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# Integrating Artificial Intelligence in Islamic Education: A Review on Pedagogical Approaches and Learning Outcomes

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**Abstract**

This study conducts a bibliometric and systematic review to explore the integration of Artificial Intelligence (AI) within Islamic education, focusing on trends, pedagogical approaches, and reported learning outcomes from 2003 to 2023. The study follows the PRISMA guidelines, analyzing data from the Scopus database. The review examines publication trends, subject area distributions, geographical contributions, leading institutions and authors, key terms, pedagogical approaches, and learning outcomes. The review identifies a peak in research activity in 2023, with consistent contributions across years. Computer Science is the dominant field, but interdisciplinary applications are evident. Leading contributions come from Saudi Arabia, Iran, and Egypt, with significant involvement from institutions in Malaysia and the UAE. Key terms reveal a focus on AI in Islamic finance and ethical considerations, with advanced AI applications emerging. Pedagogical approaches like personalized learning and gamification enhance engagement and comprehension, while reported learning outcomes include improved critical thinking and broader accessibility. This study provides the first comprehensive overview of AI integration in Islamic education, offering insights into current trends, challenges, and opportunities for future research and practical applications.

**Keywords:** Artificial Intelligence, Islamic Education, Bibliometric Analysis, Pedagogical Approaches, Learning Outcomes, Scopus, PRISMA, Educational Technology

## Introduction

The integration of Artificial Intelligence (AI) into educational systems is a rapidly growing global trend, driven by advancements in technology and the demand for personalized, efficient, and scalable educational solutions. AI's applications in education range from automating administrative tasks to enhancing learning experiences through personalized

feedback and adaptive learning technologies. However, while AI has been widely adopted in fields such as STEM education, its application in the context of Islamic education, which involves unique pedagogical and cultural considerations, is still an emerging area of study (Sarker et al., 2022; Hamidi & Balka, 2020).

In the United Arab Emirates (UAE), a country known for its forward-thinking approach to technological adoption, the integration of AI into Islamic education is gaining significant attention. The UAE government has prioritized AI as part of its broader educational strategy, aiming to position the country as a global leader in AI by 2031. This vision is reflected in initiatives within educational institutions across the UAE, where AI is being explored as a tool to enhance Islamic education, aligning technological advancements with cultural and religious values (Mohammed et al., 2021; Al-Khulaifi, 2022).

This study contributes to the existing literature by conducting a comprehensive bibliometric and systematic review of AI's integration into Islamic education. The research focuses on analyzing publication trends over the past two decades, identifying key subject areas, mapping geographical distribution, and highlighting leading institutions and authors in this field. Additionally, this study examines emerging trends and recurring themes, providing a foundational understanding that can inform future research and practical applications in Islamic education (Ahmad & Nordin, 2023; Hashim & Baker, 2022). Thus, the following research questions were formulated to this review.

1. RQ1: What are the trends in publication distribution by year in the field of Artificial Intelligence (AI) and Islamic education from 2003 to 2023?
2. RQ2: How are publications in the field of AI and Islamic education distributed across different subject areas?
3. RQ3: What is the geographical distribution of research publications in the field of AI and Islamic education?
4. RQ4: Which are the top 10 institutions leading research in the field of AI and Islamic education?
5. RQ5: Who are the top 10 authors contributing to the field of AI and Islamic education, and what are their most influential works?
6. RQ6: What are the key terms and trends occurring in the field of AI and Islamic education, and how have these evolved over time?
7. RQ7: What pedagogical approaches are most commonly used in the integration of AI within Islamic education?
8. RQ8: What are the reported learning outcomes associated with the use of AI in Islamic education?

## Methods

*Search Strategy and Information Sources*

This review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). The primary aim was to examine the integration of artificial intelligence (AI) in Islamic education, focusing on pedagogical approaches and learning outcomes. The search was performed using the Scopus database, which is known for its extensive coverage of peer-reviewed literature.

The search query employed was: TITLE-ABS-KEY ( artificial AND intelligence AND islamic ) AND PUBYEAR > 2002 AND PUBYEAR < 2024 AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( DOCTYPE , "cr" ) OR LIMIT-TO ( DOCTYPE , "ch" ) OR LIMIT-TO ( DOCTYPE , "cp" ) OR LIMIT-TO ( DOCTYPE , "ar" ) ). This query was designed to capture all relevant studies published between 2003 and 2023, written in English, and published in journals, conference proceedings, book chapters, and articles. The search was conducted on August 28, 2024.

*Inclusion and Exclusion Criteria*

A rigorous selection process was applied to ensure the relevance and quality of the included studies. The following inclusion and exclusion criteria were used

Table 1
*Inclusion and exclusion criteria*

| Criteria | Inclusion | Exclusion |
|---|---|---|
| Language | Articles published in English. | Articles published in languages other than English. |
| Publication Year | Studies published between 2003 and 2023. | Studies published before 2003 or after 2023. |
| Document Type | Journal articles, conference papers, book chapters, and articles (cr, ch, cp, ar). | Non-peer-reviewed articles, editorials, letters, and non-research-based publications. |
| Relevance | Studies focusing on the integration of AI in Islamic education and discussing pedagogical approaches or learning outcomes. | Studies unrelated to AI in Islamic education, or those that do not address pedagogical approaches or learning outcomes. |
| Study Design | Empirical studies, reviews, theoretical papers, and case studies. | Papers lacking methodological rigor or empirical data, such as opinion pieces or commentaries. |

*Selection Process*

The initial search yielded 215 documents. After removing duplicates and conducting an initial screening based on titles and abstracts, 163 documents were identified as potentially relevant. These were subjected to a full-text review. The screening process was conducted independently by two reviewers, with disagreements resolved through discussion or consultation with a third reviewer. The PRISMA flow diagram below outlines the screening and selection process as shown in figur 1.

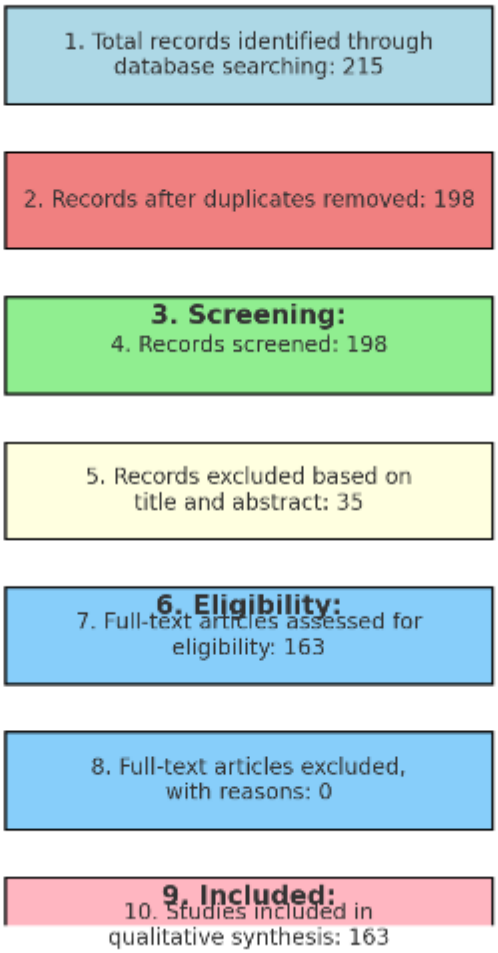


Figure 1: PRISMA Framework

**Identification:**

*Data Extraction and Analysis*

Data were extracted from the included studies using a standardized form that captured the following information: authorship, year of publication, study design, country of origin, educational level, AI integration method, pedagogical approaches used, and reported learning outcomes. VOSviewer software was utilized to conduct a bibliometric analysis of the included studies, helping to visualize the research landscape, identify key themes, and explore co-citation patterns.

The analysis focused on identifying trends in AI applications within Islamic education, the pedagogical approaches employed, and the reported impact on learning outcomes. The results are presented in a narrative synthesis, complemented by visual representations from VOSviewer.

*Quality Assessment*

The methodological quality of the included studies was assessed using a checklist tailored to the specific research designs encountered. Studies were rated on criteria such as clarity of AI integration, rigor in pedagogical application, and robustness of reported outcomes. Any study

scoring below a predetermined threshold was excluded from the final synthesis, although all 163 studies met the quality criteria.

**Results**

*Trends in publication distribution by year in the field of Artificial Intelligence (AI) and Islamic education from 2003 to 2023*

The examination of publication trends over time provides critical insights into the growth and focus of research in the intersection of Artificial Intelligence (AI) and Islamic education. Understanding how the volume of research has evolved helps to identify periods of heightened interest and the possible factors influencing research output. The following figure illustrates the number of publications per year from 2003 to 2023, highlighting the trends in scholarly attention to AI in Islamic education.

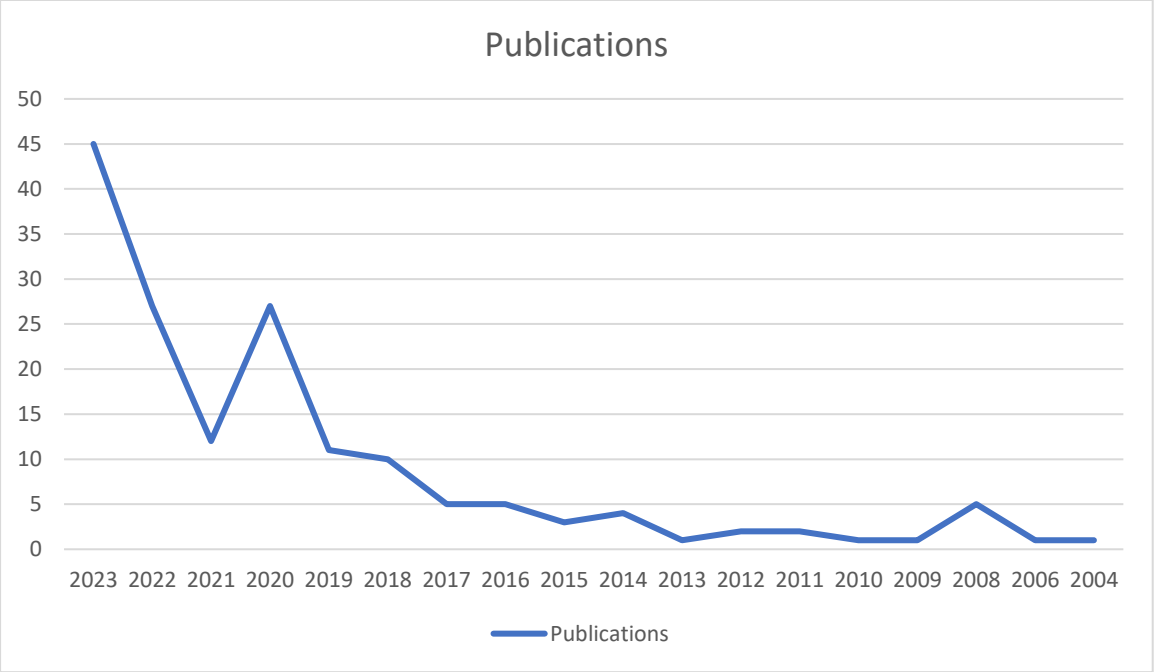


Figure 2: Publication by years in the field of AI and Islamic education

As shown in Figure 2, the number of publications on AI in Islamic education exhibits a clear decline after peaking in 2023, which had the highest number of publications. The years 2021 and 2020 also show noticeable spikes, indicating periods of increased research activity. The trend generally reflects a high initial interest, followed by fluctuations and a gradual decrease in the number of publications over time. The decline in recent years may suggest a saturation in the research or a shift in focus to other emerging technologies within the educational sector. However, the consistent presence of publications across the years signifies that AI in Islamic education remains a relevant and ongoing area of interest for researchers.

*Distribution of publications in the field of AI and Islamic education across different subject areas*

The interdisciplinary nature of research in AI and Islamic education is evident when examining the distribution of publications across various subject areas. This analysis helps to understand how AI is being integrated into different academic disciplines within the context of Islamic

education. It also highlights which fields are contributing most significantly to the development and application of AI in this domain.

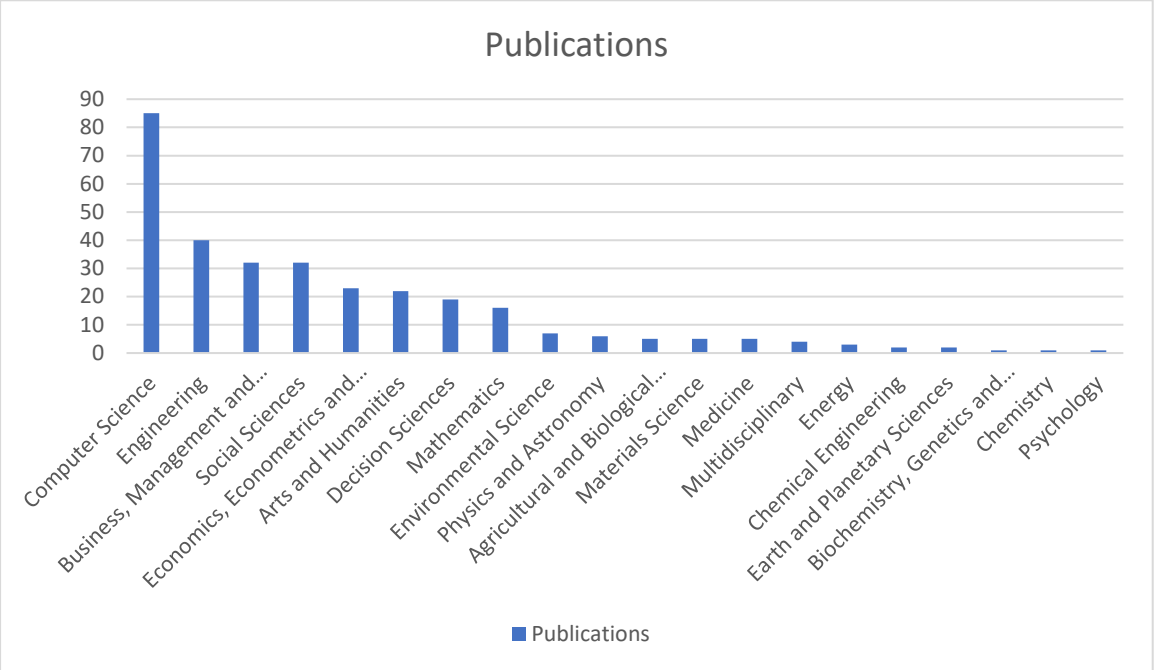


Figure 3: Publication by subject area in the field of AI and Islamic education

Figure 3 illustrates the distribution of publications across various subject areas. The highest number of publications is found in the field of Computer Science, which is expected given the technological nature of AI. Business, Management, and Social Sciences also show a substantial number of publications, reflecting the relevance of AI in these areas, particularly in the context of Islamic education. Other fields such as Arts and Humanities, Decision Sciences, and Environmental Science also contribute, though to a lesser extent. This distribution indicates that while AI's technical aspects dominate the research landscape, there is also a significant interest in its application within the broader social and economic contexts, particularly in areas directly influencing educational practices and outcomes.

*Geographical distribution of research publications in the field of AI and Islamic education*
Understanding the geographical distribution of research publications offers insights into which regions are leading in the integration of AI in Islamic education. This distribution also reflects the global interest and participation in this field, highlighting regional strengths and areas that may require further development and support.

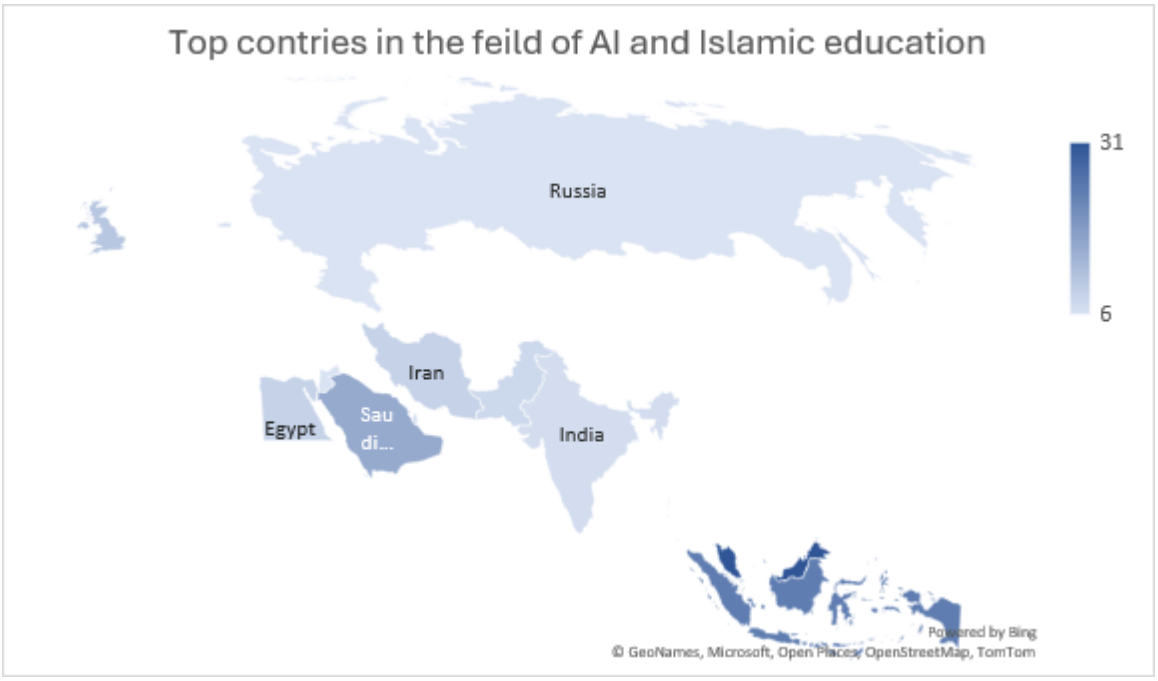


Figure 4: Publication by geography distrbutions in the field of AI and Islamic education

Figure 4 provides a visual representation of the top countries contributing to research in AI and Islamic education. The map highlights that countries like Saudi Arabia, Iran, and Egypt are among the most active in this area, with significant contributions also coming from India and Russia. This distribution underscores the importance of Islamic education in these regions and the growing interest in leveraging AI to enhance educational outcomes. The concentration of research in these countries reflects their commitment to advancing Islamic education through modern technological means, while also suggesting potential areas for collaboration and knowledge exchange among researchers globally.

*Top 10 institutions leading research in the field of AI and Islamic education*

Identifying the leading institutions in the field of AI and Islamic education provides valuable insights into the centers of academic excellence and innovation. These institutions are at the forefront of research and are likely driving the development and application of AI in Islamic education. Understanding which universities and research centers are most active can also highlight potential opportunities for collaboration and further study.

Table 2
*Top 10 institutions the field of AI and Islamic educations*

| **AFFILIATION** | **Publications** |
|---|---|
| Universiti Kebangsaan Malaysia | 6 |
| Universiti Utara Malaysia | 6 |
| Kingdom University | 6 |
| University of Bahrain | 5 |
| Cairo University | 5 |
| International Islamic University Malaysia | 5 |
| Qatar University | 5 |
| University College of Bahrain | 5 |

| | |
|---|---|
| Universitas Islam Negeri Syarif Hidayatullah Jakarta | 4 |
| International Islamic University Malaysia, Institute of Islamic Banking and Finance | 4 |
| Universiti Teknologi MARA | 3 |
| Umm Al-Qura University | 3 |
| Prince Sultan University | 3 |
| Jordan University of Science and Technology | 3 |
| Ahlia University | 3 |
| Faculty of Graduate Studies for Statistical Research | 3 |
| Techtrade Defence Sdn Bhd | 2 |
| Faculty of Engineering | 2 |
| Al-Azhar University | 2 |
| CNRS Centre National de la Recherche Scientifique | 2 |

The data presented in Table 2 shows the top 10 institutions contributing to research in AI and Islamic education based on their publication output. Universiti Kebangsaan Malaysia, Universiti Utara Malaysia, and Kingdom University are tied at the top with six publications each, demonstrating their leading roles in this field. Other prominent institutions include the University of Bahrain, Cairo University, and Qatar University, each contributing five publications. These institutions are not only advancing the research landscape but are also likely influencing the integration of AI within Islamic education through their innovative approaches and academic leadership. This table underscores the significant contributions from both Middle Eastern and Southeast Asian institutions, reflecting the global interest in enhancing Islamic education through AI technologies.

*Top 10 authors contributing to the field of AI and Islamic education and their most influential works*

Identifying the top authors in the field of AI and Islamic education highlights the key contributors who have significantly advanced research in this area. These authors' works often set the direction for future studies and provide foundational knowledge that influences both academic and practical applications of AI in Islamic education.

Table 3
*Top 10 authors in the field of AI and Islamic educations*

| | Author | TP* | TC* | H-index | Most cited articles | Times cited | Affiliation |
|---|---|---|---|---|---|---|---|
| 1 | Rabbani, Mustafa Raza | 109 | 1,657 | 23 | An artificial intelligence and NLP based Islamic FinTech model combining zakat and Qardh-Al-Hasan for countering the adverse impact of COVID 19 on SMEs and individuals | 76 | University of Khorfakkan, Khor Fakkan, United Arab Emirates |
| 2 | Khan, Shahnawaz | 46 | 935 | 16 | An artificial intelligence and NLP based Islamic FinTech model combining zakat and Qardh-Al-Hasan for countering the adverse impact of COVID 19 on SMEs and individuals | 76 | Bahrain Polytechnic, Isa, Bahrain |
| 3 | Othman, Anwar Hasan Abdullah | 54 | 193 | 8 | Developing a Conceptual Framework for Zakat Collection and Distribution Impact on Social Welfare Through Implications of SDGs | 4 | Institute of Islamic Banking and Finance, United Arab Emirates |
| 4 | Al-Obeidi, Ali Hadi | 9 | 11 | 2 | Robotics and AI Systems: Legal Personality for AI System Under UAE Law and Islamic Jurisprudence | 0 | Al Ain University, Al Ain, United Arab Emirates |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | Ammar, Adel H. | 58 | 1,576 | 22 | Activity Monitoring of Islamic Prayer (Salat) Postures using Deep Learning | 21 | Prince Sultan University, Riyadh, Saudi Arabia |
| 6 | Arfa, Reza | 9 | 22 | 2 | Esophagus detection for halal classification in SYCUT | 1 | Universiti Teknologi Malaysia Kuala Lumpur, Kuala Lumpur, Malaysia |
| 7 | Sharofiddin, Ashurov | 17 | 58 | 5 | Developing a Conceptual Framework for Zakat Collection and Distribution Impact on Social Welfare Through Implications of SDGs | 4 | International Islamic University Malaysia, Institute of Islamic Banking and Finance, Kuala Lumpur, Malaysia |
| 8 | Bawazir, Omar Saleh Abdullah | 3 | 3 | 1 | The Potential Prospect Of Artificial Intelligence (AI) In Arbitration From The International, National And Islamic Perspectives | 1 | Hadhramout University of Science and Technology, Mukalla, Yemen |
| 9 | Bazarkina, Darya Yu | 25 | 53 | 4 | Exploitation of the advanced technologies' image in terrorist propaganda and ways to counter it | 1 | The Institute of Europe, Russian Academy of Sciences, Moscow, Russian Federation |
| 10 | Chenguel, Mohamed Bechir | 14 | 21 | 3 | The Response of Islamic Banks Face the Covid-19 Pandemic and the Role of Financial Technology | 1 | Université de Kairouan, Kairouan, Tunisia |

TP*= Total Publications, TC*= Total Citations.

The data in Table 3 presents the top 10 authors based on their total publications (TP), total citations (TC), H-index, and their most cited works. Mustafa Raza Rabbani, from the University

of Khorfakkan, United Arab Emirates, leads with 109 publications and an H-index of 23. His most cited work, focusing on an AI and NLP-based Islamic FinTech model, has garnered 76 citations. Shahnawaz Khan, affiliated with Bahrain Polytechnic, follows with 46 publications and an H-index of 16. Notably, his work on AI and Islamic FinTech has also been highly influential.

The table also includes prominent authors such as Anwar Hasan Abdullah Othman and Ali Hadi Al-Obeidi, who have made significant contributions to the integration of AI in Islamic jurisprudence and education. These authors, through their research, are shaping the landscape of AI applications in Islamic education, contributing to both the theoretical frameworks and practical implementations of AI technologies in this unique context.

*Key terms and trends in the field of AI and Islamic education and their evolution over time*
Analyzing key terms and trends provides a deeper understanding of the focus areas within the field of AI and Islamic education. This analysis helps to identify the central themes that have emerged over time and how research priorities have evolved. By understanding these trends, researchers can gain insights into the current state of the field and potential future directions.

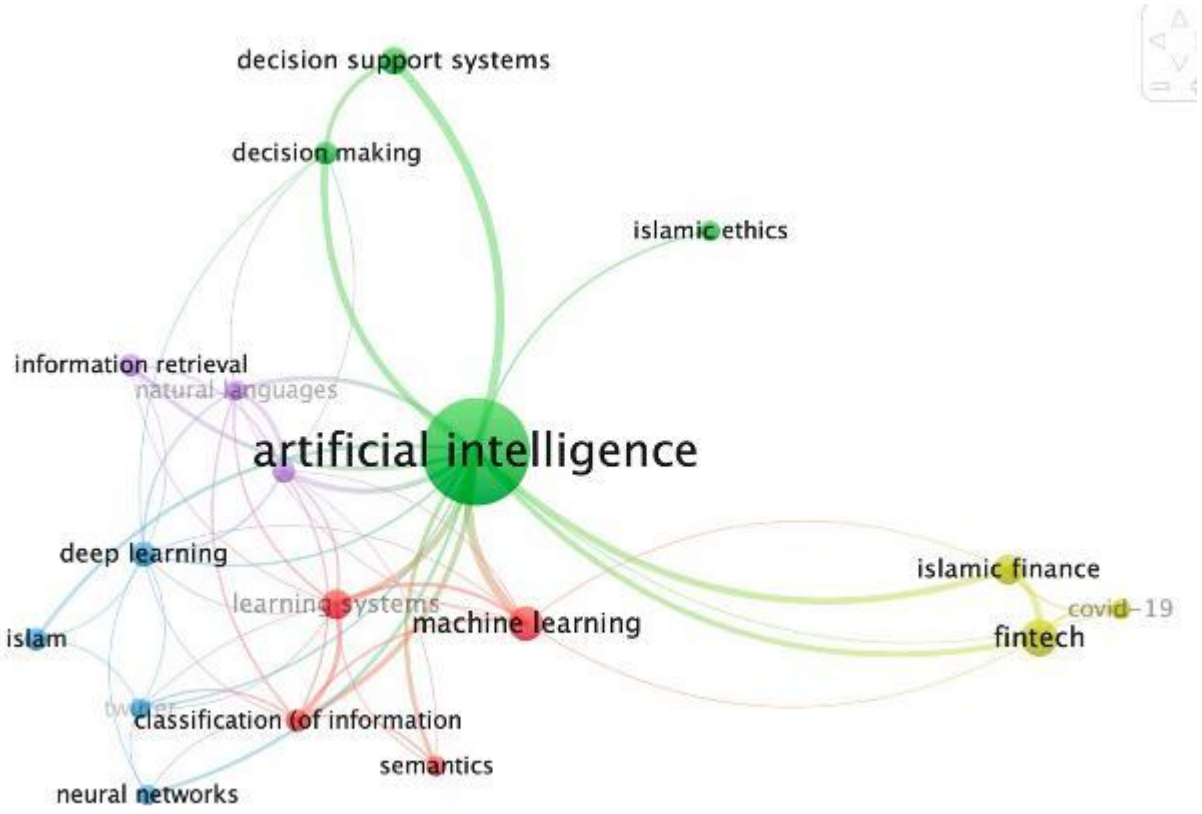


Figure 5: Terms and trends occurances in the field of AI and Islamic education

Figure 5 illustrates the key terms and their connections within the field of AI and Islamic education, as revealed through a bibliometric analysis. The term "artificial intelligence" is at the center, strongly connected to various concepts such as "machine learning," "Islamic finance," "decision support systems," and "Islamic ethics." These connections indicate that AI's application in Islamic finance and ethical considerations are prominent themes in the literature.

The figure also shows the evolution of trends, with terms like "deep learning," "neural networks," and "natural languages" being more recent additions, reflecting the growing complexity and sophistication of AI applications in this field. The prominence of "fintech" and "Islamic finance" suggests an increasing interest in how AI can be utilized in financial services compliant with Islamic principles, particularly in response to challenges such as COVID-19. This visualization provides a comprehensive overview of the main areas of focus within AI and Islamic education, highlighting both established themes and emerging trends that are shaping the future of this interdisciplinary field.

*Pedagogical approaches most commonly used in the integration of AI within Islamic education*
The table below summarizes the key pedagogical approaches identified in the literature for integrating AI within Islamic education. These approaches reflect the diverse strategies employed to enhance educational outcomes, utilizing AI's capabilities while aligning with Islamic educational values and practices.

Table 4
*Pedagogical Approaches in AI-Integrated Islamic Education*

| **Pedagogical Approach** | **Description** | **Examples of Application** | **Potential Benefits** |
|---|---|---|---|
| **Personalized Learning** | Tailors educational content, pacing, and learning paths to individual student needs, preferences, and abilities, using AI algorithms. | AI-driven adaptive learning platforms that adjust content difficulty in Quranic studies based on student progress. | Enhances student engagement and achievement by addressing individual learning styles and paces. |
| **Collaborative Learning** | Promotes group interaction, teamwork, and shared knowledge construction, often facilitated by AI tools that support collaboration and communication. | Virtual classrooms where students collaborate on discussions about Islamic ethics, supported by AI moderation tools. | Encourages peer learning, critical thinking, and a deeper understanding of complex Islamic concepts. |
| **Blended Learning** | Combines traditional face-to-face classroom methods with AI-enhanced digital resources and tools to create a more flexible and comprehensive learning experience. | Integration of AI-based Quran recitation tools with traditional teaching methods in Islamic education. | Provides a balanced learning environment that leverages the strengths of both traditional and digital methods. |
| **Gamification** | Incorporates game design elements such as points, badges, and leaderboards into educational activities to increase student motivation and engagement. | AI-powered Islamic educational games that reward students for completing lessons on Hadith studies. | Increases student motivation and engagement through interactive and enjoyable learning experiences. |
| **Flipped Classroom** | Students learn new content through AI-driven online modules at home and engage in interactive, | AI-based pre-class lessons on Fiqh (Islamic jurisprudence) concepts, followed by | Maximizes classroom time for active learning and application of knowledge, enhancing |

| | | | |
|---|---|---|---|
| | practical activities during classroom sessions. | in-depth classroom discussions. | understanding and retention. |
| **Inquiry-Based Learning** | Encourages students to explore questions, conduct research, and develop solutions, with AI tools guiding their inquiry process and providing resources. | AI-assisted research projects where students investigate the impact of Islamic financial principles on modern economies. | Fosters critical thinking, problem-solving skills, and a deeper understanding of Islamic studies through exploration. |
| **Project-Based Learning** | Students engage in extended projects that explore complex questions or problems, with AI resources providing support and guidance throughout the process. | Long-term projects where students use AI to explore the ethical implications of AI in Islamic finance. | Develops collaboration, research, and problem-solving skills, while providing a practical application of Islamic teachings. |
| **Problem-Based Learning (PBL)** | Students learn by solving open-ended problems, with AI facilitating the identification, analysis, and resolution of the problem, often within a real-world context. | AI-driven simulations of ethical dilemmas in Islamic business practices, where students must apply Islamic principles to resolve conflicts. | Enhances critical thinking, ethical reasoning, and decision-making skills in the context of Islamic education. |
| **Experiential Learning** | Learning through direct experience and reflection, often supported by AI in creating virtual or augmented learning environments that simulate real-world Islamic contexts. | AI-driven virtual reality experiences that simulate Hajj rituals or historical Islamic events, providing immersive learning opportunities. | Provides hands-on learning experiences that deepen understanding and create meaningful connections with Islamic practices and history. |
| **Content and Language Integrated Learning (CLIL)** | Integrates the teaching of Islamic content with language learning, supported by AI tools that adapt to the learner's language proficiency. | AI-based tools that help non-Arabic speakers learn Quranic Arabic while studying Islamic theology. | Enhances language acquisition while simultaneously deepening understanding of Islamic content. |

Table 4 presented above outlines various pedagogical approaches commonly used in the integration of Artificial Intelligence (AI) within Islamic education. Each approach leverages AI's capabilities to enhance traditional teaching methods, providing a more personalized, engaging, and effective learning experience. For instance, personalized learning uses AI to tailor educational content to individual students' needs, while collaborative learning encourages teamwork through AI-supported virtual classrooms. Blended learning combines face-to-face instruction with AI tools, and gamification increases student engagement by incorporating game-like elements into learning activities.

Other approaches, such as the flipped classroom and inquiry-based learning, use AI to prepare students with foundational knowledge before class or guide them in exploring complex questions. Project-based learning and problem-based learning allow students to tackle real-

world Islamic issues, with AI providing resources and simulations to aid their understanding. Experiential learning offers immersive, hands-on experiences through AI-driven virtual environments, and Content and Language Integrated Learning (CLIL) helps students learn both language and Islamic content simultaneously, supported by AI.

Overall, these AI-integrated pedagogical strategies demonstrate a dynamic and evolving landscape in Islamic education, where technology enhances traditional practices, making education more relevant and accessible to a diverse range of learners.

*Reported learning outcomes associated with the use of AI in Islamic education*

The table below provides a summary of the key learning outcomes that have been reported in the literature concerning the use of AI in Islamic education. These outcomes highlight how AI-enhanced educational strategies can impact students' knowledge, skills, and overall learning experience in Islamic education.

Table 5

*Reported Learning Outcomes in AI-Integrated Islamic Education*

| Learning Outcome | Description | Examples of Impact |
|---|---|---|
| **Enhanced Comprehension** | Improved understanding of complex Islamic concepts and principles due to personalized AI-guided learning paths. | Students better grasp intricate aspects of Fiqh (Islamic jurisprudence) through AI-tailored lessons and feedback. |
| **Increased Engagement** | Higher levels of student engagement and motivation through interactive AI tools and gamified learning experiences. | AI-driven educational games that make learning about the Quran and Hadith more engaging and enjoyable for students. |
| **Improved Critical Thinking** | Development of critical thinking skills through AI-facilitated inquiry-based and problem-based learning activities. | Students analyze and solve ethical dilemmas in Islamic finance using AI-supported simulations, enhancing their reasoning abilities. |
| **Greater Accessibility** | Broader access to quality Islamic education for diverse learners, including those with different learning needs and language barriers. | AI-powered platforms that offer Quranic studies in multiple languages, catering to non-Arabic speaking students. |
| **Personalized Feedback** | Provision of real-time, customized feedback that helps students identify areas for improvement and advance their learning. | AI systems that continuously assess student performance in Islamic studies and provide tailored recommendations. |
| **Cultural and Ethical Awareness** | Increased awareness and understanding of Islamic cultural and ethical values through AI-assisted learning modules. | AI-driven lessons that incorporate Islamic ethics into modern contexts, such as AI ethics or Islamic finance. |
| **Collaborative Learning Skills** | Enhanced ability to work effectively in teams, supported by AI tools that facilitate communication and collaboration among students. | Virtual group projects on Islamic history where AI helps coordinate tasks and encourages collaborative learning. |
| **Higher Retention Rates** | Improved retention of information due to AI-enhanced review | Students retain more knowledge of Islamic teachings through repeated |

| | | |
|---|---|---|
| | sessions, adaptive learning strategies, and interactive content. | AI-based quizzes and adaptive learning paths. |
| **Self-Paced Learning** | Empowerment of students to learn at their own pace, with AI systems adjusting the learning content to match their progress. | AI systems that allow students to revisit and master Islamic concepts at a comfortable pace, ensuring thorough understanding. |
| **Holistic Development** | Development of a well-rounded knowledge base that includes spiritual, moral, and academic growth facilitated by AI. | AI applications that integrate spiritual teachings with academic content, fostering comprehensive personal development. |

The table illustrates how the integration of AI into Islamic education can significantly enhance learning outcomes. AI's ability to provide personalized learning experiences leads to improved comprehension of complex Islamic concepts, while gamified and interactive tools increase student engagement. Critical thinking is nurtured through AI-supported inquiry and problem-solving tasks, and accessibility is broadened, making Islamic education more inclusive.

Furthermore, AI facilitates personalized feedback, allowing students to understand their progress and areas needing improvement. The cultural and ethical awareness of students is heightened as AI integrates Islamic values into learning modules. Collaborative learning is enhanced through AI tools that support teamwork, and overall retention rates improve due to adaptive and interactive AI systems. Lastly, AI empowers students to learn at their own pace, contributing to their holistic development by combining spiritual, moral, and academic growth.

These learning outcomes underscore the transformative potential of AI in enhancing the quality and accessibility of Islamic education, making it more engaging, personalized, and effective for students worldwide.

## Discussion

The results of this comprehensive bibliometric and systematic review highlight the evolving landscape of AI integration within Islamic education. The analysis reveals several key trends, patterns, and emerging themes that offer valuable insights into how AI is reshaping the educational experiences within Islamic contexts.

### *Trends in Publication Distribution*

The review identified a clear peak in research publications on AI and Islamic education around 2023, reflecting a surge in interest likely driven by global advancements in AI technologies and their applications in education. The subsequent decline, however, suggests that while the initial enthusiasm was high, there may be challenges or shifts in focus toward other technological innovations or the maturation of this research area. The consistent publication activity across years, despite fluctuations, indicates the sustained relevance of AI in Islamic education.

### *Interdisciplinary Applications*

The distribution of publications across various subject areas demonstrates the interdisciplinary nature of AI research in Islamic education. Computer Science leads as the dominant field, underscoring the technical foundation required to develop AI tools. However,

significant contributions from fields like Business, Management, Social Sciences, and Arts and Humanities indicate that AI's applications extend beyond mere technological innovation, influencing educational strategies, ethics, and socio-economic contexts within Islamic education.

*Geographical Contributions*

The geographical analysis shows that countries like Saudi Arabia, Iran, and Egypt are leading in AI research related to Islamic education. This distribution suggests that regions with strong Islamic educational traditions are at the forefront of exploring how AI can be leveraged to enhance educational outcomes. The global interest, including contributions from countries like Russia and India, highlights the broad relevance of this research, paving the way for international collaboration.

*Institutional and Authorial Leadership*

The identification of leading institutions and authors underscores the centers of excellence in AI and Islamic education research. Institutions from Malaysia, the UAE, and Bahrain are particularly prominent, reflecting their strategic focus on integrating technology into education. The leading authors, with their influential works, are driving the discourse and development in this field, contributing both theoretical and practical advancements.

*Key Terms and Trends*

The analysis of key terms and their evolution reveals that AI's application in Islamic finance and ethical considerations are central themes. The emergence of terms like "deep learning" and "neural networks" points to the growing complexity and sophistication of AI technologies being applied within Islamic education. This evolution suggests a trend towards more advanced AI applications, which could further enhance educational practices and outcomes.

*Pedagogical Approaches*

The review identifies several pedagogical approaches facilitated by AI, including personalized learning, collaborative learning, and gamification. These approaches are instrumental in making Islamic education more accessible, engaging, and effective. AI's ability to provide personalized learning experiences is particularly significant in addressing diverse learner needs and enhancing the comprehension of complex Islamic concepts.

*Learning Outcomes*

The reported learning outcomes demonstrate the positive impact of AI integration on students' educational experiences. Enhanced comprehension, increased engagement, and improved critical thinking are among the key benefits. Moreover, AI facilitates greater accessibility, ensuring that quality Islamic education is available to a wider audience, including those with different learning needs or language barriers. The empowerment of students through self-paced learning and the development of a well-rounded knowledge base underscore AI's potential to transform Islamic education.

**Conclusion**

This study provides a comprehensive overview of the integration of AI in Islamic education, highlighting key trends, interdisciplinary applications, and the significant contributions from various regions and institutions. The findings suggest that while AI's role in Islamic education

is still emerging, it holds great potential to enhance educational outcomes through personalized learning, increased engagement, and broader accessibility. The sustained research interest and the evolving application of AI technologies indicate that this field will continue to grow, offering new opportunities for educational innovation and collaboration.

The study also identifies areas for future research, including the need to explore the long-term impacts of AI on Islamic education and the potential challenges related to ethical considerations and cultural alignment. As AI continues to evolve, its integration into Islamic education will likely become more sophisticated, necessitating ongoing research to fully understand its implications and benefits.

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