

Islamic AI Literacy for Character Formation: A Systematic Literature Review and Bibliometric Analysis

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ABSTRACT

Purpose of the study: This study examines the development, scholarly distribution, thematic patterns, and intellectual structure of research on artificial intelligence, AI literacy, Islamic education, and responsible and ethical AI use, with attention to character formation. It also synthesizes recurring findings in the literature to identify an emerging conceptual structure of Islamic AI literacy.

Methodology: This study employed a Systematic Literature Review and bibliometric analysis using the Scopus database and VOSviewer software. Two complementary search strategies identified studies on artificial intelligence and Islamic education, as well as AI literacy and responsible or ethical AI use in education. After sequential screening by document type, language, publication period, and open-access availability, 47 articles formed the final corpus.

Main Findings: The analysis of 47 articles shows publication growth, from 6 articles in 2024 to 16 in 2025 and 25 through 9 September 2026, with Indonesia contributing 21 publications. Bibliometric analysis identified three thematic dimensions: AI literacy and educational competency, ethical and responsible AI, and human capacity and educational implementation. The systematic synthesis further identified five interrelated dimensions of Islamic AI literacy that connect technological, ethical, pedagogical, human, and character-formative considerations.

Novelty/Originality of this study: This study contributes an emerging conceptual understanding of Islamic AI literacy by integrating substantive synthesis from the systematic literature review with structural mapping from bibliometric analysis. The five dimensions are not an established model, but a conceptual structure derived from findings across the reviewed studies. The synthesis connects AI awareness, critical evaluation, ethical responsibility, Islamic values, human agency, and character formation.

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1. INTRODUCTION

The rapid development of artificial intelligence (AI) is transforming educational practice by changing how teachers and students access, generate, evaluate, and communicate knowledge. AI can support personalized learning, adaptive instruction, feedback, assessment, lesson planning, learner engagement, and applications in Qur'anic and Islamic learning [1]-[3]. At the same time, its use raises concerns about misinformation, academic

integrity, privacy, bias, overreliance, and reduced critical engagement [2], [4]-[8]. These opportunities and risks indicate that the educational value of AI depends not only on technological capability but also on pedagogical judgment, ethical awareness, human oversight, and the context in which AI is used.

Accordingly, AI literacy is increasingly understood as a multidimensional competence rather than a purely technical ability. Across the literature, its recurring elements include awareness of AI capabilities and limitations, critical evaluation of AI-generated outputs, ethical and responsible use, and pedagogical judgment. Responsible AI literacy also requires attention to bias, transparency, accountability, verification, and human-centered decision making [6], [9]-[13]. For educators, this means aligning AI use with curriculum, learner needs, educational objectives, and professional responsibilities rather than accepting AI-generated content automatically [5], [14], [15]. AI literacy therefore concerns not only how AI works, but also when, why, and under what ethical and pedagogical conditions it should be used.

These considerations become more complex in Islamic education, where educational purposes extend beyond information acquisition to Islamic values, religious authenticity, moral and spiritual development, and teacher-student relationships. Research shows that AI can support personalized learning, Qur'anic learning, feedback, learner autonomy, and access to Islamic knowledge, but also raises concerns about teacher readiness, privacy, bias, transparency, religious authority, and the authenticity of AI-generated religious content [1], [16]-[19]. Research on Qur'anic interpretation, Islamic manuscripts, and digital religious information further emphasizes the risks of bias, decontextualization, textual distortion, and inadequate verification [20]-[22]. Consequently, AI integration in Islamic education must be considered within the normative and formative purposes of Islamic education, where human oversight, contextual judgment, and value alignment remain essential [23]-[25].

The formative dimension is particularly important in relation to character formation. Existing evidence suggests that AI can support cognitive and psychomotor learning more readily than affective, moral, and spiritual development and cannot independently provide the guidance, mentorship, and relational dimensions required for deeper character formation [18], [19]. Human-centered AI research therefore emphasizes human-in-the-loop decision making, professional agency, contextual judgment, and ethical stewardship [12]. Character formation should thus be understood as a formative orientation of educational practice rather than an automatic outcome of AI use. In Islamic education, educators remain essential for interpretation, verification, moral guidance, spiritual development, and pedagogical decision making [1], [12], [16].

Taken together, the literature identifies recurring connections among AI awareness, critical evaluation, ethical responsibility, pedagogical judgment, Islamic values, human agency, religious verification, and character formation. However, these elements remain dispersed across different research traditions and have not been sufficiently integrated into a coherent perspective on Islamic AI literacy for character formation. The recurring elements are summarized in Table 1.

Table 1. Recurring Elements of Islamic AI Literacy

No.	Defining Element	Reference
1	AI awareness: understanding AI capabilities, limitations, benefits, and risks.	[7], [9]
2	Critical evaluation: assessing the reliability, accuracy, appropriateness, and contextual limitations of AI outputs.	[9], [14], [19]
3	Pedagogical judgment: aligning AI use with curriculum, learner needs, objectives, and context.	[6], [14], [15]
4	Ethical and responsible use: addressing bias, privacy, fairness, transparency, integrity, accountability, and overreliance.	[4], [9], [11], [13]
5	Human agency: preserving educators' roles in interpretation, guidance, and decision making.	[1], [12], [16], [19]
6	Islamic value alignment: relating AI-supported practice to Islamic values, ethics, spirituality, and educational foundations.	[1], [16], [23], [25]
7	Religious verification: verifying AI-generated religious information and maintaining authenticity through human and scholarly oversight.	[1], [19], [21], [22]
8	Critical independence: limiting excessive dependence on AI that may weaken critical thinking and meaningful Islamic learning.	[4], [5], [18], [26]
9	Character-formative orientation: supporting moral, affective, and spiritual development while recognizing AI's limitations in moral guidance.	[1][18][19]
10	Institutional readiness: considering teacher competence, infrastructure, accessibility, policy, and supportive educational conditions.	[11], [13], [16], [23]

Three related research gaps emerge. First, a conceptual gap remains. AI literacy, responsible AI use, Islamic values, human agency, and character development have been widely discussed, but their integration into

a coherent perspective on Islamic AI literacy for character formation remains underdeveloped. Existing research establishes important components such as AI awareness, critical evaluation, pedagogical judgment, ethical responsibility, religious authenticity, and human oversight [1], [9], [14], [16], [20], but their relationship within the formative purposes of Islamic education has not been sufficiently synthesized. Second, an evidence gap also remains. Evidence concerning the longer-term relationship between AI literacy and character formation is still limited, and the literature does not justify assuming that AI exposure or use automatically produces responsible or character-formative outcomes [11], [18], [19], [27]. Third, a methodological and field-level gap arises from the dispersion of the literature across disciplines, countries, institutions, publication sources, authors, and themes, limiting a comprehensive understanding of how the field has developed and how its intellectual structures are connected.

These gaps provide the rationale for combining a Systematic Literature Review (SLR) with bibliometric analysis. The SLR enables substantive synthesis of recurring findings across the selected literature, whereas bibliometric analysis provides structural mapping of the development, distribution, and thematic relationships of the research field [28], [29]. The novelty lies not simply in combining these two methods, but in integrating substantive evidence from the SLR with structural mapping from bibliometric analysis to develop an emerging conceptual understanding of Islamic AI literacy for character formation. This integration connects what the literature reports with how the field has developed across countries, institutions, authors, sources, and themes. The resulting conceptual understanding is evidence-based and derived from recurring findings across the reviewed studies; it is not presented as an established model or an empirically validated construct.

Accordingly, the present study investigates the development and scholarly structure of research related to artificial intelligence, AI literacy, Islamic education, responsible and ethical AI use, and character formation. More specifically, it examines how the field has developed across the selected publication period, how scholarly contributions are distributed across countries, institutions, sources, and authors, and how thematic patterns and intellectual structures can inform future research on Islamic AI literacy and character formation. These objectives are operationalized through the following research questions:

RQ1. How has research related to artificial intelligence and Islamic education developed across the selected publication period?

RQ2. How are scholarly contributions to artificial intelligence literacy and responsible or ethical artificial intelligence use in education distributed across countries, institutions, sources, and authors?

RQ3. How do the identified thematic patterns and intellectual structures inform future research directions for Islamic AI literacy and character formation?

By addressing these questions, the study contributes an evidence-based understanding of an emerging research domain at the intersection of AI, Islamic education, ethics, human guidance, religious authenticity, and character formation. The integrated approach provides both substantive synthesis and structural mapping while offering a conceptual foundation for future research, teacher preparation, curriculum development, ethical governance, and responsible AI integration in Islamic education.

2. RESEARCH METHOD

2.1. Research Design and Data Corpus

This study employed an integrated Systematic Literature Review (SLR) and bibliometric analysis to examine the development, scholarly distribution, thematic patterns, and intellectual structure of research related to artificial intelligence (AI), AI literacy, Islamic education, responsible and ethical AI, and their relevance to character formation. The SLR was used to systematically identify, screen, and synthesize the substantive findings of the selected literature, while bibliometric analysis was used to describe the development and distribution of the research field and to examine its structural and thematic relationships [28], [29].

The research object was the scholarly literature concerning AI and Islamic education, AI literacy, responsible or ethical AI in education, and issues related to Islamic values and character formation. The unit of analysis was an individual journal article. The final analytical corpus comprised 47 open-access, English-language journal articles that met all predefined eligibility criteria. The 47 articles constituted the dataset for the descriptive bibliometric analysis, VOSviewer-based network analysis, and qualitative thematic synthesis.

2.2. Data Source and Collection Procedure

The literature search was conducted using the Scopus database because of its broad coverage of peer-reviewed scholarly publications and its suitability for bibliometric analysis [29]. The search was conducted on 9 September 2026.

Two complementary search strategies were developed to capture the main dimensions of the research domain. The first search set (K1) focused on the intersection between AI and Islamic education:

K1: TITLE-ABS-KEY(("Artificial Intelligence" OR "Generative AI") AND ("Islamic Education" OR "Islamic Studies" OR "Islamic Learning" OR "Islamic Pedagogy")) The K1 search identified 62 records. The second search set (K2) focused on AI literacy and responsible or ethical AI in educational contexts: *K2: TITLE-ABS-KEY(("AI Literacy" OR "Artificial Intelligence Literacy") AND ("Responsible AI" OR "Ethical Awareness") AND ("Teacher Education" OR "K-12 Education"))* The K2 search identified 45 records.

The two search sets produced a combined initial corpus of 107 records. The retrieved records were combined and checked for duplicate entries using bibliographic information. No duplicate records were identified ($n = 0$). The eligible records were then screened sequentially according to the predefined inclusion and exclusion criteria.

2.3. Inclusion and Exclusion Criteria

The eligibility criteria were established before the screening process and were applied sequentially to all retrieved records.

Table 2. Inclusion and Exclusion Criteria

Criterion	Inclusion Criteria	Exclusion Criteria
Document type	Journal articles	Non-article documents
Language	English-language publications	Non-English publications
Publication period	Publications from 2024 to 9 September 2026	Publications outside the specified period
Accessibility	Open-access articles	Articles that were not open access

Records were retained only when they satisfied all four inclusion criteria. The application of these criteria resulted in the final corpus of 47 articles.

2.4. Screening and Selection Procedure

The screening and selection procedure was conducted sequentially and is presented in the PRISMA-based flow diagram in Figure 1. Following the identification of 107 records, no duplicate records were identified. The document-type criterion was then applied, resulting in the exclusion of 42 non-article records and leaving 65 journal articles. The language criterion was subsequently applied, excluding 7 non-English records and leaving 58 English-language articles. One article published outside the specified period from 2024 to 9 September 2026 was then excluded, leaving 57 articles. Finally, 10 non-open-access articles were excluded, resulting in the final corpus of 47 open-access articles.

Table 3. Screening and Selection Stages

Screening Stage	Records Remaining	Records Excluded	Reason for Exclusion
Initial records from K1 and K2	107	–	–
Document-type screening	65	42	Non-article documents
Language screening	58	7	Non-English publications
Publication-period screening	57	1	Outside 2024 to 9 September 2026
Open-access screening	47	10	Not open access
Final corpus	47	–	Included in the review

The screening process was reported using a PRISMA-based flow structure to provide a transparent account of the identification, exclusion, and final inclusion of the research corpus [30].

2.5. Data Analysis and Bibliometric Procedures

The analysis was conducted at three complementary levels: descriptive bibliometric analysis, VOSviewer-based network analysis, and qualitative thematic synthesis. First, descriptive analysis of the Scopus bibliographic metadata was conducted to examine publication trends, country contributions, institutional affiliations, publication sources, and author productivity. These descriptive analyses were used to address the development and scholarly distribution of the research field represented in RQ1 and RQ2.

Second, network-based bibliometric analysis was conducted using VOSviewer version 1.6.21 [31]. Two network analyses were performed. For the country-level analysis, the type of analysis was bibliographic coupling, the unit of analysis was countries, and the counting method was full counting. The minimum number of documents per country was set at 2. This analysis was used to examine bibliographic relationships among countries represented in the selected literature and to identify the structural relationships of the research field at the country level.

For the keyword analysis, the type of analysis was co-occurrence, the unit of analysis was all keywords, and the counting method was full counting. The minimum occurrence threshold was set at 1, resulting in 278

keywords being selected for the keyword network. Prior to visualization, bibliographic records and keyword variants were manually cleaned and normalized. The resulting networks were visualized in VOSviewer. The country-level bibliographic coupling analysis provided a structural view of relationships among countries, while the keyword co-occurrence analysis was used to identify recurring concepts and thematic relationships within the research field. The bibliometric outputs were subsequently interpreted together with the findings of the systematic literature review.

2.6. Qualitative Thematic Synthesis

The 47 selected articles were also subjected to qualitative thematic synthesis to identify recurring substantive patterns relevant to AI literacy, responsible and ethical AI, Islamic educational values, human agency, and character formation. The thematic synthesis was conducted in three analytical stages. First, the selected articles were reviewed to identify findings, concepts, and arguments directly relevant to the research questions. Second, relevant findings were coded according to recurring concepts, issues, and patterns across the selected studies. Third, related codes were grouped into broader themes and compared across the studies to identify convergence, divergence, and underexplored relationships.

The findings were then synthesized narratively by comparing the reported results and key findings across the selected articles. This procedure was intended to move beyond a sequential description of individual studies and to identify cross-study patterns relevant to the conceptualization of AI literacy, responsible AI use, Islamic values, human agency, and character formation. The qualitative synthesis also provided the substantive basis for consolidating recurring findings into broader conceptual dimensions of Islamic AI literacy. The resulting conceptual synthesis was treated as an emerging conceptual structure derived from the reviewed evidence, rather than as an already established or empirically validated construct.

2.7. Integration of Bibliometric and SLR Findings

The bibliometric and SLR components were integrated at the interpretation stage. The descriptive bibliometric analysis provided an overview of publication development and scholarly distribution, including publication trends, countries, institutions, sources, and authors. The VOSviewer analysis provided a structural perspective through country-level bibliographic coupling and keyword co-occurrence. The SLR thematic synthesis provided the substantive interpretation of recurring concepts, findings, ethical concerns, pedagogical considerations, Islamic values, human agency, and character-formation issues. The findings from these analytical components were then compared and integrated according to the three research questions. RQ1 was addressed primarily through the analysis of publication development across the selected period. RQ2 was addressed through the descriptive distribution of publications across countries, institutions, sources, and authors, complemented by the country-level bibliographic coupling analysis. RQ3 was addressed through the integration of keyword co-occurrence patterns with the substantive themes identified through the SLR.

Areas in which bibliometric patterns and substantive findings converged were interpreted as recurring and structurally visible aspects of the field, whereas weakly represented or insufficiently developed connections were examined as areas requiring further investigation. Through this integration, the study moved beyond reporting publication counts and isolated thematic findings to examine how AI literacy, responsible and ethical AI use, Islamic educational values, human and pedagogical agency, and character formation are conceptually connected across the literature. The integrated interpretation provided the basis for the study's emerging conceptual understanding of Islamic AI literacy for character formation, which was subsequently developed from recurring evidence identified across the selected studies.

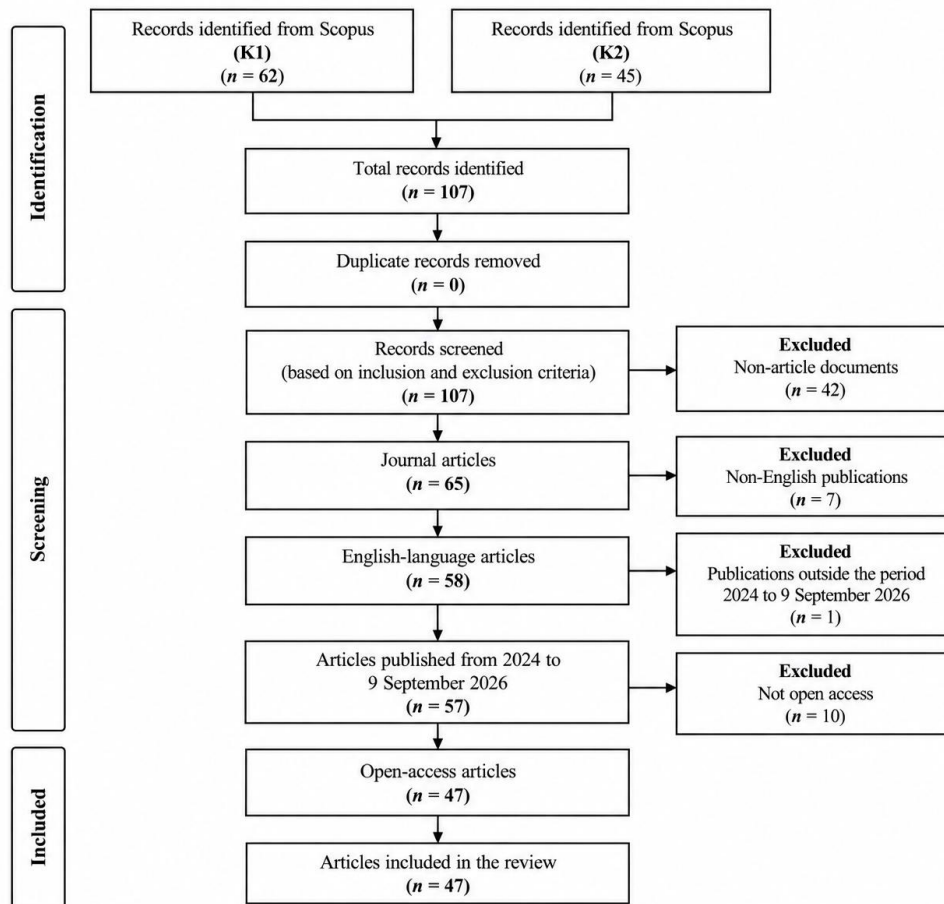


Figure 1. PRISMA 2020 flow diagram of the study selection process

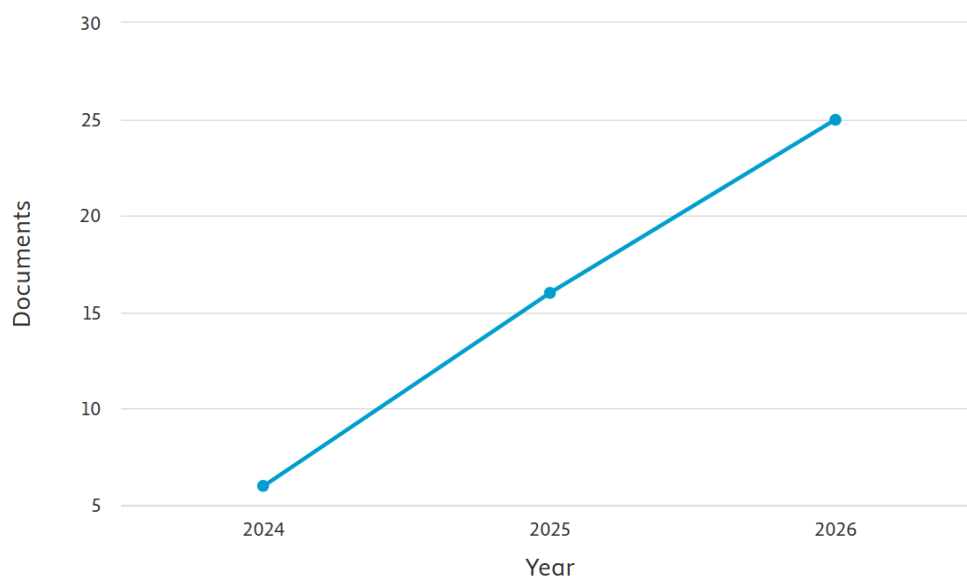
3. RESULTS

The final corpus comprised 47 articles that met the predefined eligibility criteria. The results are presented according to the three research questions, followed by the conceptual synthesis derived from the systematic literature review and bibliometric analysis.

3.1. Research Development across the Selected Publication Period

RQ1: How has research related to artificial intelligence and Islamic education developed across the selected publication period?

The Scopus-based analysis identified 47 articles in the final corpus. Publication output increased from 6 articles in 2024 to 16 articles in 2025 and 25 articles through 9 September 2026. The publication trajectory is presented in Figure 2.



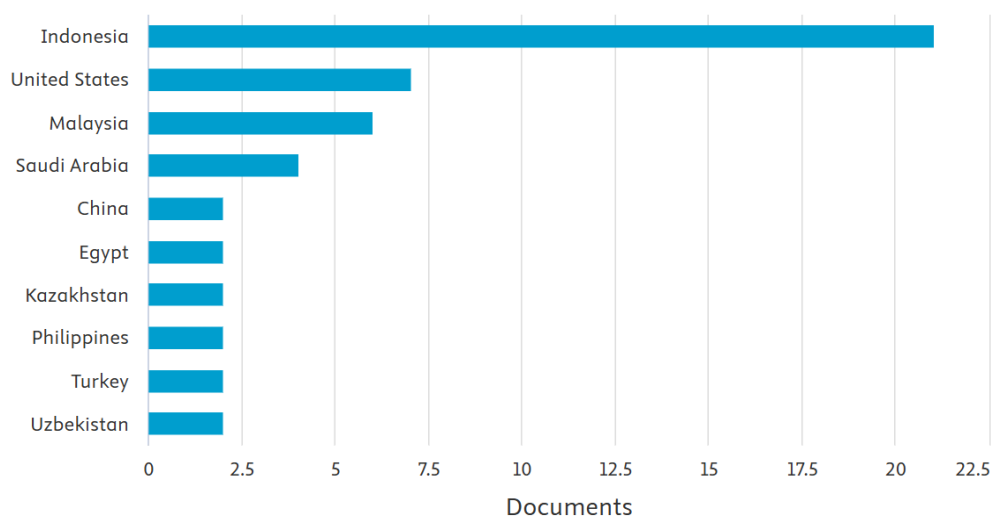
Source: Scopus database

Figure 2. Number of artificial intelligence and Islamic education publications

3.2. Scholarly Distribution and Structural Relationships

RQ2: How are scholarly contributions to artificial intelligence literacy and responsible or ethical artificial intelligence use in education distributed across countries, institutions, sources, and authors?

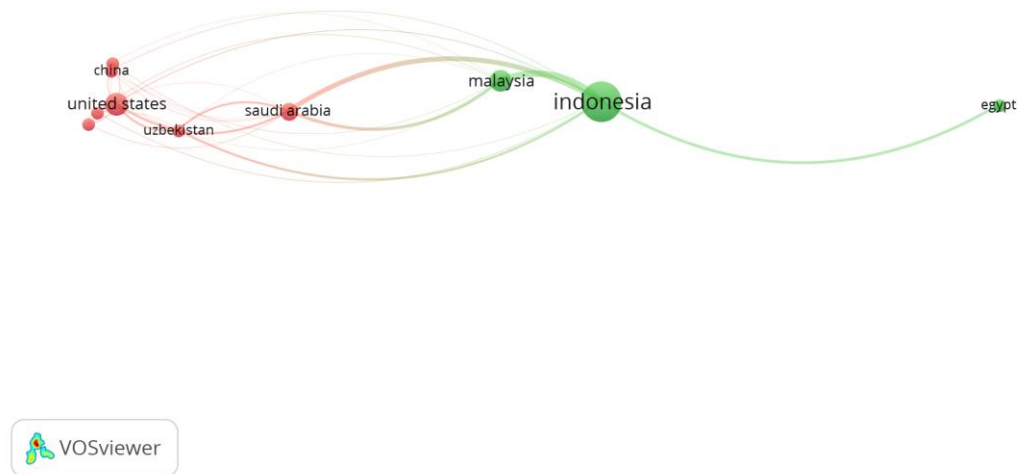
The country distribution shows that Indonesia contributed 21 publications, followed by the United States with 7, Malaysia with 6, and Saudi Arabia with 4. Other contributing countries include China, Egypt, Kazakhstan, the Philippines, Turkey, and Uzbekistan. The country distribution is presented in Figure 3.



Source: Scopus database

Figure 3. Number of publications by country (Top 10 countries)

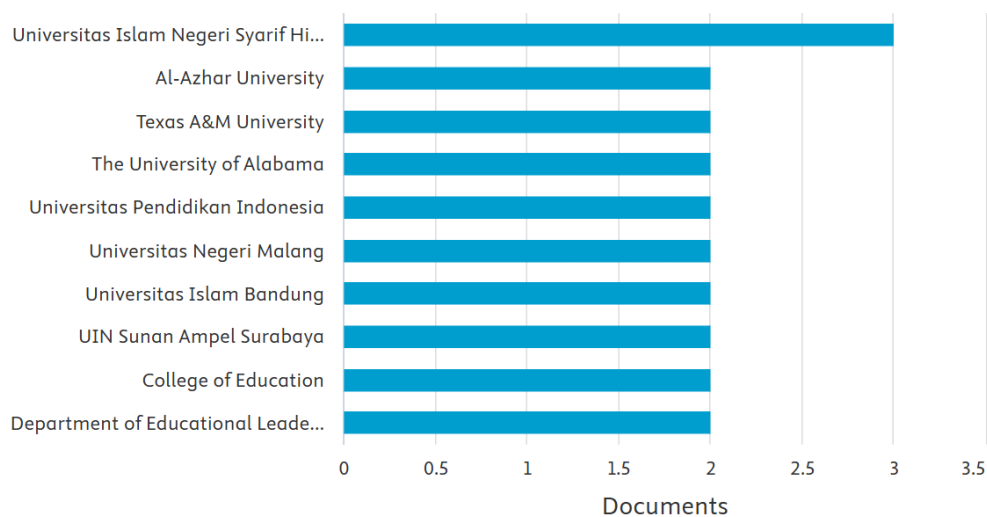
Country-level structural relationships were analyzed using bibliographic coupling in VOSviewer. The resulting network shows Indonesia connected with Malaysia, the United States, Saudi Arabia, China, and Egypt through bibliographic relationships based on shared reference patterns.



Source: VOSviewer

Figure 4. Country-level bibliographic coupling network

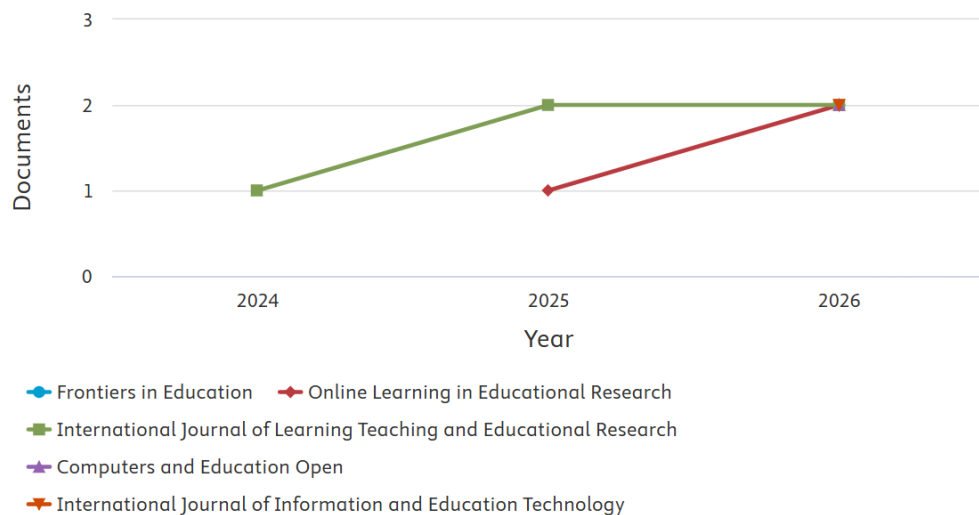
The institutional distribution is presented in Figure 5. Universitas Islam Negeri Syarif Hidayatullah Jakarta contributed three publications. Several other institutions contributed two publications each, including Al Azhar University, Texas A&M University, The University of Alabama, Universitas Pendidikan Indonesia, Universitas Negeri Malang, Universitas Islam Bandung, and UIN Sunan Ampel Surabaya.



Source: Scopus database

Figure 5. Top institutional affiliations contributing to AI literacy and responsible AI research

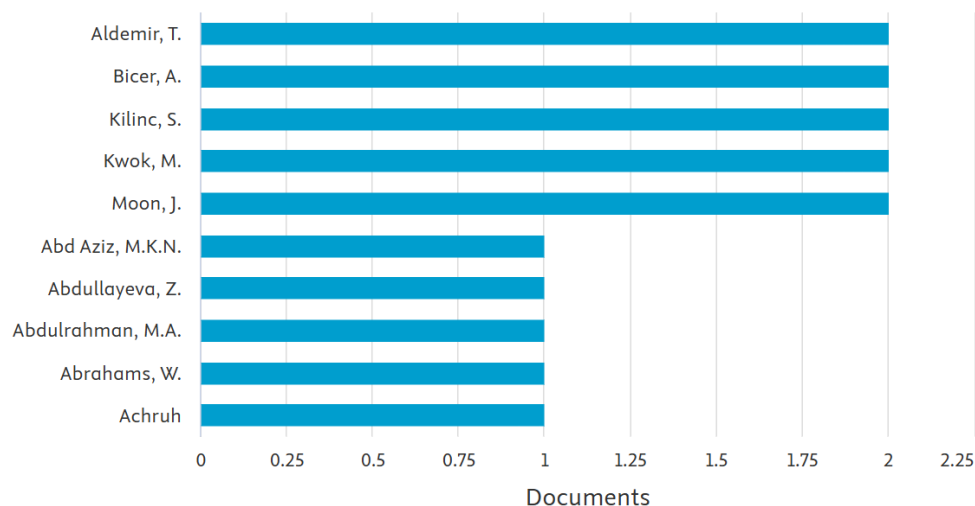
The distribution of publication sources is presented in Figure 6. The identified sources include *Frontiers in Education*, *Online Learning in Educational Research*, *International Journal of Learning, Teaching and Educational Research*, *Computers and Education Open*, and *International Journal of Information and Education Technology*.



Source: Scopus database

Figure 6. Top publication sources related to AI literacy and responsible AI use in education

Author productivity is presented in Figure 7. Aldemir, Bicer, Kilinc, Kwok, and Moon each contributed two publications, while many other authors contributed one publication.



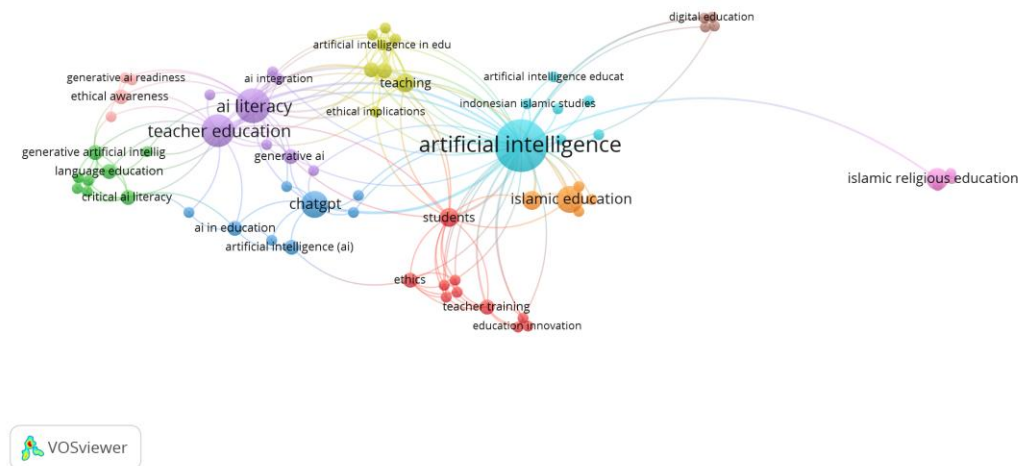
Source: Scopus database

Figure 7. Top authors contributing to AI literacy and responsible AI research

3.3. Thematic Patterns

RQ3: How do the identified thematic patterns and intellectual structures inform future research directions for Islamic AI literacy and character formation?

Keyword co-occurrence analysis using VOSviewer identified artificial intelligence as the central keyword, connected with AI literacy, students, teacher education, teacher training, ChatGPT, ethics, teaching, and ethical technology. The keyword network is presented in Figure 8.



Source: VOSviewer software

Figure 8. Keyword co-occurrence network visualization

The ten keywords with the highest total link strength are presented in Table 4.

Rank	Keyword	Total Link Strength
1	Artificial Intelligence	169
2	AI Literacy	74
3	Students	58
4	Teacher Education	58
5	Teacher Training	40
6	ChatGPT	38
7	Ethics	38
8	Teaching	38
9	Ethical Technology	34
10	Teachers'	34

Based on the keyword co-occurrence patterns and the substantive synthesis, three broad thematic dimensions were identified:

1. AI literacy and educational competency
2. Ethical and responsible AI
3. Human capacity and educational implementation

The first dimension concerns knowledge, skills, and critical awareness related to AI. The second concerns bias, privacy, transparency, accountability, and responsible decision making. The third concerns teacher preparation, training, pedagogical adaptation, and human mediation.

3.4. Conceptual Dimensions of Islamic AI Literacy for Character Formation

The integrated analysis identified five interrelated dimensions of Islamic AI literacy for character formation:

1. AI Awareness
2. Critical Evaluation and Responsible Use
3. Islamic Ethical and Value Alignment
4. Human and Pedagogical Agency
5. Moral and Character Development

The five-dimensional conceptual structure is presented in Figure 9.

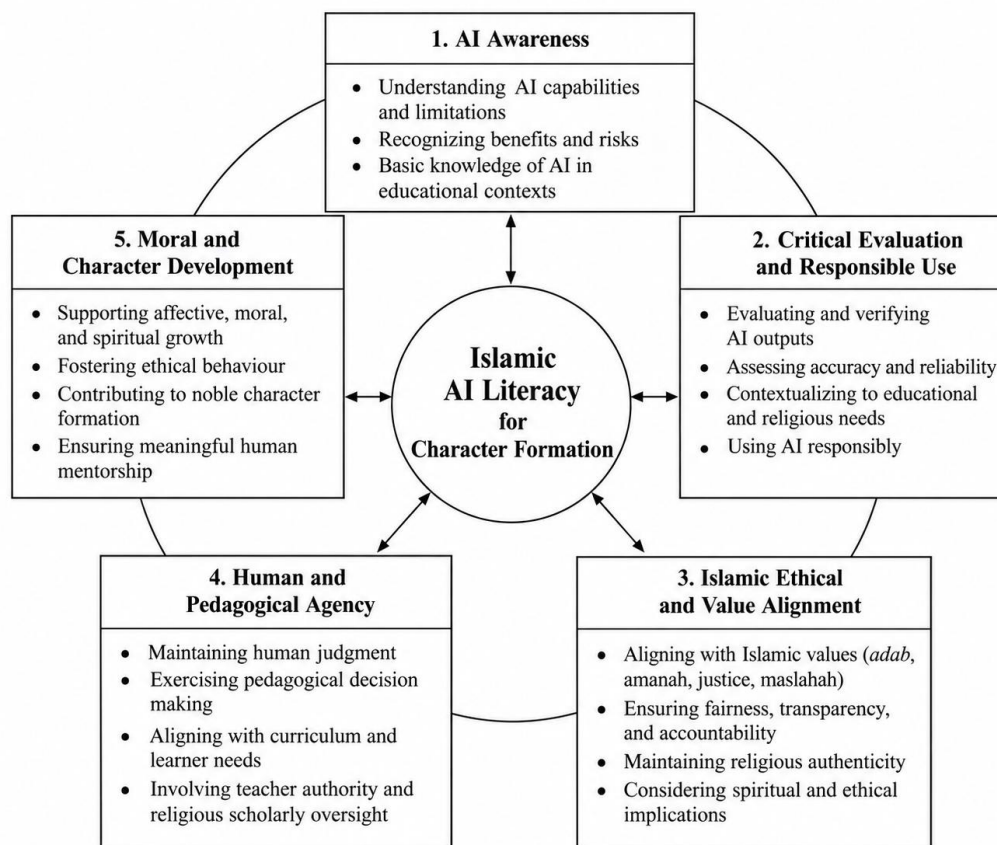


Figure 9. Conceptual Dimensions of Islamic AI Literacy for Character Formation

4. DISCUSSION

4.1. Research Development and the Emergence of the Field

The publication trajectory indicates expanding scholarly attention to the intersection of AI, education, ethics, and Islamic contexts. The increase from 6 articles in 2024 to 16 in 2025 and 25 articles through 9 September 2026 is consistent with previous research addressing AI-supported learning, pedagogical applications, ethical concerns, and AI integration in Islamic educational contexts [1], [2], [19], [32]-[35]. The findings nevertheless suggest that publication growth should not be equated with conceptual consolidation. Previous studies have increasingly addressed teacher competence, pedagogical integration, ethical boundaries, and the preservation of Islamic educational values [1], [16], [19]. The concentration of publications in the most recent period, together with the dispersion of topics across AI literacy, Islamic education, ethics, teacher preparation, religious knowledge, and character formation, indicates that the field remains emergent.

This interpretation reinforces the research gap identified in the Introduction. The literature contains substantial work on individual components of responsible AI use, but these components have not yet been sufficiently integrated around Islamic values and character formation. The increasing publication activity therefore strengthens the rationale for systematic synthesis rather than, by itself, indicating a mature or conceptually consolidated field.

4.2. Scholarly Distribution and Field-Level Fragmentation

The country distribution demonstrates that the research domain is not confined to a single national context. Indonesia contributes the largest number of publications, which is consistent with studies examining AI adoption, teacher readiness, ethical concerns, and Islamic educational values in Indonesian Islamic higher education [16], [17]. Contributions from other countries further indicate that AI literacy and responsible AI use are being investigated across different educational and cultural settings. The country-level network requires a specific interpretation because the analysis used bibliographic coupling, not co-authorship analysis. Bibliographic coupling reflects bibliographic relatedness based on shared references. Thus, the connections involving Indonesia, Malaysia, the United States, Saudi Arabia, China, and Egypt indicate shared bibliographic

foundations rather than direct international collaboration. This distinction is important for interpreting the structure of the field accurately.

The institutional and publication-source distributions further indicate the multidisciplinary character of the domain. The presence of Islamic universities, general educational institutions, and international academic environments reflects the intersection of educational technology, teacher education, Islamic education, and digital ethics. Similarly, the dispersion across educational technology, learning sciences, and broader educational journals is consistent with previous research that conceptualizes AI literacy and responsible AI as involving technological, pedagogical, professional, and ethical dimensions [6], [9], [10]. The dispersed author productivity provides additional evidence that the field does not yet appear dominated by a single strongly established scholarly group. Collectively, these distributional patterns reinforce the field-level gap identified in the Introduction: relevant knowledge is distributed across different scholarly communities and research traditions. Bibliometric mapping therefore contributes not merely publication counts but a structural perspective on the fragmentation and relatedness of the emerging research domain.

4.3. Thematic Patterns and the Research Gap

The keyword structure places artificial intelligence at the center of the field, while AI literacy, teacher education, teacher training, ethics, and ethical technology are also prominent. This pattern is consistent with previous studies emphasizing AI awareness, critical evaluation, ethical reasoning, pedagogical judgment, and professional agency [6], [9], [12], [13]. The three thematic dimensions provide a substantive interpretation of this structure. AI literacy and educational competency reflects the emphasis on the knowledge, skills, and critical awareness needed to engage with AI. Ethical and responsible AI reflects attention to bias, privacy, transparency, accountability, and responsible decision making. Human capacity and educational implementation emphasizes teacher preparation, training, pedagogical adaptation, and human mediation [13], [15], [36].

These patterns reinforce, rather than resolve, the conceptual gap identified in the Introduction. AI literacy, teacher readiness, AI integration, and ethical technology receive substantial attention, yet their explicit integration with character formation remains comparatively underdeveloped, particularly in Islamic education. Existing studies in Islamic education emphasize moral, spiritual, relational, and authenticity-related dimensions that cannot be reduced to technological functionality [1], [16], [19]. The findings also clarify the direction of future research. Further work should examine how AI literacy can be aligned with Islamic values, ethical reasoning, human agency, and character development. Relevant areas include critical evaluation, verification, responsible digital behavior, and value-based decision making in Islamic educational practice [20], [21], [35]. Such directions follow from the underdeveloped connections identified across the substantive and thematic evidence rather than from keyword prominence alone.

4.4. Novelty and the Five-Dimensional Conceptual Structure

The principal conceptual contribution of the study is the synthesis of five interrelated dimensions: AI Awareness; Critical Evaluation and Responsible Use; Islamic Ethical and Value Alignment; Human and Pedagogical Agency; and Moral and Character Development. The novelty does not lie in claiming that these individual components are entirely new. Previous studies have addressed awareness, ethics, evaluation, responsible use, pedagogical judgment, human agency, religious authenticity, and moral development separately or in partial combinations [1], [9], [12], [14], [16], [18]-[21]. Rather, the novelty lies in integrating these recurring components into an emerging conceptual structure specifically oriented toward Islamic AI literacy and character formation through the combined interpretation of SLR evidence and bibliometric patterns.

AI Awareness provides the foundational understanding of AI capabilities, limitations, benefits, and risks and corresponds with previous discussions of AI literacy [7], [9]. Critical Evaluation and Responsible Use extends this foundation to evaluation, verification, contextualization, and responsible application of AI outputs, consistent with research on AI literacy and pedagogical judgment [9], [14], [15]. Islamic Ethical and Value Alignment situates AI-supported practices within Islamic values, ethical principles, religious authenticity, and the normative foundations of Islamic education [1], [16], [20], [23], [25]. This dimension is important because responsible AI integration in Islamic education involves more than technological efficiency.

Human and Pedagogical Agency emphasizes teacher judgment, human oversight, pedagogical decision making, and the continuing role of educators and religious authority. This interpretation complements human-centered AI research emphasizing professional agency [12] and Islamic education research concerning teacher authority and contextual judgment [1], [16], [19]. Moral and Character Development connects AI literacy with the formative purposes of Islamic education. Existing research indicates that AI may support learning processes but cannot independently replace the moral, affective, spiritual, and relational guidance required for deeper character formation [18], [19]. Character formation should therefore be treated as a formative orientation of educational practice rather than an automatic consequence of AI use.

Taken together, the five dimensions address the conceptual gap by connecting components that have largely been examined separately. However, they should be understood strictly as an emerging, evidence-based conceptual synthesis of recurring findings. They are not presented as an established theory, causal model, or empirically validated measurement framework.

4.5. Theoretical Implications

The findings suggest that AI literacy in Islamic education should not be reduced to technical competence. Its meaning is contextualized by ethical responsibility, Islamic values, pedagogical judgment, human agency, and formative educational purposes. The five-dimensional synthesis therefore provides a contextualized interpretation of responsible AI literacy in which technological competence is embedded within the normative and formative aims of Islamic education. It also clarifies the conceptual relationship between responsible AI use and character formation by emphasizing human and pedagogical agency rather than treating AI use as an automatic contributor to moral development. This extends existing discussions of AI literacy into an Islamic educational context while retaining an evidence-based and non-validated conceptual status.

4.6. Practical Implications

For teacher education, the findings suggest that AI literacy development should extend beyond operational skills to include verification of AI outputs, critical evaluation, ethical decision making, pedagogical judgment, religious authenticity, and responsible use. Teacher preparation programs can therefore integrate AI literacy with Islamic ethical principles and human-centered pedagogical practice. For curriculum and institutional governance, responsible AI guidance should address privacy, bias, transparency, academic integrity, verification of religious information, and preservation of human educational authority. These considerations are particularly relevant in Islamic educational settings, where technological adoption needs to remain aligned with ethical, religious, and character-formative objectives.

4.7. Limitations and Future Research

This study has several limitations. First, the literature search was conducted using Scopus only, meaning that potentially relevant studies indexed in other databases were not included. Second, the corpus was restricted to English-language, open-access journal articles published from 2024 to 9 September 2026, which may have excluded relevant studies outside these criteria. Third, the bibliometric analysis depended on available Scopus metadata and the selected VOSviewer settings, including country-level bibliographic coupling and all-keyword co-occurrence analyses. Finally, the five dimensions represent an emerging conceptual synthesis and have not yet been empirically validated as a formal measurement model. Empirical validation is therefore required before the five dimensions can be treated as a formal measurement construct. Future research may examine their validity and applicability through longitudinal, practice-based, comparative, and context-sensitive studies across different Islamic educational settings.

5. CONCLUSION

This study shows that research on artificial intelligence, AI literacy, and Islamic education is an emerging and multidisciplinary field, with growing attention to ethical, pedagogical, and human-centered dimensions. The findings also indicate that the explicit integration of AI literacy with character formation remains insufficiently developed in Islamic education. By integrating systematic literature review and bibliometric analysis, the study identifies recurring substantive and structural patterns and synthesizes them into five interrelated dimensions of Islamic AI literacy: AI Awareness, Critical Evaluation and Responsible Use, Islamic Ethical and Value Alignment, Human and Pedagogical Agency, and Moral and Character Development. These dimensions provide an emerging conceptual understanding of Islamic AI literacy for character formation rather than an established or empirically validated model.

The findings suggest that responsible AI integration in Islamic education should extend beyond technical competence to include ethical judgment, verification, Islamic value alignment, human oversight, and character-formative purposes. Future research should empirically examine and validate the proposed dimensions across different educational and cultural contexts. The study is limited by its use of the Scopus database, restriction to English-language open-access journal articles within the selected publication period, reliance on VOSviewer-based bibliometric analysis, and the absence of empirical validation of the proposed conceptual structure.

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REFERENCES

- [1] M. Arif, M. K. N. Abd Aziz, H. Hassan, Y. Fikri, M. Zekkari, and B. V. Rismawati, "Artificial Intelligence in Islamic Religious Education: A PRISMA-Based Review and the SEI-CHAT Framework," *Online Learn. Educ. Res.*, vol. 6, no. 1, pp. 65–85, 2026, doi: 10.58524/oler.v6i1.993.
- [2] F. Karataş and E. Yüce, "AI and the Future of Teaching: Preservice Teachers' Reflections on the Use of Artificial Intelligence in Open and Distributed Learning," *Int. Rev. Res. Open Distrib. Learn.*, vol. 25, no. 3, pp. 304–325, 2024, doi: 10.19173/irrodl.v25i3.7785.
- [3] Z. Mukhambetaliyeva, A. Uzakova, N. Koktalov, and H. Fujii, "Artificial Intelligence Integration in Teacher Training: Advancing Functional and Professional Competencies for Quality Education (Sustainable Development Goal 4)," *Sci. Educ. Int.*, vol. 37, no. 1, pp. 28–38, 2026, doi: 10.33828/sei.v37.i1.3.
- [4] J. G. Caling *et al.*, "Pre-service Teachers' Use of ChatGPT and Acquired Moral Dissonance," *J. Interdiscip. Stud. Educ.*, vol. 14, no. 4, pp. 73–98, 2025, doi: 10.32674/zmq9089.
- [5] R. D. De Asis, "Generative AI as a writing scaffold: Use, perceptions, and writing quality among pre-service teachers in the Philippines," *Soc. Sci. Humanit. Open*, vol. 14, 2026, doi: 10.1016/j.ssaho.2026.103275.
- [6] A. Unal and J. Hobe, "Preparing Preservice Teachers for AI-Supported Classrooms: Perceptions and Competencies, and Psychometric Characteristics of the Survey Instrument," *Educ. Sci.*, vol. 16, no. 8, 2026, doi: 10.3390/educsci16081252.
- [7] D. N. Nguyen, "Learning with ChatGPT: Awareness, Use and Ethical Readiness among Vietnamese High School Students," *Int. J. Inf. Educ. Technol.*, vol. 16, no. 6, pp. 1573–1584, 2026, doi: 10.18178/ijiet.2026.16.6.2622.
- [8] A. Adiyono, M. Sholeh, F. F. Dalimarta, B. Budiyo, and S. Samuji, "Design and Implementation of an AI-Based Platform for Kitab Kuning Learning," in *Advances in Science, Technology and Innovation*, 2026, pp. 25–36. doi: 10.1007/978-3-032-21822-3_4.
- [9] A. M. Al-Abdullatif, "Auditing AI Literacy Competency in K–12 Education: The Role of Awareness, Ethics, Evaluation, and Use in Human–Machine Cooperation," *Systems*, vol. 13, no. 6, p. 490, 2025, doi: 10.3390/systems13060490.
- [10] X. Lu, A. Zaitseva, and F. J. Troyan, "AI literacy: A core practice in world language education," *Foreign Lang. Ann.*, vol. 59, no. 1, pp. 9–33, 2026, doi: 10.1111/flan.70037.
- [11] T. J. Ó. Ceallaigh and S. Murphy, "Teaching the teachers: A systematic review of genAI-specific technological pedagogical knowledge (TPK) in teacher education," *Comput. Educ. Open*, vol. 10, p. 100367, 2026, doi: 10.1016/j.caeo.2026.100367.
- [12] E. Baran, M. Dilek, M. Ziba, and X. Xiao, "Human-centered AI for teacher educators: Designing professional learning for critical AI literacy," *Comput. Educ. Open*, vol. 11, p. 100399, 2026, doi: 10.1016/j.caeo.2026.100399.
- [13] A. Ayesha, S. Hamid, Z. Salieva, and S. N. Ahmed, "Transforming Language Teacher Education in the Global South: Assessing Artificial Intelligence Readiness in CELTA Programs," *J. Int. Students*, vol. 16, no. 6, pp. 155–176, 2026, doi: 10.32674/jnytyp10.
- [14] W. Abrahams, "Exploring Pre-Service Teachers' AI Pedagogical Judgement in Assessment Design: A Document Analysis of Technology-Integrated Tasks," *Int. J. Learn. Teach. Educ. Res.*, vol. 25, no. 6, pp. 616–635, 2026, doi: 10.26803/ijlter.25.6.26.
- [15] A. A. Dalyanci, I. Celik, S. Kontkanen, J. Laru, and S. Siklander, "Beyond AI Literacy: Exploring Pre-Service Teachers' Pedagogical and Ethical Reasoning in Generative AI Integration in Education," *J. Educ. Comput. Res.*, 2026, doi: 10.1177/07356331261479569.
- [16] Achruh, M. Rapi, M. Rusdi, and R. Idris, "Challenges and Opportunities of Artificial Intelligence Adoption in Islamic Education in Indonesian Higher Education Institutions," *Int. J. Learn. Teach. Educ. Res.*, vol. 23, no. 11, pp. 423–443, 2024, doi: 10.26803/ijlter.23.11.22.
- [17] F. Syukur, A. Maghfurin, U. Marhamah, and P. Jehwae, "Integration of Artificial Intelligence in Islamic Higher Education: Comparative Responses between Indonesia and Thailand," *Nazhruna J. Pendidik. Islam*, vol. 7, no. 3, pp. 531–553, 2024, doi: 10.31538/nzh.v7i3.13.
- [18] A. Nirwana AN *et al.*, "SWOT Analysis of AI Integration in Islamic Education: Cognitive, Affective, and Psychomotor Impacts," *Qubahan Acad. J.*, vol. 5, no. 1, pp. 476–503, 2025, doi: 10.48161/qaj.v5n1a1498.
- [19] Z. Almajdoub, P. Fidalgo, Y. Alramamneh, R. AlHakmani, and N. Kasasbeh, "Artificial intelligence in Qur'anic education: pedagogical promise, practical challenges, and ethical concerns," *Front. Educ.*, vol. 11, p. 1876380, 2026, doi: 10.3389/educ.2026.1876380.
- [20] A. Umar, A. Haqqi, F. Rojihisawal, M. D. F. AR, D. A. Dewi, and A. Adnan, "Artificial Intelligence and the Ethics of Tafsir: Integrating Digital Technologies and Islamic Humanities in Automating Interpretative Processes," *J. Educ. Technol. Learn. Creat.*, vol. 3, no. 2, pp. 324–347, 2025, doi: 10.37251/jetlc.v3i2.2496.
- [21] M. A. Fitryansyah and F. N. Fauziah, "Bridging Tradition and Technology: AI in the Interpretation of Nusantara Religious Manuscripts," *J. Lekt. Keagamaan*, vol. 22, no. 2, pp. 317–346, 2024, doi: 10.31291/jlka.v22i2.1247.
- [22] M. A. Abdulrahman, "The Future of Hadith Studies in The Digital Age: Opportunities and Challenges," *J. Ecohumanism*, vol. 3, no. 8, pp. 2792–2800, 2024, doi: 10.62754/joe.v3i8.4927.
- [23] A. Wedi, D. Mardiana, and Umiarso, "Digital Transformation Model of Islamic Religious Education in the AI Era: A Case Study of Madrasah Aliyah in East Java, Indonesia," *Int. J. Learn. Teach. Educ. Res.*, vol. 24, no. 8, pp. 842–863, 2025, doi: 10.26803/ijlter.24.8.37.
- [24] T. Tumiran, B. Siregar, S. Lubis, M. Y. Harahap, and M. H. Rahman, "AI-Driven Islamic Classroom Management in the Digital Era: The Roles of Neuro-Pedagogy, Spiritual Intelligence, and Innovative Teaching Performance," *Qubahan Acad. J.*, vol. 6, no. 2, pp. 191–205, 2026, doi: 10.48161/qaj.v6n2a2072.
- [25] N. Faizin, M. Alfian, A. Basid, M. R. Ramadhan, S. A. Panatik, and A. N. Kawakip, "Muslim students' acceptance of

- artificial intelligence in Islamic religious education: an extended TAM approach,” *Discov. Educ.*, vol. 4, no. 1, p. 304, 2025, doi: 10.1007/s44217-025-00767-1.
- [26] A. Adiyono, T. Suwartono, S. Nurhayati, F. F. Dalimarta, and O. Wijayanti, “Impact of Artificial Intelligence on Student Reliance for Exam Answers: A Case Study in IRCT Indonesia,” *Int. J. Learn. Teach. Educ. Res.*, vol. 24, no. 3, pp. 455–479, 2025, doi: 10.26803/ijlter.24.3.22.
- [27] R. Daher, “Integrating AI literacy into teacher education: a critical perspective paper,” *Discov. Artif. Intell.*, vol. 5, no. 1, p. 217, 2025, doi: 10.1007/s44163-025-00475-7.
- [28] H. Snyder, “Literature review as a research methodology: An overview and guidelines,” *J. Bus. Res.*, vol. 104, pp. 333–339, 2019, doi: 10.1016/j.jbusres.2019.07.039.
- [29] N. Donthu, S. Kumar, D. Mukherjee, N. Pandey, and W. M. Lim, “How to conduct a bibliometric analysis: An overview and guidelines,” *J. Bus. Res.*, vol. 133, pp. 285–296, 2021, doi: 10.1016/j.jbusres.2021.04.070.
- [30] M. J. Page *et al.*, “The PRISMA 2020 statement: An updated guideline for reporting systematic reviews,” *J. Clin. Epidemiol.*, vol. 134, pp. 178–189, 2021, doi: 10.1016/j.jclinepi.2021.03.001.
- [31] N. J. van Eck and L. Waltman, “Software survey: VOSviewer, a computer program for bibliometric mapping,” *Scientometrics*, vol. 84, no. 2, pp. 523–538, 2010, doi: 10.1007/s11192-009-0146-3.
- [32] N. L. Khusniyah, L. Hakim, and A. I. Muslimin, “Comparing AI-Based and Peer-Based Feedback in Teaching the CaRS Model: A Quasi-Experimental Study on Postgraduate Academic Writing,” *Int. J. Inf. Educ. Technol.*, vol. 16, no. 3, pp. 687–694, 2026, doi: 10.18178/ijiet.2026.16.3.2541.
- [33] Y. Sugiarti, E. O. Mukhamad Anwas, F. Fitroh, J. Arlinwibowo, and I. Maulana Anwas, “Indonesia Islamic students’ belief towards the performance of artificial intelligence: perceptions, impacts, and anticipations,” *IAES Int. J. Artif. Intell.*, vol. 15, no. 4, pp. 3955–3966, 2026, doi: 10.11591/ijai.v15.i4.pp3955-3966.
- [34] S. Aflahah *et al.*, “AI, Ethics, and Islamic Higher Education: Navigating the Tensions Between Practical Risk Mitigation and Religious Normativity,” *J. Ilm. Islam Futur.*, vol. 26, no. 1, pp. 1–24, 2026, doi: 10.22373/jiifv26.i1.32978.
- [35] M. W. B. H. M. Yahya, M. Rahmat, P. Parihat, G. Munawar, and A. Amiruddin, “Artificial Intelligence in Islamic Education: Strengthening Religious Tolerance or Reproducing New Socio Legal Risks?,” *Petita J. Kaji. Ilmu Huk. dan Syariah*, vol. 11, no. 1, pp. 618–641, 2026, doi: 10.22373/petita.v11i1.1184.
- [36] T. Aldemir, A. Bicer, S. Kilinc, J. Moon, and M. Kwok, “Challenges, safeguards, and professional learning needs for AI integration: insights from a two-week AI literacy module with preservice teachers,” *Cogent Educ.*, vol. 13, no. 1, p. 2721038, 2026, doi: 10.1080/2331186X.2026.2721038.