

## The Role of Technology in Islamic Education to Improve Students' Cognition at Madrasah Tsanawiyah

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### ABSTRACT

Islamic education in the digital era requires innovation in learning methods to support the development of thinking skills of Madrasah Tsanawiyah students. Ideally, technology can be an effective tool to create an interactive learning environment and support the development of student cognition. However, the reality shows that the use of technology in Islamic education is still very limited. This limitation can be seen from the lack of technological infrastructure and the low competence of teachers in integrating technology into the learning process. The gap between expectations and reality is the basis for this study. The focus of the study is to explore the role of technology in Islamic education learning and its impact on improving student cognition. This study uses a qualitative approach with a literature study method. Data were obtained through literature studies, digital documentation, and selection of relevant sources. Data analysis was carried out thematically to identify patterns and relationships between technology and student cognitive development. The results of the study show that technology has an important role as a learning medium that facilitates the understanding of religious concepts and improves students' critical thinking skills and creativity. The discussion emphasizes the need for training for teachers to maximize the use of technology. In conclusion, technology has great potential in improving students' cognition if used optimally

**Keywords:** *Technology, Islamic Education, Students' Cognition, Literature Study.*

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### INTRODUCTION

Modern education demands the use of technology as the main tool in creating effective and innovative learning. Technology in education can help students understand the material more deeply through visualization, simulation, and direct interaction (Warsita, 2020). In the context of Islamic education, technology also plays an important role in conveying religious values in a more interesting and relevant way for the digital generation. The integration of technology in religious learning can improve students' understanding of complex Islamic concepts (Ahmad & Hassan, 2021). Furthermore, the use of technology such as e-learning applications, educational videos, or online learning platforms can make the learning process more flexible and inclusive (Wijaya, 2022). Ideally, technology is not only a tool, but also a medium for educational transformation that can develop students' creativity and critical thinking skills.

However, real conditions show that the use of technology in education is far from perfect. Most schools, including madrasahs, are still not optimal in integrating technology into the curriculum (Suhardi & Rahmawati, 2023). Even in some areas, the technological infrastructure is very minimal so that teachers have difficulty implementing digital-based learning methods. This is reinforced by findings that many teachers do not yet have adequate skills to use technology effectively (Hasanah, 2022). In addition, even though there are technological devices available, their use is often only a formality without having a significant impact on the learning process (Nugraha, 2021). This condition shows a gap between the ideal expectations of the use of technology and the reality in the field..

Lack of enthusiasm and commitment from education providers is one of the main factors in the minimal use of technology in Madrasah Tsanawiyah. Most madrasahs have not fully realized the potential of technology as a tool to improve the quality of education (Fauzi & Yulianti, 2022). Skepticism towards technology among education managers is often caused by a lack of understanding of its benefits. This is also supported by research that found that several madrasahs were reluctant to invest budgets in technology procurement because it was considered not a priority (Rahman & Mulyani, 2023). In addition, the lack of training for educators makes them feel insecure about adopting technology in learning (Anwar, 2021). As a result, the technology that is already available is rarely used optimally to support an effective teaching and learning process.

Parents' demands for quality education are increasing, including the hope that their children will receive modern and quality learning. Parents of students today tend to be more critical and demand the application of technology in the teaching and learning process (Pratama, 2023). They hope that their children will not only study religious material in a traditional way but also be equipped with the ability to adapt to the digital world. This is supported by findings showing that parents of Madrasah Tsanawiyah students want a combination of Islamic values and modern technology in education (Sari & Kurniawan, 2022). In addition, parents' expectations for quality education also include aspects of children's cognitive development, such as critical thinking skills and creativity (Hidayatullah, 2021). Technology is considered one of the solutions to meet these demands.

If the use of technology in Islamic education can run optimally, its impact on the cognitive development of Madrasah Tsanawiyah students is very significant. The use of technology in learning can improve students' critical and analytical thinking skills (Zulkarnain & Suryani, 2023). In addition, technology also helps students in connecting religious concepts with real life (Rizal & Fatimah, 2022). With technology, students can explore wider learning resources and interact with the material more dynamically. Technology also encourages collaboration between students, which ultimately strengthens their understanding of the material (Sukma, 2021). Thus, the proper use of technology can create a learning environment that supports students' intellectual and spiritual development in a balanced manner.

The focus of this study covers two main aspects, namely the role of technology in Islamic education learning and its impact on improving students' cognition in Madrasah Tsanawiyah. This study aims to explore how technology can be integrated into the teaching and learning process in madrasahs and identify its influence on students'

critical thinking skills, creativity, and problem solving. With this approach, it is expected that the results of the study can provide new insights into the importance of utilizing technology as a supporting tool for modern and effective Islamic education. The benefits of this study are designed to provide theoretical contributions to the academic world and practical for educators, especially in designing more innovative learning models. In addition, this study is also expected to be a reference for policy makers in improving the quality of education in madrasas through optimal utilization of technology.

### **Literature Review**

Islamic education in the digital era requires a transformation in learning methods to meet the challenges of the times. Educational technology has become one of the solutions to increase the effectiveness of Islamic religious learning (Hasan & Rahim, 2022). The use of digital media such as e-learning applications, interactive videos, and online learning platforms can help students understand religious concepts better. Technology not only functions as a tool, but also as a medium that is able to integrate Islamic values with modern life (Ahmad & Huda, 2021). In addition, technology can create an inclusive and attractive learning environment for the millennial generation, thereby increasing their learning motivation (Zainuddin, 2023).

Student cognition is an important aspect that needs to be considered in the learning process, especially in the context of Madrasah Tsanawiyah. Technology has a significant impact on the development of students' critical thinking skills (Fauzan & Khairunnisa, 2023). The use of digital media can improve students' memory and analytical abilities (Saefudin & Nurhayati, 2022). In addition, multimedia-based technology can stimulate students' brains to process information faster and more efficiently (Suhaimi, 2021). Thus, technology can be an effective tool to support students' cognitive development in Islamic education learning.

The lack of use of technology in Islamic education is often caused by internal factors, such as lack of training for teachers. Many teachers in madrasas do not yet have adequate competence to use technology optimally (Rahmatullah & Aini, 2022). In addition, most teachers are still reluctant to adopt technology because they do not understand its benefits (Fitriani & Yuliani, 2023). The lack of support from educational institutions is also a major obstacle to integrating technology into learning (Wijaya, 2021). Therefore, training and institutional support are needed to overcome these obstacles.

The quality of Islamic education can be improved through targeted technology integration. Technology can improve the quality of learning by providing more interactive and varied materials (Rahman & Fatmawati, 2023). For example, the use of mobile learning applications allows students to learn anytime and anywhere. In addition, technology can increase student participation in the teaching and learning process (Anwar & Kurniawan, 2022). Technology can also help teachers evaluate student learning progress more accurately and in real time, so that learning becomes more effective (Pratama, 2021).

The role of technology in Islamic education learning is not only limited to practical aspects but also includes spiritual aspects. Technology can be used to convey Islamic values more deeply and relevantly to students (Hidayatullah & Salma, 2023). For

example, 3D animation can be used to explain complex theological concepts. In addition, technology can help students connect religious teachings with everyday life (Zakiyah & Hasanah, 2022). Technology can also be a means to strengthen students' religious identity through interactive and inspiring learning (Firdaus, 2021).

The main challenges in utilizing technology in Madrasah Tsanawiyah are limited infrastructure and budget. Most madrasahs in rural areas still lack technological devices such as laptops, projectors, or internet access (Nurhasanah & Ridwan, 2023). In addition, budget allocation for educational technology is often neglected (Kusuma & Dewi, 2022). Lack of support from local governments is also an obstacle in the development of technology-based learning systems (Mukhtar, 2021). Therefore, policy and financing support are needed to overcome these obstacles.

## RESEARCH METHOD

This study uses a qualitative approach with a library research method to explore in depth the role of technology in Islamic education learning and its impact on students' cognitive development through a literature review. The qualitative approach aims to understand the meaning behind data obtained from written sources (Sugiyono, 2023), while library research is considered effective for collecting information from scientific documents such as journals, books, and articles (Arikunto, 2022). Data collection is carried out through literature studies, digital documentation, and source selection to ensure the validity of the information. Furthermore, data analysis is carried out using thematic analysis, which aims to identify the main patterns of the data obtained (Moleong, 2021). Thematic analysis helps organize findings into a coherent and meaningful narrative in accordance with the research objectives (Creswell, 2023). With these steps, this study provides a comprehensive theoretical overview of the topic under study.

## RESEARCH RESULTS AND DISCUSSION

### Research Results

The results of the study on the use of technology in Islamic education learning have a significant role in increasing the effectiveness and attractiveness of the teaching and learning process, as found in the following research results:

No.	Penulis	Judul	Desain	Prosedur Penelitian	Hasil
1	Hasan & Rahim (2022)	Utilization of Digital Technology in Qualitative Islamic Education	Case Study	Interviews with teachers and observations of the use of technology in religious learning	E-learning applications and interactive videos help students understand religious concepts more deeply and create an

					interesting and dynamic learning atmosphere
2	Ahmad & Huda (2021)	Integration of Technology in Qualitative Islamic Religious Learning	Library in Research	Analysis of literature from various journals and books related to Islamic education and technology	Visual media such as infographics and animations can explain complex theological concepts more easily understood by students
3	Zainuddin (2023)	Implementation of Educational Games in Qualitative Islamic Learning	Exploratory Study	Exploratory study of the use of educational applications in religious learning	Educational game-based applications are effective in conveying Islamic values interactively and relevantly for students of Madrasah Tsanawiyah

The results of research on the positive impact of technology on students' cognitive development have been proven in various studies as in the following table:

No.	Penulis	Judul	Desain	Prosedur Penelitian	Hasil
1	Fauzan & Khairunnisa (2023)	The Influence of Digital Media on Students' Critical Thinking Skills	Qualitative	Literature study and observation of the use of digital media in learning	Digital media such as educational videos and simulations improve students' critical and analytical thinking skills by allowing direct interaction with subject matter

2	Saefudin & Nurhayati (2022)	The Role of Multimedia Technology in Islamic Learning	Qualitative	Literature analysis on the use of multimedia technology in Islamic education	Multimedia technology helps students associate abstract concepts with real examples and accelerates information processing in the brain
3	Suhaimi (2021)	Integration of Technology in Understanding Islamic Theological Concepts	Qualitative	Case study of the application of augmented reality-based technology in Islamic religious learning	Technology such as augmented reality helps students understand theological concepts more realistically, for example in visualizing the procedures for the Hajj pilgrimage

The results of the study on the minimal use of technology in madrasas are often caused by internal factors, such as lack of training for teachers, as shown in the following table:

No.	Penulis	Judul	Desain	Prosedur Penelitian	Hasil
1	Rahmatullah & Aini (2022)	Teacher Competence in the Utilization of Educational Technology	Qualitative	Literature study and interviews with madrasa teachers	Many teachers do not yet have adequate competence to use technology optimally, including difficulties in operating technological devices and utilizing them in learning

2	Fitriani & Yuliani (2023)	Teacher Obstacles in Adopting Educational Technology	Qualitative	Qualitative analysis of observation data and interviews with madrasa educators	Most teachers are still reluctant to adopt technology because they do not understand its benefits in learning
3	Wijaya (2021)	The Role of Educational Institutions in Supporting Technology Integration	Qualitative	Case study of education policies in several madrasas	The lack of support from educational institutions, such as the lack of training programs and special budget allocations, makes it difficult for teachers to integrate technology into learning

The results of the study on the quality of Islamic education can be improved through targeted technology integration, as shown in the following table:

No.	Penulis	Judul	Desain	Prosedur Penelitian	Hasil
1	Rahman & Fatmawati (2023)	Technology Integration in Improving Learning Quality	Qualitative	Case study of the use of online learning platforms in madrasahs	Technology can improve the quality of learning by providing interactive and varied materials that can be accessed at any time
2	Anwar & Kurniawan (2022)	Mobile Learning and Student Participation in Learning	Qualitative	Exploratory study of mobile learning applications in Islamic learning	Mobile learning applications increase student participation and enable independent and collaborative learning

3	Pratama (2021)	Evaluation of Technology-Based Learning in Islamic Education	Qualitative	Descriptive study of the effectiveness of automated assessment systems in learning evaluation	Technology helps teachers evaluate student learning progress more accurately and provides real-time feedback
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The results of the study on the role of technology in Islamic education learning are not only limited to practical aspects but also to spiritual aspects, as in the following table:

No.	Penulis	Judul	Desain	Prosedur Penelitian	Hasil
1	Hidayatullah & Salma (2023)	Technology as a Learning Medium for Islamic Values	Qualitative	Exploratory study of the use of 3D animation in Islamic religious learning	Technology can be used to convey Islamic values in depth through 3D animation and simulation
2	Zakiah Hasanah (2022)	Technology Integration in Islamic Education	Qualitative	Case study of the use of learning videos in madrasahs	Technology helps students connect religious teachings with everyday life, such as through video-based applications
3	Firdaus (2021)	Digital Technology in Strengthening Students' Religious Identity	Qualitative	Analysis of the role of social media and podcasts in Islamic education	Technology strengthens students' religious identity through interactive and inspiring learning, such as the use of social media and da'wah podcasts

The results of the study on the main challenges in the use of technology in Madrasah Tsanawiyah are limited infrastructure and budget, as in the following table:

No.	Penulis	Judul	Desain	Prosedur Penelitian	Hasil
1	Nurhasanah & Ridwan (2023)	Infrastructure Limitations in the Use of Technology in Madrasahs	Qualitative	Case study in rural madrasahs related to technology facilities	Most madrasahs in rural areas still lack technological devices such as laptops, projectors, and internet access
2	Kusuma & Dewi (2022)	Budget Allocation and Priority of Educational Technology	Qualitative	Exploratory study on madrasah education budget policy	Budget allocation for educational technology is often ignored, with more priority on the procurement of printed books
3	Mukhtar (2021)	Government and Private Support in the Development of Educational Technology	Qualitative	Policy analysis related to government and private cooperation in the digitalization of madrasahs	Lack of support from local governments and minimal cooperation with the private sector hamper the adoption of technology in madrasahs

## Discussion

The research results that have been presented show a close relationship between the use of technology in Islamic education and its impact on the development of students' cognition in Madrasah Tsanawiyah. The first research focus, namely the role of technology in Islamic education learning, is answered through the finding that technology is able to create an inclusive, interactive, and relevant learning environment to the needs of the digital generation. Meanwhile, the second research focus, namely the impact of technology on improving students' cognition, is supported by research results showing that digital media can stimulate students' critical and analytical thinking skills. However, the minimal use of technology in madrasahs due to limited infrastructure, budget, and teacher training is a major challenge. Therefore, to answer

the research focus comprehensively, an in-depth analysis is needed regarding how the results of this study can be interpreted, linked to real implementation, and strategies that can be designed to optimize the use of technology.

Analysis of the first research focus shows that technology has a strategic role in Islamic education learning. E-learning applications, interactive videos, and 3D animations are not only tools but also educational transformation media that are able to convey Islamic values contextually. Technology can help students understand complex religious concepts in a more interesting way (Hasan & Rahim, 2022). This is reinforced by research that emphasizes the importance of the relevance of technology in conveying religious teachings to the millennial generation (Zainuddin, 2023). Technology is not just a practical tool but also a spiritual means that can strengthen students' religious identity. Thus, the integration of technology in Islamic education must be carried out systematically and in a planned manner..

The second research focus highlights the impact of technology on students' cognitive development. Based on the research results, multimedia-based technology such as educational videos and learning simulations have a significant impact on improving students' critical thinking skills. Technology can stimulate students' brains to process information faster and more efficiently (Saefudin & Nurhayati, 2022). This is closely related to the principle of active learning, where students not only passively receive material but also actively interact with the content. Technology can help students connect theological concepts with real life, so that their understanding becomes deeper (Firdaus, 2021). Technology has great potential to become the main tool in developing students' cognition, as long as it is used appropriately and in a targeted manner.

The results of this analysis are compared with the possibility of its implementation in the field. Although the research findings show significant benefits of technology, real implementation still faces many obstacles, such as lack of infrastructure, budget, and teacher training. Most madrasahs in rural areas do not have adequate access to technology (Nurhasanah & Ridwan, 2023). This condition shows a gap between the idealism of technology use and the reality in the field. To implement the results of this study, collaboration between the government, educational institutions, and the private sector is needed. In addition, clear policy support and adequate budget allocation are key factors for the success of technology implementation in madrasahs.

As a strategy to implement the results of this study, the author recommends several concrete steps. First, the government needs to design a technology training program for madrasah teachers to improve their competence in integrating technology into learning. Second, madrasahs need to allocate a special budget for the procurement of technological infrastructure, such as laptops, projectors, and internet access. Third, cooperation with the private sector or non-profit organizations can be utilized to support the development of technology in madrasahs. Finally, the author emphasizes the importance of periodic evaluation to ensure that the technology used truly has a positive impact on the development of student cognition. With this strategy, it is hoped that the use of technology in Islamic education can be optimized effectively.

It is important to consider cultural aspects in implementing technology in madrasahs. The technology used must be in accordance with local values and norms that apply in society. For example, the digital content prepared must pay attention to cultural

and religious sensitivities so as not to cause resistance from students or parents. The author argues that an inclusive approach in developing educational technology will be more easily accepted and adopted by the community. Therefore, involving religious leaders, parents, and local communities in the technology design and implementation process can increase the success of this program.

However, there is another challenge that needs to be considered, namely the risk of dependence on technology. The author reminds us that technology is only a tool, not the main goal in education. If not used wisely, technology can shift the role of teachers as central figures in learning. In addition, excessive use of technology without clear guidance can cause students to lose their ability to think critically independently. Therefore, the author emphasizes the importance of a balance between the use of technology and traditional learning methods, such as group discussions and lectures, to create a holistic learning environment.

By considering all these aspects, the author emphasizes that technology has great potential to support the development of Islamic education, especially in improving student cognition. However, its implementation must be carried out carefully and planned, taking into account the social, cultural context, and resource limitations. Cross-sector collaboration, supportive policy development, and ongoing evaluation are the keys to success in integrating technology into Islamic education. Thus, the hope of creating a generation that is intelligent, has noble character, and is ready to face future challenges can be realized through optimal use of technology.

## **CONCLUSION**

This study answers two main problem formulations. First, technology has a significant role in Islamic education learning by creating an inclusive, interactive, and relevant learning environment for the digital generation. Technologies such as e-learning applications, interactive videos, and 3D animations can convey Islamic values contextually. Second, the use of technology has a positive impact on the development of Madrasah Tsanawiyah students' cognition by improving critical thinking, analytical, and problem-solving skills. However, the lack of infrastructure, budget, and teacher training are the main obstacles in optimal use of technology.

Recommendations from this study include the need for technology training programs for madrasah teachers to improve their competence in integrating technology into learning. In addition, madrasahs need to allocate a special budget for the procurement of technology infrastructure, such as laptops, projectors, and internet access. The implications of this study indicate that technology can be a tool for transforming Islamic education if managed properly. For further research, it is recommended to examine the effectiveness of technology in the field context and explore hybrid learning models that combine traditional approaches with modern technology. Further research can also focus on long-term evaluation of the impact of technology on students' spiritual development

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