Rima International Journal of Education (RIJE)
ISSN: 2756 – 6749 (p); 3141-2033 (e)
, Vol. 5, Issue 2, March. 2026; Page: 13—29 DOI: https://doi.org/10.65760/rijessu.v5.2.2

Effect of Instructional Technology on Students' Academic Achievement in Islamic Studies at Nassarawa Zonal Education Directorate, Kano, Nigeria: A Theoretical Perspective

[*1]Ahmad Shu'aibu Abdullahi & [2]Ahmad Abdullahi Ibrahim

[*1]Agricultural and Postharvest Training College, Kano (APTCOK). Email: ahmadshuaibu7@gmail.com

[2]Northwest University, Kano. Email: ahmad.daneji.aai@gmail.com

Abstract

The integration of instructional technology into classroom teaching has become an important strategy for improving students' learning experiences and academic achievement in modern education. Despite the increasing relevance of technology in teaching and learning, the instruction of Islamic Studies in many secondary schools still relies largely on traditional teaching approaches that limit students' engagement and understanding of instructional content. This paper examines the effect of instructional technology on students' academic achievement in Islamic Studies at the Nassarawa Zonal Education Directorate in Kano State, Nigeria. The paper adopts a theoretical approach by analysing relevant literature and educational theories related to technology integration in teaching and learning. Key concepts such as instructional technology, Islamic Studies education, and academic achievement are clarified, while the discussion is anchored on Constructivist Learning Theory, the Technology Acceptance Model, and Connectivism Theory. The paper argues that the effective integration of instructional technology, including multimedia resources, digital learning platforms, and audio-visual instructional materials, can enhance students' engagement, improve their understanding of Islamic teachings, and promote better academic performance. The paper also highlights challenges associated with the integration of technology in schools, including inadequate technological infrastructure and limited teacher training. It concludes that adopting technology-supported instructional strategies can significantly improve the quality of Islamic Studies education and recommends increased investment in educational technology and teacher capacity development.

Keywords: Instructional Technology; Islamic Studies Education; Academic Achievement; Educational Technology; Secondary Education

Cite this as: Abdullahi, A. S., & Ibrahim, A. A. (2026). Effect of Instructional Technology on Students' Academic Achievement in Islamic Studies at Nassarawa Zonal Education Directorate, Kano, Nigeria: A Theoretical Perspective. *Rima International Journal of Education, 5*(2), 13—29. DOI: https://doi.org/10.65760/rijessu.v5.2.2

Introduction

In recent years, the rapid advancement of digital technologies has significantly transformed educational practices across the world. The integration of information and communication technologies (ICT) into teaching and learning has become a central strategy for improving instructional effectiveness and students' academic achievement in contemporary education systems. The COVID-19 pandemic further accelerated the adoption of digital learning tools, highlighting the importance of instructional technology in ensuring continuity of education and enhancing learning experiences (Adedoyin & Soykan, 2020; Dhawan, 2020). As a result, educational institutions are increasingly adopting technology-driven instructional approaches to meet the needs of 21st-century learners.

Instructional technology plays a critical role in facilitating interactive, learner-centred, and flexible learning environments. Recent studies have shown that the use of digital tools such as multimedia resources, online learning platforms, and virtual instructional environments enhances students' engagement, motivation, and academic performance (Bond, 2020; Trust & Bond, 2020). These technologies enable teachers to present instructional content in diverse formats, thereby improving students' understanding and retention of knowledge. In addition, technology-supported learning environments promote collaboration, critical thinking, and independent learning, which are essential skills in modern education (Martin & Bolliger, 2018; Rapanta *et al.,* 2020).

In the context of religious education, particularly Islamic Studies, effective instructional strategies are essential for achieving both cognitive and moral learning outcomes. Islamic Studies education aims not only to impart knowledge of religious teachings but also to develop students' moral character and ethical behaviour. However, the teaching of Islamic Studies in many secondary schools continues to rely heavily on traditional methods such as lecture-based instruction and rote memorisation, which may limit students' engagement and deeper understanding of the subject. Contemporary educational research emphasises the need for innovative pedagogical approaches that integrate technology to enhance the teaching and learning of religious subjects (Sahin, 2018).

Recent empirical studies have demonstrated that the integration of instructional technology can significantly improve students' academic achievement across different subject areas. Technology-enhanced learning environments allow students to interact with instructional materials, explore concepts independently, and engage in collaborative learning activities, all of which contribute to improved learning outcomes (Darling-Hammond *et al.,* 2020; Goel *et al.,* 2020). Despite these benefits, several challenges continue to hinder the effective integration of instructional technology in many developing countries, including Nigeria. These challenges include inadequate technological infrastructure, limited access to digital resources, insufficient teacher training, and weak institutional support systems (Adedoyin & Soykan, 2020).

In Nigeria, particularly in Kano State, Islamic Studies remains a core subject due to its cultural and religious significance. However, the effective teaching of the subject is often constrained by limited instructional resources and the continued use of traditional teaching methods. The integration of instructional technology into Islamic Studies instruction therefore presents an opportunity to enhance teaching effectiveness and improve students' academic achievement.

Against this background, this paper examines the effect of instructional technology on students' academic achievement in Islamic Studies at the Nassarawa Zonal Education Directorate, Kano, Nigeria. Specifically, the paper explores how the use of technology-supported instructional strategies can enhance students' engagement, improve their understanding of Islamic teachings, and contribute to better academic performance.

Conceptual Clarification

Conceptual clarification is important in academic research because it provides clear explanations of the major concepts used in a study. It helps readers understand the meaning and scope of the key variables under investigation. In this paper, the major concepts discussed include instructional technology, Islamic Studies education, and academic achievement.

Instructional Technology

Instructional technology refers to the systematic use of technological tools, resources, and processes to facilitate effective teaching and learning. It involves the application of modern digital technologies such as computers, multimedia projectors, audio-visual materials, online learning platforms, internet resources, and educational software to improve instructional delivery and enhance students' learning experiences. In contemporary education, instructional technology extends beyond the mere use of devices to include the strategic design, implementation, and evaluation of technology-supported learning environments that promote meaningful learning outcomes (Bond, 2020; Trust & Whalen, 2020).

Scholars have emphasised that instructional technology encompasses both theoretical and practical dimensions of teaching and learning. It involves the integration of pedagogical principles with technological tools to create effective and engaging learning experiences. While earlier definitions by Reiser and Dempsey (2017) and Gagné *et al.* (2005) conceptualised instructional technology as the application of instructional design and learning theories, recent studies highlight its evolving nature in response to digital transformation in education. For instance, Adedoyin and Soykan (2020) note that instructional technology plays a critical role in enabling flexible, remote, and blended learning environments, particularly in response to global disruptions such as the COVID-19 pandemic.

In modern educational settings, instructional technology plays a crucial role in creating learner-centred environments where students actively participate in the learning process. The integration of multimedia elements such as text, images, audio, and video has been shown to enhance students' comprehension and retention of information by engaging multiple cognitive processes (Mayer, 2009; Dhawan, 2020). Furthermore, technology-supported learning environments encourage collaboration, critical thinking, and independent learning, which are essential skills for 21st-century learners (Rapanta *et al.,* 2020; Darling-Hammond *et al.,* 2020).

Recent research also indicates that instructional technology improves students' engagement and academic achievement by providing interactive and personalised learning experiences. Digital tools such as virtual classrooms, educational applications, and multimedia resources enable students to access diverse learning materials and participate actively in the learning process

(Bond, 2020). In addition, instructional technology supports differentiated instruction by allowing teachers to adapt content to meet the diverse needs and learning styles of students (Trust & Whalen, 2020).

Within the context of secondary school education, instructional technology includes the use of computers, interactive whiteboards, projectors, educational videos, online learning platforms, and mobile learning applications. These tools enable teachers to present lessons in more engaging and interactive ways and help students visualise abstract concepts more clearly. Therefore, instructional technology can be regarded as an essential component of modern education that enhances instructional effectiveness, promotes active learning, and improves students' academic achievement.

Islamic Studies Education

Islamic Studies education refers to the teaching and learning of Islamic knowledge, values, and principles derived from the Qur'an and the traditions of Prophet Muhammad (peace be upon him). The subject is designed to provide learners with a comprehensive understanding of Islamic beliefs, practices, and moral teachings. It typically covers key areas such as Qur'anic studies, Hadith studies, Islamic jurisprudence (Fiqh), Islamic history, and Islamic ethics. Through engagement with these areas, learners develop a deeper understanding of the religious, moral, and cultural foundations of Islam.

Islamic education is widely recognised as a holistic system of learning that integrates spiritual, intellectual, and moral development. It aims to produce individuals who are not only knowledgeable about Islamic teachings but also capable of applying those teachings in their daily lives (Halstead, 2004; Sahin, 2018). Contemporary perspectives on Islamic education further emphasise the need to align traditional religious instruction with modern pedagogical practices in order to enhance learners' engagement and understanding (Sahin, 2018).

In many Muslim societies, Islamic Studies plays a vital role in shaping the moral and spiritual development of young people. The subject promotes values such as honesty, discipline, respect for others, compassion, and social responsibility, which are essential for personal and societal development. Recent studies have highlighted the importance of adopting innovative and

learner-centred approaches in teaching Islamic Studies to make the subject more relevant and engaging in the 21st century (Sahin, 2018; Darling-Hammond et al., 2020).

In Nigeria, particularly in northern regions such as Kano State where Islam plays a significant role in social and cultural life, Islamic Studies remains an important subject within the school curriculum. It contributes to the development of students' moral character and strengthens their religious identity. However, the effectiveness of Islamic Studies education depends largely on the teaching methods employed by teachers. Contemporary research suggests that integrating modern instructional strategies, including instructional technology, can significantly enhance students' understanding of Islamic teachings and improve learning outcomes (Adedoyin & Soykan, 2020; Rapanta et al., 2020).

Academic Achievement

Academic achievement refers to the level of success attained by students in their educational activities, typically measured through tests, examinations, assignments, and other forms of assessment. It reflects the extent to which learners have acquired knowledge, skills, and competencies in a particular subject or area of study. Academic achievement is commonly used as an indicator of the effectiveness of teaching and learning processes in educational institutions.

Traditionally, academic achievement has been associated with the attainment of educational objectives, including cognitive skills such as knowledge, comprehension, application, analysis, and evaluation (Bloom, 1956). However, contemporary perspectives extend this concept to include the ability of learners to apply knowledge meaningfully and demonstrate critical thinking and problem-solving skills in real-life contexts (Darling-Hammond et al., 2020).

Recent studies indicate that students' academic achievement is influenced by multiple factors, including teaching methods, learning environment, availability of instructional resources, student motivation, and access to technology-enhanced learning opportunities (Bond, 2020; Dhawan, 2020). Technology-supported instructional approaches, in particular, have been shown to improve students' engagement and facilitate deeper understanding of subject content, thereby contributing to improved academic performance.

In the context of Islamic Studies education, academic achievement refers to students' level of understanding and performance in Islamic Studies subjects as demonstrated through classroom assessments and external examinations. The effective use of instructional strategies, especially those supported by instructional technology, can enhance students' engagement and comprehension of Islamic teachings. For instance, the use of multimedia presentations, audio-visual materials, and digital learning platforms can help students better understand abstract religious concepts and improve their academic performance (Rapanta et al., 2020; Adedoyin & Soykan, 2020).

Theoretical Framework

A theoretical framework provides the foundation upon which a study is built. It explains the theories that guide the understanding of the relationship between the variables investigated in a study. In educational research, theories help to explain how learning occurs and how different instructional approaches influence students' learning outcomes. Since this paper examines the effect of instructional technology on students' academic achievement in Islamic Studies, it is important to anchor the discussion on relevant learning theories that explain how technology supports effective teaching and learning. This paper is guided by Constructivist Learning Theory, the Technology Acceptance Model (TAM), and Connectivism Theory.

Constructivist Learning Theory

Constructivist learning theory emphasises that learners actively construct knowledge through interaction with their learning environment rather than passively receiving information from teachers. The theory suggests that learning occurs when students engage with instructional materials, explore ideas, and connect new knowledge with their prior experiences. Foundational scholars such as Piaget (1972) argue that knowledge is constructed through cognitive processes that enable learners to interpret and reorganise information based on experience. Similarly, Vygotsky (1978) highlights the importance of social interaction in learning through his concept of the Zone of Proximal Development, which explains how learners achieve higher levels of understanding with appropriate support.

While these classical perspectives remain relevant, recent studies have reinforced the importance of constructivist approaches in technology-

enhanced learning environments. Contemporary research shows that digital learning tools support active knowledge construction by enabling learners to interact with content, collaborate with peers, and engage in problem-solving activities (Rapanta et al., 2020; Bond, 2020). Instructional technology therefore aligns strongly with constructivist principles, as it facilitates learner-centred environments where students actively participate in the learning process.

Digital tools such as multimedia presentations, educational videos, interactive simulations, and online discussion platforms enable students to explore concepts actively and engage with learning materials in meaningful ways. These tools are particularly useful in subjects such as Islamic Studies, where abstract concepts and historical contexts can be better understood through visualisation and interactive learning. Consequently, the integration of instructional technology enhances students' understanding and improves academic achievement (Darling-Hammond et al., 2020).

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) explains how individuals adopt and use technological systems. The model, developed by Davis (1989), identifies perceived usefulness and perceived ease of use as the key factors influencing technology adoption. Perceived usefulness refers to the extent to which individuals believe that using a particular technology will enhance their performance, while perceived ease of use relates to how effortless the technology is to use.

Recent studies have extended the application of TAM in educational contexts, particularly in understanding teachers' adoption of instructional technology. Research indicates that teachers are more likely to integrate digital tools into their instructional practices when they perceive such technologies as beneficial to teaching effectiveness and student learning outcomes (Adedoyin & Soykan, 2020; Trust & Whalen, 2020). Conversely, lack of training, technical support, and confidence in using technology can limit its adoption.

In the context of Islamic Studies education, teachers' attitudes toward instructional technology play a crucial role in determining how effectively technological tools are integrated into classroom instruction. When teachers perceive technology as both useful and easy to use, they are more likely to adopt digital tools such as multimedia presentations, projectors, and

educational software. This, in turn, enhances students' engagement and improves their academic performance (Bond, 2020).

Connectivism Theory

Connectivism is a contemporary learning theory that explains how learning occurs in the digital age through networks and technological systems. Proposed by Siemens (2005), the theory posits that knowledge is distributed across networks of information sources and that learning occurs when individuals connect with these networks.

Recent research supports the relevance of connectivism in modern education, particularly in technology-driven learning environments. Studies show that digital platforms, online learning communities, and multimedia resources enable learners to access diverse sources of information, collaborate with others, and engage in continuous learning beyond the traditional classroom (Dhawan, 2020; Rapanta et al., 2020). This reflects the growing importance of networked learning in the 21st century.

In the context of Islamic Studies education, connectivism highlights the potential of instructional technology to expand students' access to Islamic knowledge. Through digital tools, students can listen to Qur'anic recitations, access online lectures, explore digital Islamic libraries, and participate in virtual discussions. These opportunities enhance students' engagement with learning materials and contribute to improved academic achievement (Adedoyin & Soykan, 2020).

Relevance of the Theories to the Study

The three theories discussed above provide a comprehensive framework for understanding the relationship between instructional technology and students' academic achievement. Constructivist learning theory explains how technology-supported interactive environments enhance students' understanding of instructional content. The Technology Acceptance Model highlights the role of teachers' perceptions and attitudes in determining the effective use of instructional technology in classrooms. Connectivism theory emphasises the importance of digital networks and technological resources in facilitating modern learning experiences.

Together, these theories support the argument that the effective integration of instructional technology in teaching Islamic Studies can create engaging learning environments, improve students' comprehension of religious concepts, and enhance their academic performance. The combination of these theoretical perspectives provides a strong foundation for analysing how instructional technology influences learning outcomes in contemporary educational settings.

Review of Related Literature

The integration of instructional technology in education has attracted significant attention from scholars and educators due to its potential to improve teaching effectiveness and students' academic achievement. Instructional technology refers to the systematic use of technological tools, digital resources, and multimedia applications to support the teaching and learning process. Over the years, researchers have examined how technology-based instructional approaches influence students' engagement, motivation, and learning outcomes across different subject areas.

Scholars have consistently emphasised that the use of instructional technology enhances the quality of instruction and promotes effective learning. According to Robert A. Reiser and John V. Dempsey, instructional technology involves the systematic design, development, utilisation, and evaluation of learning processes and resources that facilitate effective teaching and improve students' learning experiences (Reiser & Dempsey, 2017). The integration of technology into teaching allows educators to present information using multimedia formats such as images, audio, video, and animations, thereby making learning more interactive and engaging for students.

Similarly, Robert E. Mayer explains that multimedia instruction enhances students' cognitive processing by presenting information through both visual and verbal channels, which improves understanding and retention of knowledge (Mayer, 2009). This approach is particularly useful in subjects where abstract or complex concepts need to be explained clearly. Multimedia presentations, simulations, and audio-visual materials can therefore help students better comprehend instructional content.

Several studies have also highlighted the positive influence of instructional technology on students' academic achievement. For instance, Thomas Bates notes that technology-supported learning environments encourage active

participation, collaborative learning, and independent study, all of which contribute to improved learning outcomes (Bates, 2019). Similarly, Margaret D. Roblyer and Aaron H. Doering report that technology-based instructional strategies enable teachers to create engaging learning environments that enhance students' motivation and academic performance (Roblyer & Doering, 2014).

In addition, instructional technology provides opportunities for teachers to diversify their instructional methods and address different learning styles among students. According to Dale H. Schunk, effective learning occurs when instructional methods are adapted to learners' needs and when students actively participate in the learning process (Schunk, 2012). The use of instructional technology supports this process by allowing teachers to present information in multiple formats and encourage interactive learning experiences.

In the context of Islamic Studies education, the use of innovative teaching strategies is particularly important for enhancing students' understanding of religious concepts and values. Islamic Studies is not only concerned with the acquisition of religious knowledge but also with the development of moral character and ethical behaviour among learners. According to J. Mark Halstead, Islamic education aims to nurture morally responsible individuals by integrating spiritual, intellectual, and ethical dimensions of learning (Halstead, 2004). Therefore, effective teaching methods are necessary to ensure that students understand and internalise Islamic teachings.

However, research indicates that the teaching of Islamic Studies in many schools still relies heavily on conventional instructional approaches such as lecture methods and memorisation. While these methods may transmit factual information, they may not sufficiently promote active learning or critical thinking among students. According to Abdullah Sahin, contemporary Islamic education requires innovative pedagogical approaches that engage students actively and encourage deeper reflection on religious teachings (Sahin, 2018).

Instructional technology has the potential to improve the teaching of Islamic Studies by making lessons more interactive and accessible. Digital tools such as audio recordings of Qur'anic recitations, multimedia presentations on Islamic history, and educational videos explaining Islamic jurisprudence can enhance students' understanding of complex religious concepts. These

technological resources can also increase students' motivation and interest in learning Islamic Studies.

Empirical studies in educational technology have further demonstrated the positive impact of technological integration on students' academic achievement. According to Linda Darling-Hammond and her colleagues, technology-enhanced learning environments support deeper learning by allowing students to explore concepts, collaborate with peers, and apply knowledge in meaningful contexts (Darling-Hammond et al., 2020). Such learning environments promote critical thinking and problem-solving skills, which contribute to improved academic performance.

Despite these benefits, several challenges hinder the effective integration of instructional technology in many educational institutions. These challenges include inadequate technological infrastructure, limited access to digital resources, insufficient teacher training, and lack of institutional support. According to Michael Fullan, successful integration of educational technology requires not only the availability of technological tools but also adequate teacher training and supportive educational policies (Fullan, 2013).

In Nigeria, the integration of instructional technology in teaching and learning remains uneven across different schools and regions. Many schools face challenges related to limited technological facilities, poor internet connectivity, and inadequate professional development opportunities for teachers. These challenges can affect the effectiveness of technology-based instructional approaches in improving students' academic achievement.

Nevertheless, the potential benefits of instructional technology in enhancing teaching effectiveness and students' learning outcomes remain widely recognised. When properly implemented, technology-supported instructional strategies can transform traditional teaching practices and create more engaging learning environments for students. In the context of Islamic Studies education, the use of instructional technology can facilitate better understanding of religious concepts, improve students' motivation to learn, and enhance their academic achievement.

Therefore, examining the influence of instructional technology on students' academic achievement in Islamic Studies is important for understanding how modern teaching strategies can improve the quality of religious education in secondary schools.

Implications for Teaching and Educational Policy

The discussion on the role of instructional technology in improving students' academic achievement in Islamic Studies has several important implications for teaching practice, curriculum development, and educational policy. As educational systems continue to evolve in response to technological advancements, integrating instructional technology into classroom instruction has become increasingly necessary for improving the quality of education and students' learning outcomes.

First, the integration of instructional technology has important implications for teaching practices in Islamic Studies. Teachers play a central role in determining how technology is utilised in the classroom. When teachers incorporate digital tools such as multimedia presentations, educational videos, interactive learning applications, and online resources into their lessons, they can create more engaging and interactive learning environments for students. Such environments encourage students' active participation and enhance their understanding of complex concepts. According to Robert E. Mayer, multimedia instructional approaches that combine visual and verbal information significantly improve students' comprehension and retention of knowledge (Mayer, 2009). Therefore, Islamic Studies teachers should be encouraged to adopt technology-based instructional strategies that facilitate active learning and improve students' academic performance.

Second, the findings of this discussion highlight the need for professional development and training programmes for teachers. Many teachers may lack the necessary skills and confidence to effectively integrate instructional technology into their teaching. Teacher training programmes should therefore focus on equipping educators with the knowledge and competencies required to use digital tools in instructional delivery. According to Michael Fullan, successful educational reform requires continuous professional development that enables teachers to adapt to new instructional approaches and technological innovations (Fullan, 2013). Providing teachers with adequate training will enhance their ability to utilise instructional technologies effectively in teaching Islamic Studies.

Third, the integration of instructional technology has implications for curriculum planning and development. Curriculum planners should consider incorporating technology-based instructional strategies into the Islamic

Studies curriculum in order to make the subject more engaging and relevant to contemporary learners. For instance, the curriculum could encourage the use of multimedia resources, digital Qur'anic recitations, interactive learning platforms, and educational software to support teaching and learning activities. According to Thomas Bates, modern curricula should reflect the changing nature of knowledge and learning by integrating digital technologies that support flexible and interactive learning environments (Bates, 2019).

Fourth, educational policy makers have a significant role to play in promoting the effective use of instructional technology in schools. Governments and educational authorities should invest in technological infrastructure such as computers, projectors, internet connectivity, and digital learning resources to support technology-based instruction. In addition, policies should be developed to ensure that schools have access to adequate technological facilities and technical support systems. According to Linda Darling-Hammond and colleagues, educational policies that support technology integration can significantly enhance teaching quality and promote improved learning outcomes among students (Darling-Hammond et al., 2020).

Furthermore, school administrators should create supportive learning environments that encourage the use of instructional technology in teaching. This includes providing teachers with access to technological resources, allocating time for professional development, and fostering collaboration among teachers to share innovative teaching practices. Such institutional support can help ensure the successful implementation of instructional technology in schools.

In the context of Islamic Studies education in Nigeria, particularly in Kano State, the effective integration of instructional technology can contribute significantly to improving the teaching and learning of the subject. By adopting modern instructional approaches supported by technology, teachers can enhance students' interest in Islamic Studies and promote deeper understanding of Islamic teachings. Consequently, this can lead to improved academic achievement and stronger moral development among students.

Conclusion

Instructional technology has become an essential component of modern education due to its potential to enhance teaching effectiveness and improve students' learning outcomes. The integration of technological tools into

classroom instruction provides opportunities for teachers to present learning materials in more engaging and interactive ways, thereby promoting active participation and deeper understanding among students.

This paper examined the effect of instructional technology on students' academic achievement in Islamic Studies at the Nassarawa Zonal Education Directorate in Kano, Nigeria. The discussion highlighted the importance of instructional technology in creating learner-centred instructional environments that support meaningful learning experiences. The paper also emphasised that the effective use of digital tools such as multimedia presentations, audio-visual materials, and online learning resources can enhance students' comprehension of Islamic concepts and improve their academic performance.

The theoretical perspectives discussed in this paper—including Constructivist Learning Theory, the Technology Acceptance Model, and Connectivism Theory—provide a strong foundation for understanding how instructional technology can support effective teaching and learning processes. These theories emphasise the importance of interactive learning environments, positive attitudes toward technology adoption, and the use of digital networks to facilitate knowledge acquisition.

Despite the numerous benefits associated with instructional technology, several challenges such as limited technological infrastructure, inadequate teacher training, and insufficient institutional support may hinder its effective implementation in some educational settings. Addressing these challenges requires collaborative efforts from teachers, school administrators, curriculum planners, and educational policymakers.

Overall, the integration of instructional technology in the teaching of Islamic Studies has the potential to transform traditional teaching practices and improve students' academic achievement. By adopting innovative instructional strategies supported by technology, educators can create engaging learning environments that enhance students' understanding of Islamic teachings and contribute to their intellectual and moral development.

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