

UTILIZING THE POTENTIAL OF TECHNOLOGY TO IMPROVE THE QUALITY OF LEARNING IN MADRASAH

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Abstract

In today's digital age, education technology has become an important element in learning transformation in various educational institutions, including the madrasah. The research aims to explore a variety of technology models that can be integrated into the learning system in the madrasah, in order to improve the quality and effectiveness of learning. Through literature analysis, the study identified three key technologies that have great potential in improving learning in the madrasah: Learning Management Systems (LMS), game-based educational technologies, and augmented reality (AR) technologies. The research shows that LMS integration facilitates more organized and efficient learning management, enabling educators to provide learning materials digitally, carry out assessments, and communicate with students in real-time. Game-based education has been found to be effective in increasing student motivation and engagement, presenting learning materials in an interesting and interactive format. Meanwhile, the application of AR technology offers an immersive learning experience, enabling students to gain in-depth understanding through the visualization of learning concepts. The results suggest that the use of technology in learning in the madrasah not only opens up access to innovative and varied learning resources, but also integrates Islamic values into the learning process more effectively. However, the success of this technology integration depends on several key factors, including adequate training for educators, the availability of adequate technological infrastructure, as well as the choice of technology that suits the needs and contexts of the madrasah.

Keywords: Potential, Technology, Learning, Madrasah.

Introduction

Madrasah, as one of the key components of the education system in many Muslim-majority countries, plays a strategic role in the formation of student character, knowledge, and skills in line with Islamic values.

Madrasah, amidst the rapid current of globalization and advancement of science, the world of education is called upon to continue to innovate and adapt. The urgency of improving the quality of education in madrasahs is a central issue in this context (Siskandar, S. 2020; Sitopu et al., 2024). Madrasah, which has historically been a center of dissemination of science in many Muslim societies, is now facing the need to blend tradition with modernity. The role of the madrasah is not only as a provider of primary and secondary education, but also as an institution that prepares the young generation

capable of contributing actively in various fields in an increasingly complex and diverse society. (Abubakari, M. S. 2021; Guna et al., 2024).

However, in this era of globalization and rapid technological development, madrasah is faced with the challenge of how to improve the quality of learning so as not to be left behind by other educational institutions that have previously adopted educational innovations and technologies. (Ali et al., 2024). Moreover, the challenge to this quality is not only related to the learning material delivered, but also to the teaching methodology, the relevance of the curriculum to current needs, and the learning infrastructure that supports (Santosa, S., & Jazuli, M. F. 2022). Madrasah is expected to produce graduates who are not only strong in religious understanding, but also have adequate academic abilities and practical skills. It demands that the madrasah constantly improve the competitiveness and quality of education given to its pupils, so that it can prepare graduates capable of adapting to the progress of the times. (Sutrisno, S. 2023).

So with that, given the importance of mastering technology in various aspects of today's life, madrasah needs to integrate technology into the learning process (Megawati et al., 2023). The use of technology in education can support more interactive teaching learning processes, enrich learning resources, and open wide access to information for students and teachers. These changes are essential to encourage creativity, innovation, and improving the quality of learning that will have a positive impact on the process of intellectual and social development of madrasah students. (Hairiyanto et al., 2024).

Educational technology, which includes a variety of tools and methods, such as online learning, the use of educational software, and others, has great potential to improve learning effectiveness, broaden the scope of education, and help students and teachers in the teaching learning process. (Tubagus et al., 2023). Educational technology today has offered great potential to revolutionize the way learning and teaching is done at various levels of education. (Aslan & Shiong, 2023). From e-learning platforms, learning mobile applications, to virtual and augmented reality, technology has expanded the coverage and learning methods that are accessible to students and teachers. (Muharrom et al., 2023). In traditional educational institutions, including the madrasah, these developments provide valuable opportunities to improve the quality of learning and to make education more inclusive and accessible to all students. Educational technology enables more adaptive and personalized teaching, potentially meeting the different learning needs of each student, as well as integrating a wide range of educational resources that are rich in information into the learning process. (Nurhayati et al., 2023).

However, the use of educational technology in traditional institutions such as madrasahs often faces a number of challenges, ranging from limited physical infrastructure, such as hardware availability and internet connectivity, to a lack of

training for teachers in using new tools and methodologies. (Iqbal et al., 2023). Besides, the difference in the use of technology in learning between madrasah and mainstream educational institutions is a critical issue that needs attention. In general, mainstream educational institutions have adopted a range of educational technology innovations, including state-of-the-art devices and sophisticated e-learning solutions. This often reflects significant resource differences, where schools in urban areas or supported by private institutions are able to provide up-to-date IT infrastructure for their pupils (Khusnood et al., 2020). This allows students in mainstream educational institutions to gain wider access to digital learning resources, leverage interactive learning tools, and follow global education trends that are increasingly oriented to the use of technology. (Nurdiana et al., 2023).

Instead, madrasahs often operate with greater budget constraints, resulting in inadequate technological infrastructure and delays in integrating technology-supported teaching methods. Problems such as unstable internet connectivity, limited device availability, and lack of technical training for teachers are major obstacles to the use of technology for education. (Rizaldi et al., 2021). As a result, students at this institution face the risk of lagging behind in digital skills that are now considered essential in the world of work and higher education. Overcoming these gaps requires the commitment of governments and other stakeholders to invest in technology infrastructure, teacher training, and the development of curricula that reflect best practices in the digital age. (Siminto et al., 2024).

Therefore, efforts to improve the quality of education in the madrasah are not only the responsibility of the institution, but also requires the support of the government, the public, and various other stakeholders. Synergistic collaboration is expected to bring transformation in sustainable madrasah education, ensuring they are able to provide the best education for future generations amid the demands and expectations of the digital age (Zaini et al., 2023).

Nonetheless, some madrasahs have started adopting and adapting to technology, for example, by integrating the use of LMS (Learning Management System) to facilitate distance learning, using interactive learning applications to enrich learning experiences, and using social media and online platforms for teaching learning activities (Iqbal et al., 2023). This change marks an important early step in the transformation of madrasah education, showing that with adequate resources, training, and support, traditional educational institutions can use technology to enhance learning experiences and produce graduates ready to face the challenges of the digital age. (Tambak et al., 2023).

The study aims to investigate in depth how educational technology can be integrated into the learning system in the madrasah to improve the quality of education. Furthermore, the research aims at identifying the most suitable and effective technological tools and methods that can be applied in the Madrasah, as well as

formulating implementation strategies that are appropriate to the needs and conditions of the madrasah.

Research Method

The method of research carried out on this study is using literature. Literary research method is an approach used to collect, analyze, and review various sources of information relevant to a particular research topic. (Zed, 2004; Sugiyono, 2010). This includes in-depth analysis of books, scientific journals, articles, and other relevant document sources. Through this method, researchers can identify, evaluate, and synthesize existing research results in order to build a broader understanding of the problem being studied. (Suyanto, 2015; Rachmawati, 2017). The course of research using the method of literature study involves several important stages, ranging from the formulation of research problems, the search for relevant literary sources using keywords, the evaluation of the quality and relevance of sources, to the presentation of the results of research in a systematic narrative form. (Rahardjo, 2011).

Result and Discussion

Integration of Technology in Education

Integration of technology in education can be understood as the process of integrating technology, especially information and communication technology (ICT), into curricula and pedagogy to improve learning processes and educational outcomes. (Consoli et al., 2023). This integration includes the use of hardware such as computers, tablets, interactive desktops, and software such as educational applications, online learning platforms, and multimedia tools. The aim is to make learning more interesting, effective, and relevant to the needs of students in today's digital age, while equipping them with the skills needed to succeed in the workplace of the future. (Akram et al., 2022).

The use of technology in education has been shown to improve learning effectiveness in several ways. First, technology enriches student learning experiences by providing access to diverse and interactive learning resources (Erwan et al., 2023). Digital learning applications, educational videos, virtual simulations, and educational games, for example, can introduce new concepts in an exciting and entertaining way, allowing students to learn at their own pace and in accordance with their learning styles. (Sarmila et al., 2023). Thus, the use of technology can enhance student understanding and facilitate deeper learning through immersive and hands-on experiences.

Second, technology supports differentiation and personalization of learning, enabling teachers to meet individual student learning needs. With technology tools, teachers can customize teaching materials, provide adaptive assessments, and provide real-time feedback (Yilmaz, A. 2021). An adaptive learning platform, for example, automatically adjusts task difficulties based on student performance, while a learning

management system allows teachers to track student progress individually. Thus, each student can be guided through a learning path that matches their specific needs, which ultimately improves learning outcomes (Schmitz et al., 2023).

Third, the integration of technology into learning teaches the essential skills of the 21st century that students need to succeed in an increasingly technology-dominated world. Through the use of technology in the classroom, students not only learn lessons, but also develop digital skills, critical thinking, problem solving, collaboration, and communication skills (Ardiç, M. A. 2021). Students learn how to search, evaluate, and use information effectively; work together on online projects; and communicate ideas through a variety of digital media. These skills are essential for their success in further education and future careers in a global knowledge-based economy. (Tondeur et al., 2021).

Benefits and challenges of technology integration in the madrasah

The integration of technology into the madrasah educational environment offers a number of significant benefits that can improve the quality of learning as well as deliver an effective learning experience for students. (Siskandar, S. 2020). First, the use of technology helps bridge the gap between traditional curricula and the needs of students in the modern era. Technologies such as computers, tablets, and other digital aids allow for more dynamic and interactive teaching, which is not limited to lecture methods. (Abubakari, M. S. 2021). With access to online resources and multimedia learning materials, students at the madrasah can explore learning concepts in a more in-depth way, which in turn can improve understanding and retention of the learning material. (Ali et al., 2024).

Second, technology integration supports learning differentiation in the madrasah, ensuring that individual student learning needs can be met. A digitized educational system enables teachers to design teaching materials that can be customized to suit each student's ability and learning speed. (Santosa, S., & Jazuli, M. F. 2022). Online learning platforms and educational applications can provide a variety of exercises, including quizzes and tasks that can be customized to their difficulty level. It helps teachers to overcome differences in student learning capabilities in one class, so that each student can develop according to their own potential. (Sutrisno, S. 2023).

Thirdly, by integrating technology in the madrasah, students also get the opportunity to develop digital skills that are crucial in the future. In a global economy heavily influenced by technology, having digital skills is no longer an option, but a necessity. (Megawati et al., 2023). Through learning activities involving technology, such as online research, digital presentations, and collaborative projects using software, students not only learn academic material, but also learn how to use technology effectively and responsibly (Iqbal et al., 2023). It equips them with the competences necessary to compete and succeed in the academic and professional environment of

the future, strengthening their position in a society that is increasingly dependent on information and communication technology. (Khusnood et al., 2020).

While the integration of technology in the madrasah offers many benefits, there are challenges to face. The first challenge is the constraints of infrastructure and access to the latest technology. Many madrasas, especially those located in remote areas or with limited funding, still struggle to provide adequate equipment and internet connectivity for students and educators. (Rizaldi et al., 2021). This limits the implementation of technology-based learning and prevents students from having an optimal learning experience. Besides, the lack of adequate infrastructure can also lead to a digital gap, where students in some madrasas may not have the same opportunity to develop digital skills compared to those in more capable institutions. (Siminto et al., 2024).

The second challenge is the need to develop the capacity of teachers. Effective technology integration in the madrasah requires teachers who are not only capable of using digital tools, but also capable of designing innovative and exciting learning using such technologies. (Zaini et al., 2023). However, not all teachers have the same expertise or readiness to use new technologies in teaching. Therefore, madrasas need to invest in the training and professional development of teachers to ensure they are equipped with the necessary skills. Without support for this professional development, the available technology may not be maximized in the learning process (Iqbal et al., 2023).

Third challenge, access gaps and digital skills. As a result of the previous two challenges, the issue of gaps in access and digital skills between madrasas in urban and rural areas has emerged. Madrasahs in urban areas tend to have better access to technology and resources for digital literacy when compared to madrasas in rural areas. (Tambak et al., 2023). This gap creates disparities in the quality of education and student learning outcomes. Addressing this problem requires comprehensive strategies, including cross-sectoral cooperation between governments, educational institutions, and the public, to ensure that every student, regardless of the location of his or her gymnasium, has equal access to learning and technological resources. (Consoli et al., 2023).

The integration of technology into madrasah education is not without challenges. However, with the joint commitment of all stakeholders, these problems can be addressed to create a more inclusive learning environment that is adapted to the needs of the 21st century.

The use of technology in improving the quality of learning in the madrasah

The use of technology can improve the quality of learning in the madrasah by enabling more effective personalization of learning. Digital technologies, such as learning management systems, interactive educational applications, and e-learning

platforms, provide an opportunity for teachers to organize learning materials that fit each student's learning speed and style. (Siskandar, S. 2020). In addition, technology helps in identifying students' strengths and weaknesses through sophisticated learning analytics, so that teachers can provide more accurate feedback and support students' individual improvement more consistently. (Tuhuteru et al., 2023).

Technology opens up opportunities for collaboration not only on a local scale but also globally. With online collaboration tools, such as discussion forums, video conferences, and cloud-based collaboration platforms, students at the madrasah can interact and collaborate with fellow students, teachers, and experts from all over the world (Aslan & Pong, 2023). It expands their insight and understanding of a wide range of subjects and cultures. Furthermore, technology provides access to unlimited learning resources, such as digital libraries, online courses, and open educational materials, giving students the opportunity to learn from the best resources in the world. (Prayogi et al., 2022).

The use of multimedia and interactive tools in learning can enhance student engagement and motivation. Visual tools, such as graphics, animations, and videos, can make lessons more interesting and understandable. Educational games and simulations, which combine entertainment and educational elements, can enhance student learning motivation by providing a more dynamic and interactive experience. (Rizaldi et al., 2021). Technologies such as augmented reality (AR) and virtual reality (VR) open up new dimensions in immersive learning, enabling students to experience and interact with learning materials in a more thorough and exciting way. (Anwar et al., 2019).

Through the strategic application of technology, the madrasah can not only improve the effectiveness of teaching but also make the learning experience more exciting and prepare students with the skills relevant to this digital age.

A suitable technology model is used in the context of the madrasah, among them; First, the Learning Management System (LMS). In the context, the use of Learning Management Systems (LMS) can be a very effective technology model. LMS provides an integrated platform that enables teachers to manage learning aspects, from the provision of learning materials, assignments, to assessments in a digital environment. The platform supports distance learning and accommodates the needs of a variety of student learning styles. With its easy-to-adjust functionality, LMS can be adapted to the special needs of the madrasah, enabling unique curriculum integration and supporting Islamic identity. In addition, LMS can facilitate collaborative and interactive learning, which enriches student learning experiences (Šumak et al., 2011; Astuti et al. 2023).

Second, the Game-based Educational Platform. The use of game-based educational technology (gamification) in the madrasah can improve the motivation and involvement of students in learning. Educational games designed to convey learning

concepts in an interesting and interactive format, can also stimulate critical thinking and student creativity. By embracing elements of Islam, this game can be an effective way to teach Islamic values, history, and teachings in a fun way. The software can be integrated into the school curriculum or used as an additional learning resource that can be accessed by students both at the school and at home. (Masrom, M. 2007).

Third, augmented reality. Augmented reality (AR) technology offers the possibility of making learning material 'live' by adding a layer of digital information to the real world. In the context of the madrasah, AR can be used to teach a wide range of subjects - from natural sciences, history, to Islamic education in a highly interactive way. For example, the use of AR to visualize historical mosques and important events in Islamic history, allows students to experience virtually and gain a deeper understanding of the material. AR applications can be tailored to the resources available in the madrasah, enabling the use of this technology ranging from simple immersive experiences using tablets and smartphones, to more complex experiences through specialized AR devices. (Yuen, A. H., & Ma, W. W. 2008).

Technological models such as LMS, game-based education, and AR, if applied wisely and adapted to the needs and conditions of the madrasah, can enrich learning experiences, enhance student engagement, and integrate Islamic values into technology-based teaching and learning.

Conclusion

The strategic and effective integration of technology into the madrasah education system has great potential to improve the quality of learning. Using tools such as Learning Management Systems (LMS), game-based education technologies, and augmented reality (AR), can help personalize learning experiences, enrich lesson materials with immersive experiences, open access to global learning resources, and enhance student engagement and motivation. Technology can support flexible and inclusive education, provide opportunities for madrasah students to collaborate with their peers both nationally and internationally, and acquire the skills needed in the digital age. However, the success of this technology integration depends on adequate training and support for educators, investment in adequate technological infrastructure, as well as the selection of solutions that fit the teaching context in the madrasah, including the Islamic values that form the basis of teaching.

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