaboration between peers, technical innovation, and reflection on the values adhered to. This cycle is an important foundation in developing strategies to strengthen technology awareness based on local values and needs.

CONCLUSION

The results of this study show that technology awareness among MI teachers in Wonomerto develops as a result of the dynamic interaction between practical learning needs, the spirit of collaboration between teachers, limitations but innovations in infrastructure aspects, and the integration of religious values in educational practices. These four elements form a conceptual model that has the potential to be used as a reference by similar educational institutions in developing contextual and effective tiered training strategies. This model not only reflects local dynamics, but also offers a replicable approach, especially through the development of local case study-based training modules, the development of strategic partnerships with digital infrastructure service providers, as well as the creation of digital content that is aligned with Islamic values.

Thus, the process of adopting technology in madrasahs is not temporary, but sustainable and meaningful. These findings also show that awareness of the importance of technology does not arise instantaneously, but rather is a direct response to pedagogical needs in the classroom. This process is reinforced by the support of an internal learning community that allows for an informal exchange of knowledge and experience. Despite facing limited resources, MI teachers in Wonomerto show adaptability through various creative approaches. On the other hand, Islamic spiritual values play an important role in shaping teachers' orientation and attitudes towards the use of technology, emphasizing that digital transformation in the madrasah environment cannot be separated from the religious dimension that underlies it.

In addition, the implementation of integrated training that includes technical and religious aspects is considered crucial in strengthening the professional capacity of MI teachers in facing the challenges of the digital era. For further research, it is recommended that an evaluation be carried out on the effectiveness of the digital learning model based on religious values through a longitudinal quantitative approach. In addition, it is also necessary to study the sustainability of the use of learning modules in the context of varied madrasah infrastructure, in order to ensure the success of implementation in the long term.

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