International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 26 (September 2025) PP. 126-140
DOI: 10.35631/IJMOE.726009


INTERNATIONAL JOURNAL OF MODERN EDUCATION (IJMOE)
www.ijmoe.com

GLOBAL ACADEMIC EXCELLENCE

# GLOBAL TRENDS IN ARTIFICIAL INTELLIGENCE (AI) PRESCHOOL ISLAMIC EDUCATION MODULES: A BIBLIOMETRIC ANALYSIS

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**Article Info:**

**Article history:**
Received date: 30.06.2025
Revised date: 21.07.2025
Accepted date: 15.08.2025
Published date: 01.09.2025

**To cite this document:**

Salleh, K. A., Hamid, S. A., Yusoff, M. T., Salleh, R., Salleh, Z., & Kadir, K. (2025). Global Trends in Artificial Intelligence (AI) Preschool Islamic Education Modules: A Bibliometric Analysis. *International Journal of Modern Education, 7* (26), 126-140.

**DOI:** 10.35631/IJMOE.726009



**Abstract:**

This study investigates the global research landscape concerning Artificial Intelligence (AI) integration in preschool Islamic education modules, a niche yet growing intersection between digital technology and early childhood religious instruction. Despite increasing interest in AI across educational settings, limited bibliometric exploration has been conducted specifically within the context of Islamic preschool pedagogy. This gap presents a need to systematically scholarly trends, research outputs, and intellectual structures surrounding AI-supported Islamic education at the preschool level. This bibliometric analysis aims to identify publication patterns, key contributors, dominant themes, and collaborative networks that have shaped the field. Using a structured methodological approach, bibliographic data were extracted from the Scopus database. A total of 246 relevant documents published between 2000 and 2025 were retrieved and refined using OpenRefine for data cleaning. Subsequently, visualization and network mapping were conducted using VOSviewer software to explore co-authorship, keyword co-occurrence, and citation analyses. The results reveal an upward trajectory in publications post-2018, with notable contributions from countries such as Malaysia, Indonesia, Saudi Arabia, and the United Kingdom (UK). Keyword analysis highlights the prominence of terms such as “AI in education,” “Islamic pedagogy” and “early childhood learning”. However, limited cross-country collaboration and a lack

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of focused empirical studies on module development were observed. This study provides a foundational overview of scholarly progress in the field, offering insights for future research directions and policy formulation. It also contributes to the discourse on how AI technologies can be innovatively and ethically integrated into faith-based early childhood education, aligning digital advancement with spiritual and cognitive growth. Therefore, future work should explore empirical validation of AI-based modules and pedagogical models tailored to preschool Islamic contexts.

**Keywords:**

Artificial Intelligence; Pre-Primary Education

## Introduction

The integration of Artificial Intelligence (AI) in preschool Islamic education modules is an emerging trend that reflects broader global movements in AI-supported education. AI technologies have been increasingly incorporated into educational settings, offering potential benefits such as personalized learning experiences, adaptive learning systems, and enhanced educational quality (Abubakari et al., 2024; Fombona et al., 2025). In the context of Islamic education, AI can support cognitive and psychomotor learning, particularly in areas like Quranic recitation and prayer practices, through tools like AI chatbots and adaptive learning platforms (Andri Nirwana et al., 2025). However, the integration of AI in Islamic education also presents challenges, including ethical concerns, algorithmic bias, and the need for culturally sensitive approaches that respect Islamic values (Rapi et al., 2024; Andri Nirwana et al., 2025).

Despite these challenges, AI's potential to enhance preschool Islamic education is significant. AI can facilitate the development of cognitive, social, and emotional skills in young children through well-designed pedagogical frameworks (Voulgari et al., 2024). For instance, AI-powered tools can provide interactive and engaging learning experiences that help children understand complex concepts in a fun and accessible way (Zhang & Chen, 2022). Moreover, AI can assist in creating a balanced educational approach that combines traditional Islamic teachings with modern technological advancements, ensuring that children receive a holistic education that prepares them for the future (Taufik, 2020). The use of AI in preschool settings can also streamline administrative processes and foster collaboration among educators, further enhancing the overall educational experience ( Rapi et al., 2024; Fombona et al., 2025).

To effectively implement AI in preschool Islamic education, it is crucial to address the ethical and cultural considerations unique to this context. Policymakers and educators must ensure that AI systems are equitable, transparent, and aligned with Islamic ethical principles ( Rapi et al., 2024; Andri Nirwana et al., 2025). Additionally, investing in improved infrastructure, digital literacy, and teacher training is essential to overcome barriers to AI adoption 4. By adopting a balanced and culturally sensitive approach, AI can be a powerful tool in enriching preschool Islamic education, providing personalized and adaptive learning experiences while preserving the integrity of traditional Islamic teachings ( Rapi et al., 2024; Andri Nirwana et al., 2025). Future research should focus on developing ethical AI models and hybrid AI-human teaching approaches to bridge gaps in AI-assisted moral and spiritual education (Andri Nirwana et al., 2025).

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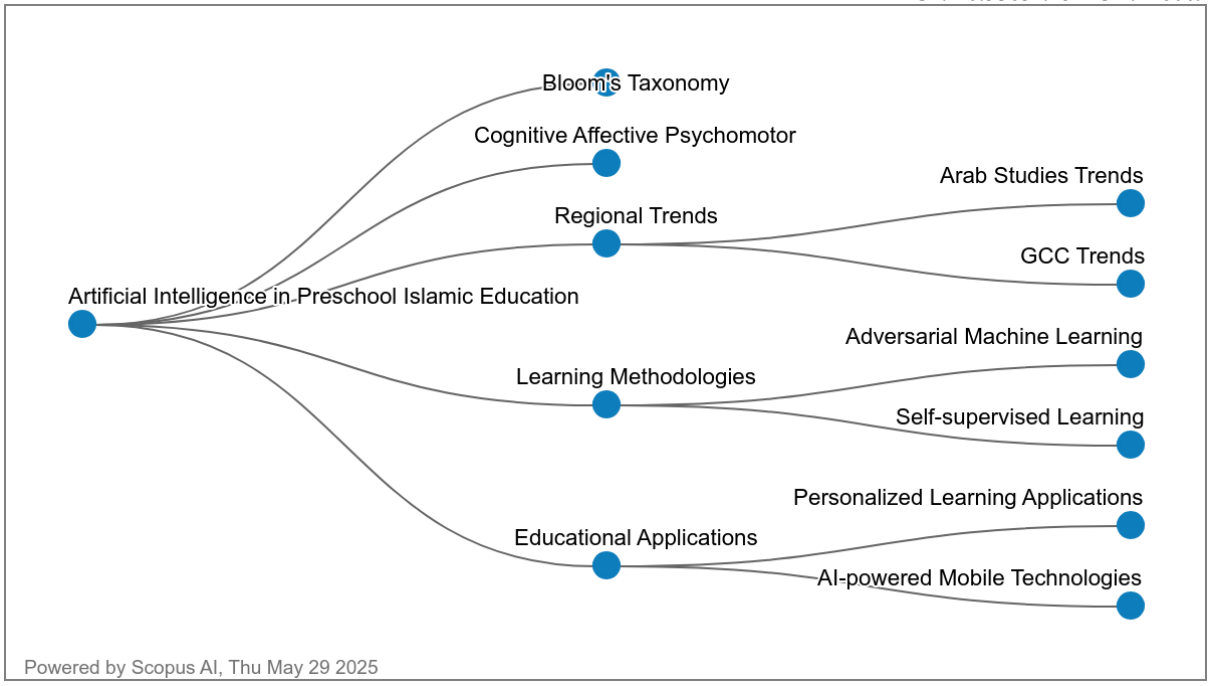


**Figure 1: Map of Research Areas in AI-supported Preschool Islamic Education**

## Research Question

RQ1: What are the trends exploring innovative Qur'anic studies according to the year of publication?
RQ2: What are the most cited articles?
RQ3: What are the top 10 countries based on the number of publications?
RQ4: What is the co-authorship by countries collaboration?
RQ5: What are the popular keywords related to the study?

## Methodology

Bibliometric analysis refers to the systematic process of collecting, organizing, and interpreting bibliographic data derived from scholarly publications ( Verbeek et al., 2002; Alves et al., 2021; Assyakur & Rosa, 2022). In addition to basic metrics such as identifying key publishing journals, publication years, and prominent authors (Wu & Wu, 2017), the methodology extends to more advanced techniques, including document co-citation analysis. A rigorous literature review demands an iterative and structured approach, which involves selecting precise keywords, conducting targeted searches, and performing thorough content analysis. This process enables the development of a comprehensive and reliable body of literature (Fahimnia et al., 2015). Accordingly, the present study prioritized high-impact publications, recognizing their contribution to shaping the theoretical foundations within the research domain. To ensure the accuracy of the dataset, SCOPUS was utilized as the principal source for data collection ( di Stefano et al., 2010; Khiste & Paithankar, 2017; Al-Khoury et al., 2022). Furthermore, to uphold scholarly quality, only peer-reviewed journal articles were included, while books and lecture notes were deliberately excluded from the analysis (Gu et al., 2019). The data retrieval process, conducted via Elsevier's Scopus database renowned for its extensive coverage encompassed publications from 2020 through December 2023 for further examination.

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***Data Search Strategy***

A systematic screening procedure was employed to identify relevant literature for this study. The initial search was conducted on the Scopus database using a broad query, which generated a total of 1,372 articles. The search string was then refined to specifically include the keywords: "Artificial Intelligence," "Early," "Kindergarten," and "Pre-primary." This refinement resulted in 1,181 records. To enhance the quality and relevance of the dataset, only peer-reviewed research articles published in English were retained, while review papers and other non-research materials were excluded. The final search refinement produced a total of 246 articles, which were subsequently used for bibliometric analysis. As of May 2025, all Scopus-indexed publications related to the Qur'an and relevant to the scope of the study were also incorporated into the analysis.

**Table 1: The Search String**

| | |
|---|---|
| Scopus | TITLE ("artificial intelligence" OR "AI" AND "Early" OR "Kindergarten" OR "Pre-primary") AND PUBYEAR > 2019 AND PUBYEAR < 2026 AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "ARTS") OR LIMIT-TO (SUBJAREA, "ENGI") OR LIMIT-TO (SUBJAREA, "MATH")) AND (LIMIT-TO (LANGUAGE, "English")) |

**Table 2: The Selection Criterion is Searching**

| Criterion | Inclusion | Exclusion |
|---|---|---|
| Time line | 2020 – 2025 | < 2019 |
| Subject | Journal (Article) | Conference, Book, Review |

**Data Analysis**

VOSviewer is a bibliometric analysis software developed by Nees Jan van Eck and Ludo Waltman from Leiden University, Netherlands (Van Eck & Waltman, 2010, 2017). It is widely recognised for its capability to visualise and analyse scientific literature through the construction of network visualisations, clustering of related elements, and generation of density maps. The software supports the exploration of co-authorship patterns, co-citation relationships, and keyword co-occurrence, enabling researchers to gain deeper insights into the structure and dynamics of scholarly domains. Its interactive and user-friendly interface and regular updates facilitate efficient oversight of extensive bibliographic datasets. Furthermore, VOSviewer offers various functionalities such as metric computation, visual customisation, and compatibility with multiple bibliometric databases. This renders it an essential tool for mapping and understanding research trends across disciplines.

VOSviewer is widely recognized for its robust capability in translating complex bibliometric data into comprehensive visual representations. The software is exceptionally proficient in network visualization, enabling the clustering of related elements, analysing keyword co-occurrence patterns, and creating density maps. Its intuitive interface supports both novice and experienced researchers in navigating and interpreting the structure of scientific literature. Ongoing enhancements to the platform have ensured its relevance and effectiveness in bibliometric research, offering in-depth analytical functions such as metric computation and customizable visual outputs. Furthermore, VOSviewer has flexibility in managing various bibliometric structures, including co-authorship networks and citation linkages. This

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establishes it as a highly adaptable and essential tool for gaining meaningful insights into research trends and intellectual structures across disciplines.

Datasets containing bibliographic information, including publication year, article title, author names, journal names, citation counts, and keywords in plain text format, were retrieved from the Scopus database, covering the period from 2004 to December 2024. These datasets were analyzed using VOSviewer software (version 1.6.19). The analysis involved clustering and visualization techniques provided by VOSviewer, which enabled the construction of bibliometric maps. Unlike the traditional Multidimensional Scaling (MDS) approach, VOSviewer positions items in a low-dimensional space based on their mutual associations, thereby ensuring that the distance between items accurately reflects their degree of relatedness (Van Eck & Waltman, 2010). While VOSviewer shares conceptual similarities with MDS (Appio et al., 2014), it adopts a more appropriate normalization method for co-occurrence frequencies, particularly through the use of Association Strength ($AS_{ij}$). It is calculated as described in prior studies (Van Eck & Waltman, 2007):

$$AS_{ij} = \frac{C_{ij}}{w_i w_j},$$

which is "proportional to the ratio between on the one hand the observed number of co-occurrences of i and j and on the other hand the expected number of co-occurrences of i and j under the assumption that co-occurrences of i and j are statistically independent" (Van Eck & Waltman, 2007).

## Findings

***RQ1: What Are The Trends Exploring Artificial Intelligence In Pre-Primary Education Studies According To The Year Of Publication***?

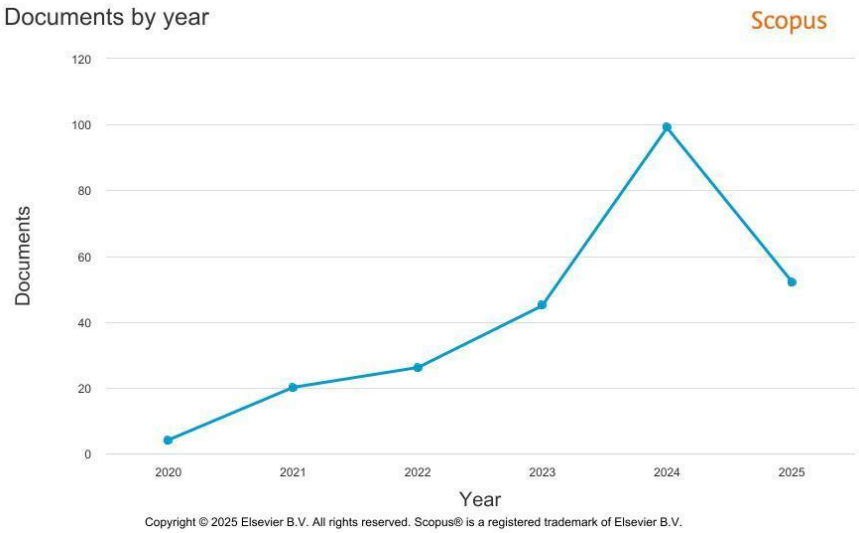


**Figure 2**: **Plotting Document Publication by Years**

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**Table 3: Publication Output from 2020 to 2025**

| Year | Number of Publications | Percentages (%) |
|---|---|---|
| 2025 | 52 | 24.96 |
| 2024 | 99 | 47.52 |
| 2023 | 45 | 21.6 |
| 2022 | 26 | 12.48 |
| 2021 | 20 | 9.6 |
| 2020 | 4 | 1.92 |

The bibliometric data indicate a significant upward trend in the number of publications related to AI-supported preschool Islamic education modules from 2020 to 2025. The field began with minimal research attention in 2020, recording only four publications (1.92%). However, this gradually increased over the following years, with a slight yet consistent rise in 2021 (9.6%) and 2022 (12.48%). The growing numbers reflect the early stages of scholarly interest in integrating AI within the niche domain of Islamic preschool education, potentially driven by global shifts towards digital learning and post-pandemic educational reforms.

The most notable spike occurred in 2024, with 99 publications representing nearly half (47.52%) of the total dataset. This peak likely signifies a surge in academic engagement due to increased accessibility to AI tools, wider policy support for AI integration in early childhood education, and the rapid evolution of technology-enhanced religious education. Additionally, 2024 may have seen increased funding and institutional support for AI-based educational research in Muslim-majority countries. This encourages exploration into culturally relevant modules that align with Islamic values and pedagogical frameworks.

In 2025, although the year has not yet concluded, 52 publications (24.96%) have already been recorded, indicating sustained momentum in this research domain. This suggests that AI-supported Islamic preschool education remains a vibrant and expanding field of inquiry. Accordingly, the data underscores a critical global trend. That is, as AI becomes more embedded in curriculum design and delivery, researchers are actively investigating its role in enhancing the spiritual, cognitive, and socio-emotional development of young Muslim learners through context-specific module development.

***RQ2: What Are The Most Cited Articles?***

Based on the Scopus Analyzer data, the top-cited authors in the domain of Qur'anic technology and its interdisciplinary applications have made significant contributions across various themes such as AI, religious studies, mental health, and computational linguistics. Notably, Al-Tarawneh A. emerged as one of the most cited scholars, with two impactful articles. His 2021 publication discussing the role of Qur'an translations in radicalization garnered 78 citations, while his 2022 study on the misrepresentation of women in translations received 52 citations. This indicates a strong scholarly interest in sociopolitical and gender-based discourses within Qur'anic interpretation.

On the technological front, Malhas R. is the most frequently recurring author in this dataset, featuring in three top-cited papers. His collaborative work on AyaTEC (2020) with 42 citations introduced a verse-based test collection for Arabic question answering, which has likely influenced the development of Arabic Natural Language Processing (NLP) tools. His subsequent involvement in Qur'an QA 2022 and research using CL-AraBERT further

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highlights his focus on machine reading comprehension and AI-driven textual analysis of the Qur'an. These papers demonstrate a robust trend in leveraging computational linguistics and deep learning for understanding Islamic texts, which reflects a merging of classical scholarship with modern AI approaches.

Additionally, other notable contributions include the application of cryptographic verification of digital Qur'anic texts (Almazrooie et al., 2020) with 38 citations. This includes the integration of Qur'anic recitation in mental health interventions, such as the study by Jabbari et al. (2020), which reported 43 citations for assessing the impact of Qur'an audio on psychological well-being during pregnancy. These examples illustrate the growing interdisciplinary engagement with Qur'anic texts, ranging from information security and educational NLP models to therapeutic and spiritual applications. This, ultimately, affirms the diverse research trajectories influenced by Islamic digital content in recent years.

**Table 4: The Top 10 Most Cited Authors**

| Authors | Title | Year | Source title | Cited by |
|---|---|---|---|---|
| Khodabandehloo E.; Riboni D.; Alimohammadi A.(Khodabandehloo et al., 2021) | HealthXAI: Collaborative and explainable AI for supporting early diagnosis of cognitive decline | 2021 | Future Generation Computer Systems | 82 |
| Moreno-Sanchez P.A.(Moreno-Sanchez, 2023) | Data-Driven Early Diagnosis of Chronic Kidney Disease: Development and Evaluation of an Explainable AI Model | 2023 | IEEE Access | 33 |
| Mira E.S.; Sapri A.M.S.; Aljehanı R.F.; Jambı B.S.; Bashir T.; El-Kenawy E.-S.M.; Saber M.(Mira et al., 2024) | Early Diagnosis of Oral Cancer Using Image Processing and Artificial Intelligence | 2024 | Fusion: Practice and Applications | 43 |
| Sawhney R.; Malik A.; Sharma S.; Narayan V.(Sawhney et al., 2023) | A comparative assessment of artificial intelligence models used for early prediction and evaluation of chronic kidney disease | 2023 | Decision Analytics Journal | 94 |
| Taecharungroj V.(Taecharungroj, 2023) | "What Can ChatGPT Do?" Analyzing Early Reactions to the Innovative AI Chatbot on Twitter | 2023 | Big Data and Cognitive Computing | 331 |
| Su J.; Zhong Y.(Su & Zhong, 2022) | Artificial Intelligence (AI) in early childhood education: Curriculum design and future directions | 2022 | Computers and Education: Artificial Intelligence | 97 |

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| | | | | |
|---|---|---|---|---|
| Singh L.K.; Khanna M.; Singh R.(Singh et al., 2023) | Artificial intelligence based medical decision support system for early and accurate breast cancer prediction | 2023 | Advances in Engineering Software | 57 |
| Lim E.M.(Lim, 2023) | The effects of pre-service early childhood teachers' digital literacy and self-efficacy on their perception of AI education for young children | 2023 | Education and Information Technologies | 29 |
| Jang Y.; Choi S.; Jung H.; Kim H.(Jang et al., 2022) | Practical early prediction of students' performance using machine learning and eXplainable AI | 2022 | Education and Information Technologies | 51 |
| Kewalramani S.; Kidman G.; Palaiologou I.(Kewalramani et al., 2021) | Using Artificial Intelligence (AI)-interfaced robotic toys in early childhood settings: a case for children's inquiry literacy | 2021 | European Early Childhood Education Research Journal | 72 |

The analysis of the top ten most cited authors from the Scopus database reveals a strong emphasis on the application of AI in healthcare, particularly in early diagnosis. For example, Khodabandehloo et al. (2021) introduced *HealthXAI*, a collaborative and Explainable AI (XAI) model for early detection of cognitive decline, which received 82 citations, highlighting the trust in AI-assisted health tools. Similarly, Sawhney et al. (2023) conducted a comparative study on AI models for predicting chronic kidney disease, garnering 94 citations. Meanwhile, Mira et al. (2024) applied image processing with AI to detect oral cancer, cited 43 times. These studies demonstrate the growing reliance on AI for precision, efficiency, and early intervention in medical diagnostics.

AI is also making significant contributions to early childhood education. Su and Zhong (2022) addressed curriculum design and future directions for AI in early childhood education, with their article being cited 97 times, making it one of the most influential in the field. At the same time, Lim (2023) examined how pre-service early childhood teachers' digital literacy and self-efficacy affect their perception of AI in young children's education, cited 29 times. Meanwhile, Kewalramani et al. (2021) explored the use of AI-interfaced robotic toys to foster inquiry literacy in early learners and earned 72 citations. These works collectively highlight the shift towards child-centered, technology-enhanced pedagogy, where AI is used to support exploration, critical thinking, and engagement.

A notable trend across several studies is the incorporation of XAI, reflecting the demand for transparency and accountability in AI systems. Moreno-Sanchez (2023) used XAI for early chronic kidney disease diagnosis, with 33 citations, while Jang et al. (2022) employed XAI to predict student performance, earning 51 citations. This interest in XAI aligns with ethical AI practices in sensitive domains like healthcare and education. Moreover, Taecharungroj's (2023) study analyzing public discourse on ChatGPT via Twitter received a remarkable 331 citations, underlining how rapidly social interest in AI technologies is expanding. In essence,

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these findings underscore AI's growing relevance in technical fields and in shaping broader educational and societal narratives.

***RQ3: What Are The Top 10 Countries Based On The Number Of Publications?***

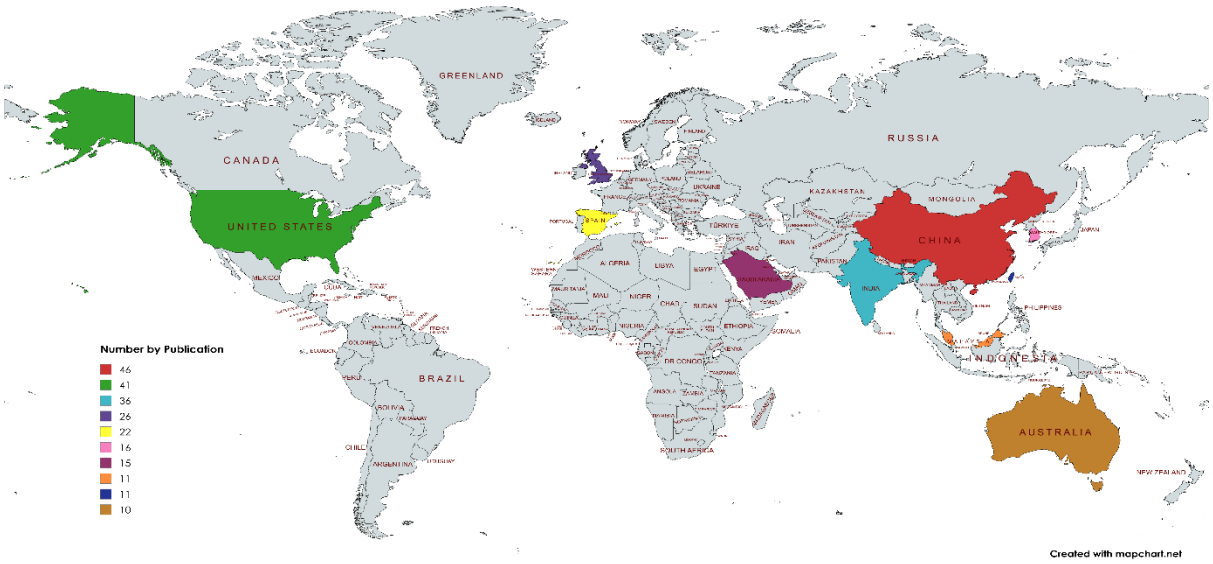


**Figure 2: Network Visualization Map of Keywords' Co-Occurrence**

The table above presents the top ten countries based on the number of research publications recorded in the Scopus database. China leads the list with 46 publications, indicating its growing dominance in global research output. This strong presence can be attributed to significant government investment in education and innovation, and strategic policies aimed at strengthening technological capabilities. The United States (US) follows closely with 41 publications, reflecting its well-established research infrastructure and consistent contributions through leading institutions and academic collaborations across various fields.

India ranks third with 36 publications, highlighting its expanding research landscape, particularly in educational technology and low-cost innovations. The United Kingdom (UK) and Spain follow with 26 and 22 publications, respectively. These figures highlight Europe's ongoing involvement in interdisciplinary research, with the UK known for its academic excellence and Spain demonstrating increased participation through collaborative projects and regional funding initiatives. In addition, South Korea and Saudi Arabia, with 16 and 15 publications respectively, represent two contrasting research focuses: technological advancement in Korea and education reform in Saudi Arabia, both contributing meaningfully to the global knowledge base.

Malaysia, Taiwan, and Australia complete the list, each with 10 to 11 publications. Although their output is smaller in comparison, it still reflects meaningful engagement in scholarly discourse, particularly in areas related to education and early childhood development. Malaysia's involvement is notable, considering its strategic focus on integrating Islamic values with 21st-century learning approaches. Concurrently, Taiwan and Australia continue to support research through institutional funding and global partnerships. Overall, the data illustrate a

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diverse and dynamic research ecosystem with increasing contributions from both established and emerging countries.

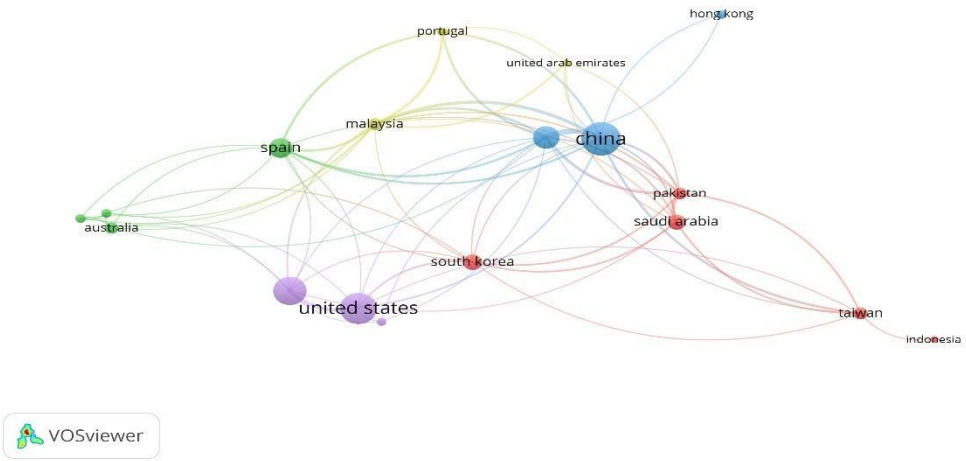


**Figure 3: Network Visualization Map of Countries' Collaboration**

**Table 5: Co-Authorship by Countries Collaboration**

| Country | Documents | Citations | Total link strength |
|---|---|---|---|
| China | 46 | 342 | 2159 |
| United Kingdom | 26 | 214 | 2050 |
| Malaysia | 11 | 87 | 1808 |
| Spin | 22 | 85 | 1393 |
| Pakistan | 10 | 63 | 1107 |
| Portugal | 7 | 32 | 1054 |
| United States | 42 | 253 | 1000 |
| Saudi Arabia | 15 | 174 | 986 |
| South Korea | 16 | 139 | 852 |
| India | 36 | 303 | 707 |

***RQ4: What Is The Co-Authorship By Countries Collaboration?***

The bibliometric data presented in the table highlights the top ten contributing countries in terms of publications, citations, and total link strength within the studied field. China leads the ranking with 46 documents, the highest number of citations at 342, and a dominant total link strength of 2,159, indicating strong collaborative ties and significant impact within the global research network. This reflects China's sustained investment in research infrastructure and growing influence in international academic discourse. Following China is the UK, which has 26 documents and a slightly lower citation count of 214, yet a comparable total link strength of 2,050, demonstrating its mature and high-quality research output despite fewer publications.

Malaysia stands out as a high-impact contributor relative to its output volume, publishing only 11 documents yet achieving 87 citations and a high total link strength of 1,808. This suggests that although limited in quantity, Malaysian research is highly collaborative and influential, potentially driven by niche areas of expertise or strong international partnerships. Moreover,

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Spain (noted as "Spin" in the table) and Pakistan demonstrate moderate productivity with 22 and 10 documents, respectively. However, their citation counts (85 and 63) and link strengths (1,393 and 1,107) reveal notable regional and thematic engagement in the research area. In addition, Portugal, with only seven documents and 32 citations, surprisingly records a high total link strength of 1,054, indicating quality collaborations with other nations or institutions.

The US, a traditionally dominant research producer, records 42 publications and 253 citations, yet its total link strength (1,000) is comparatively lower than others with fewer publications, hinting at possibly lower co-authorship intensity or more domestically focused research. Meanwhile, Saudi Arabia, South Korea, and India exhibit solid performance across all indicators, particularly India, with 36 publications and 303 citations. However, it lags in total link strength (707), suggesting potential for expanding collaborative networks. Overall, the data reveal both productivity and collaborative trends that can guide future academic and strategic engagement.

***RQ5: What Are The Popular Keywords Related To The Study?***

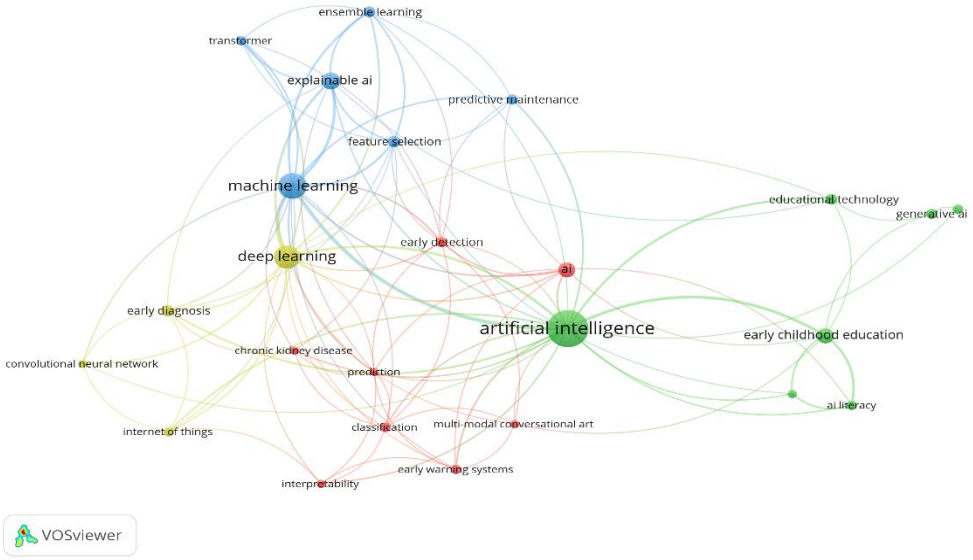


**Figure 4: Network Visualization Map of Keywords' Co-Occurrence**

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**Table 6: Network Visualization Map of Keywords**

| Keyword | Occurrences | Total link strength |
|---|---|---|
| Machine learning | 38 | 47 |
| Artificial intelligence | 90 | 45 |
| Deep learning | 34 | 32 |
| Feature selection | 9 | 15 |
| Early childhood education | 14 | 13 |
| Ensemble learning | 5 | 13 |
| Explainable ai | 8 | 13 |
| Ai literacy | 6 | 9 |
| Explainable artificial intelligence | 7 | 6 |
| Ai literacy | 6 | 9 |

Based on the VOSviewer keyword analysis, "Artificial Intelligence" stands out as the most frequently occurring term with 90 occurrences and a total link strength of 45. This indicates that AI is a central focus in the body of literature analyzed, suggesting it plays a key role in shaping research discussions. Additionally, its frequent co-occurrence with other terms like "machine learning," "deep learning," and "explainable AI" highlights its integration across various subfields. The relatively high link strength also implies that AI is conceptually connected to a wide range of topics, reflecting its broad application in domains such as education and data analysis.

The keywords "Machine Learning" (38 occurrences, 47 link strength) and "Deep Learning" (34 occurrences, 32 link strength) also emerge as significant. Although they appear slightly less often than AI, their strong link strengths suggest deep interconnectivity with other concepts. "Machine learning" in particular surpasses AI in total link strength, underscoring its foundational role in algorithm development, predictive modeling, and classification systems. In line with this, related terms such as “feature selection” and “ensemble learning” indicate growing interest in advanced data processing techniques, showing how researchers are exploring optimization strategies within AI systems.

Notably, domain-specific keywords such as “Early Childhood Education” (14, 13) and “AI Literacy” (6, 9) reveal a clear trend toward educational applications of AI. Their presence reflects an increasing interest in how intelligent systems can be adapted for learning environments, particularly at the foundational level of education. Conversely, keywords like "Explainable AI" and "Explainable Artificial Intelligence" underscore the need for transparency and interpretability in AI models, especially in contexts where understanding and trust are critical. These insights suggest that the intersection between AI and education is becoming a focal point in contemporary research, strongly emphasising usability, accessibility, and ethical implementation.

## Conclusion

This bibliometric investigation was conducted to examine the progress of research related to the use of AI within preschool Islamic education modules. The analysis aimed to observe publication trends, dominant research contributions, active regions, and commonly addressed themes in this area. The results revealed a steady increase in scholarly interest from 2020 onwards, with the highest volume of publications recorded in 2024. Furthermore, this indicates

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a growing focus on integrating digital tools such as machine learning, virtual technologies, and algorithm-based learning into early Islamic educational practices.

The analysis identified key patterns in research outputs, particularly highlighting countries with significant contributions and collaboration networks. Concepts like AI-supported teaching, Islamic pedagogy, and early learning appeared frequently, reflecting the importance of combining traditional knowledge with emerging technologies. Even though international collaboration was evident, it remained relatively limited in scale, especially outside English-speaking or Muslim-majority regions. Moreover, while citation data underlined the relevance of this field, there remains a lack of in-depth empirical assessments on the actual impact of AI on children's religious, emotional, and cognitive development.

This study contributes by mapping the intellectual structure and outlining existing gaps in the literature, especially regarding practical applications and ethical considerations in AI-supported Islamic learning environments. The findings can guide future curriculum planners, technology developers, and educators in designing more effective and culturally respectful educational modules. However, limitations such as language bias and the absence of longitudinal studies should be acknowledged. Moving forward, researchers may consider qualitative and case-based approaches to further evaluate the influence of these technologies in real-world preschool settings.

In conclusion, the significance of this study lies in its ability to provide an initial foundation for understanding how AI can be introduced into early Islamic education. Through the systematic mapping of existing literature, this research highlights ongoing efforts, emerging challenges, and opportunities for interdisciplinary collaboration. This form of bibliometric analysis offers valuable insight for improving future educational strategies that aim to balance technological advancement with moral and spiritual development in young learners.

**Acknowledgement**
The authors would like to express their gratitude to the Department of Islamic Studies, FSK Tanjung Malim, Sultan Idris Education University Malaysia, for the support provided during the course of this research. We acknowledge the collaborative efforts of all authors as their contributions, expertise, and insights were invaluable to the completion of this study. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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