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EFFECTIVENESS OF DIGITAL EDUCATION AND TRAINING FOR TEACHERS AT STATE TSANAWIYAH MADRASAH 3, PEKANBARU CITY

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Abstract
The transformation of education in the era of the Industrial Revolution 4.0 demands that madrasa teachers possess digital competencies that can adapt to technological advancements. However, the implementation of digital-based training in public madrasas still faces several challenges, such as limited infrastructure, varying levels of human resource readiness, and issues regarding program effectiveness. This study aims to analyze and interpret This study aims to analyze and interpret the effectiveness of digital education and training (diklat) for teachers at MTsN 3 Pekanbaru City, focusing on program implementation success, goal achievement, participant satisfaction, input-output comparison, and overall goal attainment. The research employs a qualitative descriptive approach using a case study method. Data were collected through in-depth interviews, participatory observation, and document analysis of the digital training programs conducted at the madrasa. The findings reveal that digital training has improved teachers' digital literacy and motivation, particularly among younger educators. Nevertheless, its overall effectiveness remains constrained by inadequate institutional support, generational skill gaps, and limited technological facilities. This research contributes to the literature on digital training effectiveness in Islamic schools and provides recommendations for developing more contextual, adaptive, and sustainable training models.

Keywords: Effectiveness, Digital Training, Madrasa Teachers

INTRODUCTION

In the midst of the digital era, madrasahs are required to adapt technology in their learning without abandoning Islamic values. The use of digital media in learning can help improve teaching effectiveness, provide a more engaging learning experience, and expand the reach of Islamic education (Irawan, 2019). In Indonesia, improving the quality of human resources has become a top priority in the 2020–2024 National Medium-Term Development Plan (RPJMN). One strategy designed by the government is the integration of digital technology into the national education and training system. The implementation of digital technology is

expected to increase the effectiveness of learning and prepare more competitive human resources in the era of globalization (Salim et al., 2023; Cahya, 2021).

The reality on the ground shows that the digital transformation process has not occurred evenly. Data from the Ministry of Religious Affairs of the Republic of Indonesia (2023) explains that the majority of madrasa teachers in Indonesia are still in the transition stage. Many teachers still rely on conventional learning approaches or blended models, especially in regions facing technological infrastructure constraints (https://bit.ly/4k7dWoX, May 22, 2025). According to Ministry of Religious Affairs data, approximately 8 million students, or 15% of the total 53 million students in Indonesia, attend madrasas. This demonstrates that madrasas have significant potential to improve the quality of human resources in Indonesia (https://bit.ly/43iWjw8, March 16, 2025).

Data from the Ministry of Religious Affairs indicates that the Madrasah Reform 2024 program has been launched to improve the quality of education, encompassing digitalization of the education system. One of its key initiatives is the implementation of a digital-based Madrasah Self-Evaluation (EDM) to analyze and improve the overall quality of education (https://bit.ly/3Z6E8at, March 16, 2025). According to the Ministry of Religious Affairs, the Madrasah KSKK Directorate is developing a digital-based Madrasah Performance Report (RKM) that combines various evaluation platforms, such as EMIS, AKMI, AKG, EDM, and eRKAM. This step aims to provide a comprehensive overview of the quality of education in madrasas and serve as a basis for developing more effective education policies (https://bit.ly/4jFPUkp, March 16, 2025).

However, despite the enormous potential of digital technology, not all educational institutions are equally prepared to adopt it. Madrasas, as part of the national education system, also face challenges in implementing digital technology. The role of madrasas in developing superior human resources based on Islamic values is increasingly being tested by the need to adapt to changing times (Kosim, 2020; Purba et al., 2025; Kurniawati et al., 2025). In the midst of the digital era, madrasas are required to adapt technology in their learning without abandoning Islamic values. The use of digital media in learning can help improve teaching effectiveness, provide a more engaging learning experience, and expand the reach of Islamic education (Irawan, 2019: 161).

Madrasahs are educational institutions instrumental in realizing national education goals. To fulfill their role as educational institutions, madrasahs must be well-managed to optimally realize the formulated educational goals. Madrasahs are places where teaching and learning processes related to Islamic teachings are integrated with the general education curriculum, which refers to Law Number 20 of 2003 concerning National Education (Fawaidi, 2022: 77).

MTsN 3 Pekanbaru City is one madrasah that strives to implement digital education and training (diklat) in the learning process. Digital-based education and training (diklat) programs are a strategic solution for improving teacher skills in this digital era. Various initiatives have been implemented, such as the use of online learning platforms, digitizing school administration, and teacher training on digital literacy. However, the effectiveness of these training programs remains questionable, given that most training programs fail to consider sustainability and adaptability to the specific needs of teachers at various educational levels.

MTsN 3 Pekanbaru City held a Merdeka Curriculum Implementation Training on September 4–5, 2024, to strengthen teachers' understanding of the latest curriculum and encourage the integration of technology into the learning process. This activity was part of the

educational digitalization initiative within the madrasah (https://bit.ly/43xtKdk, May 26, 2025). According to data on teaching staff at MTsN 3 Pekanbaru, several teachers have expertise in Information and Communication Technology (ICT), indicating the availability of resource support for developing digital-based learning at the madrasah (https://bit.ly/3ZtVONy, May 26, 2025).

In addition to teacher training, students at MTsN 3 Pekanbaru also participated in basic data science training, which included an introduction to digital technology and data analysis skills. This reflects the formation of a learning ecosystem leading to digital transformation at the madrasah (Fonda and Febriani, 2024). Based on field observations and initial interviews with educators at MTsN 3 Pekanbaru City, it was identified that the use of digital platforms in training activities was not yet optimal. The majority of teachers faced difficulties adapting to technology, a lack of structured training programs, and a minimal ongoing evaluation process for the effectiveness of the digital training that had been implemented. One teacher stated, "The training we undergo is often too technical and irrelevant to the realities of our classrooms, which are full of dynamic student characters." This statement demonstrates a mismatch between the training design and actual needs in the field.

Meanwhile, when researchers conducted initial direct observations by participating in digital-based training activities on the use of the Madrasah Digital Supervision (MAGIS) Application at MTsN 3 Pekanbaru City on March 7, 2025, they identified several issues that occurred during the training, including: (1) Some senior teachers felt burdened by having to master various new technological applications and devices; (2) Some teachers felt insecure about their abilities, especially senior teachers; (3) Some teachers felt the training provided was too general and not tailored to their specific needs. From the aforementioned issues, it can be concluded that there is a difference in readiness between senior and junior teachers in adapting to rapid technological change. Younger teachers tend to be more adaptable to technological change, while more senior teachers tend to take longer to adapt.

This indicates the need for a more personalized training approach to meet the needs of all teacher groups. Therefore, researchers can conclude that many teachers have not been able to optimally implement the results of the digital training they have received, either in direct application or in integration into daily learning processes.

RESEARCH METHOD

This research was conducted at Madrasah Tsanawiyah Negeri (MTsN) 3 Pekanbaru City, an Islamic-based school located in Pekanbaru, Riau. The subjects in this study consisted of several groups that play a role in the implementation of digital education and training at the madrasah. Research subjects were selected using a purposive sampling technique, meaning only individuals relevant to the research were included (Creswell, 2014:253). The selection criteria included:

1. Madrasah Principal, the highest leader with strategic responsibility for internal policy-making regarding the direction of school development, including teacher training programs and technology integration, and able to provide information from a structural and policy perspective within the institution.
2. Training Facilitator/Instructor/Supervisor, plays a key role in managing digital infrastructure and has a technical understanding of institutional support for

implementing digital training. They can also explain technological readiness and technical obstacles encountered in the digitalization training process.

3. Educators, including teachers who have participated in digital training, teachers who use technology in their daily teaching, and teachers who encounter obstacles in implementing digital education.
4. Students, including those who have experienced digital-based learning at madrasahs and those with limited access to technology.
5. Parents/Guardians, such as parents who support or experience challenges in using educational technology at home.

This study focuses on the effectiveness of digital education and training in improving the quality of human resources for teachers at MTsN 3 Pekanbaru City. The focus of this study covers several key aspects that reflect how digital technology is implemented in the madrasah environment and its impact on educators and learners (Aisy, Prihatin, and Nurdin, 2024:3707).

The demographic characteristics of the subjects selected by the researcher include:

1. Age: 25-55 years (teachers and education personnel), 12-15 years (students), 35-50 years (parents).
2. Gender: Equal proportion of males and females.
3. Educational Background:
   a. Teachers have a minimum educational background of a bachelor's degree in education or Islamic studies.
   b. Education personnel have an educational background in educational administration or management.
   c. Students come from various economic backgrounds and have varying levels of digital skills.

In this qualitative research, the researcher did not determine the number of informants based on the principle of statistical generalization, but rather based on the depth of information needed and the principle of data saturation (Creswell, 2014:253).

1. Small but In-Depth Sample.
   Qualitative research does not aim to generalize findings to a wider population, but rather to understand phenomena in depth. Therefore, a small but representative sample size is preferred.
2. Varied Perspectives
   By selecting informants from various categories (teachers, education personnel, students, parents/guardians, madrasah principals, and IT managers), this study was able to capture a broader perspective on the implementation of digital education.
3. Data Saturation Principle
   The number of informants was determined until no new information emerged during the interviews. If interviews with 15-20 informants yielded a clear pattern of findings, then this number was considered sufficient.
4. Time and Resource Limitations
   This study considered efficiency in the data collection and analysis process. With a relatively small but focused number of informants, data analysis could be conducted more systematically and in-depth.

RESULT AND DISCUSSION

In this study, the government, through the Ministry of Religious Affairs, and madrasah management, were positioned as the principals, developing policies to improve teacher competency through digital training programs. Meanwhile, teachers acted as agents implementing these policies in daily classroom learning practices. Through this approach, the effectiveness of digital training was assessed not only by the administrative success of the program, but also by the extent to which teachers were able to concretely apply the training findings in the learning process.

Several informants stated that the training implementation was supported by competent facilitators and adequate training facilities. However, several technical challenges were still encountered, such as limited internet connection and limited available technological devices. These conditions indicate that, from an implementation perspective, the digital training met one of Campbell's indicators of effectiveness, namely that the program was implemented according to established plans, procedures, and schedules.

From an agency theory perspective, the successful implementation of this program reflects a strong coordinating relationship between the principal and the agent. The madrasah principal, as the principal's representative, provided policy support by providing time, facilities, and motivation for teachers to participate in training activities. On the other hand, teachers, as agents, demonstrated a commitment to participating in the training program despite time constraints and a relatively high workload.

However, this study also identified several obstacles in program implementation, particularly those related to differences in technological readiness levels among teachers. Younger teachers generally adapted more quickly to the use of digital technology, while senior teachers required more time to understand technology-based training materials. This situation suggests, from an agency theory perspective, that there are variations in capacity among agents in carrying out the policy mandate given by the principal.

The implementation of digital training for teachers at MTsN 3 Pekanbaru adhered to Standard Operating Procedures (SOPs), which serve as the primary guideline for organizing each training activity. All stages of implementation, from planning and implementation to evaluation of training outcomes, were systematically structured in accordance with official guidelines established by the Ministry of Religious Affairs of the Republic of Indonesia. The implementation of this SOP aims to ensure that training activities are not merely formalities but actually have a positive impact on improving the digital competencies and skills of madrasah teachers. The training covered the use of learning technologies such as Google Classroom, Canva, AI Masterclass: Smartly Creating Teaching Materials, and Healthy Internet for Children training. The materials presented during the training were quite relevant to the needs of teachers in the digital era, particularly in supporting the implementation of the Independent Curriculum and strengthening technology-based pedagogical competencies.

Table 1. Supporting and Inhibiting Factors in the Implementation of Digital Training

Supporting Dimensions	**Supporting Dimensions**
Inhibiting Dimensions	Inhibiting Dimensions
Full support from the madrasah principal and the Ministry of Religious Affairs	Full support from the madrasah principal and the Ministry of Religious Affairs
Limited internet bandwidth	Limited internet bandwidth

Teacher enthusiasm and active participation	Teacher enthusiasm and active participation

Based on observations and interviews, it can be concluded that in terms of implementation success, the digital training at MTsN 3 Pekanbaru was effective administratively and substantively. However, it still requires strengthening the technical side (infrastructure) and learning strategies that are oriented towards practice and sustainability.

The primary objective of the digital training program is to improve teachers' professional and pedagogical competencies in implementing digital-based learning that is engaging, efficient, and adaptable to current developments. Based on interviews with facilitators and several teachers, most of the training objectives have been achieved. Teachers demonstrated significant improvements in their ability to operate digital platforms, design technology-based teaching media, and manage interactive online learning. Training supervisors/facilitators confirmed that these teacher skill improvements were measured through a combination of pre- and post-tests, project assignments, and observations of classroom learning implementation.

The level of achievement among participants was uneven. Younger teachers who were more familiar with technology tended to grasp and implement training outcomes more quickly, while more experienced teachers still required further guidance. Achievement of training objectives is highly dependent on individual readiness, educational background, and personal motivation for self-development. Therefore, overall, the primary objective of the training program has been achieved, but its effectiveness could be enhanced with more differentiated training strategies oriented to individual teacher needs.

Participant satisfaction with the digital training program was positive. Most teachers reported that the training provided tangible benefits, increased motivation, and fostered self-confidence. Furthermore, participants experienced improvements in their mastery of digital skills and the application of more varied learning strategies in the classroom. Teachers expressed satisfaction, particularly because the training material was relevant to real-world classroom needs and delivered by competent and interactive facilitators. This was evident in the many teachers who voluntarily shared their experiences and innovations from the training with their colleagues (Casula et al., 2021).

Digital training can provide an engaging learning experience because it combines theory and practice. It is also considered to increase teachers' confidence in using digital media in teaching. However, several teachers criticized the training's short duration and tight schedule, preventing them from fully understanding the material. They also suggested that the training be supplemented with post-training mentoring to ensure the material is truly implemented in learning.

Based on the research results, the relationship between inputs (costs, time, and effort) and outputs (results obtained) shows a positive and even beneficial balance. Most of the training programs are free of charge due to support from the Ministry of Religious Affairs. The benefits to teachers are significant in improving their professional and pedagogical competencies. Although teachers must sacrifice time and energy outside of teaching hours, the results are commensurate and even exceed expectations. He stated that "the sacrifice of teachers' time is rewarded with improved classroom learning quality and higher student engagement."

The facilitator/supervisor added that the training results are evident when teachers are able to create multimedia-based digital teaching materials, manage virtual classes, and utilize

online learning platforms. Teachers who participate in digital training are even able to produce dynamic visual materials, learning videos, and interactive exercises that spark student interest. Senior teachers with limited basic digital skills require more time to apply the training findings. Therefore, several speakers suggested that future trainings adopt a blended learning model, with theoretical material delivered online and face-to-face sessions focused on hands-on practice (Humaizi et al., 2024; Fauzan et al., 2023).

In addition to implementing the blended learning model, several speakers also emphasized the importance of post-training mentoring and follow-up. This ensures that the training process doesn't stop at theory, but continues with the implementation of training outcomes in classroom practice. With ongoing mentoring, teachers can receive direct guidance in applying the new skills and knowledge acquired during the training.

Furthermore, post-training follow-up serves as an evaluation mechanism to assess the extent to which the training impacts the quality of the learning process and student outcomes. Through this activity, organizers can identify successes and challenges experienced by participants in implementing the training outcomes. This ensures that the training is more meaningful, practice-oriented, and has a tangible impact on improving teacher professionalism and the quality of learning in educational institutions.

In general, the primary objective of the Digital Teacher Training at MTsN 3 Pekanbaru, namely to improve teacher competency in facing the challenges of the digital era, has been successfully achieved. To learn more about the overall achievement of the digital training objectives at MTsN 3 Pekanbaru, visit: This digital training program has a direct impact on improving the quality of learning and achieving targets at the madrasah, in line with the madrasah's vision and mission, namely to produce superior and competitive students. Teachers have become more innovative, creative, and adaptive to technological developments. The results can be seen in increased student participation in class, a variety of teaching methods, and improved student achievement in academic activities such as digital literacy competitions, robotics competitions, and scientific papers. The digital teacher training has a real and meaningful impact on increasing student activity and self-confidence. This indicates that efforts to improve teacher competency in facing the demands and challenges of the digital era have been substantially realized (Harianto et al., 2023; Ohorella et al., 2024). The facilitator/supervisor also added that this training directly contributes to achieving the madrasah's vision, namely to produce superior, competitive, and virtuous students. Teachers who previously used conventional methods are now starting to incorporate a technology-based student-centered learning approach. Based on qualitative data analysis of in-depth interviews, observations, and a review of training documents, this study found that the digital teacher training program at MTsN 3 Pekanbaru City has been implemented with a high level of substantive effectiveness, but has not been optimal technically and sustainably.

CONCLUSION

The successful implementation of the digital training program at MTsN 3 Pekanbaru can be said to have been successful, as reflected in the quality of the thorough planning, the well-managed implementation process, and the high level of participant participation. However, some senior teachers still experienced challenges adapting to digital technology due to limited experience using digital devices. This situation indicates that the training program has been effective administratively and substantively, but still requires support in the form of mentoring

and follow-up support after the training to make it more inclusive and able to accommodate differences in teacher competency levels. Success in Achieving Goals. The main goal of the training, namely improving digital-based professional and pedagogical competencies, was generally achieved by the majority of participants. Teachers demonstrated the ability to integrate technology into learning activities, develop interactive digital media, and utilize online platforms to support classroom management. However, this level of success was not evenly distributed. Teachers with educational backgrounds in ICT experienced faster competency improvement than non-ICT teachers. Therefore, the effectiveness of training targets is greatly influenced by individual readiness, prior technology experience, and motivation to participate in the learning process.

Level of Satisfaction with the Program. Most participants expressed positive perceptions of the implementation of digital training, primarily because the training material was deemed relevant to the demands of modern developments and the needs of madrasas. However, several teachers expressed challenges related to the training duration, which they felt was too tight, and the lack of post-training follow-up. Participants hoped for further assistance in the form of mentoring or coaching to deepen their understanding and implementation of the training outcomes. Overall, the satisfaction dimension demonstrated strong effectiveness, reflected in participants' experiences of direct benefits in improving their professional competencies. Comparison of Input and Output. Based on the comparison of input and output, the implementation of digital training demonstrated an adequate level of efficiency. The training program was conducted online, thus minimizing significant funding, while its impact on improving teacher skills was clearly reflected in learning practices. However, the results obtained were not entirely equitable, primarily due to limited infrastructure and differences in teacher skill levels. This situation indicates the need for ongoing development and efforts to equalize digital facilities within the madrasah environment

The digital training was deemed successful in realizing the program's primary objectives, namely improving teacher competency and strengthening the vision of madrasas as educational institutions responsive to technological advancements. The program's implementation significantly contributed to improving the quality of learning, fostering teacher creativity, and increasing student participation in the learning process. Therefore, it can be concluded that the program's objectives have been achieved, although the sustainability of the results requires systematic evaluation support and ongoing training development.

SUGGESTION

Based on the findings, MTsN 3 Pekanbaru City and the Ministry of Religious Affairs are encouraged to develop digital training programs that are differentiated according to teachers' initial levels of digital competence, particularly by providing more intensive assistance for senior teachers and participants with limited technological experience. Future training should combine online theoretical sessions with face-to-face practical activities, extend the duration of hands-on exercises, and include systematic post-training mentoring to ensure that acquired skills are consistently implemented in classroom instruction. Institutional support should also be strengthened through improvements in internet connectivity, the availability of digital devices, and access to relevant learning platforms. Furthermore, regular evaluations should be conducted to assess changes in teachers' competencies, the quality of digital learning practices, and their impact on student participation and learning outcomes so that the program can be continuously improved and sustainably implemented.

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