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Global research trends in educational evaluation: A bibliometric review

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Abstract

Background/purpose. Educational evaluation has become an essential component in improving educational quality, accountability, and evidence-based decision-making. The rapid advancement of digital technologies, artificial intelligence, and online learning environments has transformed educational evaluation into more adaptive and technology-driven assessment practices. However, comprehensive studies mapping the global development and research trends in educational evaluation remain limited. Therefore, this study aimed to analyse global research trends in educational evaluation through a bibliometric review.

Materials/methods. This study employed a bibliometric research design using data retrieved from Google Scholar through the Publish or Perish application. A total of 500 publications related to educational evaluation published between 2020 and 2026 were collected and analysed. The data were exported in RIS and CSV formats and subsequently analysed using VOSviewer and Microsoft Excel to identify publication trends, citation patterns, keyword co-occurrence, thematic clusters, and emerging research topics.

Results. The findings revealed that educational evaluation research experienced substantial growth during the analysed period, particularly in relation to digital transformation, online assessment, and post-pandemic educational challenges. The visualization analysis identified several dominant themes, including assessment, teaching, systematic review, educational effectiveness, artificial intelligence, and digital evaluation. The results also indicated that educational evaluation research has increasingly shifted toward technology-supported and AI-driven assessment ecosystems involving learning analytics, adaptive learning, and intelligent educational systems.

Conclusion. Educational evaluation has evolved into a multidisciplinary and technology-oriented research field integrating pedagogy, educational technology, learning analytics, and quality assurance practices. Future educational evaluation research should continue emphasizing innovative, ethical, inclusive, and evidence-based evaluation approaches that respond to the dynamic demands of contemporary education.

Research Article

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1. Introduction

Educational evaluation has become an essential component in improving the quality and effectiveness of education across various educational contexts. Evaluation practices are widely used to assess learning outcomes, instructional effectiveness, curriculum implementation, institutional performance, and educational policies. In recent years, educational evaluation has received increasing global attention due to the growing demand for accountability, quality assurance, and evidence-based decision-making in educational systems. Educational institutions are increasingly expected to demonstrate measurable educational outcomes through systematic and transparent evaluation processes, making evaluation an important foundation for educational improvement and policy development (Arbeni et al., 2025; Liz & Javier, 2021).

The importance of educational evaluation is closely associated with quality assurance initiatives in education. Evaluation activities contribute significantly to curriculum development, accreditation processes, institutional effectiveness, and continuous educational improvement. Through evaluation, educators and policymakers are able to identify strengths and weaknesses within educational programs and formulate strategic interventions to improve learning quality. Furthermore, the increasing emphasis on accountability has intensified the use of evaluation frameworks to measure educational performance and institutional achievement in various educational settings (Arbeni et al., 2025).

The rapid advancement of digital technologies has also transformed the landscape of educational evaluation. This transformation has shifted educational evaluation beyond conventional program and outcome measurement toward technology-supported assessment ecosystems involving artificial intelligence, learning analytics, adaptive assessment, and digital feedback systems. The integration of online learning environments, digital assessment tools, artificial intelligence, and learning analytics has expanded evaluation practices into more adaptive, flexible, and personalized forms of assessment (Fiskawarni et al., 2025). Digital transformation has enabled educators to collect, analyze, and interpret educational data more efficiently, allowing for real-time feedback and data-driven instructional decisions. In addition, technology-based evaluation systems have increased opportunities for formative assessment and continuous monitoring of student learning progress.

The COVID-19 pandemic further accelerated the implementation of digital evaluation systems worldwide. During the pandemic, educational institutions rapidly shifted from conventional face-to-face learning toward online and hybrid learning models, resulting in extensive adoption of virtual assessments and online evaluation platforms. This transition generated significant academic discussions regarding the validity, reliability, accessibility, and fairness of technology-based evaluations in virtual learning environments (Fiskawarni et al., 2025). Consequently, research related to online assessment, digital feedback, e-evaluation, and learning analytics has experienced substantial growth over the past decade.

Despite these developments, several challenges remain in the implementation of effective educational evaluation systems. Limited resources, technological disparities, inadequate evaluation competencies, and resistance from stakeholders continue to hinder the optimization of evaluation practices in many educational institutions (Arbeni et al., 2025). These challenges indicate the need for innovative and sustainable evaluation approaches that align with contemporary educational demands. Recent studies also emphasize the importance of integrating formative evaluation, authentic assessment, and learning analytics into educational practices to improve the relevance and effectiveness of evaluation systems (Monalissa & Anshori, 2025).

Although the number of publications related to educational evaluation has increased considerably, there remains limited research that systematically maps the global development of this field. Previous studies have generally focused on specific evaluation models, educational levels, or assessment methods, while comprehensive bibliometric investigations remain relatively scarce. Bibliometric analysis is important for identifying publication trends, influential authors, collaborative networks, emerging themes, and research hotspots within educational evaluation studies. Such

analysis can provide a broader understanding of the intellectual structure and future direction of educational evaluation research.

Therefore, this study aims to analyze global research trends in educational evaluation through a bibliometric review of published literature. The study examines publication growth, citation patterns, country contributions, keyword co-occurrence, and thematic developments in educational evaluation research. The findings are expected to provide valuable insights for researchers, educators, and policymakers in understanding the evolution, challenges, and future opportunities of educational evaluation studies.

2. Literature Review

Educational evaluation refers to a systematic process of collecting, analyzing, and interpreting information to determine the effectiveness, quality, and achievement of educational objectives (Tyler, 2013; Stufflebeam & Shinkfield, 2007). Evaluation practices are widely implemented to assess learning outcomes, instructional effectiveness, curriculum implementation, institutional performance, and educational policies (Brown & Harris, 2014). Traditionally, educational evaluation primarily focused on summative assessment through standardized testing and measurement-oriented approaches (Bin Mubayrik, 2020). However, recent developments indicate a significant shift toward more comprehensive, formative, and evidence-based evaluation models that emphasize continuous educational improvement and authentic assessment practices (Monalissa & Anshori, 2025). The integration of digital technologies, online learning systems, and learning analytics has further transformed educational evaluation into more adaptive and multidimensional practices capable of assessing cognitive, affective, and behavioral aspects of learning (Chen & Gadekallu, 2023; Fiskawarni et al., 2025).

Several theoretical perspectives and evaluation frameworks have contributed to the development of educational evaluation research. The Context, Input, Process, and Product (CIPP) model proposed by Stufflebeam remains one of the most widely used frameworks in educational program evaluation (Stufflebeam & Shinkfield, 2007). In addition, formative and summative evaluation approaches, authentic assessment, and outcomes-based evaluation have become important foundations in contemporary educational studies (Brown & Harris, 2016). Contemporary educational evaluation research increasingly intersects with educational technology and artificial intelligence studies, particularly in the areas of automated assessment, adaptive learning, and digital evaluation systems. Recent studies also highlight the increasing role of artificial intelligence, e-assessment, big data analytics, and digital learning platforms in supporting educational evaluation processes (Zao, 2025). Despite these advancements, challenges such as limited resources, technological disparities, and stakeholder resistance continue to hinder the implementation of innovative evaluation strategies in many educational contexts (Arbeni et al., 2025). These conditions indicate that educational evaluation has evolved into a multidisciplinary field involving pedagogy, psychology, educational technology, management, and policy studies, while simultaneously requiring more holistic and reflective evaluation approaches to address contemporary educational challenges (Monalissa & Anshori, 2025).

Table 1 presents the previous studies have investigated educational evaluation from various perspectives, including assessment practices, quality assurance, technology integration, and institutional effectiveness. However, most previous studies focused on specific educational contexts or particular evaluation approaches, while comprehensive bibliometric investigations examining the global development of educational evaluation research remain limited. Therefore, this study seeks to provide a broader mapping of publication trends, influential themes, collaborative networks, and emerging research directions in educational evaluation studies.

Table 1. Research on educational evaluation.

No	Title	Reference
1	Evaluation of the Impact of Educational Programs at Secondary School: Systematic and Bibliometric Review of Literature	Khammari & Hasnaoui (2025)

No	Title	Reference
2	Performance evaluation for educators in higher education from bibliometric analysis views.	Hussain et al. (2025)
3	Education for the future? Critical evaluation of education for sustainable development goals	Kopnina (2020)
4	Educational Evaluation: Types, Processes, Challenges, and Implications for Educational Policy	Arbeni et al. (2025)

3. Methodology

3.1 Research Design

This study applied a bibliometric research approach to investigate the global development and research trends in educational evaluation studies published between 2020 and 2026. Bibliometric analysis is considered an effective quantitative method for examining scientific publications, identifying research patterns, measuring publication productivity, and mapping the intellectual structure of a particular research field. Through bibliometric techniques, researchers are able to analyse publication growth, citation patterns, collaboration networks, and thematic developments within academic literature. In this study, bibliometric mapping was conducted to explore the conceptual structure, emerging themes, and research evolution related to educational evaluation.

3.2 Data Source

The data for this study were collected from Google Scholar using the Publish or Perish (PoP) application as the primary data retrieval tool. Google Scholar was selected because it offers extensive coverage of academic publications, including journal articles, conference papers, books, and other scholarly documents from various disciplines. The data collection process focused on publications discussing educational evaluation published from 2020 to 2026. Several keywords and search phrases were used during the retrieval process, including “educational evaluation”, “evaluation in education”, “learning evaluation”, “assessment in education”, and “program evaluation”. A total of 500 relevant publications were obtained and subsequently exported in RIS and CSV formats to support bibliometric and descriptive analyses.

3.3 Data Collection Procedure

The data collection procedure began with the identification of keywords relevant to educational evaluation research. The search process was conducted through Publish or Perish by utilising Google Scholar as the database source. Retrieved publications were then screened based on their relevance to the research topic, publication year, and completeness of bibliographic information. Publications that were duplicated, incomplete, or not directly related to educational evaluation were excluded from the dataset to ensure data accuracy and consistency. After the screening process, the final dataset was exported in RIS format for bibliometric visualisation and CSV format for descriptive statistical analysis.

3.4 Data Analysis

The collected data were analysed using VOSviewer and Microsoft Excel. VOSviewer was employed to visualise bibliometric networks, including keyword co-occurrence, thematic clusters, and relationships among research topics in educational evaluation studies. The software also facilitated the identification of dominant themes, emerging trends, and conceptual structures within the field. Meanwhile, Microsoft Excel was used to organise publication data, calculate publication frequencies, and analyse annual publication trends descriptively. The analysis focused on publication growth, keyword mapping, thematic evolution, and research trends to provide a comprehensive overview of the development of educational evaluation research during the selected publication period.

4. Results

4.1. Educational Evaluation 2020–2026

Table 1 and Figure 1 present the annual distribution of publications related to educational evaluation indexed through Google Scholar and retrieved using the Publish or Perish application during the period 2020–2026. The results indicate fluctuations in the number of publications across the observed years. A total of 500 publications were identified and analysed in this study.

Based on Table 1, the highest number of publications was recorded in 2020 with 194 documents (38.80%), followed by 2021 with 105 documents (21.00%) and 2022 with 87 documents (17.40%). The publication trend gradually decreased in the following years, with 66 publications (13.20%) in 2023 and 38 publications (7.60%) in 2024. Meanwhile, the lowest number of publications was identified in 2026 with only 1 publication (0.20%), followed by 2025 with 9 publications (1.80%). The declining trend in recent years may be associated with the indexing process and publication coverage limitations for newly published documents.

The findings demonstrate that educational evaluation became a highly discussed topic during the early 2020s, particularly in relation to digital learning transformation, online assessment, and educational quality assurance following the COVID-19 pandemic. The substantial number of publications in 2020 and 2021 indicates increased scholarly attention toward evaluation practices, technology-based assessment, and learning effectiveness in rapidly changing educational environments. Furthermore, the trend reflects the growing importance of educational evaluation as an essential component in supporting evidence-based educational decision-making and institutional improvement.

Table 1. Annual report research on educational evaluation.

No	Years	Documents	Percentages
1	2020	194	38,80%
2	2021	105	21,00%
3	2022	87	17,40%
4	2023	66	13,20%
5	2024	38	7,60%
6	2025	9	1,80%
7	2026	1	0,20%
	Total	500	100%

Source: Research Data (2026)

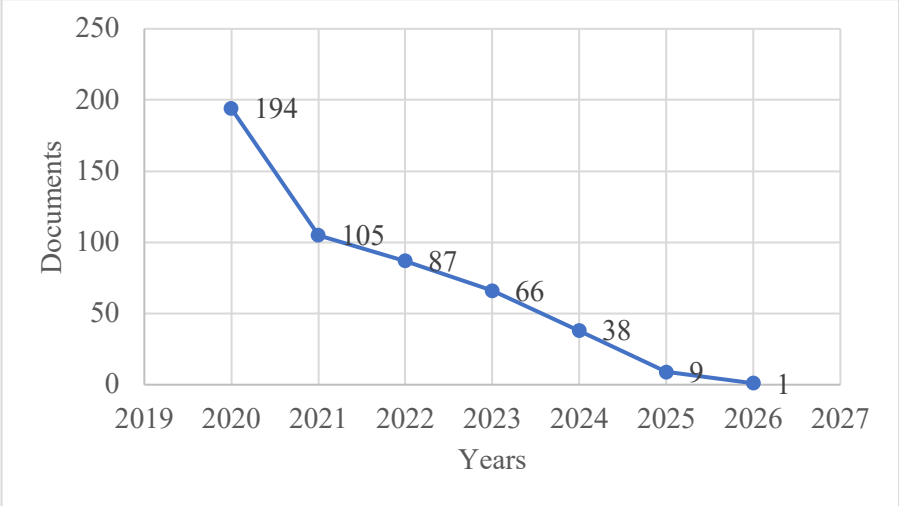

Figure 1. Annual report of publications

4.2. Most Influential and Highly Cited Publications

Table 2 presents the most influential and highly cited publications related to educational evaluation research during the period 2020–2026. The citation analysis demonstrates that educational evaluation research has increasingly intersected with emerging issues such as artificial intelligence, digital assessment, online learning, academic integrity, and innovative educational technologies. Highly cited publications generally focused on transformative educational practices, technology-enhanced learning, and the integration of artificial intelligence in educational environments.

The most cited publication was Education in the era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning by Baidoo-Anu and Ansah (2023), which received 5004 citations. The article highlights the growing impact of generative AI technologies on teaching, learning, and educational assessment practices. The second most influential publication was A review of the quality indicators of rigor in qualitative research by Johnson et al. (2020) with 3974 citations, emphasizing the importance of methodological quality and evaluation standards in educational research. Meanwhile, Rudolph et al. (2023) discussed the implications of ChatGPT for traditional assessment systems in higher education, receiving 3375 citations.

The results also indicate that research themes associated with artificial intelligence, virtual learning environments, project-based learning, metaverse applications, chatbots, and 21st-century skills have gained substantial scholarly attention in recent years. This trend reflects the transformation of educational evaluation toward more digital, adaptive, and technology-driven approaches. Furthermore, the emergence of AI-related studies among the most cited publications demonstrates the growing concern regarding academic integrity, ethics, assessment validity, and the future role of intelligent technologies in education.

Table 3. Most cited articles on educational evaluation.

No	Cites	Title	Year	Cites Per Year	Ref.
1	5004	Education in the era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning	2023	1668.00.00	Baidoo-Anu & Ansah (2023)
2	3974	A review of the quality indicators of rigor in qualitative research	2020	662.33.00	Johnson et al. (2020)
3	3375	ChatGPT: Bullshit spewer or the end of traditional assessments in higher education?	2023	1125.00.00	Rudolph et al. (2023)
4	3120	Literature review of Industry 4.0 and related technologies	2020	520.00.00	Oztemel & Gursev (2020)
5	2974	Artificial intelligence in higher education: the state of the field	2023	991.33.00	Crompton & Burke (2023)
6	2492	A review of project-based learning in higher education: Student outcomes and measures	2020	415.33.00	Guo et al. (2020)
7	1822	COVID-19 and teacher education: A literature review of online teaching and learning practices	2020	303.67	Carrillo & Flores (2020)
8	1641	Immersive virtual reality as a pedagogical tool in education: a systematic literature review of	2021	328.20.00	Hamilton et al. (2021)

No	Cites	Title	Year	Cites Per Year	Ref.
		quantitative learning outcomes and experimental design			
9	1624	Role of AI chatbots in education: systematic literature review	2023	541.33.00	Labadze et al. (2023)
10	1615	Creativity, critical thinking, communication, and collaboration: Assessment, certification, and promotion of 21st century skills for the future of work and education	2023	538.33.00	Thornhill-Miller et al. (2023)
11	1586	Educational applications of metaverse: possibilities and limitations	2021	317.20.00	Kye et al. (2021)
12	1561	ChatGPT in higher education: Considerations for academic integrity and student learning	2023	520.33.00	Sullivan et al. (2023)
13	1440	SWOT analysis applications: An integrative literature review	2021	288.00.00	Benzaghta et al. (2021)
14	1300	Chatbots for language learning—Are they really useful? A systematic review of chatbot-supported language learning	2022	325.00.00	Huang et al. (2022)
15	1280	Practical and ethical challenges of large language models in education: A systematic scoping review	2024	640.00.00	Yan et al. (2024)
16	1267	Self-determination theory applied to physical education: A systematic review and meta-analysis	2020	211.17.00	Vasconcellos et al. (2020)
17	1141	A meta systematic review of artificial intelligence in higher education: A call for increased ethics, collaboration, and rigour	2024	570.50.00	Bond et al. (2024)
18	1103	Predicting academic success in higher education: literature review and best practices	2020	183.83	Alyahyan & Düştegör (2020)
19	1011	Education for the future? Critical evaluation of education for sustainable development goals	2020	168.50.00	Kopnina (2020)

4.3. Visualization of Research Data Mapping of Educational Evaluation

Figure 2 presents the network visualization based on the co-occurrence of terms related to educational evaluation using VOSviewer. The minimum occurrence threshold of terms was set at 10 occurrences. From a total of 2603 identified terms, 54 terms met the minimum threshold requirement. Subsequently, the software automatically calculated the relevance score of each term and selected the 60% most relevant terms, resulting in 32 interconnected terms included in the final visualization network.

As illustrated in Figure 2, the co-occurrence network demonstrates strong interrelationships among themes associated with educational evaluation research. The visualization produced four major clusters consisting of interconnected terms representing different thematic focuses within the field. Several dominant terms such as systematic review, assessment, teaching, literature review, and school appeared as central nodes in the network, indicating their high frequency and strong conceptual

relationships within the analysed publications. In addition, emerging terms such as artificial intelligence, ChatGPT, covid, and pandemic indicate the increasing influence of digital transformation and post-pandemic educational challenges on contemporary educational evaluation research.

The first cluster (red), consisting of 11 items, includes article, child, effect, evidence, intervention, knowledge, literature, meta analysis, outcome, school, and systematic review. This cluster primarily reflects studies focusing on educational outcomes, intervention effectiveness, systematic literature synthesis, and evidence-based educational practices. The dominance of terms such as systematic review and effect indicates that many studies aimed to evaluate educational impacts and learning outcomes through empirical and review-based approaches.

The second cluster (green), comprising 10 items, includes addition, assessment, challenge, covid, engineering education, experience, pandemic, process, teacher, and teaching. This cluster highlights themes related to educational assessment, teaching practices, and challenges experienced during the COVID-19 pandemic. The presence of terms such as covid, pandemic, and teaching suggests that educational evaluation research increasingly focused on technology-supported learning environments, online assessment, and instructional adaptation during and after the pandemic period.

The third cluster (blue), consisting of 9 items, includes application, artificial intelligence, chatgpt, field, learning process, literature review, science, trend, and year. This cluster represents the integration of technological innovation and artificial intelligence in educational evaluation research. The appearance of artificial intelligence and ChatGPT as interconnected terms demonstrates the growing scholarly interest in AI-assisted assessment, intelligent learning systems, and digital educational evaluation practices in recent years.

The fourth cluster (yellow), consisting of 2 items, includes effectiveness and performance. This cluster reflects research themes associated with evaluating educational effectiveness, instructional performance, and learning achievement. Although smaller than the other clusters, these terms remain strongly connected to broader discussions concerning educational quality and evaluation outcomes.

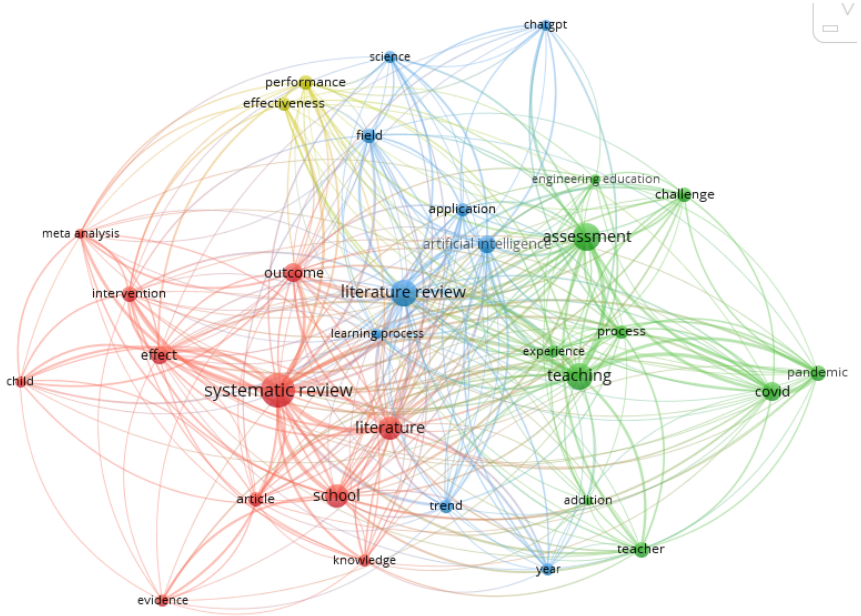

Figure 2. Network visualization based on co-occurrence of terms.

The overlay visualization presented in Figure 3 illustrates the temporal development of educational evaluation research trends. Terms represented by darker colours indicate earlier research focuses, while brighter colours indicate more recent and emerging topics. The overlay visualization demonstrates that earlier studies concentrated on themes such as effect, meta analysis, and child, whereas more recent studies increasingly focused on artificial intelligence, ChatGPT, assessment, and challenge. This trend suggests a shift in educational evaluation research toward technology-enhanced assessment systems, digital learning environments, and AI-supported educational practices.

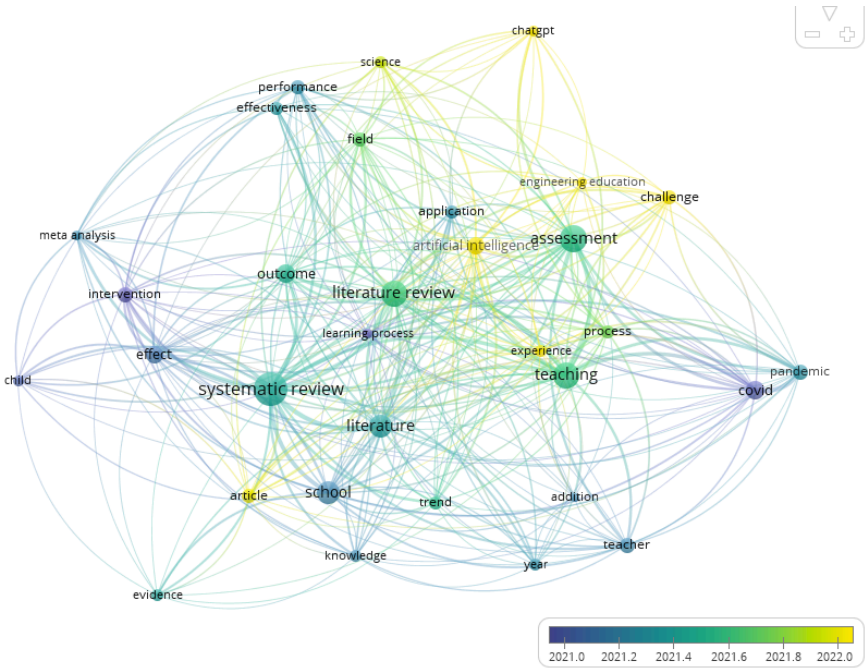

Figure 3. Overlay visualization based on co-occurrence of terms.

Furthermore, the density visualization shown in Figure 4 illustrates the intensity and frequency of term occurrences within the co-occurrence network. Areas highlighted in brighter yellow colours indicate highly dominant and frequently discussed topics, while darker areas represent less frequently occurring themes. The density visualization demonstrates that terms such as systematic review, assessment, teaching, literature review, and school occupied the most prominent positions within the network. These findings indicate that educational evaluation research remains strongly centred on assessment practices, instructional effectiveness, and systematic evidence synthesis, while simultaneously expanding toward emerging technological and digital learning perspectives.

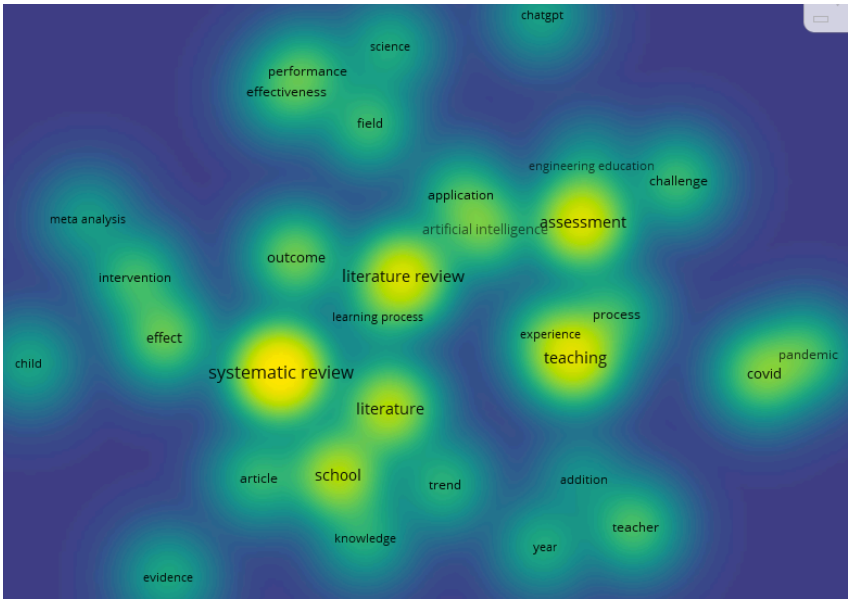

Figure 4. Density visualization based on the co-occurrence of terms.

5. Discussion

The findings indicate that educational evaluation research has increasingly evolved toward technology-supported and evidence-based educational practices. This transformation reflects the broader shift in educational paradigms from conventional summative assessment toward more adaptive, formative, and multidimensional evaluation approaches (Bin Mubayrik, 2020; Monalissa & Anshori, 2025). Previous scholars have argued that educational evaluation is no longer limited to

measuring academic achievement but has expanded into assessing learning processes, instructional effectiveness, student engagement, and institutional quality (Tyler, 2013; Stufflebeam & Shinkfield, 2007). The dominance of themes such as assessment, teaching, systematic review, and effectiveness in the visualization analysis confirms that educational evaluation research continues to emphasize educational quality improvement through systematic and data-driven approaches. Furthermore, the strong occurrence of review-based studies suggests that researchers increasingly rely on evidence synthesis and meta-analytical approaches to strengthen educational decision-making and policy formulation (Brown & Harris, 2016).

The emergence of terms such as artificial intelligence, ChatGPT, covid, and learning process also demonstrates that educational evaluation research has become closely associated with digital transformation and post-pandemic educational challenges. The dominance of AI-related terms does not indicate a departure from educational evaluation research; instead, it reflects the conceptual expansion of educational evaluation toward technology-driven assessment ecosystems in contemporary education. This finding supports previous studies emphasizing that the integration of digital technologies and learning analytics has significantly changed educational assessment practices, enabling more flexible, personalized, and real-time evaluation systems (Chen & Gadekallu, 2023; Fiskawarni et al., 2025). In addition, the increasing scholarly attention toward artificial intelligence reflects the growing interest in intelligent educational systems capable of supporting automated feedback, adaptive assessment, and predictive learning analytics. However, previous studies also warned that technology-driven evaluation systems may create challenges related to academic integrity, ethical concerns, accessibility, and technological disparities among educational institutions (Arbeni et al., 2025: Zhao, 2025). Therefore, the development of digital educational evaluation requires balanced implementation strategies that consider both technological innovation and educational equity.

From a broader perspective, this study confirms that educational evaluation has developed into a multidisciplinary research field integrating pedagogy, educational technology, psychology, management, and policy studies. The findings align with previous literature suggesting that future educational evaluation should move toward holistic and authentic assessment models capable of capturing complex learning experiences beyond traditional cognitive measurement (Monalissa & Anshori, 2025; Brown & Harris, 2016). The strong interconnection between evaluation, teaching, effectiveness, and educational technology found in this study indicates that evaluation practices will continue to play a strategic role in supporting educational improvement, curriculum development, and institutional accountability. Consequently, future research should focus not only on technological advancement in evaluation systems but also on developing sustainable, ethical, and inclusive evaluation frameworks that respond to rapidly changing educational environments.

6. Conclusion

This bibliometric study demonstrates that educational evaluation research experienced substantial development during the 2020–2026 period, particularly in relation to technological advancement, digital learning transformation, and post-pandemic educational challenges. The findings reveal that themes such as assessment, teaching, systematic review, educational effectiveness, artificial intelligence, and digital evaluation emerged as dominant topics within the research landscape. The visualization analysis also indicates that educational evaluation has evolved into a multidisciplinary field integrating pedagogy, educational technology, learning analytics, and institutional quality assurance. Educational evaluation research is increasingly characterized by the integration of digital technologies and artificial intelligence within assessment and quality assurance practices. Furthermore, the increasing presence of AI-related topics such as ChatGPT and intelligent assessment systems reflects the growing influence of technology-driven evaluation practices in contemporary education. Therefore, future educational evaluation research should continue emphasizing innovative, ethical, inclusive, and evidence-based evaluation approaches that are responsive to the dynamic needs of modern educational environments.

7. Suggestion

Based on the findings of this study, future research is recommended to explore educational evaluation from more specific perspectives, such as artificial intelligence-based assessment, learning analytics, authentic evaluation, and digital assessment systems in diverse educational contexts. Researchers are also encouraged to conduct comparative and longitudinal studies to examine the effectiveness, validity, and ethical implications of technology-supported evaluation practices. In addition, educational institutions and policymakers should strengthen the development of innovative, inclusive, and sustainable evaluation frameworks that support evidence-based decision-making, educational quality improvement, and adaptive learning in the digital era.

Declarations

Author Contributions. A.F.: Literature review, conceptualization, methodology, data analysis. A.A.: review-editing and, original manuscript preparation. All authors have read and approved the published on the final version of the article

Conflicts of Interest. The authors declare no conflict of interest.

Funding. This research received no external funding.

Ethical Approval. Ethical approval was not required for this study because the research utilised publicly accessible bibliographic data obtained from Google Scholar through the Publish or Perish application and did not involve human participants.

Data Availability Statement. The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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