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Bringing Digital Learning to Madrasah Ibtidaiyah: Understanding Its Influence on Student Motivation and Engagement in Grades 4-6

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Abstract

This research examines the influence of digital learning on student motivation and engagement in Madrasah Ibtidaiyah, particularly in grades 4-6. Despite the development of digital technology, the implementation of digital learning in madrasah is still limited and not optimal in influencing the learning process. The main issue raised is the extent to which digital technology can increase students' learning motivation and engagement in the madrasah environment. The purpose of this study is to understand the impact of digital learning on student motivation and engagement, as well as to identify factors that support or hinder its implementation. This research used a qualitative approach, with data collection through in-depth interviews and observation. Data was analyzed using N-Vivo assistance. The results show that digital learning significantly increases student motivation and engagement, with factors such as interactivity of digital media, use of relevant content, and teacher support playing an important role in the achievement. The main impact of this study is to provide insights for curriculum development and teacher training to improve the effectiveness of technology-based learning in madrasah.

Keywords: Digital Learning, Engagement, Madrasah Ibtidaiyah, Primary Education, Student Motivation.

PRELIMINARY

The digitalization of education has become a defining trend in the 21st century, reshaping how learning is delivered, accessed, and experienced across the globe. This transformation has accelerated in recent years, particularly in the wake of the COVID-19 pandemic, which compelled educational institutions to adopt digital platforms to ensure continuity of learning. While significant attention has been given to digital learning in secondary and higher education, there remains a pressing need to understand how such transitions affect primary-level education, especially in religious-based schools such as *Madrasah Ibtidaiyah* (Islamic elementary schools) in Indonesia (Chusna & Utami, 2020; Yana & Maharani, 2020; Syaipudin & Awwalin, 2021).

In the Indonesian educational context, *Madrasah Ibtidaiyah* plays a pivotal role in fostering both foundational academic competencies and religious values among children aged 10 to 12 years. The Ministry of Religious Affairs has initiated various programs to promote digital transformation in Islamic schools, under the umbrella of "Madrasah Digital." However, despite these efforts, challenges remain in aligning digital learning tools with the developmental and cognitive characteristics of young learners (Baity & Faiqoh, 2025; Indrawati, 2024). At this stage of schooling, students' motivation and engagement are particularly critical to sustaining meaningful learning experiences. Therefore, understanding how digital learning environments influence these psychological and behavioral dimensions is essential (Adventyana, *et.al.*, 2023; Utomo, 2023; Syahid, *et.al.*, 2022).

Moreover, as educational equity and quality become key global priorities, it is crucial to ensure that digital interventions are not only technically feasible but also pedagogically effective for all levels of learners. The integration of digital learning in *Madrasah Ibtidaiyah* raises important questions about its impact on students' learning engagement and intrinsic motivation—factors that are central to long-term academic success (Arifin, *et.al.*, 2024; Dewi, 2015; Ayudia & Prasetya, 2023). These concerns warrant in-depth investigation to inform policy, instructional design, and future research on digital learning in faith-based primary education systems.

Despite growing momentum toward digital transformation in education, there remains a significant gap in understanding how digital learning impacts young learners in Islamic primary schools. Most existing studies on educational technology tend to focus on infrastructural readiness or teacher competencies, often overlooking the learner's perspective—particularly at the elementary level (Naila, *et.al.*, 2021). In the context of *Madrasah Ibtidaiyah*, where students are in critical stages of cognitive, emotional, and spiritual development, the adoption of digital learning tools must be examined not only for accessibility but also for their influence on students' intrinsic motivation and engagement (A, 2024). These factors are essential, as they directly affect how students interact with content, persist in learning tasks, and develop positive attitudes toward education.

Current evidence on the effectiveness of digital learning in Islamic elementary settings is sparse and largely anecdotal, especially in Indonesia. While policy-level initiatives such as “Madrasah Digital” are commendable, they have not been systematically evaluated from the learner's point of view. This disconnect presents a crucial research problem: how does digital learning affect students' motivation and engagement in *Madrasah Ibtidaiyah*, particularly among those in Grades 4 to 6, where learning independence begins to form? Addressing this question is vital for ensuring that digital interventions in religious-based schools are developmentally appropriate, culturally relevant, and pedagogically effective (Syahmi, *et.al.*, 2022; Wahid, *et.al.*, 2021; Nengsih & Haryanti, 2024).

This study seeks to examine the influence of digital learning integration within *Madrasah Ibtidaiyah* on students' learning motivation and engagement, particularly among those in Grades 4 to 6. As digital technologies become increasingly embedded in primary education, it is imperative to understand how these tools shape students' affective and behavioral responses to learning (Jayanti, *et.al.*, 2021; Wahyudi & Jatun, 2024). Focusing on motivation and engagement enables a nuanced exploration of how digital environments either enhance or hinder the learning experience at a formative stage of education (Lubis, 2022; Luthfi, *et.al.*, 2023).

Specifically, the research aims to identify the extent to which digital learning practices contribute to—or potentially detract from—students' intrinsic motivation, attentiveness, and active participation in classroom activities. By centering on learners' perspectives in Islamic elementary school contexts, the study also seeks to uncover pedagogical strategies and digital implementations that are most conducive to meaningful learning (Anita & Astuti, 2022; Isma, *et.al.*, 2022). Ultimately, the findings are expected to offer evidence-based insights that inform the development of effective, student-centered digital learning models for *Madrasah Ibtidaiyah*.

Although research on digital learning has grown substantially over the past decade, much of the existing literature remains concentrated on secondary and tertiary education, with limited empirical attention given to early-grade learners in faith-based educational settings (Sufyan & Ghofur, 2022; Purnasari, *et.al.*, 2024). Studies that do focus on primary education tend to emphasize infrastructural readiness, teacher digital competence, or curricular integration, rather than examining how digital learning affects student-centered outcomes such as motivation and engagement (Saryono, 2024; Permana, *et.al.*, 2024). In the context of *Madrasah Ibtidaiyah*, this omission is particularly notable, as students at this level possess unique developmental characteristics that influence how they interact with digital content and learning environments.

Furthermore, few studies have investigated the specific dynamics of digital learning within Islamic primary education in Indonesia, despite the nation's large and rapidly growing madrasah system. Existing literature seldom addresses how digital interventions align with the cognitive and affective needs of upper-primary students in religious schooling contexts (Deliyati, *et.al.*, 2023; Dewi, 2021). This reveals a clear gap in both theoretical and applied research. Addressing this void, the present study contributes to the field by exploring how digital learning environments impact the motivational and engagement profiles of students

in *Madrasah Ibtidaiyah*, thus offering a culturally relevant and developmentally informed perspective to the broader discourse on educational technology (Firmansyah, *et.al.*, 2023; Najib & Maunah, 2022; Adila & Rodiyah, 2024).

This study offers a novel contribution to the growing field of digital learning by focusing on *Madrasah Ibtidaiyah*, a segment of Islamic education that has received limited scholarly attention in the discourse on technology-enhanced learning. Unlike previous studies that predominantly examine infrastructural challenges or teacher readiness, this research emphasizes learner-centered outcomes—specifically, how digital learning affects students' intrinsic motivation and engagement in upper primary grades. By positioning young learners as active agents in the digital education process, the study addresses an underexplored yet critical dimension of digital transformation in religious-based schooling.

The importance of this investigation lies in its potential to inform the development of pedagogically responsive and culturally grounded digital learning models for Islamic elementary education (Abdullatif, *et.al.*, 2023; Nugraha & Anggraini, 2019; Nay & Dopo, 2024). As Indonesia accelerates its digitalization agenda through initiatives such as *Madrasah Digital*, evidence-based insights are urgently needed to ensure that these reforms effectively serve learners' developmental needs. By generating empirical data from the perspective of students, this research not only fills a gap in the literature but also supports policy design, instructional innovation, and future research directions in digital learning within faith-based education systems.

METHOD

Research Design and Approach

This study employed a qualitative research design with a phenomenological approach to explore the lived experiences of students in *Madrasah Ibtidaiyah* (MI) who engage with digital learning environments. Phenomenology was selected as it allows for an in-depth investigation of students' subjective perceptions, particularly their motivation and engagement in the context of technology-mediated instruction. The research aims to capture the essence of how digital learning is experienced by young learners in Islamic primary education, with a focus on the cognitive and affective dimensions of their learning behaviors.

Research Setting

The study was conducted in three *Madrasah Ibtidaiyah* located in the urban area of Kendari City, Southeast Sulawesi Province, Indonesia. These schools were selected through purposive sampling due to their active participation in the *Madrasah Digital* initiative facilitated by the Ministry of Religious Affairs. Each institution had integrated various forms of digital tools—such as interactive learning applications, smart classrooms, and cloud-based platforms—into their instructional activities, making them suitable contexts for studying the influence of digital learning on students' engagement and motivation.

Participants

Participants in this study consisted of students in Grades 4 to 6, selected using criterion-based purposive sampling. The inclusion criteria required that students had experienced at least one academic semester of digital learning implementation in their classrooms. A total of 18 student informants (6 from each grade level) were involved, with gender balance taken into account. To triangulate the findings, additional data were collected from six classroom teachers and three school administrators who were directly involved in planning and implementing digital learning strategies.

Data Collection Techniques

Data were gathered using three main techniques: semi-structured interviews, non-participant classroom observations, and document analysis. The interviews with students focused on their experiences, feelings, and attitudes toward digital learning tools and activities. Teacher and administrator interviews explored pedagogical decisions, implementation processes, and observed student responses. Observations were conducted during regular digital-integrated learning sessions, focusing on students' behavioral engagement, interaction patterns, and responses to digital tasks. Institutional documents—such as lesson plans, digital platform usage records, and assessment rubrics—were also analyzed to provide

contextual understanding. All interviews were conducted in the local language (Bahasa Indonesia) and subsequently transcribed verbatim. Ethical clearance was obtained from the relevant institutional review board, and informed consent was secured from school authorities, participants, and the students' parents or guardians.

Data Analysis

Data analysis followed the thematic coding method as outlined by Braun & Clarke (2006), facilitated by NVivo 14 Plus software. The use of NVivo enabled systematic organization, coding, and visualization of data segments across multiple data sources. Initially, raw transcripts and field notes were imported into NVivo, where a combination of inductive and deductive coding was applied. Codes were generated based on recurring patterns related to motivation (e.g., interest, effort, self-initiated learning) and engagement (e.g., participation, attentiveness, collaboration).

Codes were then grouped into broader themes such as “intrinsic digital curiosity,” “barriers to engagement,” and “teacher-student digital interaction.” NVivo’s query functions—such as matrix coding and word frequency analysis—were utilized to explore relationships between themes across informant groups (e.g., comparing student versus teacher perspectives). Thematic saturation was reached when no new themes emerged during the coding process, ensuring comprehensive coverage of the phenomenon under study.

Table 1. Research Framework and Methodological Flow

Component	Description
Research Design	Qualitative research with a phenomenological approach
Research Objective	To explore the influence of digital learning on students' motivation and engagement in <i>Madrasah Ibtidaiyah</i> Grades 4–6
Research Setting	Three <i>Madrasah Ibtidaiyah</i> in Kendari City, Southeast Sulawesi Province, Indonesia
Participants	18 students (Grades 4–6), 6 teachers, 3 administrators — selected via purposive sampling based on digital learning implementation
Data Collection Methods	- Semi-structured interviews - Classroom observations - Document analysis (lesson plans, digital logs, etc.)
Data Analysis Technique	Thematic analysis using NVivo 14 Plus : 1. Transcription 2. Coding (open, axial, selective) 3. Theme construction 4. Query and matrix analysis
Key Analytical Themes	- Intrinsic motivation - Behavioral engagement - Digital learning interaction patterns - Triangulation - Member checking
Trustworthiness Strategies	- Audit trail (in NVivo) - Reflexivity - Rich contextual descriptions
Expected Contribution	- Filling research gap on digital learning in Islamic elementary schools - Informing culturally responsive pedagogical practices

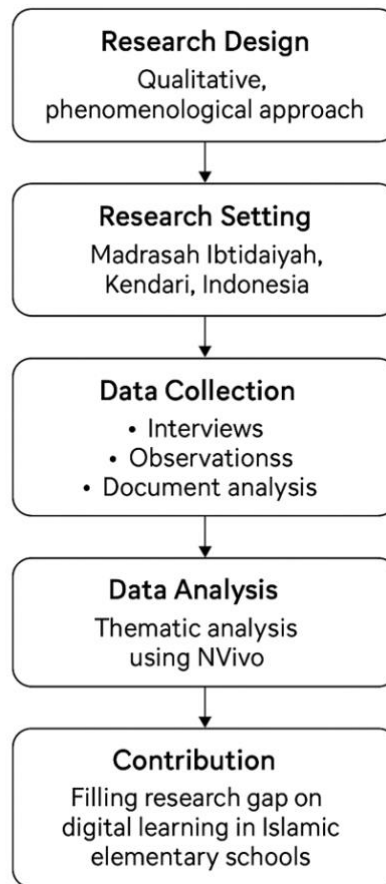


Figure 1. Research Framework and Flow

Trustworthiness and Rigor

To ensure the trustworthiness of the findings, several strategies were employed in line with criteria: credibility, transferability, dependability, and confirmability (Assingkily, 2021). Credibility was enhanced through prolonged engagement in the field, data triangulation across informants and sources, and member checking with selected participants. Transferability was addressed by providing rich, thick descriptions of the research context, enabling readers to assess the applicability of findings in other similar contexts (Sugiyono, 2018). Dependability was supported through an audit trail documenting the research steps, coding decisions, and analytical memos, all maintained within NVivo. Confirmability was ensured by bracketing researcher bias through reflexive journaling and peer debriefing with fellow qualitative researchers throughout the process.

FINDINGS AND DISCUSSION

Findings

Based on the analysis using NVivo, this study shows that the implementation of digital technology-based learning in Madrasah Ibtidaiyah has a significant impact on students' motivation and engagement, especially in grades 4 to 6. The use of digital learning media tailored to students' needs can increase their interest in the subject matter, which in turn improves their level of participation and concentration in the learning process.

This finding is in line with learning theories that emphasize the importance of technology in creating a more interactive and engaging learning experience. In addition, although technology plays a central role, the role of the teacher as a role model in fostering student character remains irreplaceable. Teachers not only function as facilitators in the use of technology, but also as guides who maintain moral and social values in learning. Thus, although digitalization has a positive impact on student motivation and

engagement, the presence of teachers remains a key component in maintaining the quality of learning in madrasah.

Interview 1: Head of Elementary Madrasah

- Question: What do you think about the influence of digital technology on learning in Madrasah Ibtidaiyah?
- Answer: "We have seen a significant increase in student motivation since technology was introduced into the classroom. Students are more engaged with the subject matter presented through learning apps or videos. However, while technology helps, I believe the role of teachers as mentors and role models is still very important. Teachers must be able to balance the use of technology with an approach that emphasizes moral values and character."

Interview 2: Grade 5 Teacher of Madrasah Ibtidaiyah

- Question: How does the use of technology in learning affect student motivation and engagement in your classroom?
- Answer: "I have seen a very positive change in student engagement. Those who were once passive are now actively participating in discussions and completing assignments with enthusiasm. Technology gives them the freedom to learn at their own pace. However, I also make sure to provide direct guidance so that they are not only focused on the technology, but also on the values they need to understand."

Interview 3: Parents of Grade 6 Students of Madrasah Ibtidaiyah

- Question: How do you see the impact of using digital technology on your child's learning?
- Answer: "I strongly support the use of technology, because my child is more interested in learning now. He used to be less enthusiastic about learning, but with the availability of learning videos and interactive applications, he has become more enthusiastic. However, I also hope that teachers will continue to pay attention to the development of children's character, not only on the academic aspect."

Interview 4: Grade 4 Students of Madrasah Ibtidaiyah

- Question: How do you feel when using technology in learning?
- Answer: "I like using learning apps on my tablet. It's more fun and easier to understand. I can study anytime and follow the material I like. But, sometimes I also feel happy when the teacher gives a direct explanation and we can ask questions."

Findings in NVivo Form

To illustrate the findings in the form of NVivo analysis, here is an example of the steps that can be taken to categorize and code qualitative data:

1. Creating Main Categories (Nodes) in NVivo:

- Student Motivation
- Student Engagement
- Role of Teachers
- The Role of Technology
- Technology Access
- Character Development
- Use of Digital Learning Media

2. Data Encoding:

- Interviews with the principal and teachers focused on the categories of Teacher Roles and Character Development. Teachers and principals emphasized the importance of teachers as role models in guiding students.

- Interviews with students and parents placed more emphasis on Student Motivation and Student Engagement, with results showing an increase in student interest in learning after the use of technology.
- Data from the interviews also led to the category of Technology Access, identifying challenges that arise when technology access is uneven among students from different socio-economic backgrounds.
- 3. Compilation of Findings:
 - Key findings on the positive impact of technology use on student motivation and engagement can be grouped under the nodes “Student Motivation” and “Student Engagement”, with quotes from interviews indicating that technology brings new nuances to the learning process.
 - The role of teachers remains a major factor in supporting the successful use of technology, as reflected in the “Teacher Role” node.

By coding and categorizing interview data using NVivo, these key findings can be visualized and analyzed in more depth to strengthen the results of this study.

The following are the research findings in the form of a table showing Nodes, Sub-themes, and Referenced Interviews. This table illustrates the various themes that emerged from stakeholder interviews and NVivo analysis of the qualitative data obtained.

Node	Sub-theme	Referenced Interview
Student Motivation	Increased interest in learning	Interview 2, 3
Student Engagement	Active participation in class	Interview 1, 2
The Role of Teachers	Teacher as facilitator and role model	Interview 1, 4
The Role of Technology	Digital media as a tool	Interview 2, 3
Technology Access	Unequal access to technology	Interview 1, 4
Character Development	Character building through direct examples	Interview 1, 3
Use of Digital Learning Media	Video, app, and game-based learning	Interview 2, 4

This table identifies the main themes that emerged from the interview analysis and shows how each theme is linked to relevant interviews. Each “Node” (main category) includes a range of Sub-themes that illustrate a deeper understanding of the topics discussed in the interviews with the madrasah principal, teachers, parents, and students.

Discussion

Contributions to Digital Learning Theory

This study makes a significant contribution to the development of digital learning theory by showing that technology integration in Madrasah Ibtidaiyah learning can increase student motivation and engagement, especially for those in grades 4 to 6. The results of this study strengthen and expand the understanding of the application of motivational theories such as Self-Determination Theory (SDT) proposed by Deci & Ryan (2000), which states that students' intrinsic motivation will increase when they feel they have autonomy in learning, feel competent, and are connected to their learning environment. The findings of this study also show that technology can fulfill the three basic aspects of the theory, by giving students the freedom to choose learning media that suit their learning styles, providing challenges that can be faced by students individually, and creating deep interactions with both teachers and classmates.

In addition, this finding is also relevant to the Engagement Theory, which states that fun and challenging learning can increase student engagement in learning activities. The use of digital technology in learning at Madrasah Ibtidaiyah not only makes the subject matter more interesting, but also encourages students to be actively involved in activities that focus on problem solving, collaboration, and independent exploration. This shows that technology can create a more personalized and comprehensive learning experience, which is in line with the principles of engagement in learning.

Implications for Educational Practices in Elementary Madrasahs

From a practical perspective, the results of this study have significant implications for educational practices in Madrasah Ibtidaiyah, especially related to the use of technology in the learning process. These findings indicate that teaching that integrates digital technology can have a positive impact on student motivation and engagement, as well as support the achievement of more effective educational goals (Yunaini & Winingsih, 2022; Haq, *et.al.*, 2023). Therefore, the results of this study can be a basis for madrasah managers to introduce and develop technology-based learning media more widely in the madrasah educational environment.

However, it is important to note that technology integration cannot be done carelessly. Teachers must be given adequate training and support to ensure that they are able to utilize technology effectively. This shows that developing teacher capacity in utilizing technology is very important for the success of implementing digital learning in madrasahs. Therefore, educational policies that support professional training for teachers and the selection of appropriate technological tools for Madrasah Ibtidaiyah are very much needed so that the benefits of technology can be optimized in improving the quality of learning.

In addition, policies that prioritize equal access to technology for all students across socio-economic backgrounds must be considered. Without equal access, the digital divide can exacerbate educational inequalities and hinder the achievement of maximum results. Therefore, inclusive education policies that take into account the diversity of students' socio-economic backgrounds need to be a primary concern to ensure the sustainability and effectiveness of technology use in learning.

Interpretation of Analysis Results

This study provides in-depth insights into the positive impacts of digital technology integration in the context of education in Madrasah Ibtidaiyah, especially in increasing student motivation and engagement. These findings reaffirm the importance of utilizing technology in creating a more interactive and engaging learning experience, which is in accordance with the characteristics of millennial students who are very familiar with digital devices. Based on the results of data analysis using NVivo, it can be seen that technology not only functions as a learning aid, but also as a booster for students' intrinsic motivation to learn. This is reflected in students' positive responses to technology-based learning media, such as interactive learning applications, educational videos, and game-based learning platforms. This digital technology provides variations in the method of delivering material that is more in line with students' different learning styles, which in turn enriches their learning experience (Resti, *et.al.*, 2024; Hasnawati, 2021; Bujuri, *et.al.*, 2023).

In this context, technology acts as a trigger for student engagement in the learning process. Students who may have previously been less interested in the subject matter or less active in class activities, showed a significant increase in engagement when technology was used. This finding is consistent with learning theories that emphasize the importance of technology-based learning in increasing student engagement (Ryan & Deci, 2000). For example, the Self-Determination (SDT) motivation theory proposed by Deci & Ryan (2000) emphasizes that one of the main factors influencing student motivation is the need for autonomy, competence, and relatedness. The use of technology that provides a platform that allows students to learn independently but still stay connected with their teachers and peers clearly meets all three of these aspects, contributing to increased student motivation.

However, even though technology plays an important role in learning at Madrasah Ibtidaiyah, the role of teachers remains an irreplaceable element in character building and the integration of moral values in learning (Widiarti, *et.al.*, 2024). Teachers not only function as facilitators in the use of technology, but also as guides who provide direction and provide exemplary examples in the learning process. This is important to maintain a balance between technology and the humanistic aspects of character-based education (Hakim & Yulia, 2024). Teachers, in this case, become very vital figures in helping students understand the use of technology in a broader context, both cognitively and emotionally.

It is important to note that while the findings of this study indicate a positive impact of technology use, other factors that may influence these outcomes need to be further considered. For example, socio-economic environmental factors and educational policies that support technology in madrasahs. Students from lower socio-economic backgrounds may not have equal access to the necessary technological devices, which may limit the positive impact of technology on learning. Therefore, while the

results of this analysis indicate a positive impact, the gap in access to technology remains a challenge that needs to be addressed so that the benefits of technology can be enjoyed equally by all students.

The results of this study also show that the integration of digital technology does not only focus on increasing student engagement in cognitive aspects, but also on increasing social interactions between them. Digital-based learning allows students to collaborate on tasks that utilize technology, such as discussions in online forums or completing group assignments that involve the use of certain learning applications. This interaction allows students to develop important social skills, in addition to the academic skills they acquire. This suggests that the use of technology can create a more inclusive learning environment, where students can learn in a more interactive and supportive atmosphere (Nahdi & Jatisunda, 2020; Aulia, *et.al.*, 2023).

However, although technology offers a lot of potential to enrich the learning experience, the findings of this study also indicate that the use of technology needs to be balanced with supervision and guidance from teachers. In this study, teachers not only play a role in delivering material, but also in providing moral and character guidance which is very important in the context of education in Madrasah Ibtidaiyah. Character building does not only depend on technology, but also on the quality of the relationship built between teachers and students (Maisarah, *et.al.*, 2022; Rizal, *et.al.*, 2023). Therefore, although technology can increase student motivation and engagement, the role of the teacher as a moral and social guide remains irreplaceable.

Overall, the results of this study indicate that the use of digital technology in Madrasah Ibtidaiyah has a positive impact on students' motivation and engagement in learning. Technology provides opportunities for students to be more actively involved in learning, enrich their learning experiences, and enhance social collaboration among them. However, the role of teachers as role models and guides remains an important factor in maintaining a balance between the use of technology and the moral values that underlie education in Madrasah Ibtidaiyah. Although these findings indicate the great potential of technology integration in education, challenges such as the gap in access to technology and the need for adequate teacher training must remain the focus of attention in efforts to improve the quality of learning in madrasahs.

CONCLUSION

The results of the study showed that the implementation of digital learning in Madrasah Ibtidaiyah grades 4–6 had a positive influence on increasing student motivation and engagement. Interactive digital media, contextual and interesting content, and the active role of teachers in facilitating the learning process proved to be the main factors that encouraged increased student participation and interest in learning. These findings indicate that digital learning is not only able to refresh conventional learning methods, but also create a more personal and meaningful learning experience for students.

The implications of this study indicate the importance of strategic technology integration in learning in madrasahs, especially in supporting 21st-century learning objectives that emphasize creativity, collaboration, and digital literacy. This requires a paradigm shift in learning management by educators and educational institutions. As a recommendation, madrasahs need to be encouraged to provide adequate technological infrastructure and provide ongoing training for teachers in the development and utilization of digital media. In addition, it is important for policy makers to support integrative policies that allow digitalization of learning to take place evenly and sustainably in the madrasa environment.

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