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STRATEGIES FOR MADRASAH IN ADAPTING TO EDUCATIONAL DIGITALIZATION POLICIES IN THE ERA OF SOCIETY 5.0

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Abstract

This study examines the strategies employed by MAN 1 Lumajang, an Islamic secondary school in Indonesia, to adapt to the government's educational digitalization policies in the context of Society 5.0. In response to the growing need for digital integration in education, the study investigates how the school has navigated the challenges of limited infrastructure, varying levels of digital literacy among teachers, and unequal access to technology among students. This qualitative case study investigates the strategies employed by MAN 1 Lumajang to adapt to educational digitalization under Society 5.0. Data were collected through semi-structured interviews with school leadership, ICT teachers, and students, classroom observations, and document analysis. Thematic analysis was used to identify key strategies, including digital infrastructure procurement, ongoing teacher training, and the use of platforms like Moodle and Google Classroom. Despite these efforts, challenges such as inconsistent technology access and the need for a more adaptive curriculum remain. The study highlights the importance of strategic planning, teacher professional development, and equitable access to technology in successfully integrating digital tools in Islamic education. The findings offer valuable insights for madrasahs aiming to balance digitalization with Islamic values.

Keywords Digitalization in Education; Educational Technology; Madrasah; Society 5.0; Teacher Training.

INTRODUCTION

Madrasah Aliyah Negeri 1 Lumajang (MAN 1 Lumajang) has made significant strides in adapting to digitalization policies in Indonesia, particularly in response to the era of Society 5.0. This era is characterized by the integration of advanced technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and big data, which has necessitated educational institutions, including madrasahs, to innovate and modernize their teaching methods. MAN 1 Lumajang is working to integrate these digitalization policies into its educational processes while upholding its religious values. Efforts include upgrading infrastructure, training educators in digital literacy, and incorporating digital learning platforms such as Moodle and Google Classroom. Despite these efforts, challenges remain, such as inconsistent technology access among students and the need for a more adaptable curriculum that aligns with technological advancements.

The adaptation of digitalization policies at MAN 1 Lumajang is influenced by several factors, including the availability of digital infrastructure like internet access, laptops, and digital projectors. According to the head of the madrasah, the key to success in digitalizing education was ensuring classrooms were equipped with the right tools. However, limited access to personal devices for some students remains a barrier, as many are unable to engage fully with digital platforms outside the classroom. Additionally, varying levels of digital literacy among teachers create disparities in how digital tools are integrated into teaching. Younger teachers tend to adapt more quickly to digital tools, while older teachers face challenges and require further support and training. To ensure sustainability, MAN 1 Lumajang has focused on continuous teacher training, the use of Learning Management Systems (LMS), and blended learning environments, which combine in-person and online instruction. These strategies have helped maintain the quality of education while adapting to technological demands, though challenges remain in fully aligning the curriculum with digital learning needs.

Previous studies have emphasized the importance of digitalization policies in education, but most research has focused on general schools, neglecting the specific context of madrasahs. Studies by Aini et al.(2022) Ningrum (2021), and others highlight the role of infrastructure and teacher training in successful digital transformations, but also note that madrasahs face challenges like limited technological access and low digital literacy among teachers. Balancing modern educational practices with Islamic values is another challenge for madrasahs, integrating digital tools (Adri et al., 2021; Irbathy et al., 2025; Ranti et al., 2021). Although infrastructure improvements have been

made, ongoing teacher training and addressing the digital divide remain essential for the success of digital education in madrasahs (Hardityo & Fahrullah, 2021; Maskur et al., 2021). These studies provide valuable insights but fail to examine the specific strategies employed by individual madrasahs like MAN 1 Lumajang in adapting to digitalization policies in the context of Society 5.0.

This research fills that gap by offering an in-depth case study of MAN 1 Lumajang, exploring the intersection of digitalization, teacher training, infrastructure development, and cultural preservation. It specifically examines how the madrasah balances the integration of digital tools with the preservation of Islamic educational values, providing new insights for other madrasahs facing similar challenges. Unlike previous research, this study explores the role of digital platforms like Moodle and Google Classroom in enhancing learning outcomes in the madrasah context, and it addresses the impact of blended learning on maintaining Islamic values while embracing technology.

The aim of this research is to investigate the strategies implemented by MAN 1 Lumajang in adapting to digitalization policies while preserving its religious and cultural values. The study focuses on challenges such as inconsistent technology access, varying digital literacy among teachers, and curriculum adaptation. By identifying the key factors contributing to the success or limitations of digital integration, the research provides both theoretical and practical contributions. Theoretically, it adds to the understanding of how madrasahs can integrate digital tools while preserving Islamic educational principles. Practically, it offers insights and recommendations for other madrasahs facing similar challenges, suggesting strategies to overcome barriers to digital learning and ensure the sustainability of digital education through continuous teacher training and strategic planning.

METHOD

This research uses a qualitative approach with a case study design to explore the strategies of Madrasah Aliyah Negeri 1 Lumajang in adapting to educational digitalization policies in the era of Society 5.0. The study investigates how MAN 1 Lumajang integrates digitalization into its educational processes while maintaining its religious and cultural values.

Data sources include key informants such as the head of the madrasah, ICT teachers, and students, as well as relevant documents on digital education policies and training programs. Data collection techniques include interviews, observations, and document analysis. Interviews provide

insights into digitalization strategies, challenges, and achievements, while observations examine the use of digital platforms like Moodle and Google Classroom. Document analysis reviews the madrasah's policies and training materials to understand the integration of technology into the learning process.

Table 1. Research Instruments

Research Instrument	Purpose of Data Collection	Data Source	Topics Explored
Semi-structured Interviews	To explore informants' perspectives on digitalisation strategies	Head of Madrasah, ICT Teachers, Students	Digitalisation Strategies, Teacher Readiness, Technology Challenges
Classroom Observations	To observe the use of digital tools in lessons	Teachers, Students	Use of LMS, Digital Learning Interaction
Document Analysis	To analyse policies and digital training materials	Madrasah Records, Policy Documents	Infrastructure Development, Teacher Training Programmes

Data analysis was carried out using thematic analysis (Braun & Clarke, 2006). The analysis process involved data reduction, data presentation, and conclusion drawing (Huberman & Miles, 2002; Ramdhan, 2025). Data reduction was performed by identifying and grouping relevant information from interviews, observations, and documents. Data presentation was done by organising the reduced data into themes reflecting the digitalization strategies, challenges, and successes of MAN 1 Lumajang. Conclusion drawing was undertaken by synthesising the findings and linking them with relevant theories of educational digitalization and discourse, including those related to technology-enhanced learning and curriculum integration. Furthermore, the researcher also compared the findings with previous studies related to digital education in madrasahs (Fanani et al., 2023; Huda et al., 2024; Sahin, 2018).

In terms of ensuring trustworthiness, triangulation was applied by using multiple data sources, including interviews, observations, and document analysis (Bowen, 2009; Patton, 2003). The validity and reliability of the findings were enhanced by member checking, where key informants were provided with the opportunity to validate the interpretations of their responses (Lincoln & Guba, 1985). In addition, data saturation was achieved when no new information emerged from the interviews and observations, ensuring the richness and depth of the collected data (Kvale, 2018; Yin, 2003). By employing this approach, the researcher aims to identify in-depth the strategies used by MAN 1 Lumajang in adapting to the educational digitalization policies in the era of Society 5.0, while offering practical recommendations for other madrasahs.

FINDINGS AND DISCUSSION

Findings

This section presents the key findings from the study, focusing on how MAN 1 Lumajang has implemented digitalization strategies and the challenges faced in adapting to the digital education policies under the framework of Society 5.0. The results are drawn from data collected through semi-structured interviews, classroom observations, and document analysis, with the analysis focused on identifying themes and patterns that emerged during the research process.

Table 2. Strategies of Madrasah Aliyah Negeri 1 Lumajang in Adapting to Educational Digitalization Policies in the Era of Society 5.0

No	Strategy	Challenges	Student Engagement	Impact
1.	Digital Infrastructure Provision	Unequal access to technology among students	Students with access to devices actively engage in digital learning	Facilitates easy access to learning materials, but is limited to students with available devices and internet connections.
2.	Digital Literacy Training for Teachers	Disparities in digital skills between younger and older teachers	Students benefit from the use of digital tools by well-trained teachers	Enhances teachers' teaching skills, but some teachers still require additional training to optimise technology use.
3.	Implementation of Digital Learning Platforms (Moodle, Google Classroom)	Some students struggle to access platforms due to a lack of personal devices	Students with full access to technology are more involved in online classes	Improves class interaction and management, but access remains uneven due to technological disparities among students.
4.	Blended Learning Approach	Slow curriculum adaptation and challenges in adjusting to digital formats	Students actively participate in blended learning (both offline and online)	Offers flexibility in learning, though challenges remain in fully implementing the approach across all classes.
5.	Collaboration with Stakeholders in Digital Curriculum Development	Lack of resources to adapt the curriculum to rapidly evolving technology	Students benefit from more dynamic and relevant teaching materials	Improves the quality of learning, but requires more resources for continuous curriculum development.

This table provides an overview of the strategies adopted by MAN 1 Lumajang to implement educational digitalization policies, outlining the key challenges, student involvement, and the outcomes of these strategies.

1. Digital Infrastructure Provision

Madrasah Aliyah Negeri 1 Lumajang (MAN 1 Lumajang) has made significant investments in upgrading its digital infrastructure to enhance the learning experience for both students and teachers. The school has provided personal computers, laptops, digital projectors, and high-speed internet access across classrooms. The goal is to equip all classrooms with the necessary tools to support digital learning, ensuring that both teachers and students have access to the latest technology. This investment aims to create a conducive learning environment that aligns with modern educational demands and prepares students for the challenges they will face in the digital age.

However, challenges remain in the unequal distribution of resources. While some students benefit from personal devices and reliable internet connections at home, others face difficulties in accessing digital learning platforms. These students are unable to fully engage with online materials or participate in digital classroom activities, which leads to disparities in learning outcomes. In particular, students from lower-income families struggle with accessing personal devices or stable internet connections. The digital divide in terms of access to technology is a significant barrier to the equitable implementation of digital learning at the school.

Despite these challenges, the provision of digital infrastructure has positively impacted the classroom experience for students who have access to these resources. The availability of devices and internet access has allowed teachers to engage students with a wide range of digital tools and resources, such as multimedia presentations and interactive assignments. This flexibility enables students to learn at their own pace and revisit materials when necessary, making learning more accessible. However, the school acknowledges that the benefits of this infrastructure are not shared equally by all students, which underscores the need for ongoing efforts to improve access to technology for all.

Student engagement has notably improved among those who can access the digital platforms provided by the school. Digital resources have created a more interactive learning environment, allowing students to engage with content in new and innovative ways. They can use digital textbooks, watch instructional videos, and participate in online discussions, which encourages students to take ownership of their learning. However, students lacking necessary devices or internet access are excluded from these benefits, highlighting the need for targeted interventions to address these inequities.

The provision of digital infrastructure has had a profound impact on the learning experience for students who have access to it. Teachers have been able to diversify their teaching methods by incorporating technology into their lessons, which has proven to be more engaging for students. Interactive tools such as quizzes, multimedia content, and online discussions have increased motivation and participation. Despite these positive outcomes, the ongoing issue of unequal distribution remains, and the school is focusing on strategies to mitigate this gap, including providing devices for loan and exploring partnerships with technology companies.

To further bridge this gap, the school has started expanding Wi-Fi coverage across the campus, ensuring that even students in remote areas can connect to the internet. Additionally, discussions are underway about providing subsidized internet connections or devices for students who face technological constraints. In the long run, the goal is to make digital education truly inclusive, ensuring all students have equal access to the technological tools essential for modern learning.

As the digital infrastructure continues to evolve, regular assessments of its effectiveness are crucial. Feedback from students and teachers will help identify areas for improvement. The school is committed to continually upgrading its technology and ensuring that all students, regardless of their socio-economic background, have equal access to digital learning opportunities. The next phase of this initiative will involve securing more funding for infrastructure expansion, ensuring the sustainability of digital education in the future.

Digital Literacy Training for Teachers

At MAN 1 Lumajang, the introduction of digital tools and platforms is supported by ongoing digital literacy training for educators. The aim is to equip teachers with the skills to integrate technology effectively into their teaching. The training focuses not only on the use of digital tools but also on pedagogical strategies to engage students through these tools. Teachers are trained on platforms like Moodle and Google Classroom, and other digital resources to create dynamic, tech-enhanced lessons that complement traditional teaching methods.

However, challenges exist, particularly the disparity in digital skills among teachers. Younger teachers, who are more familiar with technology, adapt quickly and use digital tools with ease. In contrast, older teachers, less comfortable with technology, require more time and support. This generational gap necessitates tailored training, offering more in-depth support to those less familiar with digital tools.

The training follows a progressive approach, starting with basic digital tools such as word processors and presentation software, and advancing to more complex platforms like digital assessment tools and learning management systems. This step-by-step process helps teachers gradually build their skills without feeling overwhelmed. Follow-up sessions are also conducted to ensure continuous improvement and keep teachers updated on emerging technologies.

As teachers' digital literacy improves, so does their ability to create engaging, interactive lessons. Proficient teachers use digital tools to enhance lessons, incorporating multimedia content, quizzes, and online discussions. This leads to more active student participation and effective tracking of progress. However, teachers still struggling with technology may not fully utilize digital resources, which affects student engagement and overall learning outcomes.

The positive impact of digital literacy training is clear in classrooms where teachers are proficient with digital platforms. Students in these classes benefit from a more interactive learning environment, allowing them to access digital resources and engage with the material in innovative ways. However, the digital literacy gap remains a challenge. Teachers who have not embraced digital tools cannot create a fully tech-enabled learning environment, which affects the quality of education.

To address these gaps, the school plans additional training sessions and peer mentoring. Experienced teachers will be encouraged to share their knowledge with those who need support, fostering a collaborative learning environment among the staff. Additionally, hands-on, practical training in real-world classroom settings will help build teachers' confidence and competence in using digital tools.

The success of this initiative will be measured by how effectively teachers incorporate digital tools into their teaching practices. The school plans to regularly assess the impact of the training on both teachers and students, using feedback to refine the training program. With ongoing professional development and support, MAN 1 Lumajang aims to ensure all teachers, regardless of their starting point, are well-equipped to meet the demands of digital education and provide students with a modern learning experience.

Implementation of Digital Learning Platforms (Moodle, Google Classroom)

The implementation of digital learning platforms like Moodle and Google Classroom has been a key part of the digital transformation at MAN 1 Lumajang. These platforms enable efficient delivery of educational content, allowing teachers to upload materials, assign tasks, and provide

feedback to students online. Students can access these platforms at their convenience, enabling independent learning at their own pace. This flexibility has proven to be especially valuable during the COVID-19 pandemic, when remote learning became a necessity.

One major challenge in implementing these platforms is ensuring that all students have access to the necessary technology. While many students can access the platforms from home using personal devices, a significant number still lack reliable devices or internet connections. This uneven access creates a gap between students who can fully engage with the digital learning platforms and those who cannot. Despite efforts to loan devices to students, the disparity in access continues to hinder the overall success of the digital learning initiative.

For students with access to the platforms, engagement has been high. They participate actively in online discussions, complete assignments on time, and interact with digital resources provided by their teachers. The platforms also allow teachers to monitor student progress in real-time, offering immediate feedback on assignments and activities. This has made it easier for teachers to identify areas where students are struggling and provide targeted support. However, for students without access to technology, their involvement remains minimal, resulting in a significant gap in engagement and learning outcomes.

The impact of digital platforms has been overwhelmingly positive for students who can participate. These students have gained greater flexibility in managing their learning and are able to access a wide range of resources that enhance their educational experience. However, the lack of universal access means that the benefits of these platforms are not fully realized across the entire student body. This highlights the ongoing need for improvements in the distribution of technology and infrastructure to support it.

To address these issues, MAN 1 Lumajang is exploring ways to improve access to digital platforms. The school is considering partnerships with technology companies to provide more devices for students in need. Additionally, the school is expanding its Wi-Fi network to ensure that all students can access the internet both on campus and in their homes. These efforts aim to reduce the digital divide and ensure all students can benefit from the educational opportunities provided by the platforms.

The school is also focusing on improving teacher proficiency in using these platforms. While many teachers have become adept at using Moodle and Google Classroom, others still require additional support. To address this, the school plans to offer more in-depth training and mentoring

for teachers, ensuring that all educators can effectively utilize the platforms. With these improvements, the school aims to enhance the overall learning experience and ensure that no student is left behind due to a lack of access to technology.

The following image illustrates a typical classroom setup at MAN 1 Lumajang, showing how digital tools such as Google Classroom, Moodle, and laptops were integrated into teaching and learning activities.

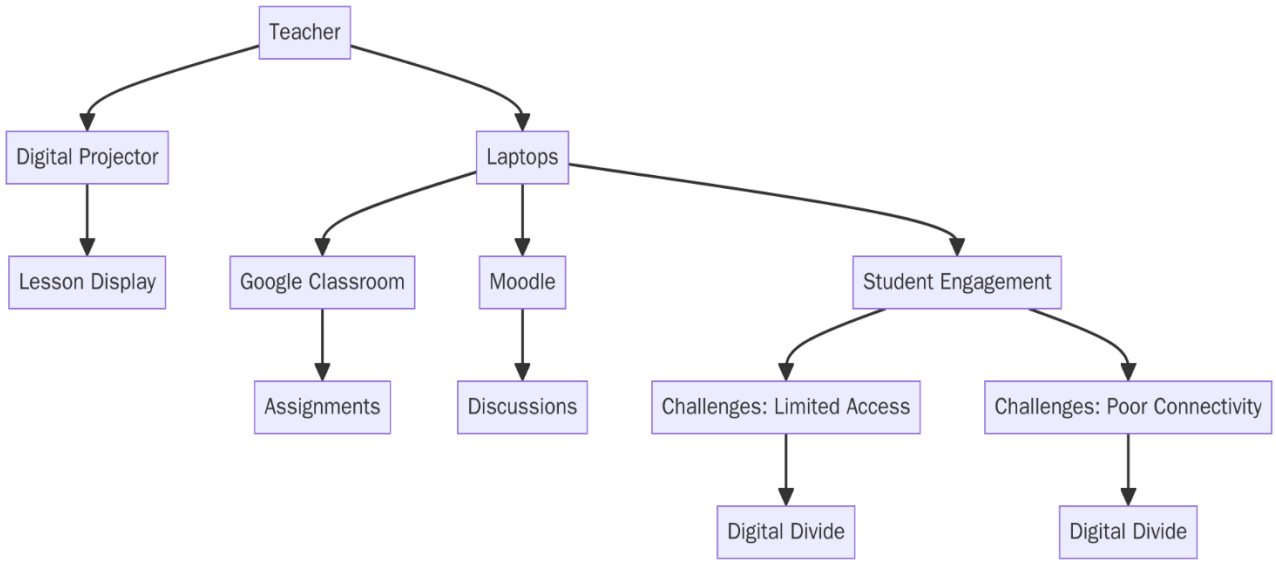

Figure 1. Classroom Setup Showing the Integration of Laptops, Digital Projectors, and the Use of LMS Platforms Such as Google Classroom and Moodle During Lessons

In the image, we can see the teacher using a digital projector to display materials on the screen, while students are actively engaging with the LMS platforms through their laptops. During classroom observations, it was noted that most students were highly engaged with the online content, completing assignments, and participating in discussions through Moodle and Google Classroom. However, a few students faced difficulties in keeping up with the lesson due to poor internet connectivity or the lack of personal devices. These challenges reflect the continued digital divide and underscore the need for improvements in infrastructure and device access.

The digitalization process at MAN 1 Lumajang revealed both significant achievements and notable challenges. While the school successfully implemented strategies to provide digital infrastructure and train teachers, challenges related to unequal access to technology, digital literacy disparities, and resistance to change persisted. Moving forward, the school must focus on addressing these issues by ensuring equitable access to technology for all students, providing ongoing support and training for teachers, and fostering an environment where technology is viewed as a

complementary tool rather than a replacement for traditional teaching methods. Only by overcoming these barriers can the school fully realize the potential of digitalization in enhancing educational outcomes and providing an inclusive learning environment for all students

2. Blended Learning Approach

The adoption of a blended learning approach at Madrasah Aliyah Negeri 1 Lumajang (MAN 1 Lumajang) marks a significant step toward integrating technology with traditional face-to-face teaching. Blended learning combines online education, where students access resources, engage with content, and complete assignments digitally, with in-person sessions that foster discussion, collaboration, and hands-on learning. This approach provides students with flexibility, allowing them to manage their learning schedules while maintaining direct contact with teachers and peers. The aim is to create a balanced learning environment where technology enhances the educational experience without replacing traditional classroom interactions.

Implementing blended learning has, however, presented challenges. The integration of online and offline learning requires substantial adjustments to the curriculum. Teachers must adapt their lesson plans to ensure that digital and in-person elements complement each other while still achieving educational goals. Some subjects, like languages or the arts, are easier to adapt to blended learning because they can be effectively taught using digital platforms. However, more complex subjects, such as mathematics and science, require innovative approaches to combine online tools with in-person activities. This adjustment has been difficult for both teachers and students, especially in terms of time and resources.

Despite these challenges, student engagement in blended learning environments has generally been positive. Many students appreciate the flexibility, as it allows them to manage their time and take control of their learning. Students report feeling more motivated to engage with the material when they can access it online and review it at their own pace. However, some students struggle with the self-discipline required for online learning. Without the physical presence of a teacher, it can be easy for students to fall behind. This has led to varying levels of participation, with some students highly engaged and others struggling to keep up.

Blended learning has had a significant impact, especially for students who balance their online and offline learning effectively. These students benefit from the flexibility of reviewing lessons outside class, accessing supplementary resources, and receiving real-time feedback. Blended learning has also fostered greater collaboration, as students are encouraged to work together online

and discuss topics in person. However, for students struggling with online learning or lacking necessary digital resources, the model can feel isolating, leading to disengagement. This highlights the need for the school to address technological and motivational barriers to full participation.

To address these disparities, MAN 1 Lumajang is offering additional support for students who find online learning challenging. This includes tutoring, mentoring, and access to digital resources. The school is also enhancing the curriculum to make online components more engaging by incorporating multimedia content, gamified learning, and digital collaboration. These improvements aim to make blended learning more inclusive and effective for all students, regardless of their background or access to technology.

The next phase of the blended learning initiative will focus on improving the infrastructure to support seamless online learning. This includes expanding the internet network, ensuring all students have devices, and providing ongoing teacher training on digital tools. These changes will help ensure that blended learning is consistently applied across all subjects, leading to greater student success. The school's commitment to refining its blended learning approach ensures that it remains a valuable tool for enhancing education in the digital age.

While the digitalization of education at MAN 1 Lumajang has enhanced teaching effectiveness and student engagement, it has also raised concerns about the potential loss of personal interactions, which are core to the values of Islamic education. Balancing technology with personal relationships is crucial, and educators will need ongoing professional development to integrate technology in ways that complement traditional methods without compromising the personal connections that define the madrasah experience.

Here is the diagram illustrating the outcomes of digital tools integration at MAN 1 Lumajang:

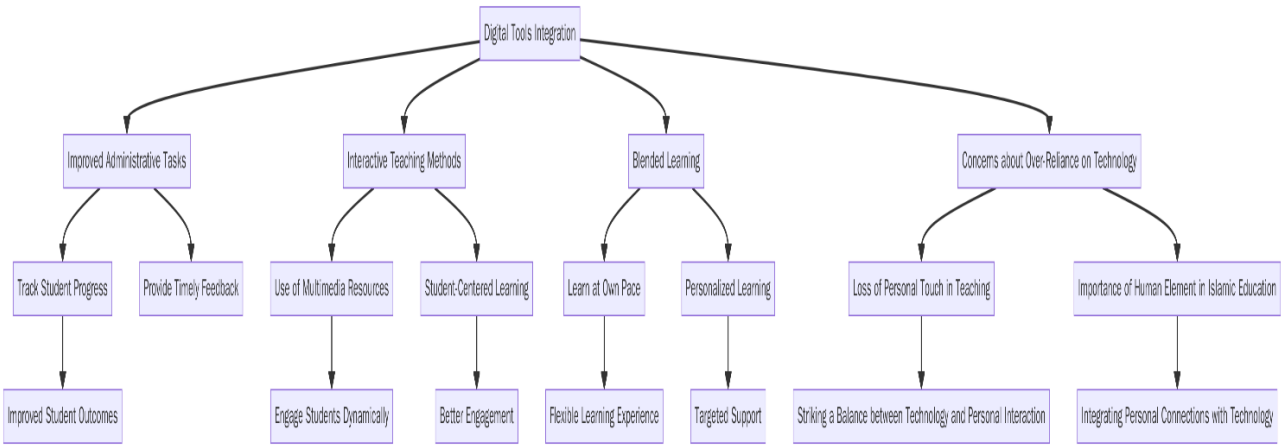

Figure 2. Illustrating the Positive Outcomes of Digital Tool Integration at MAN 1 Lumajang

Furthermore, the success of blended learning also depended on the level of student engagement with online learning tools. Teachers noted that while many students embraced digital tools, some were still hesitant to adopt online platforms, citing a preference for in-person instruction. Addressing these concerns and encouraging broader student participation in online activities is crucial to ensuring that digital tools are fully leveraged to enhance learning. As digital tools continue to play an increasing role in education, it will be important to provide ongoing support to both teachers and students to ensure that they can effectively navigate and benefit from these technologies

3. Collaboration with Stakeholders in Digital Curriculum Development

MAN 1 Lumajang has made significant progress in collaborating with various stakeholders to develop a curriculum that aligns with the demands of the digital age. This collaboration includes partnerships with local educational authorities, technology companies, and curriculum development experts to create a dynamic and current curriculum. The goal is to ensure the curriculum not only meets academic standards but also prepares students for the technological challenges of the future. By integrating digital tools and resources, the aim is to enhance the relevance and effectiveness of the curriculum, offering interactive and engaging learning experiences.

However, one of the main challenges in this collaboration is the rapid pace of technological change. Digital tools and platforms evolve quickly, and keeping the curriculum updated to reflect these changes requires constant effort and investment. Moreover, there is a lack of resources to continuously adapt and develop new materials incorporating the latest technologies. Despite the school's commitment, the rapid advancement of technology presents ongoing challenges in ensuring all digital tools are adequately integrated into the curriculum. Additionally, teachers must be trained to use these tools effectively, which requires extra time and support.

Despite these challenges, the involvement of stakeholders has positively impacted the curriculum development process. Collaboration with external partners has introduced innovative digital tools such as interactive learning platforms, virtual classrooms, and collaborative online projects. These tools allow students to engage with content in new ways, fostering creativity, critical thinking, and problem-solving skills. Students now have access to a wider range of learning materials, including digital textbooks, videos, simulations, and interactive activities, which enhance their learning experience. This integration has made the curriculum more engaging and relevant to

modern learners' needs.

The integration of digital resources has also increased student engagement. As students interact with digital tools, they become more active participants in their learning. Online platforms allow students to engage with the material at their own pace, and the flexibility of digital learning enables them to review lessons, participate in discussions, and access additional resources outside of class. This increased engagement has led to a deeper understanding of the subject matter and improved learning outcomes for many students.

Looking forward, MAN 1 Lumajang plans to continue strengthening its partnerships with stakeholders to keep the curriculum up-to-date. Future collaborations will focus on expanding the use of emerging technologies like artificial intelligence and virtual reality to further enhance learning. The school will also focus on providing ongoing professional development for teachers to help them integrate these technologies into their teaching practices. By continuing to innovate and collaborate, MAN 1 Lumajang aims to create a digital curriculum that prepares students for success in an increasingly technology-driven world.

In conclusion, collaboration with stakeholders has played a crucial role in developing MAN 1 Lumajang's digital curriculum. Despite challenges in keeping pace with technological advancements, the positive impact on student engagement and learning outcomes is clear. As the school continues to collaborate and invest in digital tools, it will ensure its students are well-equipped for the digital age.

Discussion

The findings from this study reveal both the successes and challenges of digitalizing education at MAN 1 Lumajang, particularly in the context of Islamic education. The study highlights issues such as unequal access to technology, the variations in digital literacy among teachers, and resistance to change, all of which have impacted the effectiveness of the digital transformation. These findings are consistent with previous research on digital education, and the following discussion draws on existing literature to analyze and interpret these results.

1. Unequal Access to Technology and the Digital Divide

One of the most prominent challenges observed was unequal access to technology among students. Despite the school's efforts to provide Wi-Fi, laptops, and projectors, many students still lacked personal devices or reliable internet connections, hindering their full participation in online learning. This issue is well-documented in educational research, particularly in the work of Febriani

& Ritonga (2022) and Malik (2018) who highlight that digital equity is a significant barrier to the successful implementation of digital education, especially in underserved areas. They argue that while technology has the potential to reduce educational gaps, the digital divide remains a challenge, with students in low-income areas facing disparities in access to digital tools.

Similarly, Ogunshe (2023)and Dudung et al (2022)emphasize the challenges of access to digital tools in higher education settings, particularly for students from disadvantaged backgrounds. Their study found that without adequate access to technology, students are disengaged from the learning process, which aligns with the experiences of students at MAN 1 Lumajang who reported struggles in completing assignments due to a lack of personal devices. This highlights the need for ongoing investments in digital infrastructure to ensure that all students can participate in digital learning environments.

2. Teacher Competency and Digital Literacy

A key challenge identified in the study was the variation in digital literacy among teachers. Younger teachers were generally more proficient in using digital tools like Google Classroom and Moodle, while older teachers required more time and support to effectively integrate these tools into their teaching. This issue reflects a generational gap in digital skills, which is often a barrier to technology integration in educational settings. Huda et al (2024)(2014) and Ramdhan (2019) discuss how the digital divide affects teacher preparedness, noting that while younger teachers are often more adept at using digital tools, older teachers may struggle to incorporate technology into their teaching practices.

The findings of this study align with Mishra & Koehler's framework of Technological Pedagogical Content Knowledge (TPACK), which emphasizes the need for teachers to integrate digital tools effectively with their pedagogical knowledge. Teachers at MAN 1 Lumajang who participated in training programs reported feeling more confident in their ability to use technology for teaching, echoing the research of Hwang et al.(2020), who advocate for ongoing professional development to improve digital literacy and empower educators to use technology in their pedagogy. Koundyannan (2020), Alenezi et al (2014)and Syahripin, et al (2021) also highlights that teacher training is vital to ensure that educators are prepared to integrate technology into their classrooms effectively, which is critical for achieving digital transformation.

3. Blended Learning and Pedagogical Effectiveness

Another significant outcome of the digitalization process was the adoption of blended learning, which combines face-to-face instruction with online learning. This approach was praised by teachers, who found it allowed for more flexible and personalized learning. According to Mansir (2021) and Ramdhan et al (2025), the SAMR model emphasizes how digital tools can augment and modify traditional learning experiences, making them more interactive and engaging. This was evident at MAN 1 Lumajang, where students were able to review course content at their own pace and engage in online discussions through platforms like Google Classroom. Alenezi et al. (2023) also argue that digital tools, when combined with face-to-face teaching, can support personalized learning and provide opportunities for students to engage with content beyond the classroom.

However, while blended learning had positive impacts on student engagement, some teachers raised concerns about over-reliance on technology. One teacher noted, "While technology enhances learning, it is important not to forget the human element of teaching, especially in Islamic education, where personal connection is key." This concern is consistent with Tóth et al. (2022) and Nicola-Gavrilă et al (2022) who distinguish between emergency remote teaching and planned online learning. They argue that while remote learning can be effective in the short term, it should not replace the personal connections that are central to traditional education. Qureshi (2021), Nida et al (2023) and Mansir et al.,(2021) also discusses how blended learning can foster engagement but cautions against the overuse of technology at the expense of teacher-student relationships, which are crucial in Islamic education.

While digital tools have been beneficial for enhancing the teaching and learning experience, MAN 1 Lumajang must continue to strike a balance between technology and the human elements of teaching, ensuring that personal relationships are maintained, especially in the context of Islamic education, where spiritual and personal guidance is integral.

4. Culturally Responsive Teaching and Digital Tools

The integration of digital tools at MAN 1 Lumajang presents the challenge of ensuring that Islamic values are not compromised. Tharp (2019) argues that culturally responsive teaching should remain central to the educational process, especially in Islamic education, where spiritual connections between students and teachers are highly valued. The digital tools used at MAN 1 Lumajang, such as Google Classroom and Moodle, must be employed in a way that complements rather than replaces the personal relationships integral to the madrasah's educational philosophy.

Hanik (2020) and Sahin (2018) also suggests that digital tools should enhance learning while respecting the cultural and spiritual context of education, especially in religious schools.

Nguyen et al.(2021), Risnawati et al (2021), and Hasanah & Faddad (2023) further argue that the integration of technology should be done with careful consideration of the educational values at stake. In Islamic schools, this means that digitalization must align with the values of Islamic education and not undermine the human-centered nature of teaching. Ah., & Bau (2023) and Mushfi et al (2023) emphasize, digital tools should be used to enhance learning without eroding the teacher-student connection, which remains essential to the pedagogical approach in Islamic educational contexts.

The findings from this study underscore the importance of addressing the **challenges** of unequal access to technology, variations in digital literacy, and over-reliance on technology while implementing digitalization in Islamic education. The use of blended learning and digital tools at MAN 1 Lumajang has shown positive effects on teaching and learning, but ensuring equitable access to technology for all students and continuous teacher training will be critical for long-term success. Culturally responsive teaching must remain at the core of educational practices to ensure that Islamic values are upheld while leveraging the benefits of digital tools. Future efforts at MAN 1 Lumajang should focus on striking a balance between embracing digital tools and maintaining the personal, spiritual connections that are central to Islamic education.

CONCLUSION

The digitalization efforts at MAN 1 Lumajang have demonstrated significant progress in enhancing teaching and learning through the integration of digital tools such as Google Classroom and Moodle. The implementation of blended learning has provided students with the flexibility to access course materials outside of class, allowing for more personalized learning and greater student engagement. However, the study has highlighted several ongoing challenges, primarily related to unequal access to technology, digital literacy disparities among teachers, and concerns about the over-reliance on technology. These issues hinder the effectiveness of digital tools in some areas and highlight the need for continued investment in both infrastructure and teacher training to ensure that all students benefit equally from the digital learning experience. Moving forward, it is essential for MAN 1 Lumajang to address the digital divide by providing equitable access to technology for all students and offering ongoing professional development to ensure that teachers are well-

equipped to integrate technology into their pedagogical practices. Additionally, while digital tools can enhance teaching and learning, the personal teacher-student relationship remains central to Islamic education. Therefore, future efforts must strike a balance between embracing technology and preserving the human element that is core to Islamic values in education. By doing so, MAN 1 Lumajang can continue to advance its digital transformation while maintaining the educational integrity and values that are essential to its mission.

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