



Research Article

Artificial Intelligence in Education in the Context of NEP 2020: A Global Bibliometric Analysis of Research Trends and Emerging Themes

Marya Khan ¹, Asmat Ilahi ², Shakir Ahmad Dar ^{3*}

¹ Research scholar, Department of Education, Lovely Professional University, Phagwara, Punjab, India

² Research scholar, Department of Education, Lovely Professional University, Phagwara, Punjab, India

³ Student, Department of library and information science, University of Kashmir, India

Corresponding Author: * Shakir Ahmad Dar

DOI: <https://doi.org/10.5281/zenodo.22108042>

Abstract

This paper presents a bibliometric study of global research on artificial intelligence (AI), generative artificial intelligence (GenAI), and higher education, interpreted in the context of India's National Education Policy (NEP) 2020. Bibliographic data were retrieved from the Lens.org database, and 830 publications published between 2020 and 2025 were analyzed. The study also examines yearly growth of publications, productive authors, source countries, highly cited publications, frequently occurring keywords, and emerging research themes. The results indicate an increase in the publishing output, especially in 2024 and 2025. Keyword analysis was based on the 25 records in the supplied CSV that contained non-empty keyword fields. Highly cited publications primarily address students' perceptions and acceptance of generative AI, technology adoption, academic integrity, and educational applications. The paper discusses the development of this area of research and its significance for higher education and information services within the context of National Education Policy 2020.

The analysis focuses on five bibliometric dimensions: annual publication growth, author productivity, source-country contribution, citation impact, and keyword frequency and emerging themes.

Manuscript Information

- ISSN No: 2583-7397
- Received: 11-07-2026
- Accepted: 18-08-2026
- Published: 26-08-2026
- IJCRM:5(4); 2026: 916-925
- ©2026, All Rights Reserved
- Plagiarism Checked: Yes
- Peer Review Process: Yes

How to Cite this Article

Khan M, Ilahi A, Dar S A. Artificial Intelligence in Education in the Context of NEP 2020: A Global Bibliometric Analysis of Research Trends and Emerging Themes. Int J Contemp Res Multidiscip. 2026;5(4):916-925.

Access this Article Online



www.multiarticlesjournal.com

KEYWORDS: Artificial intelligence, Generative AI, ChatGPT, Higher Education, Information services, Bibliometric analysis, NEP 2020.

1. INTRODUCTION

Artificial Intelligence has gained attention that emerged as a major field of review in higher education, with broad influence for teaching, learning, assessment, student success, and institutional administration. Research has examined the role of AI technologies in higher education and related opportunities and challenges (Crompton & Burke, 2023). The rapid development of generative AI, particularly ChatGPT, has further intensified research in higher education.

A growing body of research has examined the use of ChatGPT in learning and teaching, assessment, academic integrity, student engagement, and research (Bhullar et al., 2024). Empirical studies have also examined students' attitudes toward ChatGPT, the role of perceived value and AI literacy in use intentions, and factors influencing adoption and assessment-related use in higher education (Ajlouni et al., 2023; Al-Abdullatif & Alsubaie, 2024; Haq et al., 2025; Oc et al., 2024). Research has also highlighted both opportunities and challenges associated with large language models in education (Kasneci et al., 2023).

Numerous systematic studies on GenAI integration into academic contexts indicate increasing applications, opportunities, and challenges (Amofa et al., 2025). With the growing adoption of GenAI in academic settings, responsible use, ethical considerations, and privacy have become important concerns (Miao & Holmes, 2023). Miao and Holmes (2023) advocate a human-centred approach to generative AI in education and research, emphasizing ethical, equitable, safe, and meaningful applications. These developments also have implications for academic libraries. Academic libraries have shown growing interest in AI-enabled technologies, AI-related information services, AI competencies, and ethical issues (Kautonen & Gasparini, 2024).

The role and implications of AI and generative AI in teaching, learning, and educational administration in higher education have become part of global debates surrounding ongoing policy developments in numerous countries.

In the context of the Indian education system, the National Education Policy (NEP) 2020 recognizes the growing importance of emerging technologies and their potential influence on the future of education, higher education, research, and training (Government of India, 2020). Given the growing volume of scholarly research on AI and GenAI in higher education, it is useful to systematically assess the development of research in this field. Such an assessment can examine research growth, major contributors, source-country distribution, highly cited publications, and emerging keywords. This approach helps capture the development of major areas of research within the field. Consequently, this paper conducts a global bibliometric analysis of research on artificial intelligence, generative AI, and higher education, with NEP 2020 serving as the Indian policy context for interpreting the findings (Government of India, 2020). Using 830 publications published between 2020 and 2025 and retrieved from the Lens.org database, the study analyzes annual publication output, productive authors, source countries, highly cited publications, and frequently occurring keywords. The analysis also interprets emerging research themes and discusses their

implications for higher education and information services, particularly in relation to India's changing educational landscape.

2. OBJECTIVES

This study aims to identify the research landscape of artificial intelligence in education through bibliometric analysis, with NEP 2020 serving as the Indian policy context. The specific objectives are:

- To explore the annual growth in publications about the use of AI in education over the chosen time period.
- To identify the most prolific scholars studying AI in education.
- To explore the geographical distribution of research by identifying the leading source countries.
- To determine the most-cited publications in the chosen dataset.
- To identify the most frequently occurring keywords and interpret emerging research themes within the field of artificial intelligence (AI) and generative artificial intelligence (GenAI) in education

3. METHODOLOGY

3.1. Research Design

This study employed a bibliometric research design to map global research on artificial intelligence and generative artificial intelligence in education during 2020–2025. The analysis focused on publication growth, author productivity, source-country contribution, citation impact, and keyword frequency. NEP 2020 was used as the Indian policy context for interpreting the educational relevance of the findings.

3.2. Data Source

Bibliographic data were extracted from Lens.org. The final dataset contained 830 publication records and 32 bibliographic variables, including Publication Year, Author/s, Source Country, Keywords, and Citing Works Count. Some bibliographic fields were incomplete: Author/s was populated for 819 records, Source Country for 173 records, and Keywords for 25 records; Citing Works Count was populated for all 830 records.

3.3. Search & Data Retrieval

A search was made using the Lens.org database to find research on the topic of AI and education that took place over the last 6 years (2020-2025). The search targeted the concepts of artificial intelligence, generative AI, ChatGPT, education, and higher education based on the retrieved records subject matter. The following boolean expression can be used to represent the search strategy:

("artificial intelligence" OR "generative AI" OR "ChatGPT") AND ("education" OR "higher education")

Lens.org was chosen as the main data source because it includes bibliographic records relevant to the current bibliometric analysis of the global collection of published works and has the capability to export publication data for analysis. The study was structured to use one database so that

the records used in the analysis had a consistent source of information and metadata structure. Therefore, no other bibliographic databases, such as Scopus, Web of Science, Dimensions, or Google Scholar, were included. The findings should therefore be interpreted with caution due to differences in database coverage and indexing methods and are based on the research coverage available in the selected Lens.org database.

In total, 830 publication records were found. The bibliographic data was downloaded as a CSV file from the Lens.org and the final data set was used for the following bibliometric analysis. Analysis was done on bibliographic data that were available in the exported data set, such as publication year, number of citing works, keywords, author, and country of origin.

The study offers a global bibliometric analysis of the research in the field of Artificial Intelligence in Education, and the interpretation of the relevance and the implications of the findings in the Indian higher-education policy context is considered as the Indian policy regime for the field of AI in the education sector. Therefore, the search term NEP 2020 was not considered as a search term to find the global data, rather it was used to discuss the results in perspective with higher education in India.

3.4. Bibliometric Analysis

The bibliographic records were analyzed using the variables contained in the final CSV file. The analysis was conducted as follows:

- **Annual publication growth:** This was based on the "Publication Year" column of the final CSV to represent yearly publication trends from 2020–2025.
- **Author productivity:** The semicolon-delimited "Author/s" field was split and each author was counted across the records with non-empty author data (819 of 830 records). The top 10 authors were selected by publication count; where the cut-off fell within a tie, the order of first appearance in the supplied dataset was retained.
- **Source-country contribution:** Publications were grouped according to the "Source Country" field in Lens.org. The

field was populated for 173 of the 830 records, while 657 records had no source-country value. The top 10 countries among records with a reported source country were selected. Because this field represents source-country information in the exported dataset, it should not be interpreted as a direct measure of authors' institutional affiliations.

- **Citation impact:** Publications were ranked using the Lens.org "Citing Works Count" field. The top 10 records were selected after sorting the field in descending order.
- **Keyword analysis:** The semicolon-delimited terms in the "Keywords" field were counted case-insensitively. The field contained keywords for 25 of the 830 records; 805 records had no keyword value. Across those 25 records, 153 keyword occurrences were identified, representing 110 distinct terms after case-insensitive normalization. The top 10 keyword terms were selected by frequency; where several terms had the same frequency at the cutoff, alphabetical order was used as the tie-breaker. The resulting keyword patterns, together with the citation findings and publication-growth pattern, were used to interpret emerging themes.

3.5. Presentation of Results

The results are presented using tables and figures to summarize the five dimensions of the study: annual publication growth, top 10 productive authors, top 10 source countries, top 10 most-cited publications, and top 10 keywords.

3.6. Scope of the Analysis

The scope of the bibliometric analysis was confined to five dimensions: annual publication growth, author productivity, source-country distribution, citation impact, and keyword frequency and emerging themes. Table 1 presents the dimensions, variables, analyses, and outputs used in the study. The analysis was limited to bibliographic indicators available in the supplied final dataset of 830 publications obtained from Lens.org.

Table 1. Scope and Bibliometric Indicators Used in the Study

S. No.	Bibliometric Dimension	Data Variable Used	Analysis Performed	Output
1	Annual Publication Growth	Publication Year	Frequency of publications by year	Annual publication trend, 2020–2025
2	Author Productivity	Author/s	Count of publications by author	Top 10 productive authors
3	Source-Country Contribution	Source Country	Frequency of publications by country	Top 10 contributing countries
4	Citation Impact	Citing Works Count	Citation count and ranking	Top 10 most-cited publications
5	Keyword Analysis	Keywords	Frequency of occurrence	Top 10 frequently occurring keywords

4. RESULTS AND BIBLIOMETRIC ANALYSIS

4.1. Annual Publication Growth

The bibliometric analysis was performed on 830 publications in the supplied Lens.org export for the period 2020–2025. Publication output was very low in 2020, with one publication, and no publications were recorded in 2021 or 2022. Output increased to 88 publications in 2023, followed by a substantial

rise to 352 publications in 2024. The highest output was recorded in 2025, with 389 publications.

The publication pattern indicates a sharp increase in research activity after 2022. Publications in 2024 and 2025 together accounted for 741 of the 830 records, representing 89.3% of the dataset. This concentration shows that most records in the supplied dataset fall in the final two years of the study period.

Table 2. Annual Publication Growth

Year	Publications	Percentage
2020	1	0.1%
2021	0	0.0%
2022	0	0.0%
2023	88	10.6%
2024	352	42.4%
2025	389	46.9%
Total	830	100.0%

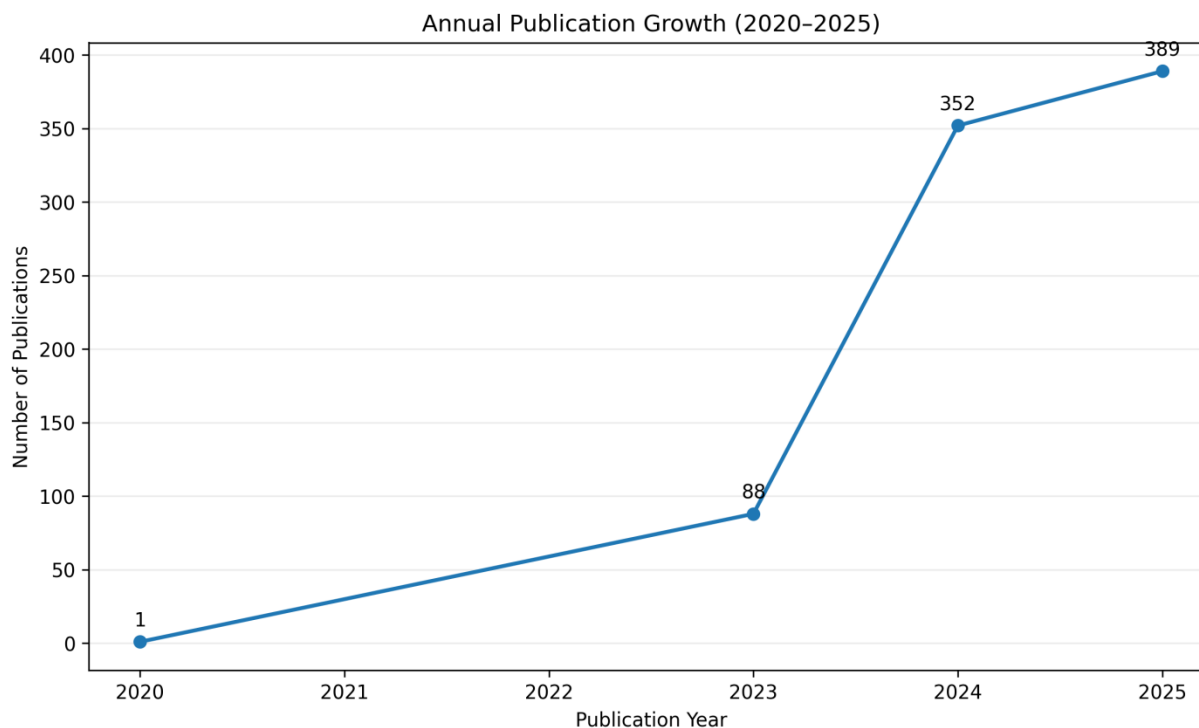


Figure 1. Annual Publication Growth (2020–2025)

These findings indicate a substantial increase in research activity during the final two years of the study period. A total of 741 records, representing 89.3% of the dataset, were published in 2024 and 2025. This concentration suggests rapidly increasing scholarly attention to artificial intelligence and, particularly, generative AI applications in higher education.

4.2. Most Productive Authors

Author analysis was conducted by splitting the semicolon-

delimited "Author/s" field and counting each author across the 819 records with non-empty author data. Malik Sallam ranked first with seven publications. Muna Barakat, Diana Malaeb, and Souheil Hallit each had six publications, while Cong Doanh Duong, Artur Strzelecki, and Sami El Khatib each had five publications. The top-10 cut-off falls within a tie at four publications; the three authors shown at that level are retained consistently with the stated tie-breaking rule.

Table 3. Top 10 Most Productive Authors

Rank	Author	Publications
1	Malik Sallam	7
2	Muna Barakat	6
3	Diana Malaeb	6
4	Souheil Hallit	6
5	Cong Doanh Duong	5
6	Artur Strzelecki	5
7	Sami EL Khatib	5
8	Marc Beardsley	4
9	Ishari Amarasinghe	4
10	Davinia Hernandez-Leo	4

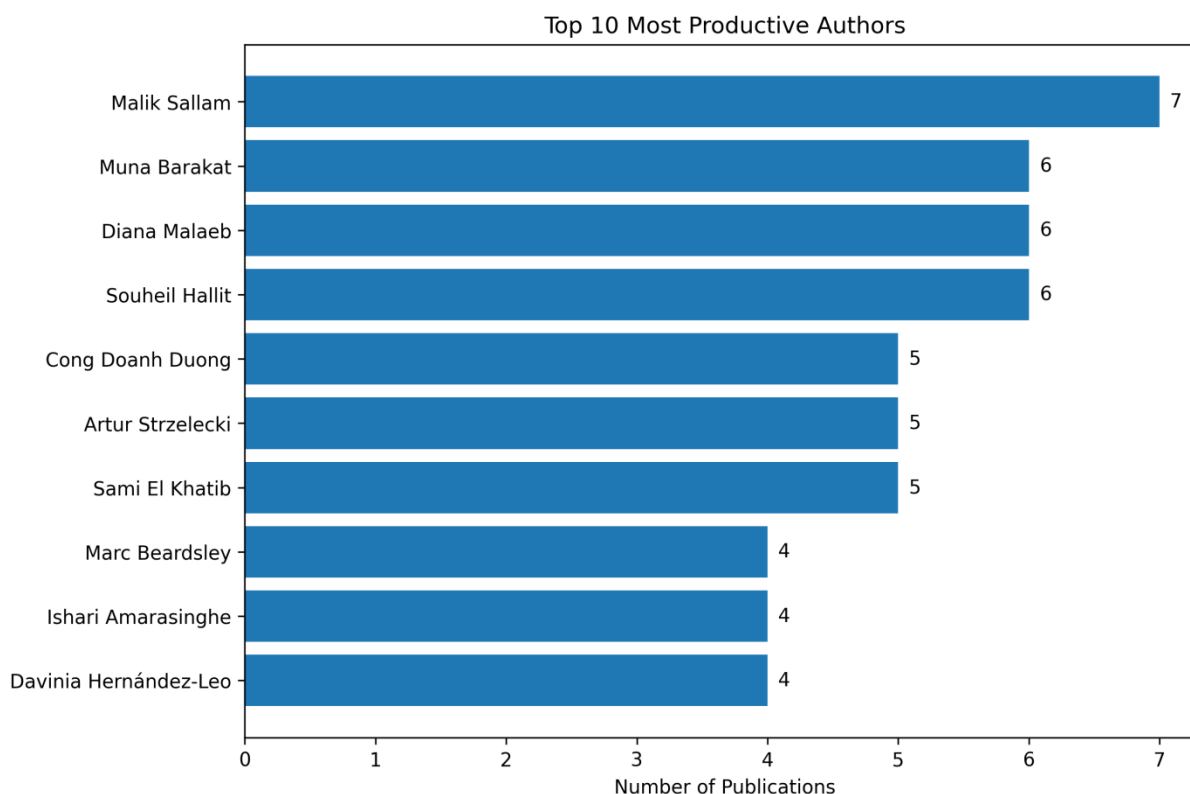


Figure 2. Top 10 Most Productive Authors

The publication counts of the leading authors are relatively close, with the highest individual count being seven. This pattern suggests that the literature is not dominated by a single highly prolific author and instead includes contributions from a relatively diverse group of researchers.

4.3. Geographical Distribution

The geographical analysis was based on the "Source Country" field available in Lens.org. This field was populated for 173 of

the 830 records; 657 records had no source-country value. The reported values therefore represent source-country information among records with a reported value and should not automatically be interpreted as the institutional affiliations of individual authors. The United Kingdom was recorded as the source country for 72 publications, followed by the United States (33), Germany (22), Switzerland (16), and the Netherlands (15).

Table 4. Top Source Countries

Rank	Source Country	Publications
1	United Kingdom	72
2	United States	33
3	Germany	22
4	Switzerland	16
5	Netherlands	15
6	Australia	8
7	Canada	1
8	Finland	1
9	Hungary	1
10	India	1

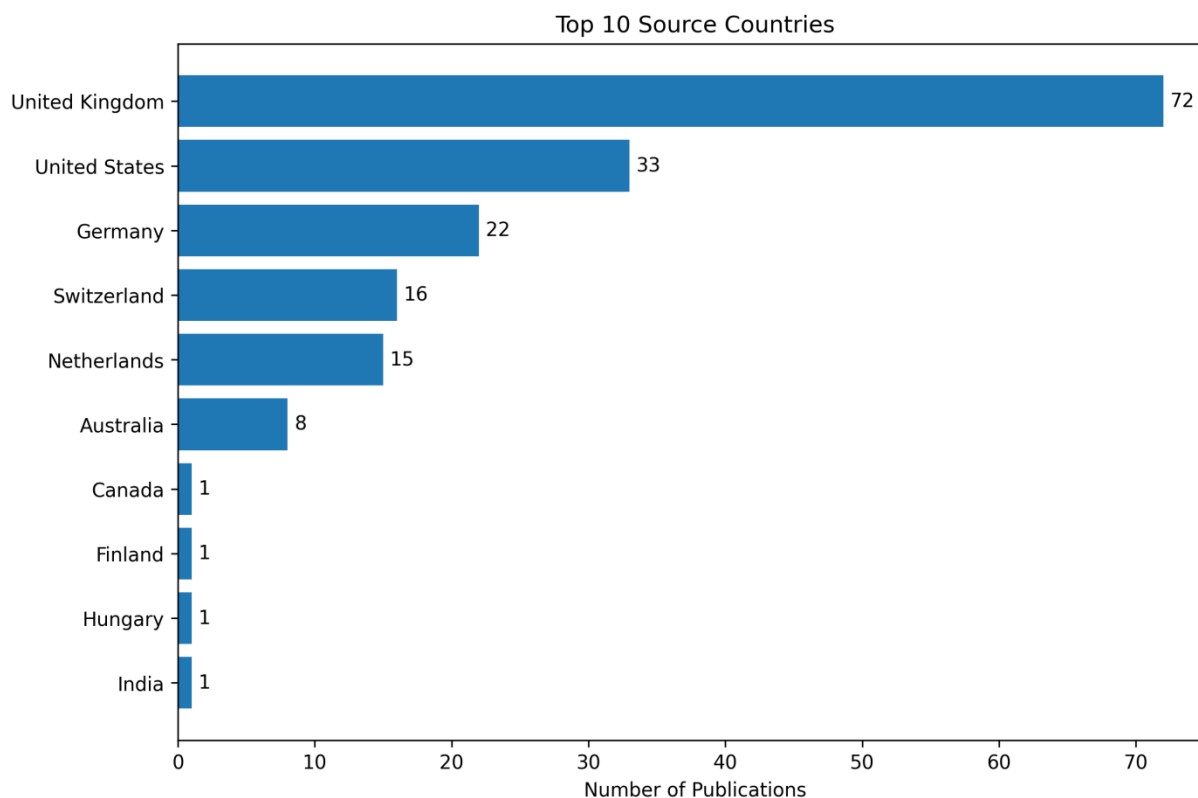


Figure 3. Top 10 Source Countries

The source-country distribution indicates that, among the 173 records with a reported source country, the United Kingdom and the United States have the highest source-country counts, followed by Germany, Switzerland, the Netherlands, and Australia. At the 1-record level, several countries are tied; the top-10 table resolves this tie alphabetically.

4.4. Most Cited Publications

Citation analysis was based on the Lens.org "Citing Works Count" field available for each record in the supplied CSV. The most-cited record had 1,755 citing works, followed by records with 602, 460, 358, 356, 339, 279, 259, 250, and 226 citing works.

Table 5. Top 10 Most-Cited Publications

Rank	Publications	Citations
1	Students Voices on Generative AI: perceptions, benefits, and challenges in higher education	1,755
2	To use or not use ChatGPT in Higher Education? A study of student's acceptance and use of technology	602
3	ChatGPT in higher education: Considerations for academic integrity and student learning	460
4	Is it helpful? Examining the causes and consequences of generative AI usage among university students	358
5	Students' acceptance of ChatGPT in Higher Education: an extended Unified Theory of Acceptance and use of Technology	356
6	Exploring the Potential Impact of Artificial Intelligence (AI) on International Students in Higher Education: Generative AI, Chatbots, Analytics, and International Student Success	339
7	Factors Influencing University Students Behavioral Intention to Use Generative Artificial Intelligence: Integrating the Theory of Planned Behavior and AI Literacy	279
8	Student perspectives on the use of generative artificial intelligence technologies in higher education	259
9	ChatGPT: Empowering Lifelong Learning in the Digital Age of Higher Education	250
10	Use of ChatGPT at University as a Tool for Complex Thinking Students Perceived Usefulness	226

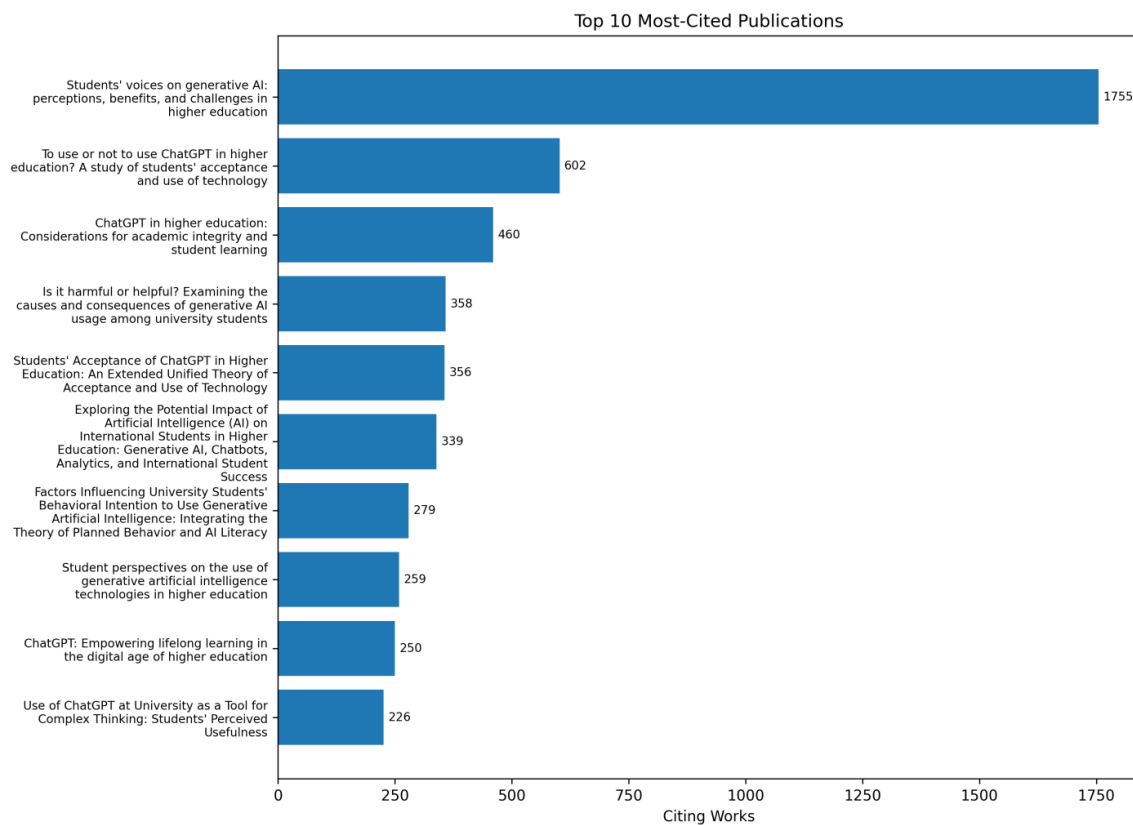


Figure 4. Top 10 Most-Cited Publications

The highly cited publications indicate that major areas of scholarly attention in the dataset include student experiences and perceptions, technology acceptance, academic integrity, behavioural intention, and educational applications of generative AI. These observations are based on the titles of the highly cited records and should be interpreted as thematic indications rather than a formal topic-modeling result.

4.5. Most Frequent Keywords

The keyword distribution in the supplied CSV is based on the

25 records that contain non-empty keyword fields. After case-insensitive normalization, the most frequent terms are ChatGPT, higher education, artificial intelligence, and generative artificial intelligence. Other frequently occurring terms include Technology Acceptance Model, Attitudes, Chatbot, Education, Generative AI, and Practices. These frequencies indicate recurring topics within the records that supplied keyword data but do not by themselves establish causal relationships or research impact.

Table 6. Top Keywords

Rank	Keywords	Frequency
1	ChatGPT	16
2	Higher Education	10
3	Artificial Intelligence	8
4	Generative Artificial Intelligence	4
5	Technology Acceptance Model	3
6	Attitudes	2
7	Education	2
8	Chatbot	2
9	Generative AI	2
10	Practices	2

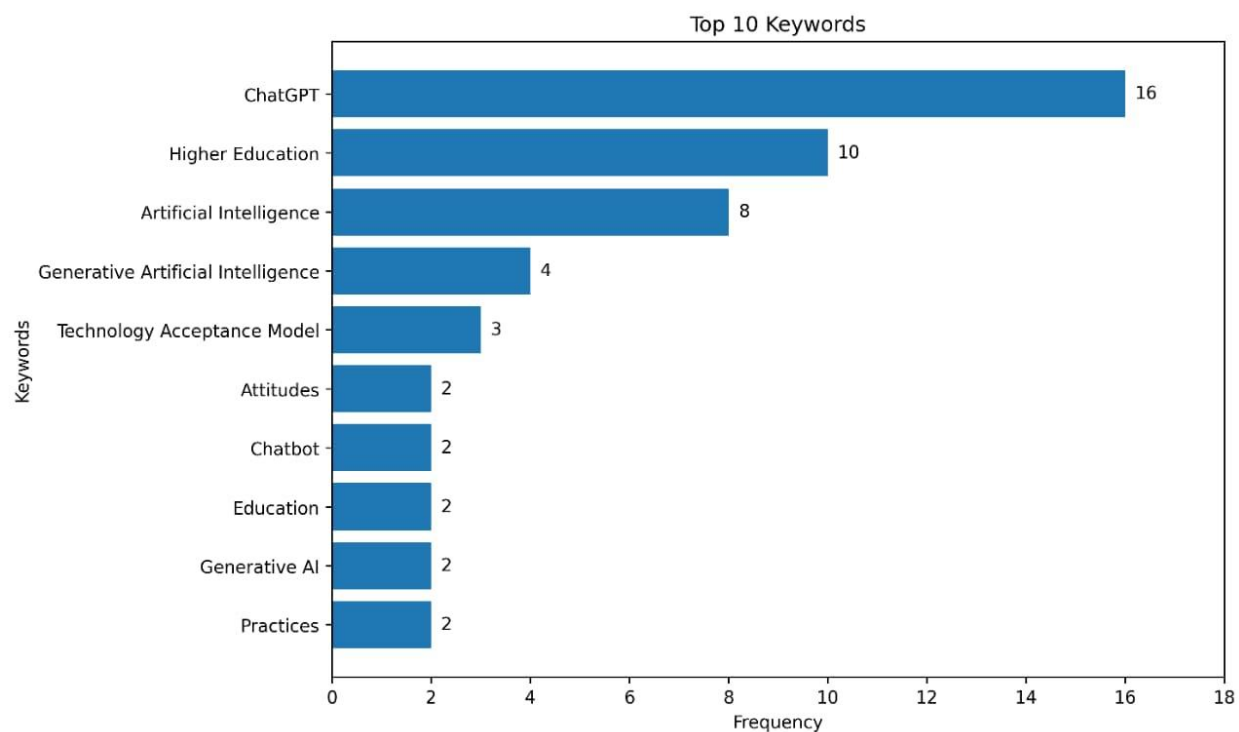


Figure 5. Top 10 Keywords

5. Emerging Research Trend and Themes

Analysis of publication growth, author productivity, source countries, citation patterns, and the available keyword data indicates several emerging research themes. First, there is strong and recent interest in ChatGPT and generative artificial intelligence in higher education. Second, student adoption, behavioural intention, perception, and attitudes toward AI technologies form a prominent research focus. Third, academic integrity, responsible use, and ethical concerns have attracted substantial scholarly attention, including among highly cited publications.

Another important theme concerns the educational application of generative AI, including learning, complex reasoning, writing, and other academic activities. These studies also consider the limitations and risks associated with generative AI in education.

AI literacy is another emerging area, with research examining students' understanding of AI, its applications, benefits, limitations, and responsible use.

Overall, the research themes identified from publication growth, highly cited titles, and the available keyword frequencies indicate a movement from broad discussions of artificial intelligence toward more specific investigations of generative AI, ChatGPT, student behaviour and acceptance, educational applications, AI literacy, academic integrity, and ethical use. These are interpretive themes derived from the available bibliographic fields rather than results from a formal thematic network or topic-modeling analysis. Because only 25 of the 830 records contained keyword data, the keyword-based component should be interpreted cautiously.

The citation and available keyword patterns reinforce these themes. Highly cited publications commonly address student

acceptance and behavioural intention, academic integrity, and educational use, while the keyword data supplied for 25 records emphasize ChatGPT, higher education, artificial intelligence, technology acceptance, and generative AI.

6. DISCUSSION

The findings demonstrate a substantial increase in scholarly attention to artificial intelligence, generative artificial intelligence, and higher education within the analyzed dataset. Publication growth was particularly pronounced in 2024 and 2025, indicating that this is a rapidly developing area of research.

The strong growth in publications is consistent with the rapid emergence and adoption of generative AI tools such as ChatGPT in higher education. Recent literature has examined their opportunities, challenges, educational applications, and limitations.

The source-country analysis shows that 173 of the 830 records contain a reported Lens.org Source Country value. Among those records, the United Kingdom has the highest source-country count, followed by the United States and Germany.

Therefore, understanding students' views and experiences is central to studies focused on artificial intelligence in educational settings. The importance of the Technology Acceptance Model and technology adoption is reflected in the leading keywords within the dataset, showing a focus on the factors that contribute to technology adoption in higher education among student groups (Cabero-Almenara et al., 2025; Shahzad et al., 2024; Strzelecki et al., 2024; Zhao et al., 2024)..

Among the 25 records containing keyword data, the leading case-insensitive terms are "ChatGPT," "Higher Education," "Artificial Intelligence," "Generative Artificial Intelligence,"

and "Technology Acceptance Model." Other frequently occurring terms such as "Attitudes," "Chatbot," "Education," "Generative AI," and "Practices" indicate recurring attention to technology adoption, student experiences, educational applications, and user attitudes.

As AI technologies become increasingly integrated into higher education, educators, researchers, and libraries will need to ensure that educational policies and practices respond appropriately to these developments.

The findings of the present research have implications for Information Science and academic libraries in the developing educational landscape, including India and the implementation of NEP 2020. There is a growing need for information and library services that support the academic use of AI technologies. As AI becomes increasingly integrated into academic work, information and library professionals need knowledge of its academic applications and ethical considerations, alongside the development of appropriate library tools and services (Kautonen & Gasparini, 2024).

In the context of NEP 2020 in India, which promotes the use of technology as a means of transforming education and higher education, the widespread and increasing research on artificial intelligence and generative AI suggests that this area needs to become an important focus for future research in libraries and the Information Science discipline. (Government of India, 2020).

This will require increased attention to:

- Training information professionals in artificial intelligence and other emerging technologies.
- Developing research and information-literacy competencies to evaluate information generated using AI.
- Fostering discussion about the wider and more informed use of these technologies and their ethical considerations.
- Increasing research on the role of libraries in the educational technology transformation process, particularly within higher education institutions.

The evidence from these studies supports the view that generative AI research in higher education remains predominantly student-centred, with students' perceptions, acceptance, usage, technological affordances, and educational applications receiving considerable attention (Batista et al., 2024). The present research similarly identifies a strong focus on generative AI and large language models in higher education, particularly on student perception, usage, acceptance, benefits, and challenges.

Furthermore, the prominence of ChatGPT and artificial intelligence among the keywords indicates strong attention to the application of generative AI tools in higher education. The emphasis on technology adoption and barriers is also relevant to information literacy and may provide direction for the development of library services for students and faculty.

There is also a need to define an evolving role for librarians in the emerging technology environment, particularly in helping users access, evaluate, and appropriately apply information and research outputs. This highlights the importance of AI literacy,

ethical use, and professional development among students, faculty, researchers, and information professionals.

7. CONCLUSION

The present bibliometric analysis shows that research on artificial intelligence, generative artificial intelligence, and higher education expanded substantially during 2020–2025, particularly in 2024 and 2025. The analyzed literature prominently addresses ChatGPT, higher education, university students, technology acceptance, AI adoption, and educational applications.

The results indicate growing attention to generative AI and its specific implications for higher education, including student perceptions, acceptance, behavioural intention, learning, academic integrity, and responsible use. In the Indian context, these developments are relevant to discussions surrounding technology-enabled educational transformation under NEP 2020.

8. LIMITATIONS OF THE STUDY

The present study has several limitations. First, the findings are derived from the selected Lens.org database and the search parameters that produced the supplied export; therefore, they represent the literature captured by that source and those parameters. Second, the analysis is based on the 830 records contained in the supplied CSV export. Third, the study is limited to five bibliometric dimensions: annual publication growth, author productivity, source-country distribution, citation impact, and keyword frequency and emerging themes. Fourth, several bibliographic fields are incomplete: 11 records lack author data, 657 lack a Source Country value, and 805 lack keyword data. The keyword analysis therefore represents only 25 records, and the source-country analysis represents only 173 records with reported values. Other techniques, including co-authorship, co-citation, bibliographic coupling, and research-network analysis, were not included. Finally, the original Lens.org search string, filters, and retrieval date are not contained in the supplied CSV and therefore cannot be reproduced from the file alone. Citation counts and bibliographic metadata can also change as databases are updated; the reported citation values therefore represent the values contained in the supplied Lens.org export.

9. Future Research Directions

Future research could extend the analysis of artificial intelligence and generative artificial intelligence in higher education by examining student perceptions, acceptance, usage, adoption, benefits, challenges, and educational outcomes. Further bibliometric studies could also examine emerging AI tools beyond ChatGPT and investigate changes in research themes over time.

In the Indian educational context, future studies could examine how research and implementation of artificial intelligence align with the goals of NEP 2020, particularly in higher education and information services.

Future bibliometric research could also apply network-based techniques such as co-authorship, co-citation, bibliographic coupling, and keyword co-occurrence to provide a deeper

understanding of collaboration patterns and thematic relationships.

REFERENCES

1. Ajlouni AO, Abd-Alkareem Wahba F, Almahaireh AS. Students' attitudes towards using ChatGPT as a learning tool: the case of the University of Jordan. *Int J Interact Mob Technol*. 2023;17(18):99-117. doi:10.3991/ijim.v17i18.41753.
2. Al-Abdullatif AM, Alsubaie MA. ChatGPT in learning: assessing students' use intentions through the lens of perceived value and the influence of AI literacy. *Behav Sci*. 2024;14(9):845. doi:10.3390/bs14090845.
3. Amofa B, Kamudyariwa XB, Fernand's FAP, Osobajo OA, Jeremiah F, Oke A. Navigating the complexity of generative artificial intelligence in higher education: a systematic literature review. *Educ Sci*. 2025;15(7):826. doi:10.3390/educsci15070826.
4. Batista J, Mesquita A, Carnaz G. Generative AI and higher education: trends, challenges, and future directions from a systematic literature review. *Information*. 2024;15(11):676. doi:10.3390/info15110676.
5. Bhullar PS, Joshi M, Chugh R. ChatGPT in higher education: a synthesis of the literature and a future research agenda. *Educ Inf Technol*. 2024; 29:21501-21522. doi:10.1007/s10639-024-12723-x.
6. Cabero-Almenara J, Palacios-Rodríguez A, Rojas Guzmán H de los Ángeles, Fernández-Scagliusi V. Prediction of the use of generative artificial intelligence through ChatGPT among Costa Rican university students: a PLS model based on UTAUT2. *Appl Sci*. 2025;15(6):3363. doi:10.3390/app15063363.
7. Crompton H, Burke D. Artificial intelligence in higher education: the state of the field. *Int J Educ Technol High Educ*. 2023; 20:22. doi:10.1186/s41239-023-00392-8.
8. Government of India, Ministry of Education. National education policy 2020. New Delhi: Ministry of Education; 2020.
9. Haq MZU, Cao G, Abukhait RMY. Examining students' attitudes and intentions towards using ChatGPT in higher education. *Br J Educ Technol*. 2025;56(6):2428-2452. doi:10.1111/bjjet.13582.
10. Kasneci E, Seßler K, Küchemann S, Bannert M, Dementieva D, Fischer F, et al. ChatGPT for good? On opportunities and challenges of large language models for education. *Learn Individ Differ*. 2023; 103:102274. doi:10.1016/j.lindif.2023.102274.
11. Kautonen H, Gasparini A. B-Wheel: building AI competences in academic libraries. *J Acad Librariansh*. 2024;50(4):102886. doi:10.1016/j.acalib.2024.102886.
12. Miao F, Holmes W. Guidance for generative AI in education and research. Paris: UNESCO; 2023.
13. Oc Y, Gonsalves C, Quamina LT. Generative AI in higher education assessments: examining risk and tech-savviness on student's adoption. *J Mark Educ*. 2025;47(2):138-155. doi:10.1177/02734753241302459.
14. Shahzad MF, Xu S, Javed I. ChatGPT awareness, acceptance, and adoption in higher education: the role of trust as a cornerstone. *Int J Educ Technol High Educ*. 2024; 21:46. doi:10.1186/s41239-024-00478-x.
15. Strzelecki A, Cicha K, Rizun M, Rutecka P. Acceptance and use of ChatGPT in the academic community. *Educ Inf Technol*. 2024; 29:22943-22968. doi:10.1007/s10639-024-12765-1.
16. Zhao L, Rahman MH, Yeoh W, Wang S, Ooi KB. Examining factors influencing university students' adoption of generative artificial intelligence: a cross-country study. *Stud High Educ*. 2025;50(12):2646-2668. doi:10.1080/03075079.2024.2427786.

Creative Commons (CC) License

This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution–Non-Commercial–No Derivatives 4.0 International (CC BY-NC-ND 4.0) license. This license permits sharing and redistribution of the article in any medium or format for non-commercial purposes only, provided that appropriate credit is given to the original author(s) and source. No modifications, adaptations, or derivative works are permitted under this license.

About the Author



Marya Khan is a Research Scholar in Education. She holds degrees in B.Sc., M.A., B.Ed., and M.Ed. from the University of Kashmir and Central University of Kashmir. She has qualified CTET and UGC-NET and presented research at an international conference. Her interests include Educational Technology, Educational Psychology, digital technology, and gamified teaching environments.



Asmat Ilahi is a Research Scholar in Education at Lovely Professional University, Punjab. She holds B.A. and M.A. in English, B.Ed., and M.Ed., and was a university rank holder. She has qualified CTET and presented papers at international conferences and seminars. Her interests include Educational Technology, Educational Psychology, Inclusive Education, digital storytelling, and innovative pedagogy.



Shakir Ahmad Dar holds an Integrated B.L.I.S. and M.L.I.S. from the University of Kashmir, Srinagar. He has qualified UGC-NET in Library and Information Science. His research interests include Library Management, University Library Systems, Academic Libraries, Information Literacy, Digital Libraries, and emerging trends in Library and Information Science.