International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

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

GLOBAL ACADEMIC EXCELLENCE

EXPLORING INNOVATIVE QURANIC TECHNOLOGIES IN EARLY CHILDHOOD EDUCATION: TRENDS ANALYSIS

Khadijah Aini Salleh[1*], Samsuddin Abd Hamid[1], Tarmizi Yusoff[2], Rashidah Salleh[3], Nur Liyana Athirah Anuar[1]

[1] Department of Islamic Stadies, Sultan Idris Education University, 35900 Tanjong Malim, Perak Darul Ridzuan
Email: p20231000345@siswa.upsi.edu.my , samsuddin@fsk.upsi.edu.my, M20201000282@siswa.upsi.edu.my
[2] Department of Arabic Language and Literature, Sultan Azlan Shah Islamic University, 33000 K. Kangsar Perak
Email: tarmizi@usas.edu.my
[3] Faculty of Islamic Studies, 43600 National University of Malaysia, 43600 Bangi, Selangor
Email: shidahmaryam@gmail.com
[*] Corresponding Author

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, T., Salleh, R., & Anuar, N. L. A. (2025). Exploring Innovative Quranic Technologies in Early Childhood Education: Trends Analysis. *International Journal of Modern Education, 7* (26), 297-311.

DOI: 10.35631/IJMOE.726020

Abstract:

This study explores global research trends and innovative technological applications related to Quranic education in early childhood settings. With the increasing integration of digital tools in religious instruction, especially in early education, there is a growing need to understand how Quranic pedagogy is evolving through technological innovations. Despite the rapid advancement of educational technologies, limited bibliometric analyses have focused specifically on Quranic technologies within early childhood education. This gap presents a critical opportunity to map the development, frequency, and direction of scholarly work in this niche domain. The objective of this research is to systematically analyze published literature from 2020 to 2024 using bibliometric techniques to uncover patterns, influential authors, key institutions, core keywords, and prevailing themes in the field. The methodology involved retrieving relevant documents from the Scopus database using refined keyword searches. Data cleaning was performed using OpenRefine to ensure consistency and accuracy in author names, affiliations, and publication sources. VOSviewer was then used to visualize co-authorship networks, keyword co-occurrence, and citation mapping. The final dataset consisted of 1,425 documents, revealing a steady increase in publications over the last five years, with a concentration of contributions from Southeast Asia and the Middle East. Keywords such as “Quranic learning,” “early childhood education,” and “educational technology” were among the most frequently occurring terms. The analysis also highlighted a strong emphasis on digital platforms, gamification, and AI-supported learning tools in contemporary Quranic instruction. In conclusion, this bibliometric analysis provides valuable insights into the evolving landscape of Quranic technologies in early childhood

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

education, serving as a foundational reference for future interdisciplinary research and practical implementation in Islamic pedagogical contexts.

Keywords:

Quran; Islamic Text; Holy Book

Introduction

Exploring innovative Quranic technologies in early childhood education reveals a promising intersection of traditional religious teachings and modern technological advancements. Augmented Reality (AR) has emerged as a significant tool in this domain, particularly in teaching essential Islamic practices such as Do'a (prayers. AR applications like "Do'a 4D" have been designed to enhance children's understanding and engagement by merging virtual and physical worlds, making the learning process more interactive and accessible (Murhayati et al., 2019). Similarly, the use of AR in teaching Hijaiah letters through applications that display 3D images and sounds has shown to facilitate quicker and more effective learning among young children (Arief et al., 2023). These technologies not only make learning more engaging but also cater to the visual and auditory preferences of early learners, thereby enhancing their overall educational experience.

The integration of virtual reality (VR) and other extended reality (XR) technologies in Quranic education is another innovative approach being explored. These technologies have been primarily used in STEM education, but their application in theological subjects like the Quran is gaining traction (Alahmadi et al., 2024). VR, for instance, can create immersive environments that help children better understand and retain Quranic teachings. This method addresses the challenges of engaging and motivating young learners, which traditional methods often fail to overcome (Alahmadi et al., 2024). The potential of these technologies to transform Quranic education is significant, as they offer new ways to present complex religious concepts in a more relatable and engaging manner.

Moreover, the broader context of early childhood education is evolving with the integration of digital technologies. Studies have shown that innovative pedagogical approaches, including the use of multimedia and interactive tools, are essential for modern education systems (Hu & Yelland, 2019)(Yan, 2020). These technologies support various aspects of child development, including cognitive, social-emotional, and linguistic skills (Hanafi et al., 2021). However, the successful implementation of these technologies requires careful consideration of developmental appropriateness and the training of educators to effectively integrate these tools into their teaching practices (Nuttall et al., 2015)(Al-Barakat et al., 2024). As such, the future of Quranic education in early childhood settings looks promising with the continued exploration and adoption of these innovative technologies.

In summary, the use of AR and VR in Quranic education for early childhood is a burgeoning field with significant potential. These technologies make learning more interactive and engaging, addressing the limitations of traditional methods. The broader integration of digital tools in early childhood education further supports this trend, highlighting the importance of innovative pedagogical approaches in modern education.

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

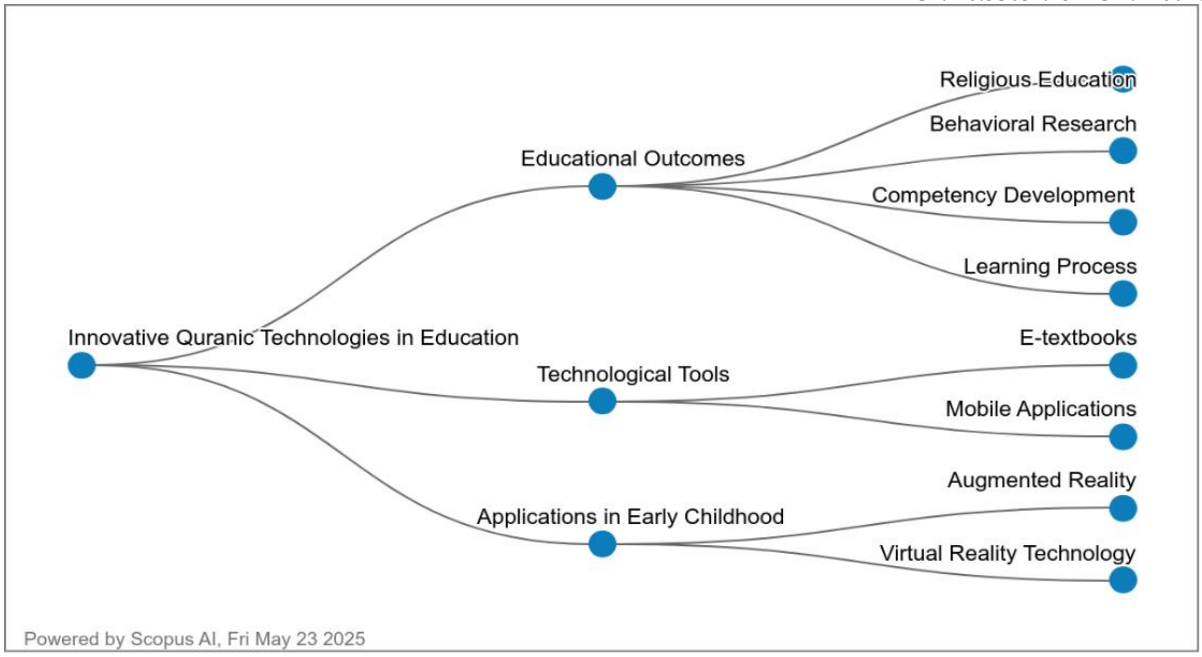

Figure 1: Concept Map of Innovative Quranic Technologies in Early Childhood Education

Research Question

RQ1: What are the trend exploring innovative Quranic studies according to the year of publication?
RQ2: What are the most cited articles?
RQ3: Where in the top 10 country based on number of publication?
RQ4: What are co-authorship by countries collaboration?
RQ5: What are the popular keyword related to the study?

Methodology

Bibliometrics involves gathering, organizing, and analyzing bibliographic data from scientific publications (Alves et al., 2021; Assyakur & Rosa, 2022; Verbeek et al., 2002). Beyond basic statistics, such as identifying publishing journals, publication years, and leading authors (Wu & Wu, 2017), bibliometrics includes more sophisticated techniques like document co-citation analysis. Conducting a successful literature review requires a careful, iterative process to select suitable keywords, search the literature, and perform an in-depth analysis. This approach helps to compile a comprehensive bibliography and achieve reliable results (Fahimnia et al., 2015). With this in mind, the study focused on high-impact publications, as they provide meaningful insights into the theoretical frameworks that shape the research field. To ensure data accuracy, SCOPUS served as the primary source for data collection (Al-Khoury et al., 2022; di Stefano et al., 2010; Khiste & Paithankar, 2017). Additionally, to maintain quality, the study only considered articles published in peer-reviewed academic journals, deliberately excluding books and lecture notes (Gu et al., 2019). Using Elsevier's Scopus, known for its broad coverage, publications were collected from 2020 through December 2023 for further analysis."

Data Search Strategy

The study employed a structured screening sequence to determine appropriate search terms for article retrieval. Initially, the research commenced with a general query on the Scopus database, which retrieved a total of 3,460 articles. Subsequently, the search string was refined to

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

specifically focus on the term "Quran," resulting in 2,215 records. These records were further filtered to include only peer-reviewed research articles written in English, while review articles were excluded. The final refinement of the search string yielded 1,425 articles, which formed the dataset for the bibliometric analysis. As of May 2025, all relevant articles indexed in the Scopus database related to the Quran were incorporated into the study.

Table 1: The Search String

Scopus	TITLE (("Quran" OR "Koran" OR "Islamic text" OR "holy book")) AND PUBYEAR > 2019 AND PUBYEAR < 2025

Table 2: The Selection Criterion is Searching

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

Data Analysis

VOSviewer is a bibliometric analysis tool developed by Nees Jan van Eck and Ludo Waltman from Leiden University, the Netherlands (Van Eck & Waltman, 2010, 2017). It is widely recognized for its capability to visualize and interpret patterns in scientific literature through user-friendly network representations. The software facilitates the analysis of co-authorship, co-citation, and keyword co-occurrence, enabling the identification of research trends and thematic structures. Its clustering features and density mapping allow for a nuanced exploration of interconnected research elements. VOSviewer also supports customizable visual outputs and is compatible with multiple bibliographic databases, making it highly adaptable for bibliometric investigations. The continuous software enhancements and interactive interface further contribute to its effectiveness in handling large-scale bibliometric data for scholarly research.

VOSviewer is a powerful tool designed to convert complex bibliometric data into comprehensible visual representations. Emphasizing network visualisation, it is particularly effective in identifying clusters of related elements, mapping keyword co-occurrence, and producing detailed density maps. Its intuitive interface facilitates accessibility for both novice and experienced researchers, allowing efficient navigation of scholarly landscapes. The software's ongoing development enhances its analytical capabilities, ensuring its continued relevance in bibliometric studies. With support for various data types including co-authorship patterns and citation linkages VOSviewer has become an essential and adaptable resource for academics aiming to extract meaningful insights and explore intellectual structures within their fields of study.

Datasets containing publication year, article titles, author names, journal sources, citation counts, and associated keywords in plain text format were retrieved from the Scopus database, covering the period from 2004 to December 2024. These datasets were subsequently processed using VOSviewer software version 1.6.19. By applying VOS clustering and visualization techniques, the software enabled the construction and analysis of bibliometric maps. Unlike traditional Multidimensional Scaling (MDS) approaches, VOSviewer is designed to represent items in a low-dimensional space where the distance between any two items directly corresponds to their degree of relatedness or similarity (van Eck & Waltman, 2010). While it

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

aligns conceptually with MDS methodologies (Appio et al., 2014), VOSviewer departs from standard MDS by employing more robust normalization techniques for co-occurrence data. Specifically, it utilizes association strength (AS_{ij})—a metric considered more appropriate for normalizing co-occurrence frequencies in bibliometric mapping (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 cooccurrences 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 Trend Exploring Innovative Quranic Studies According To The Year Of Publication?

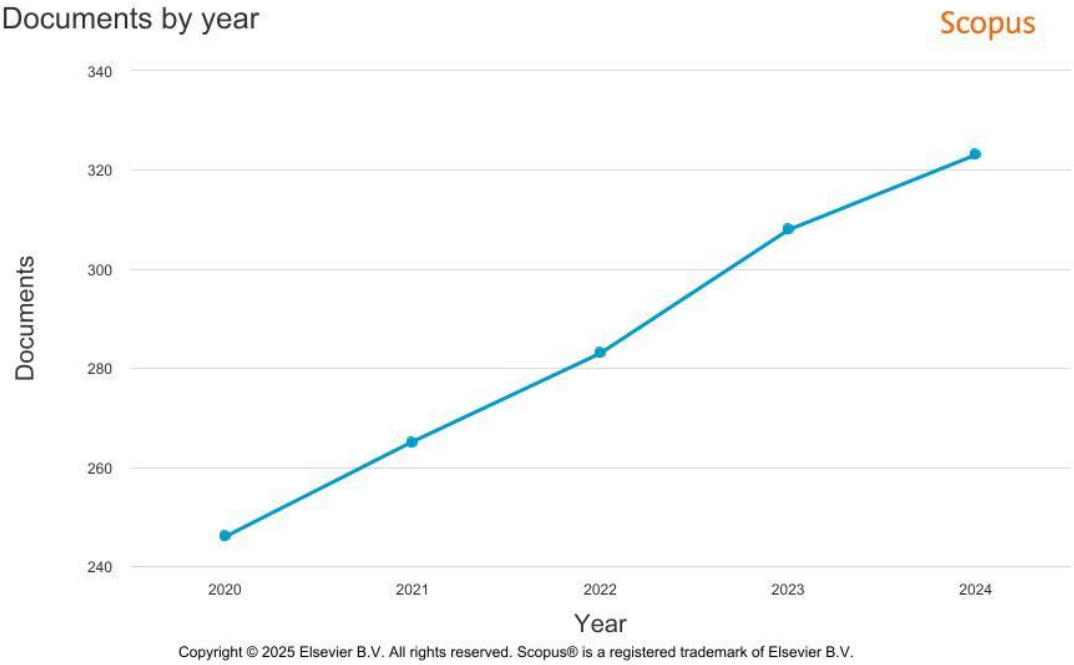

Figure 2: Trend of Research in Online Learning by Years

Table 3: Publication Output from 2020 to 2024

Year	No of Publication	Percentages (%)
2024	323	22.6
2023	308	21.6
2022	283	19.8
2021	265	18.5
2020	246	17.2

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

Based on the bibliometric analysis of the topic "Exploring Innovative Quranic Technologies in Early Childhood Education", data extracted from Scopus demonstrates a steady increase in publication output from 2020 to 2024. The year 2024 recorded the highest number of publications at 323 (22.6%), followed closely by 308 in 2023 (21.6%) and 283 in 2022 (19.8%). This upward trend reflects growing academic interest in the integration of innovative technologies within early childhood Islamic education, particularly in facilitating Quranic learning. The consistent rise also indicates a shift in research priorities towards digitization and modernization of pedagogical approaches in Islamic studies for young learners.

This increase may be attributed to the rapid development of educational technologies such as Islamic mobile applications, augmented reality (AR), and artificial intelligence (AI), which are being used to make Quranic concepts more interactive and accessible for children. The 5.4% increase from 2020 to 2021, followed by continued growth in the subsequent years, suggests that this field is receiving significant attention, potentially supported by education policies in Muslim-majority countries and global funding initiatives promoting religious education innovation. The high volume of scholarly engagement signals increased awareness of the importance of integrating edutainment and digital strategies into foundational Islamic learning.

Lastly, this publication trend indicates that the field is entering a growth and maturation phase. With nearly 1,000 publications over five years, researchers are presented with rich opportunities to explore emerging gaps, such as evaluating the effectiveness of these technologies on children's understanding of core Islamic values like Tawheed and Adab. These findings also lay the groundwork for conducting more focused research, including systematic literature reviews or meta-analyses, which could lead to the development of a robust tech-integrated Islamic pedagogical model with high impact on early childhood education.

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 artificial intelligence, 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, indicating 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 NLP tools. His subsequent involvement in Qur'an QA 2022 and research using CL-AraBERT further highlights his focus on machine reading comprehension and AI-driven textual analysis of the Qur'an. These papers show 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 Quranic texts (Almazrooie et al., 2020) with 38 citations, and the integration of Qur'anic recitation in mental health interventions, such as the study by Jabbari et al. (2020),

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

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 thereby affirming the diverse research trajectories influenced by Islamic digital content in recent years.

RQ3: Where In The Top 10 Country Based on Number of Publication

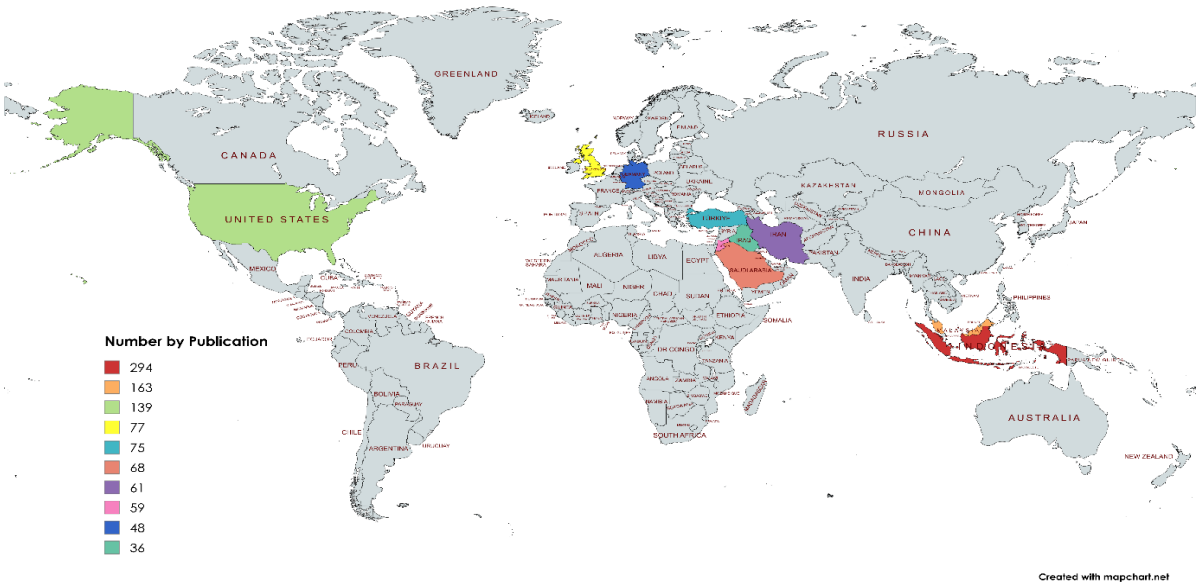

Figure 3: Network Visualization Map of Keywords' Co-Occurrence

Table 4: Most Cited Author

Authors	Title	Year	Source title	Cited by
Nahar K.M.O.; Al-Khatib R.M.; Al-Shannaq M.A.; Barhoush M.M.(Nahar et al., 2020)	An efficient holy quran recitation recognizer based on SVM learning model	2020	Jordanian Journal of Computers and Information Technology	28
Malhas R.; Elsayed T.(Malhas & Elsayed, 2020)	AyaTEC: Building a Reusable Verse-Based Test Collection for Arabic Question Answering on the Holy Qur'an	2020	ACM Transactions on Asian and Low-Resource Language Information Processing	42
Malhas R.; Mansour W.; Elsayed T.(Malhas et al., 2022)	Qur'an QA 2022: Overview of The First Shared Task on Question Answering over the Holy Qur'an	2022	5th Workshop Open-Source Arabic Corpora and Processing Tools with Shared Tasks on Qur'an QA and Fine-Grained Hate Speech Detection, OSACT 2022 - Proceedings at	29

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

			Language Resources and Evaluation Conference, LREC 2022	
Rostam N.A.P.; Malim N.H.A.H.(Rostam & Malim, 2021)	Text categorisation in Quran and Hadith: Overcoming the interrelation challenges using machine learning and term weighting	2021	Journal of King Saud University - Computer and Information Sciences	29
Al-Tarawneh A.(Al-Tarawneh, 2021)	The role of quran translations in radicalizing muslims in the west and misrepresenting islam	2021	Journal of Religion and Violence	78
Almazrooie M.; Samsudin A.; Gutub A.A.-A.; Salleh M.S.; Omar M.A.; Hassan S.A.(Almazrooie et al., 2020)	Integrity verification for digital Holy Quran verses using cryptographic hash function and compression	2020	Journal of King Saud University - Computer and Information Sciences	38
Malhas R.; Elsayed T.(Malhas & Elsayed, 2022)	Arabic machine reading comprehension on the Holy Qur'an using CL-AraBERT	2022	Information Processing and Management	35
Al-Tarawneh A. (Al-Tarawneh, 2022)	Combating the Misrepresentation of Women in Quran Translations: Translational Interventions	2022	Journal of International Women's Studies	52
Saged A.A.G.; Mohd Yusoff M.Y.Z.; Abdul Latif F.; Hilmi S.M.; Al-Rahmi W.M.; Al-Samman A.; Alias N.; Zeki A.M.(Saged et al., 2020)	Impact of Quran in Treatment of the Psychological Disorder and Spiritual Illness	2020	Journal of Religion and Health	30
Jabbari B.; Mirghafourvand M.; Sehhatie F.; Mohammad-Alizadeh-Charandabi S.(Jabbari et al., 2020)	The Effect of Holly Quran Voice With and Without Translation on Stress, Anxiety and Depression During Pregnancy: A Randomized Controlled Trial	2020	Journal of Religion and Health	43

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

Based on the data from the *Scopus Analyzer*, Indonesia leads as the most active country in terms of publication output, with a total of 294 publications. This figure is more than double that of Malaysia, which ranks second with 163 publications. Indonesia's strong performance may reflect a high national interest in the topic under investigation possibly related to early childhood education, Quranic technologies, or Islamic pedagogy supported by a large population, progressive educational policies, and active higher education and research institutions.

Malaysia follows closely as a significant regional contributor. The country has long invested in the integration of Islamic education and innovative technologies, particularly in early childhood education. The United States (139) and the United Kingdom (77) also contribute considerably to the discourse, indicating that interest in the topic is not limited to Muslim-majority countries. These Western nations likely engage through cross-cultural academic collaborations, research focused on Muslim communities, or broader educational technology agendas that intersect with Islamic themes.

Other countries in the top ten include Turkey (75), Saudi Arabia (68), Iran (61), Jordan (59), Germany (48), and Iraq (36). Turkey and Saudi Arabia have historically demonstrated commitment to educational and technological reforms aligned with Islamic principles. Iran and Jordan have shown increasing academic output, suggesting strengthening research infrastructures. Interestingly, Germany's presence signals a global scholarly interest that transcends religious or cultural boundaries. It reflects a growing openness and academic engagement in topics related to Islamic education or digital innovation from a broader intercultural or interdisciplinary perspective.

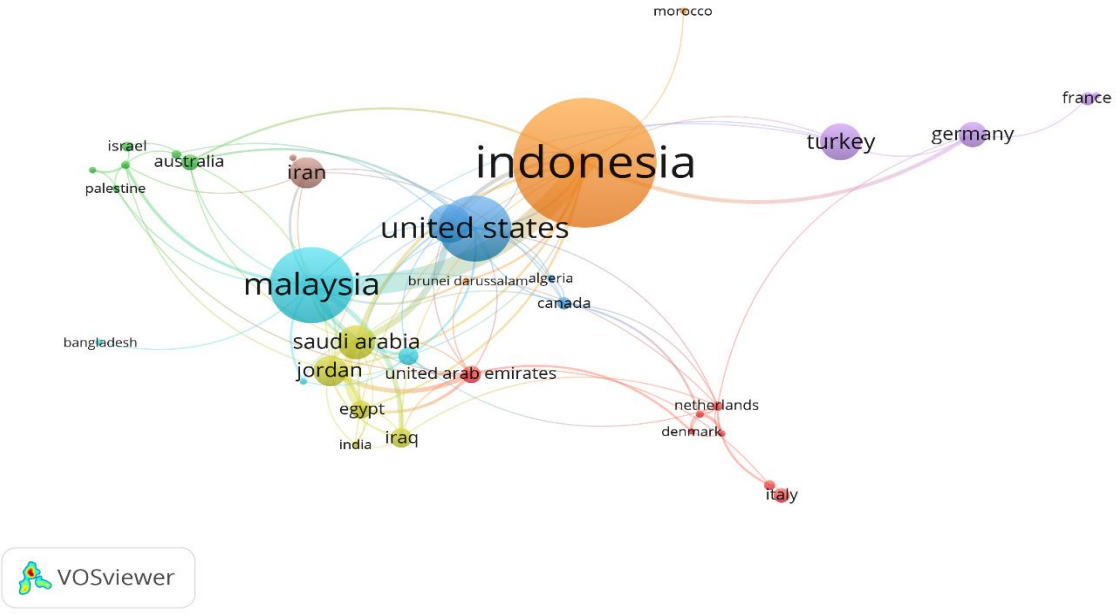

Figure 3: Network Visualization Map Countries Collaboration

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

Table 5: Co-Authorship by Countries Collaboration

Country	Documents	Citations	Total link strength
Malaysia	163	377	56
Indonesia	294	565	54
Saudi arabia	68	188	36
Jordan	59	246	24
United Kingdom	77	139	23
Egypt	33	109	22
United arab emirates	32	53	20
United states	140	272	18
Pakistan	34	84	14
Iraq	36	47	13

RQ4: What Are Co-Authorship By Countries Collaboration

Based on the Vosviewer analysis, Indonesia leads in terms of the number of documents (294), citations (565), and total link strength (54), indicating a high level of research activity and regional influence. Malaysia follows closely with 163 documents, 377 citations, and a total link strength of 56 surpassing Indonesia in network connectivity. This suggests that Malaysian publications are not only prolific but also more embedded in global collaborative networks. These two Southeast Asian countries appear to be major contributors to the field in both quantity and interconnectedness of research.

Other countries like Jordan, Saudi Arabia, and the United Kingdom also show strong performance in terms of impact and collaboration. Jordan, for example, with only 59 documents, has a high citation count of 246 and a strong link strength of 24, indicating significant influence. The United States, with 140 documents and 272 citations, maintains a strong presence, although its link strength of 18 is slightly lower than that of some Middle Eastern and Asian countries, possibly reflecting more isolated or domestically focused research outputs in this context.

In contrast, some countries produce a high number of documents but show limited impact or collaboration. For instance, Turkey has 74 documents but only 31 citations and a low link strength of 4, suggesting a lack of integration into wider research networks. France also shows a similar pattern with 24 documents but minimal citations and connectivity. Interestingly, Qatar, despite having only 15 documents, achieves 133 citations an indicator of high-quality or high-impact research. These patterns highlight that publication quantity alone is not sufficient; the impact and collaborative reach of the research are equally critical in measuring scholarly influence.

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

RQ5: What Are The Popular Keyword Related To The Study?

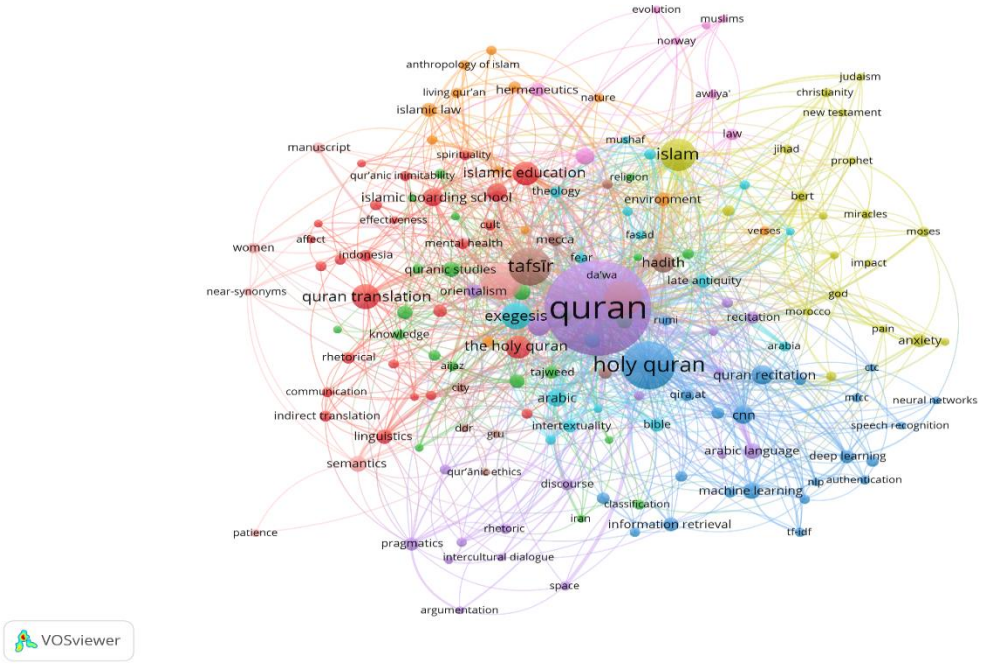

Figure 4: Network Visualization Map 0f Keywords' Co-Occurrence

Table 6: Network Visualization Map of Keywords

Keyword	Occurrences	Total link strength
Quran	94	68
Qur'an	76	68
Islam	48	63
Qur'an	43	44
Translation	35	42
Exegesis	27	36
Holy quran	41	33
Tafsīr	34	28
Arabic	17	27
Tafsir	24	23

The Vosviewer keyword analysis reveals that the most frequently occurring keyword is "quran" with 94 occurrences and a total link strength of 68, followed closely by "qur'an" (76 occurrences, 68 strength) and "islam" (48 occurrences, 63 strength). This indicates a strong thematic focus on the Qur'an and Islamic studies across the analyzed documents. The presence of various spellings of the word "Qur'an" (e.g., qur'an, qurʾān, qur'ān, holy quran, etc.) reflects inconsistency in transliteration but reinforces the centrality of the Qur'anic text in the body of literature. These variations may impact bibliometric analysis accuracy and suggest a need for standardization in metadata input during database indexing.

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

In terms of thematic clusters, the data suggests a robust intersection between Islamic texts and technological or computational methods. Keywords such as "machine learning" (14 occurrences), "deep learning" (9), "nlp" (natural language processing, 5), "information retrieval" (9), and "word2vec" (6) highlight the integration of artificial intelligence tools in Qur'anic studies, possibly in tasks such as classification, recitation recognition, and semantic interpretation. The inclusion of terms like "quran recitation", "quran translation", and "tafsīr" (34 occurrences) demonstrates the scholarly emphasis on understanding, translating, and teaching the Qur'an using digital methods, supporting the trend of "digital Islam" or "Islamic digital humanities."

A sociocultural dimension is also visible through keywords like "mental health", "anxiety", "depression", and "gender", indicating that researchers are also exploring how Islamic texts or teachings relate to contemporary issues affecting Muslim societies. Terms like "education" (10), "islamic education" (13), and "religious education" point to a pedagogical concern, possibly involving how the Qur'an is taught or integrated into early childhood, primary, or tertiary education. The keyword "interpretation" (16) and "hermeneutics" (9) further support the critical and scholarly engagement with the Qur'an's meanings in both classical and modern contexts, reinforcing the multidimensional nature of this research field.

Conclusion

This bibliometric study aimed to explore the research landscape surrounding innovative Quranic technologies within the context of early childhood education. The analysis sought to identify publication trends, influential contributions, active geographic regions, collaborative networks, and thematic developments in this emerging field. Findings revealed a consistent rise in scholarly output between 2020 and 2024, with 2024 marking the peak in publication frequency. This trend signifies heightened academic interest in integrating digital innovations such as augmented reality, virtual environments, and machine learning into the pedagogical practices of Islamic education for young learners.

The most commonly cited publications demonstrated a convergence of Qur'anic studies with domains such as artificial intelligence, computational linguistics, and psychological wellbeing. Countries such as Indonesia, Malaysia, and Jordan were among the leading contributors, reflecting strong regional investments in Islamic educational reforms and digital initiatives. Co-authorship patterns suggested a moderate level of international collaboration, with Southeast Asian countries particularly engaged in global knowledge networks. Keyword analysis underscored recurring themes related to Qur'anic interpretation, education, translation, and technology integration, suggesting an evolving discourse that straddles tradition and innovation.

This study provides a foundational overview of the academic progression in Quranic technological interventions for early childhood. It contributes by highlighting emerging areas of focus, such as the cognitive and affective impacts of digital Qur'anic tools, which warrant deeper empirical examination. While offering a panoramic view of existing research, the study also acknowledges several limitations, particularly regarding the underrepresentation of non-English literature and a lack of comprehensive impact evaluations. Future investigations may expand to include qualitative assessments or longitudinal case studies evaluating the pedagogical effectiveness and cultural relevance of such technologies.

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

Ultimately, the significance of this research lies in its ability to inform educational policymakers, curriculum developers, and technologists about the current direction and potential of integrating Quranic learning with digital tools in early childhood settings. By shedding light on knowledge gaps and collaborative opportunities, the findings set the stage for more inclusive, effective, and culturally attuned innovations in Islamic education.

Acknowledgement

The authors would like to express their gratitude to Department 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.

References

Al-Barakat, A. A., Al-Karasneh, S. M., Kanaan, E. M., AlAli, R. M., Ibrahim, N. A. H., & Aboud, Y. Z. (2024). Good Practices in Using Digital Technology for Children in Developing Their Learning Experiences. *Revista Electronica de LEEME*, *54*, 180–195. https://doi.org/10.58262/LEEME.54.0012

Al-Khoury, A., Hussein, S. A., Abdulwhab, M., Aljuboori, Z. M., Haddad, H., Ali, M. A., Abed, I. A., & Flayyih, H. H. (2022). Intellectual Capital History and Trends: A Bibliometric Analysis Using Scopus Database. *Sustainability (Switzerland)*, *14*(18). https://doi.org/10.3390/su141811615

Al-Tarawneh, A. (2021). The role of quran translations in radicalizing muslims in the west and misrepresenting islam. *Journal of Religion and Violence*, *9*(1), 101–122. https://doi.org/10.5840/jrv202142587

Al-Tarawneh, A. (2022). Combating the Misrepresentation of Women in Quran Translations: Translational Interventions. *Journal of International Women's Studies*, *23*(1).

Alahmadi, F., Meccawy, M., & Elhag, S. (2024). Enhancing Quran Comprehension: A VR Approach. In D. P. L.T., A. P., & S. M. (Eds.), *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics): Vol. 15027 LNCS* (pp. 230–239). Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/978-3-031-71707-9_17

Almazrooie, M., Samsudin, A., Gutub, A. A.-A., Salleh, M. S., Omar, M. A., & Hassan, S. A. (2020). Integrity verification for digital Holy Quran verses using cryptographic hash function and compression. *Journal of King Saud University - Computer and Information Sciences*, *32*(1), 24–34. https://doi.org/10.1016/j.jksuci.2018.02.006

Alves, J. L., Borges, I. B., & De Nadae, J. (2021). Sustainability in complex projects of civil construction: Bibliometric and bibliographic review. *Gestao e Producao*, *28*(4). https://doi.org/10.1590/1806-9649-2020v28e5389

Appio, F. P., Cesaroni, F., & Di Minin, A. (2014). Visualizing the structure and bridges of the intellectual property management and strategy literature: a document co-citation analysis. *Scientometrics*, *101*(1), 623–661. https://doi.org/10.1007/s11192-014-1329-0

Arief, A., Nurani, R. D., & Kapita, S. N. (2023). Design And Build A Hijaiah Letter Recognition Application For Early Children Using The Markerless Method Based Augmented Reality. *2023 8th International Conference on Informatics and Computing, ICIC 2023*. https://doi.org/10.1109/ICIC60109.2023.10382003

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020
Assyakur, D. S., & Rosa, E. M. (2022). Spiritual Leadership in Healthcare: A Bibliometric Analysis. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *7*(2). https://doi.org/10.30604/jika.v7i2.914

di Stefano, G., Peteraf, M., & Veronay, G. (2010). Dynamic capabilities deconstructed: A bibliographic investigation into the origins, development, and future directions of the research domain. *Industrial and Corporate Change*, *19*(4), 1187–1204. https://doi.org/10.1093/icc/dtq027

Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. In *International Journal of Production Economics* (Vol. 162, pp. 101–114). https://doi.org/10.1016/j.ijpe.2015.01.003

Gu, D., Li, T., Wang, X., Yang, X., & Yu, Z. (2019). Visualizing the intellectual structure and evolution of electronic health and telemedicine research. *International Journal of Medical Informatics*, *130*. https://doi.org/10.1016/j.ijmedinf.2019.08.007

Hanafi, M., Muhammad, F., Wiyono, N., & Ardyanto, T. D. (2021). Quran memorization and early childhood development: A case-control with neuroscience approach. *Bali Medical Journal*, *10*(2), 697–700. https://doi.org/10.15562/bmj.v10i2.2265

Hu, X., & Yelland, N. (2019). Changing Learning Ecologies in Early Childhood Teacher Education: From Technology to stem Learning. *Beijing International Review of Education*, *1*(2–3), 488–506. https://doi.org/10.1163/25902539-00102005

Jabbari, B., Mirghafourvand, M., Sehhatie, F., & Mohammad-Alizadeh-Charandabi, S. (2020). The Effect of Holly Quran Voice With and Without Translation on Stress, Anxiety and Depression During Pregnancy: A Randomized Controlled Trial. *Journal of Religion and Health*, *59*(1), 544–554. https://doi.org/10.1007/s10943-017-0417-x

Khiste, G. P., & Paithankar, R. R. (2017). Analysis of Bibliometric term in Scopus. *International Research Journal*, *01*(32), 78–83.

Malhas, R., & Elsayed, T. (2020). AyaTEC: Building a Reusable Verse-Based Test Collection for Arabic Question Answering on the Holy Qur'an. *ACM Transactions on Asian and Low-Resource Language Information Processing*, *19*(6). https://doi.org/10.1145/3400396

Malhas, R., & Elsayed, T. (2022). Arabic machine reading comprehension on the Holy Qur'an using CL-AraBERT. *Information Processing and Management*, *59*(6). https://doi.org/10.1016/j.ipm.2022.103068

Malhas, R., Mansour, W., & Elsayed, T. (2022). Qur'an QA 2022: Overview of The First Shared Task on Question Answering over the Holy Qur'an. In A.-K. H., E. T., M. H., A.-T. A., M. W., & D. K. (Eds.), *5th Workshop Open-Source Arabic Corpora and Processing Tools with Shared Tasks on Qur'an QA and Fine-Grained Hate Speech Detection, OSACT 2022 - Proceedings at Language Resources and Evaluation Conference, LREC 2022* (pp. 79–87). European Language Resources Association (ELRA).

Murhayati, S., Abduh, M. A., Andhi, R. R., Yendra, R., Rahman, M., & Fudholi, A. (2019). Educational integration of prayer in islam using an augmented reality approach. *International Journal of Engineering and Advanced Technology*, *8*(5), 2085–2087.

(2020). An efficient holy quran recitation recognizer based on SVM learning model. *Jordanian Journal of Computers and Information Technology*, *6*(4), 392–414. https://doi.org/10.5455/jjcit.71-1593380662

Nuttall, J., Edwards, S., Mantilla, A., Grieshaber, S., & Wood, E. (2015). The role of motive objects in early childhood teacher development concerning children's digital play and

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 26 (September 2025) PP. 297-311
DOI: 10.35631/IJMOE.726020

play-based learning in early childhood curricula. *Professional Development in Education*, *41*(2), 222–235. https://doi.org/10.1080/19415257.2014.990579

Rostam, N. A. P., & Malim, N. H. A. H. (2021). Text categorisation in Quran and Hadith: Overcoming the interrelation challenges using machine learning and term weighting. *Journal of King Saud University - Computer and Information Sciences*, *33*(6), 658–667. https://doi.org/10.1016/j.jksuci.2019.03.007

Saged, A. A. G., Mohd Yusoff, M. Y. Z., Abdul Latif, F., Hilmi, S. M., Al-Rahmi, W. M., Al-Samman, A., Alias, N., & Zeki, A. M. (2020). Impact of Quran in Treatment of the Psychological Disorder and Spiritual Illness. *Journal of Religion and Health*, *59*(4), 1824–1837. https://doi.org/10.1007/s10943-018-0572-8

van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, *84*(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

van Eck, N. J., & Waltman, L. (2017). Citation-based clustering of publications using CitNetExplorer and VOSviewer. *Scientometrics*, *111*(2), 1053–1070. https://doi.org/10.1007/s11192-017-2300-7

Van Eck, N. J., & Waltman, L. (2007). Bibliometric mapping of the computational intelligence field. *International Journal of Uncertainty, Fuzziness and Knowldege-Based Systems*, *15*(5), 625–645. https://doi.org/10.1142/S0218488507004911

Verbeek, A., Debackere, K., Luwel, M., & Zimmermann, E. (2002). Measuring progress and evolution in science and technology - I: The multiple uses of bibliometric indicators. *International Journal of Management Reviews*, *4*(2), 179–211. https://doi.org/10.1111/1468-2370.00083

Wu, Y. C. J., & Wu, T. (2017). A decade of entrepreneurship education in the Asia Pacific for future directions in theory and practice. In *Management Decision* (Vol. 55, Issue 7, pp. 1333–1350). https://doi.org/10.1108/MD-05-2017-0518

Yan, B. (2020). Application of Information Technology in the Problems and Countermeasures of Kindergarten Science Education. In H. C., C. Y.-W., & Y. N. (Eds.), *Advances in Intelligent Systems and Computing* (Vol. 1088, pp. 1031–1036). Springer. https://doi.org/10.1007/978-981-15-1468-5_120