Volume 8 Number 1 (2026)
January-April 2026
Page: 152-167

E-ISSN: 2656-4491
P-ISSN: 2656-4548
DOI: 10.37680/scaffolding.v8i1.8464

SCAFFOLDING
Jurnal Pendidikan Islam dan Multikulturalisme

CHANGE MANAGEMENT AND ITS ROLE IN ENHANCING TEACHER COMPETENCY THROUGH TECHNOLOGY INTEGRATION

Abu Hasan Agus R[1], Bukhori Muslim[2]
[12]Universitas Nurul Jadid Probolinggo; Indonesia
Correspondence E-mail; muslimbukhori280890@gmail.com

Submitted: 18/11/2025 Revised: 05/12/2025 Accepted: 20/12/2025 Published: 15/01/2026

Abstract

This study aims to examine the integration of technology in education from the perspective of change management theory, with a particular focus on developing educator competencies at Islamic Senior High School (Madrasah Aliyah) Miftahul Ulum, located in Sumberanyar, Paiton, Probolinggo, East Java. Using a qualitative case study design, the study draws on desk reviews of school policy documents and training records, classroom observations of technology-supported learning activities, and semi-structured interviews with teachers, school leaders, and IT coordinators. The collected data were analyzed using thematic analysis, following stages of data reduction, data display, and conclusion drawing to identify patterns aligned with Lewin's change management framework. The findings reveal that adequate preparation (Unfreeze) through structured training and awareness-building significantly reduces resistance to technology adoption. During the implementation phase (Change), teachers demonstrate improved competencies in digital assessment, learning management systems, and collaborative tools. Sustaining change (Refreeze) requires continuous professional development, consistent leadership support, and peer collaboration to ensure long-term integration. The study contributes both theoretically and practically by offering a contextualized application of Lewin's change management model within an Islamic secondary school setting and by providing evidence-based strategies for strengthening educator digital competence. Practically, the research guides schools in designing structured training programs and cultivating collaborative cultures to enhance effective and sustainable technology integration. Theoretically, it enriches the discourse on change management in educational technology by illustrating how classical change models operate in faith-based school environments.

Keywords Change Management, Educator Competencies, Technology Integration.

© 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY NC) license (https://creativecommons.org/licenses/by-nc/4.0/).

INTRODUCTION

The integration of technology into teaching in contemporary education has become a significant trend, aimed at improving the overall educational experience. However, the implementation of technology often reveals a glaring gap between theoretical frameworks and real-world practice. While many educational theories emphasize the potential benefits of technology in learning environments, such as increased engagement and personalized learning (Guàrdia et al., 2021; Mastur, 2023), the actual adoption of these technologies by educators often falls short of expectations (Aini et al., 2025; Salim et al., 2024; Sanjani, 2024). This gap is not only a theoretical concern but also a practical one, as many educators face challenges in effectively integrating technology into their daily teaching practices. The key issue lies in understanding why, despite the availability of resources and the proven advantages of technological tools, this gap persists.

Change management in educational institutions is crucial for the successful implementation of new practices and technologies (Iryani et al., 2021; Kawakip, 2020). Various models of change management have been discussed in academic literature, with a particular focus on schools' ability to adapt to technological advancements (Buanaputra et al., 2022; Iryani et al., 2021; Salim et al., 2024). Kurt Lewin's Change Management Theory, for example, provides a clear framework for understanding the stages of change: Unfreeze, Change, and Refreeze. In schools, these stages can be particularly challenging due to ingrained practices and resistance to change. Educational leaders must facilitate the unfreezing of old habits, ensuring that teachers are open to new technologies. However, schools often face difficulties during the Change phase, when the actual implementation of new technologies occurs. The challenge lies in tailoring these strategies to the unique needs of teachers and students within different educational settings.

Initial observations at MA Miftahul Ulum indicate that the school has begun integrating digital tools, including a technology-based management system. However, change management readiness remains uneven. Although the school has provided occasional training sessions, not all teachers consistently participate, and some still rely on traditional teaching methods. This raises academic questions: to what extent does existing change management readiness influence the Development of teachers' digital competencies, and why does resistance to technological change persist despite administrative encouragement and the availability of resources? Such questions underscore the need to evaluate the school's Unfreeze phase, particularly its effectiveness in building awareness, motivation, and foundational skills among teachers.

Educators at Madrasah Aliyah Miftahul Ulum face significant challenges in adopting technology, despite administrative encouragement and sufficient resources. Many teachers are not yet fully equipped to utilize digital tools in their learning, despite being provided with an online learning management system, an online assessment platform, and digital collaboration applications. The absence of some teachers from training sessions and their continued reliance on traditional teaching methods create gaps in the Development of their digital competencies. This research is crucial for evaluating the school's readiness for change management, particularly during the Unfreeze phase, and identifying how awareness, motivation, and basic skills can be more effectively built among teachers. This is crucial to ensuring that technology integration improves learning quality and strengthens the competitiveness of education at the madrasah level.

Numerous studies have addressed the role of technology in education, each contributing to our understanding of its impact on teaching practices. Teacher-student interactions through online learning platforms can be more effective, as online tools increase engagement but also pose challenges related to teacher workload (Kiss et al., 2022; Limone & Toto, 2022). Dharmasraya (2024) examined the barriers teachers face in adopting technology, highlighting issues such as a lack of training and inadequate technical support. They examined the long-term impact of technology integration on teaching competency and found that ongoing professional development is crucial for successful adaptation (Elbanna & Muthoifin, 2024; Nungu et al., 2023). Makruf et al. (2022) focused on the impact of specific digital tools, such as Google Classroom, on teacher efficiency. Institutional factors influencing technology adoption emphasized the role of school leadership (Ataman et al., 2024; Mahsusi et al., 2024; Zuhdi et al., 2024). Irman et al. (2023) discussed cultural resistance to technology in schools, noting that entrenched teaching traditions often hinder technological advancement. Zainal et al. (2022) explored how peer collaboration in schools can enhance the use of educational technology. Despite these valuable contributions, a gap remains in understanding how change management theory can be applied to technology integration in schools, particularly in relation to developing educator competencies.

The existing literature provides valuable insights into the use of technology in education, but significant gaps remain. Most studies have focused on the benefits and barriers of technology integration but have not sufficiently addressed how change management theories, such as Lewin's model, can facilitate the development of educator competencies during technological transitions. There is also a lack of comprehensive research that combines these theoretical perspectives with real-

world case studies, particularly in specific educational contexts. Furthermore, the role of continuous professional development and peer collaboration in maintaining technology use over time has not been fully explored. This study seeks to fill these gaps by examining the intersection of change management, technology adoption, and competency development in educators, offering new insights into how schools can effectively manage technological changes.

The integration of technology in education has been shown to impact the development of educators' competencies significantly. Research indicates that educators who effectively incorporate technology into their teaching practices are better equipped to foster student engagement, enhance learning outcomes, and streamline administrative tasks (Caffrey et al., 2022; Celik et al., 2022; Otaya et al., 2023). For instance, teachers who utilize learning management systems (LMS) and online collaboration tools can provide personalized learning experiences for students (Holzinger et al., 2022; Rahman et al., 2021). These tools also enable more efficient assessment practices, as they can track and analyze student performance data in real-time. Furthermore, technology integration provides teachers with continuous professional development opportunities through online training platforms and virtual collaboration.

This research aims to answer the following question: How can change management strategies, particularly those based on Kurt Lewin's theory, be applied to enhance the competencies of educators in integrating technology at MA Miftahul Ulum? The focus of this study will be on identifying the challenges faced by educators during the adoption of educational technology, understanding the strategies that can facilitate their adaptation to these tools, and exploring the long-term impacts of these changes on their teaching practices. The originality of this research lies in its application of Kurt Lewin's change management theory within the context of educational technology integration, particularly in a real-world setting like MA Miftahul Ulum. By focusing on the development of educator competencies through a structured change management approach, this study contributes to a deeper understanding of how schools can support teachers in becoming proficient with new technologies.

METHOD

The unit of analysis in this study is MA Miftahul Ulum, a secondary school located in the city of Probolinggo. This research focuses on understanding the integration of educational technology into teaching practices, specifically addressing the competencies of educators in

adapting to new technological tools. The case being studied is the process of technology adoption and its impact on the professional development of teachers within this institution. The study will adopt a qualitative research design, utilizing a case study approach (Maxwell, 2020). This design enables an in-depth examination of how educational technology is implemented and how change management theories, particularly those of Kurt Lewin, are applied in a real-world educational setting.

The sources of information for this study will include respondents, informants, and texts (see Table 1) (Hall & Liebenberg, 2024). The primary respondents will be the teachers at MA Miftahul Ulum, as they are the key participants in the technology integration process. Informants will include school leaders, such as the principal and IT coordinators, who are involved in the decision-making process regarding technology adoption. Texts will include official documents, training materials, and school reports related to the implementation of technology and educational practices. Data collection will be conducted through desk reviews, observations, and interviews. The desk review will involve analyzing existing documents related to the school's technology policies, training programs, and previous evaluations. Data collection techniques used in this study are interviews, observations, and documentation. The observation phase was conducted from February 3 to May 20, 2025, in classrooms and the school environment at MA Miftahul Ulum Kota Probolinggo. Interviews will be semi-structured, with both open-ended questions and interview guidelines to capture detailed insights from respondents about their experiences and perspectives.

Table 1. Data Collection Matrix

No.	Data Collection Technique	Source	Purpose	Methodology
1.	Desk Review	School Documents	To gather existing information on the school's technology policies and prior reports	Review of reports, training manuals, and official records
2.	Observation	Teachers and Students	To observe the real-time use of technology in classrooms	Field notes on classroom practices and interactions
3.	Interviews	Teachers, Principal, IT Coordinators	To understand the challenges and successes in technology adoption and its impact on teaching practices	Semi-structured interviews with open-ended questions

The data collected in this study will be analyzed using the three-step process outlined by Miles and Huberman: data reduction, data display, and verification (Nasri, 2023). Data reduction will involve organizing and filtering the collected data, with a focus on key themes related to technology adoption, teacher competencies, and change management processes. The data display

will involve creating matrices, charts, and thematic frameworks to visualize patterns and trends in the data. Data verification will be conducted by triangulating the findings from different sources (interviews, observations, and documents) to ensure consistency and accuracy. The method of analysis will include content analysis, discourse analysis, and interpretive analysis. Content analysis will be employed to categorize and interpret textual data from interviews and documents. In contrast, discourse analysis will focus on understanding how respondents use language to express their views on the integration of technology. Interpretive analysis will allow for deeper insights into the meanings behind educators' experiences with technology adoption and its impact on their professional development.

FINDINGS AND DISCUSSION

Findings

The process of integrating technology into education requires significant changes in teachers' mindsets and behavior, especially at the Madrasah Aliyah (Islamic Senior High School) level, such as at MA Miftahul Ulum in Probolinggo. Although the school has implemented various digital tools, challenges in readiness for change management remain a significant obstacle. Successful technology integration depends not only on the availability of tools but also on teachers' readiness to accept and utilize them effectively.

This evaluation is crucial to ensure that the changes implemented build teachers' competency in addressing the challenges of digital education. Through a structured process that includes ongoing training and peer support, it is hoped that educators will achieve greater technological mastery. Table 2 illustrates the critical role of change management in technology integration and teacher competency Development at MA Miftahul Ulum.

Table 2. The Role of Change Management in Technology Integration for Teacher Competency Development at MA Miftahul Ulum, Probolinggo City

No.	Policy	Preparation	Implementation
1.	Stabilizing long-term technology use	Preparing teachers for technology adoption	Applying technology in teaching practice
2.	Ongoing training, evaluations, and teacher learning communities	Workshops, seminars, hands-on training	Use of e-learning, web apps, and digital assessment tools
3.	Sustained engagement through peer support	Hesitation reduced after direct training	Increased confidence and active use of digital tools
	Consistent technology integration in daily teaching	Better understanding and acceptance of technology	Improved teaching competence and student engagement

Table 2 highlights the essential differences and interrelationships between the three phases—Policy, Preparation, and Implementation—in the technology integration process at MA Miftahul Ulum. From a descriptive perspective, the Policy phase focuses on establishing long-term stability through ongoing training, periodic evaluation, and peer support structures. Meanwhile, the Preparation phase emphasizes equipping teachers with the basic understanding and skills needed for change, primarily through workshops, seminars, and hands-on practice sessions that alleviate hesitation. The Implementation phase captures the actual use of digital tools such as online learning platforms and web-based applications, where teachers begin to directly apply technology in classroom interactions and assessment tasks.

Meaningful technology integration requires more than simply access to digital tools; it relies heavily on the school's capacity to effectively manage human and organizational change. The findings indicate that teacher confidence and competence grow significantly with thorough preparation and sustained policy support. This suggests that resistance to technology is not simply a technical issue, but rather a psychological and cultural one, influenced by the quality of training and the presence of a supportive community. Furthermore, the consistent improvement observed during the Implementation phase indicates that once teachers experience the practical benefits of technology, they are more likely to maintain its use. The interaction between Policy, Preparation, and Implementation reinforces the conclusion that effective change management is a key driver in transforming technology from a mere external requirement to a normalized, integral component of teachers' professional practice.

Stabilizing Change Policy

The third finding addresses the Refreeze phase, which is focused on stabilizing the changes and ensuring that technology becomes a permanent part of the educational process. This study found that continuous support and periodic evaluations were essential for maintaining the use of technology in teaching at MA Miftahul Ulum. Policies that encourage sustained technology use, along with the creation of learning communities for teachers, played a critical role in making technology adoption lasting.

The research further discovered that MA Miftahul Ulum, like many other schools, with policies supporting continuous professional development and regular evaluations of technological integration, reported higher levels of consistent usage of digital tools. Teachers in these schools were more likely to utilize technology as part of their daily teaching routines, and the creation of peer

networks and learning communities helped sustain this change by providing ongoing support and problem-solving opportunities.

Table 3. Technology Support and Use

No.	Aspect	Indicator	Finding
1.	Sustained Support	Ongoing Training	Continuous training and evaluation helped teachers maintain tech usage.
2.	Peer Support	Teacher Learning Communities	Creation of teacher forums or groups to share tech experiences helped maintain engagement.
3.	Technology Integration	Regular Usage	Schools with regular evaluations had better integration of technology in daily practices.

Source: Data from Researcher Analysis, 2025

Table 3 shows important aspects that support the sustainable use of technology in teacher professional development. Regarding Sustained Support, research findings show that ongoing training and evaluation help teachers maintain consistent use of technology in the learning process. Furthermore, regarding Peer Support, support from teacher learning communities or discussion forums established to share experiences using technology has been shown to maintain teacher engagement and motivation in utilizing digital platforms. Finally, regarding Technology Integration, research results indicate that schools that conduct regular evaluations regarding technology use have a better level of integration into daily learning practices.

The research highlights that the Refreeze phase is not about completing the change but ensuring that it sticks. MA Miftahul Ulum provided ongoing training programs and evaluations, which allowed for more consistent use of technology in classrooms, indicating that sustained support is essential for making technological changes permanent. These findings suggest that a crucial part of any technology implementation strategy in education is long-term support. Policies that promote continuous learning and the establishment of peer support networks play an essential role in ensuring that technological adoption is not a passing phase but an integral part of the school culture.

Preparation and Orientation to Educational Technology

The first finding in this study, conducted at MA Miftahul Ulum, highlights the importance of the Unfreeze phase in the implementation of technology-based change in education, specifically in preparing educators for adopting new technologies. The research found that the initial stage of introducing technological change involves orienting educators to the advantages of technology for enhancing teaching competencies. It emphasizes that creating awareness and providing thorough

training are essential for ensuring educators are receptive to new technological tools. The Unfreeze phase, which is about preparing the organization for change, focuses on addressing teachers' resistance by giving them the proper tools and knowledge about technology.

Based on the observation results at MA Miftahul Ulum, a positive portion of educators expressed difficulty in adopting new technology due to a lack of understanding about its long-term benefits. This lack of understanding resulted in hesitation to embrace changes in teaching methodologies. The teachers acknowledged that, although the technology had potential, their unfamiliarity with its application led to a sense of uncertainty and reluctance to fully integrate it into their classrooms. The need for a more extensive and hands-on approach to technology training was apparent.

Table 4. Technology Preparation Aspects

No	Aspect	Indicator	Finding
1.	Educator Preparedness	Understanding Technology	Many teachers at MA Miftahul Ulum are hesitant about technology adoption due to a lack of understanding.
2.	Training Methods	Training Types	Workshops, seminars, and hands-on sessions were most effective in improving comprehension and acceptance of technology.
3.	Technology Engagement	Technology Adoption	Teachers who participated in direct training sessions had higher levels of engagement with new tools.

Source: Data from Researcher Analysis, 2025

The research findings underscore that effective training methods, such as seminars, hands-on workshops, and group discussions, significantly contributed to the preparedness of educators at MA Miftahul Ulum. These approaches allowed educators to understand the potential impact of technology on their teaching practices, enhancing their willingness to engage with these tools. Without this stage of preparation, technology adoption risks facing resistance from educators who are unacquainted with its long-term benefits. The key to successful technology adoption in education is proper preparation. The Unfreeze phase, focused on raising awareness and providing essential training, helps educators understand the role and potential of technology in enhancing their teaching capabilities. These initial steps are critical for ensuring that technology adoption is met with enthusiasm rather than resistance.

Implementation of Technology in Competency Development

This study found that although many educators at MA Miftahul Ulum initially felt hesitant and lacked confidence in using technology after integrating e-learning and web-based applications

into their professional development, they experienced a significant increase in their teaching competencies, digital classroom management skills, and data-driven assessment skills. This finding was surprising because it contradicted the initial assumption that technological barriers would reduce learning effectiveness; instead, digital adoption proved to be a major catalyst for improving the quality of the teaching and learning process.

The technology is implemented into educators' professional development processes. This study found that the introduction of technology, particularly e-learning platforms, web-based learning applications, and digital assessment tools, significantly improved educators' ability to manage learning and assess student progress. Educators at MA Miftahul Ulum showed notable improvements in their distance learning skills, data-driven assessments, and collaborative digital tool usage.

Based on interviews with educators at MA Miftahul Ulum, the study found that those who actively engaged with e-learning platforms such as Google Classroom and video conferencing tools like Zoom reported significant improvement in student interaction and learning outcomes. Teachers also felt more confident in using digital tools for planning, grading, and delivering lessons, which contributed to a more efficient teaching process. This shift in educational practices enabled more flexible, personalized learning experiences for students. In restating these findings, the research indicates that the active use of digital platforms contributed to increased competency in areas such as classroom management, assessment, and student engagement. Teachers who were initially hesitant about using these technologies found that, once integrated into their teaching practices, the platforms became indispensable tools for modern education.

These findings also highlight that educators' willingness to embrace technology is crucial in shaping their teaching practices. By incorporating digital tools into their daily routine, teachers not only improve their own competencies but also enhance the learning experiences for their students. This suggests that technological integration in education is not just about tools, but about fostering an ongoing process of growth and adaptation among educators. The successful implementation of technology in educational settings requires educators to move beyond initial resistance and embrace digital tools as part of their professional growth. The implementation of such tools leads to improvements not only in teaching practices but also in student outcomes, confirming the value of technology integration in modern education.

Discussion

One of the most significant findings of this research highlights the role of preparation and awareness in minimizing resistance to technological change in education. This result implies that without adequate preparation, the function of technology as a tool for pedagogical innovation can become dysfunctional, leading to teacher reluctance and student disengagement. This finding aligns with Laila's (2024) study, which demonstrated that when educators are not adequately trained before new digital tools are introduced, the result is frustration and reduced instructional effectiveness. Clear communication of benefits played a decisive role in ensuring the acceptance of new practices (Uralovich et al., 2023; Zain & Mustofa, 2024). These studies, in line with the present findings, indicate that preparation is not merely a procedural step but a functional mechanism that determines whether technology serves its intended purpose.

Teachers who receive training not only acquire technical skills but also develop a sense of competence and agency, which directly decreases anxiety about change. The professional teacher development programs targeted at specific teacher needs were effective in minimizing early-stage resistance (Khotimah et al., 2024; Nungu et al., 2023). This is consistent with Yunita and Mulyadi's (2024) claim that confidence is central to adopting technology; once educators feel capable, they begin to perceive digital tools as assets rather than burdens. The causal relationship between structured preparation and reduced resistance demonstrates that resistance is not simply a matter of unwillingness, but of insufficient scaffolding during change. The present study confirms this underlying pattern: teachers at MA Miftahul Ulum who engaged in hands-on training quickly transitioned from hesitation to active use of technology. This indicates that professional learning structures are crucial mediators in the adoption of technology, establishing a direct causal relationship between preparation and functional integration.

When teachers actively utilize digital platforms, learning becomes more interactive, assessments become data-driven, and student engagement significantly increases. Conversely, underutilization or superficial use of these tools leads to dysfunction, where technology remains a symbolic enhancement rather than a practical one. Teachers who actively engage with online tools develop stronger classroom management and assessment practices (Bahtiar & Kerta Wijaya, 2020; Mundiri et al., 2021). Gustilo et al. (2024) also asserted that digital collaboration tools enhance teacher-student interactions, thereby improving communication and feedback loops. The current study extends this insight by demonstrating that educators at MA Miftahul Ulum experienced

significant improvements in their ability to personalize learning experiences, which in turn contributed to better student learning outcomes.

Teachers who regularly engage with e-learning tools gradually internalize digital competencies, which enhances their teaching proficiency and ability to manage online assessments. The use of platforms like Google Classroom fostered both familiarity and skill, thereby increasing technological fluency (Maman et al., 2021; Suryaningsih & Aisyah, 2024). Asror et al. (2023) also noted that when teachers develop confidence through regular digital practice, the positive effect cascades into improved student performance. The causal mechanism is thus one of reinforcement: regular engagement creates skill, which in turn generates confidence, and confidence produces improved learning outcomes. This structural progression was also evident in the current study, where teachers who initially showed hesitation became proficient and began to report higher levels of student interaction and achievement.

The implication here is that without systematic support, the functionality of technology adoption diminishes over time, resulting in a regression in teaching practices. In contrast, when sustained support is present, the function of digital tools is preserved and continuously enhanced. Purwowidodo and Zaini (2024) argued that sustaining technology integration requires more than initial adoption; it depends on institutional structures that provide feedback and continuous development. The teacher learning communities foster shared problem-solving and innovation, ensuring that the use of technology does not decline after its initial introduction (Asad et al., 2020). In the present study, forums and collaborative groups established among teachers at MA Miftahul Ulum played a critical role in maintaining engagement with digital tools. This suggests that the function of technology in education is not static but dynamic, and it requires an ecosystem of ongoing support to prevent dysfunction.

Teachers operate within social and institutional frameworks, and when these frameworks encourage collaboration, motivation, and accountability increase. Malik et al. (2024) argued that ongoing professional development and peer collaboration serve as structural anchors that stabilize the integration of technology. Institutional backing is necessary to prevent a decline in usage, as teachers without external reinforcement often revert to traditional practices (Sumanti et al., 2024). The causal link here is clear: structured support sustains momentum by creating opportunities for teachers to refine skills, troubleshoot issues, and share best practices. In this study, ongoing evaluations and peer forums functioned as reinforcing mechanisms that kept technology use active

and evolving.

The implications of these findings are both practical and theoretical, providing valuable insights into how educational technology can be effectively integrated into schools. Practically, the study demonstrates that initial training, active engagement, and continuous support are indispensable pillars for effective technology adoption. Schools must design professional development programs that not only introduce tools but also provide long-term scaffolding to ensure their continued use and adoption. Theoretically, the findings contribute to the change management literature by demonstrating how teacher confidence, institutional frameworks, and collaborative cultures interact to influence the success of technological innovation in education. The case of MA Miftahul Ulum exemplifies how an institution can serve as a model of sustainable technology integration, combining preparation, engagement, and support into a cohesive strategy. These insights suggest that future research further explore how systemic structures interact with individual teacher practices to shape long-term educational transformation.

CONCLUSION

The research highlights that without proper preparation (Unfreeze), effective implementation (Change), and continuous support (Refreeze), the integration of technology in teaching practices is likely to face resistance and limited success. One important lesson learned from this study is the need for ongoing training and peer collaboration to ensure sustainable adoption of technological tools among educators. The strength of this study lies in its contribution to the academic field, as it integrates change management theories with the competency development of educators in the integration of technology. This approach offers a new perspective on how schools can effectively manage technological changes, a topic that has not been sufficiently explored in previous research. By employing a case study approach in a real-world setting, the study offers practical insights into how educational institutions can enhance the adoption process. However, the study has limitations, including its focus on a single school, which may limit the generalizability of the findings. Additionally, the study does not consider factors such as gender, age, or diverse teaching contexts. Future research should incorporate a broader range of cases, include varied demographic factors, and utilize survey methods to provide a more comprehensive understanding of the topic.

REFERENCES

Aini, T. N., Nugraha, L., Surbakti, A. H., & Mundiri, A. (2025). Value-Based Branding in Islamic Boarding Schools: Efforts to Maintain Identity in Digitalization Dynamics. Al-Tanzim: Jurnal Manajemen Pendidikan Islam, 9(2), 442–457.

Asad, M. M., Hussain, N., Wadho, M., Khand, Z. H., & Churi, P. P. (2020). Integration of E-Learning Technologies for Interactive Teaching and Learning Process: An Empirical Study on Higher Education Institutes of Pakistan. Journal of Applied Research in Higher Education, 13(3), 649–663. https://doi.org/10.1108/Jarhe-04-2020-0103

Asror, M., Mahfudloh, R. I., Kusaeri, K., & Rusydiyah, E. F. (2023). Educational Innovation of Islamic Boarding Schools in Indonesia and Malaysia in Facing the 21st Century Challenges. Jurnal Tarbiyatuna, 14(1), 27–50. https://doi.org/10.31603/tarbiyatuna.v14i1.8802

Ataman, A., Baharun, H., & Safitri, S. D. (2024). Exploring Complementary Leadership Styles in Madrasahs by Aiming at Their Impact on Integrity and Character Development. Business and Applied Management Journal, 1(2), 118–133. https://doi.org/10.61987/bamj.v1i2.487

Bahtiar, H., & Kerta Wijaya, L. (2020). Mobile-Based Geographic Information System for mapping and data collection towards 4.0 Industry. In Journal of Physics: Conference Series (Vol. 1539, Issue 1). https://doi.org/10.1088/1742-6596/1539/1/012012

Buanaputra, V. G., Astuti, D., & Sugiri, S. (2022). Accountability and legitimacy dynamics in an Islamic boarding school. Journal of Accounting and Organizational Change, 18(4), 553–570. https://doi.org/10.1108/JAOC-02-2021-0016

Caffrey, C., Lee, H., Withorn, T., Clarke, M., Castañeda, A., Macomber, K., Jackson, K. M., Eslami, J., Haas, A., Philo, T., Galoozis, E., Vermeer, W., Andora, A., & Kohn, K. P. (2022). Library Instruction and Information Literacy 2021. Reference Services Review, 50(3/4), 271–355. https://doi.org/10.1108/RSR-09-2022-0035

Celik, I., Dindar, M., Muukkonen, H., & Järvelä, S. (2022). The Promises and Challenges of Artificial Intelligence for Teachers: A Systematic Review of Research. Tech Trends, 66(4), 616–630. https://doi.org/10.1007/s11528-022-00715-y

Dharmasraya, S. (2024). Multicultural Education: Fostering Diversity and Inclusion in the Classroom Environment. Education Studies and Teaching Journal (Edutech), 1(1), 1–18. https://journal.ppipbr.com/index.php/edutech/index

Elbanna, M., & Muthoifin. (2024). Islamic Education Models: A Bibliometric Analysis of Challenges and Prospects. Solo Universal Journal of Islamic Education and Multiculturalism, 3(01), 11–26. https://doi.org/10.61455/sujiem.v3i01.231

Guàrdia, L., Clougher, D., Anderson, T., & Maina, M. (2021). IDEAS for Transforming Higher Education: An Overview of Ongoing Trends and Challenges. International Review of Research in Open and Distributed Learning, 22(2), 167–184. https://doi.org/10.19173/irrodl.v22i2.5206

Gustilo, L., Ong, E., & Lapinid, M. R. (2024). Algorithmically-Driven Writing and Academic Integrity: Exploring Educators' Practices, Perceptions, and Policies in the AI era. International Journal for Educational Integrity, 20(1), 3. https://doi.org/10.1007/s40979-024-00153-8

Hall, S., & Liebenberg, L. (2024). Qualitative Description as an Introductory Method to Qualitative Research for Master 's-Level Students and Research Trainees. In International Journal of Qualitative Methods (Vol. 23, p. 16094069241242264). Sage Publications Sage CA: Los Angeles, CA. https://doi.org/10.1177/16094069241242264

Holzinger, A., Saranti, A., Angerschmid, A., Retzlaff, C. O., Gronauer, A., Pejakovic, V., Medel-Jimenez, F., Krexner, T., Gollob, C., & Stampfer, K. (2022). Digital Transformation in Smart Farm and Forest Operations Needs Human-Centered AI: Challenges and Future Directions. Sensors,

22(8). https://doi.org/10.3390/s22083043

Irman, I., Wasliman, I., Warta, W., & Naufal, S. M. R. (2023). Management of The Implementation of The National Curriculum Based on Islamic Boarding School Education to Improve the Quality of Madrasah Aliyah (Descriptive Analytical Study at MA Al-Masthuriyah, MA Sunanul Huda, MA Al-Amin, Sukabumi Regency). Jhss (Journal of Humanities and Social Studies), 7(1), 022–029. https://doi.org/10.33751/jhss.v7i1.7234

Iryani, E., Masruri, M., & Maisah. (2021). Strategic Management of Change in Islamic Education Institutions (A Case Study at Islamic Education Institution of Syafana Islamic School Serpong). Dinasti International Journal of Education Management and Social Science, 2(5), 728–741. https://doi.org/10.31933/dijemss.v2i5.829

Kawakip, A. N. (2020). Globalization and Islamic Educational Challenges: Views from East Javanese Pesantren. Ulumuna, 24(1), 105–131. https://doi.org/10.20414/ujis.v24i1.385

Khotimah, H., Manshur, U., Zaini, A. W., & Suhermanto, S. (2024). Increasing The Competence of Islamic Religious Education Teachers from A Madrasah-Based Management Perspective. Manager: Indonesian Journal of Educational Management, 6(1), 13–26. https://doi.org/10.52627/managere.v6i1.388

Kiss, B., Sekulova, F., Hörschelmann, K., Salk, C. F., Takahashi, W., & Wamsler, C. (2022). Citizen Participation in the Governance of Nature-Based Solutions. Environmental Policy and Governance, 32(3), 247–272. https://doi.org/10.1002/eet.1987

Laila, N. N. (2024). The Influence of the School Environment on the Formation of Primary School Students' Character. International Journal of Students Education, 5(2), 184–189. https://doi.org/10.62966/ijose.vi.761

Limone, P., & Toto, G. A. (2022). Factors That Predispose Undergraduates to Mental Issues: A Cumulative Literature Review for Future Research Perspectives. Frontiers in Public Health, 10, 831349. https://doi.org/10.3389/fpubh.2022.831349

Mahsusi, H. S. F., M. K., H., N. D., & Wajdi, M. B. N. (2024). Achieving Excellence: The Role of Digital Transformation in Madrasah Management and Islamic Culture. Cogent Arts and Humanities, 11(1). https://doi.org/10.1080/23311983.2024.2304407

Makruf, I., Rifa'i, A. A., & Triana, Y. (2022). Moodle-based Online Learning Management in Higher Education. International Journal of Instruction, 15(1), 135–152. https://doi.org/10.29333/iji.2022.1518a

Malik, A., Khatoon, M., Siddique, S., & Rauf, A. (2024). Disruptive Technologies in Education: Transforming Traditional Curriculum Models for the 21st Century. Multidisciplinary Journal of Emerging Needs of Curriculum, 1(2), 54–60.

Maman, W., R., A., D. T., H., Z., Mushorfan, & Wiranata, M. A. (2021). Google Classroom as a Distance Learning Tool during a Pandemic. Journal of Physics: Conference Series, 1899(1), 12176. https://doi.org/10.1088/1742-6596/1899/1/012176

Mastur, M. (2023). Strategy: The Principal's Leadership Style in Implementing "Merdeka Belajar" in Schools. Kelola: Jurnal Manajemen Pendidikan, 10(1), 10–21. https://doi.org/10.24246/j.jk.2023.v10.i1.p10-21

Maxwell, J. A. (2020). Why Qualitative Methods Are Necessary for Generalization. Qualitative Psychology, 8(1), 111. https://doi.org/10.1037/qup0000173

Mundiri, A., Muali, C., Dewi, M. S., Sulistiani, I. R., Abdullah, D., Waliulu, R. F., Naz'aina, & Erliana, C. I. (2021). The Role of E-Marketing in Islamic Education Institutions: Educational Reform Based on ICT to Increase Competitiveness. Turkish Online Journal of Qualitative Inquiry (TOJQI), 12(4), 1965–1970.

Nasri, U. (2023). Exploring Qualitative Research: A Comprehensive Guide to Case Study

Methodology. Al-Hikmah: Jurnal Studi Islam, 4(3), 72–85. https://ejournal.kopertais4.or.id/sasambo/index.php/alhikmah/article/view/5627

Nungu, L., Mukama, E., & Nsabayezu, E. (2023). Online Collaborative Learning and Cognitive Presence in Mathematics and Science Education. Case study of the University of Rwanda, College of Education. Education and Information Technologies, 28(9), 10865–10884. https://doi.org/10.1007/s10639-023-11607-w

Otaya, L. G., Anwar, H., Yahiji, K., & Rahmawati. (2023). The Assessment of Fit Data Model Feasibility of the Teachers' Pedagogic Competency Variables. International Journal of Instruction, 16(2), 909–926. https://doi.org/10.29333/iji.2023.16248a

Purwowidodo, A., & Zaini, M. (2024). Developing a Value-Based Moderate Islamic Education Model: A Case Study of Pesantren Sidogiri Pasuruan. Jurnal Pendidikan Agama Islam (Journal of Islamic Education Studies), 12(1), 43–62. https://doi.org/10.15642/jpai.2024.12.1.43-62

Rahman, A. H. A., Samad, N. S. A., Bahari, N., Muhamad, S. F., Mohamad, S. R., & Yaacob, M. N. (2021). Modelling Innovative Teaching as a Driver of Competitive Advantage in Pondok Institution: A Concept Paper. In Lecture Notes in Networks and Systems: Vol. 194 LNNS (pp. 131–141). https://doi.org/10.1007/978-3-030-69221-6_10

Salim, N. A., Zaibi, M., Brantasari, M., Ikhsan, M., & Aslindah, A. (2024). Islamic Boarding School Leadership Innovation: From Traditional to Modernization of Education. Munaddhomah, 5(4), 447–460. https://doi.org/10.31538/munaddhomah.v5i4.1392

Sanjani, M. A. F. (2024). The Impact of School Principals on Graduate Quality Through Character Education Initiatives. Journal of Educational Management Research, 3(1), 30–46. https://doi.org/10.61987/jemr.v3i1.347

Sumanti, S. T., Nunzairina, & Salminawati. (2024). The Evolution of Islamic Educational Institutions in North Sumatra, Indonesia. Nazhruna: Jurnal Pendidikan Islam, 7(1), 1–19. https://doi.org/10.31538/nzh.v7i1.4419

Suryaningsih, S., & Aisyah, E. N. (2024). The Role of Technology in Improving Early Childhood Social Skills. Education and Sociedad Journal, 1(2), 53–61. https://doi.org/10.61987/edsojou.v1i2.598

Uralovich, K. S., Toshmamatovich, T. U., Kubayevich, K. F., Sapaev, I. B., Saylaubaevna, S. S., Beknazarova, Z. F., & Khurramov, A. (2023). A Primary Factor in Sustainable Development and Environmental Sustainability is Environmental Education. Caspian Journal of Environmental Sciences, 21(4), 965–975. https://doi.org/10.22124/cjes.2023.7155

Yunita, Y., & Mulyadi, M. (2024). Towards Islamic Pedagogy by Exploring the Applications of Educational Technology. El-Ghiroh, 22(1), 19–40. https://doi.org/10.37092/el-ghiroh.v22i1.702

Zain, B., & Mustofa, M. L. (2024). Islam and Local Wisdom: Integration of Local Values in Islamic Thought. Journal of Social Studies and Education, 2(1), 27–43. https://doi.org/10.61987/jsse.v2i1.567

Zainal, S., Manumanoso Prasetyo, M. A., Aziz Yaacob, C. M., & Jamali, Y. (2022). Adopting Pesantren-Based Junior High School Programs: The Pesantren Changes its Educational System Without Conflict. Jurnal Ilmiah Islam Futura, 22(2), 260–276. https://doi.org/10.22373/JIIF.V22I2.13525

Zuhdi, Z., Faridy, F., Baharun, H., & Hefny, H. (2024). Enhancing Learning Quality through Management Support in Crafting Self-Assessment Questions at School. Communautaire: Journal of Community Service, 3(1), 1–12. https://doi.org/10.61987/communautaire.v3i1.353