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Research trends of ChatGPT in higher education: A bibliometric analysis

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Abstract

The emergence of generative artificial intelligence (GenAI), especially ChatGPT, has made teaching, learning, and research more user-friendly in academia. However, the global research trends on ChatGPT in higher education remain inadequate. This bibliometric analysis will reveal the global trends on ChatGPT in higher education in terms of scholarly publications over the years, leading countries, document types, leading institutions and countries, journals, major research areas, and important authors. Data were obtained from Lens (Lens.org) through the keyword search 'ChatGPT in higher education' for the duration-2020 to 2025. A total of 374 scholarly works were analysed using bibliometric analysis. The findings show that publication starts to increase in 2022 and peaks in 2024, indicating scholars' interest in higher education. It is noted that Journal Articles(273) shows the majority publications followed by conference proceedings (29) and preprints(27) implicates that rapid knowledge dissemination and rigorous research. The United States, China, India, Indonesia and Australia were the major contributing countries in this research field. This research area is highly interdisciplinary and major contributing subjects are Computer Science, Psychology, Education and policy related fields. Institutional and authorship patterns indicate a collaborative and distributive research context. From this study it may be concluded that 'Research on chat GPT in Higher Education' is evolving from exploratory research to grounded theory planned academic discourse. The emerging trends also supportive for the scholar for identifying new specific area for future research work.

Keywords: GenAI, authorship, educational technology, personalized learning

Introduction

Generative artificial intelligence (Gen AI) has changed the landscape of teaching and learning processes. Gen AI can support impactful learning through its thoughtful integration into modern education (Manolchev *et al.* 2024) [13]. Chat GPT (Chat Generative Pre-trained Transformer) is a type of Gen AI developed by open AI that can generate human-like responses to user prompts (Welskop, 2023) [19] for transforming human education systems and pedagogical approaches (Aithal and Aithal, 2023) [1]. Chat GPT provides human-computer interaction (Dempere *et al.*, 2023) [8] and thereby enhances personalized learning, rapid access to information, supports research activity and creativity (Das and Madhusudan, 2024; Isiaku *et al.* 2024; Info *et al.* 2023) [7, 11, 12]. Chat GPT has enhanced broader global access to educational resources (Rawas, 2024; Aithal & Aithal, 2023) [16], language support for non-native English speakers, and proper feedback mechanisms that enhance academic work (Costa *et al.* 2024, Bukar *et al.* 2024) [5]. Despite the benefits of Chat GPT, skepticism has also been noted

among many educators regarding its reliability and pedagogical value (Schönberger, 2023; Blahopoulou and Ortiz Bonnin, 2025) [3, 17]. Gender-specific perceptual differences have also been noted; male learners have reported greater satisfaction in the use of Chat GPT for information searching, whereas female students have shown more usefulness in terms of homework and theoretical orientation (Fadillah and Akbar, 2025) [9]. Although Chat GPT has several benefits for learners, findings also show numerous concerns, such as potential biases, misinformation, reliability concerns, plagiarism (Zeb *et al.*, 2029), AI-related anxiety, digital literacy gap, critical thinking gap (Awal and Asaduzzaman, 2024; Dempere *et al.* 2013), privacy, safety, and confidentiality risk (Bukar *et al.*, 2024) [5].

Hence, researchers have emphasized the ethical and effective use of Chat GPT in higher education, for which capacity building of students and teachers should be undertaken to ensure innovative practices (Phutela *et al.* 2024; Yilmaz and Yüceol, 2015) [15]. The responsible use of

Chat GPT in academic institutions requires proper guidelines, clear policies (Hasanein and Sobain 2023; Perera and Lankathilaka, 2023) ^[10, 14], authentic assessment, equitable technology access (Shabbir *et al.* 2024) ^[18], transparent disclosure, and sociotechnical discussion for inclusive use (Costa *et al.*, 2024; Buragohain and Chaudhary, 2025) ^[4] among disadvantaged student groups (Info *et al.*, 2023) ^[11]. The opportunity of Chat GPT in higher education and potential challenges pave the way for conceptual discussions and the study of research trends in this important research area. The bibliometric analysis provides a quantitative mapping of the knowledge structure of this research on ‘Chat GPT in higher education’ in terms of global research trends, publication patterns, and its growth, leading institutions and authors, collaboration networks, and emerging research themes.

Materials and Methods

For this bibliometric analysis, the metadata was generated from the LENS (Lens.org). The LENS is open-source software with a rich source of scholarly works published as journal articles, books, book chapters, scientific proceedings, etc. The search code in lens was “ChatGPT in higher education” for the period of 2020-01-01 to 2025-12-31. A total of 314 articles were retrieved. English-language publications were recorded, and duplicate publications were discarded to ensure data consistency. The metadata included journal articles, books, book chapters, conference

proceedings, dissertations, reports, and pre-prints. Descriptive bibliometric indicators incorporated publications over time and their types, top institution logo grids, most active countries/regions, most active authors, top fields of study, and top author journals.

Results

The Generative Artificial Intelligence (Gen AI) based large language Model (LLM) was come in force during twenties of this decade and release of Chat GPT-3.5 at the end of 2022 creates milestone. After the thorough use of Chat GPT in higher education prompted researchers to conduct research in this emerging domain. It was noted from the analysis of publications noted from 2023 and the maximum was during 2024 in this ‘Chat GPT in higher education’ research; however, in 2025, publication showed slight stabilization, suggesting a sustained research moment rather than a short-term trend (Fig 1).The distribution of articles on ‘Chat GPT in higher education’ shows the supremacy of journal articles (273), representing that the theme has quickly increased scholarly consideration and it is being verified through peer-reviewed experimental and academic studies. The presence of conference proceedings (29) and preprints (27) proposes a developing and fast-evolving research field in which findings are being distributed. Overall, the results highlight that studies on ‘Chat GPT in higher education’ are in an active growth phase, with an increasing need for systematic reviews (Table 1).

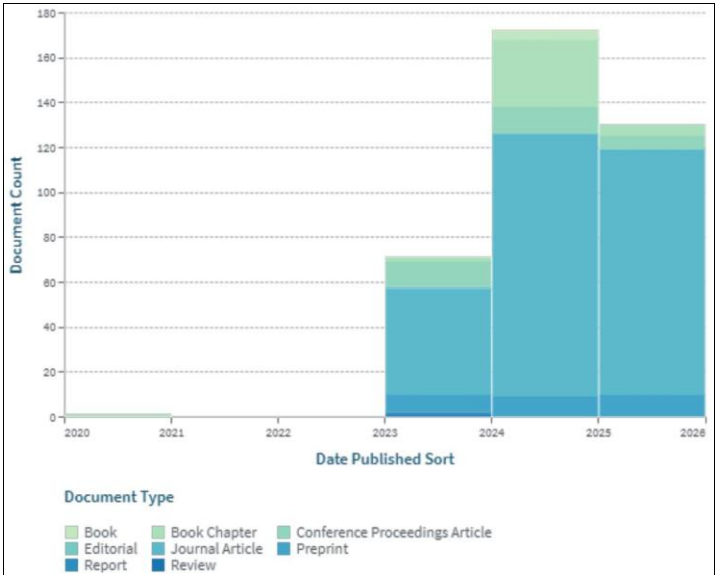


Fig 1: Scholarly work over the time on Research trends of ChatGPT in Higher education

Table 1: Distribution of the documents on Research trends of ChatGPT in Higher education

Sl. No.	Document Type	Document Count
1.	Journal Article	273
2.	Book Chapter	38
3.	Conference Proceedings Article	29
4.	Preprint	27
5.	Book	4
6.	Editorial	1
7.	Report	1
8.	Review	1
	Total	374

Researches on ‘ChatGPT in higher education’ across the different nations are not well distributed. The maximum research was noted in China (23 documents), followed by Indonesia (21), the United States (20), and India and Australia (16 each). Research on this topic has spread across 68 nations, representing a worldwide distribution, although the concentration of research varies from nation to nation. Emerging contributions from Asian countries, particularly China, Indonesia, and India, indicate a growing appreciation for ChatGPT’s potential role in personalized learning, research assistance, and academic writing support (Fig 2).

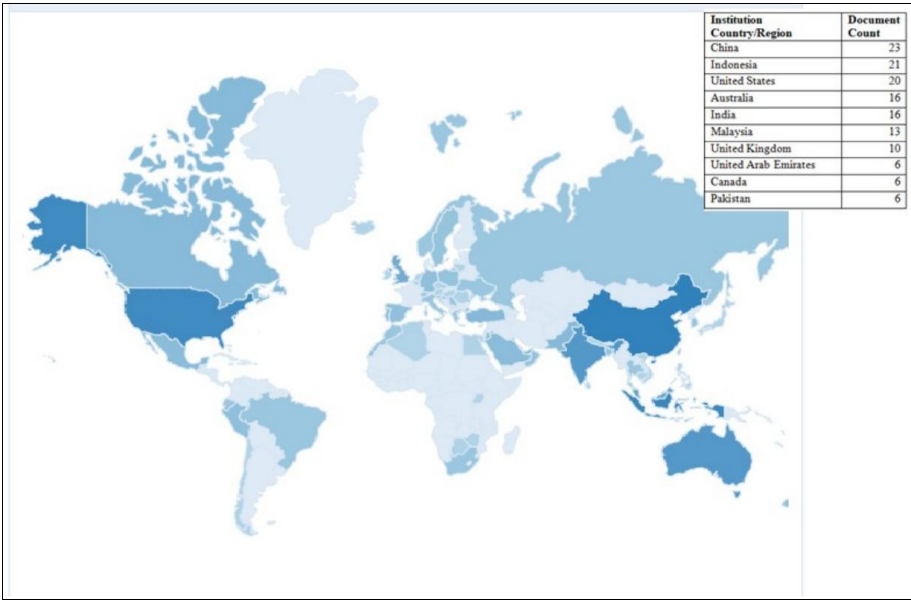


Fig 2: Most Active countries and region on Research trends of ChatGPT in Higher education

Institutional analysis reveals a reasonably distributive authorship pattern of publications on it, with specific leading publication presences of a few leading universities. It is observed that MEF University Turkey leads with 11 publications, followed by Srinivas University, India (8), University of Jordan (4), Beijing University of Technology, King Saud University, Holy Spirit University, Gulf Medical

University, and Beijing University of Technology Gulf Medical University (each with 3 publications). The relatively limited number of publications indicates that ‘ChatGPT in higher education’ studies are not elevated by a single global leader, but rather by a distributive scholarly engagement was noted. This indicates that research on ‘ChatGPT in education’ is still exploratory (Fig 3).

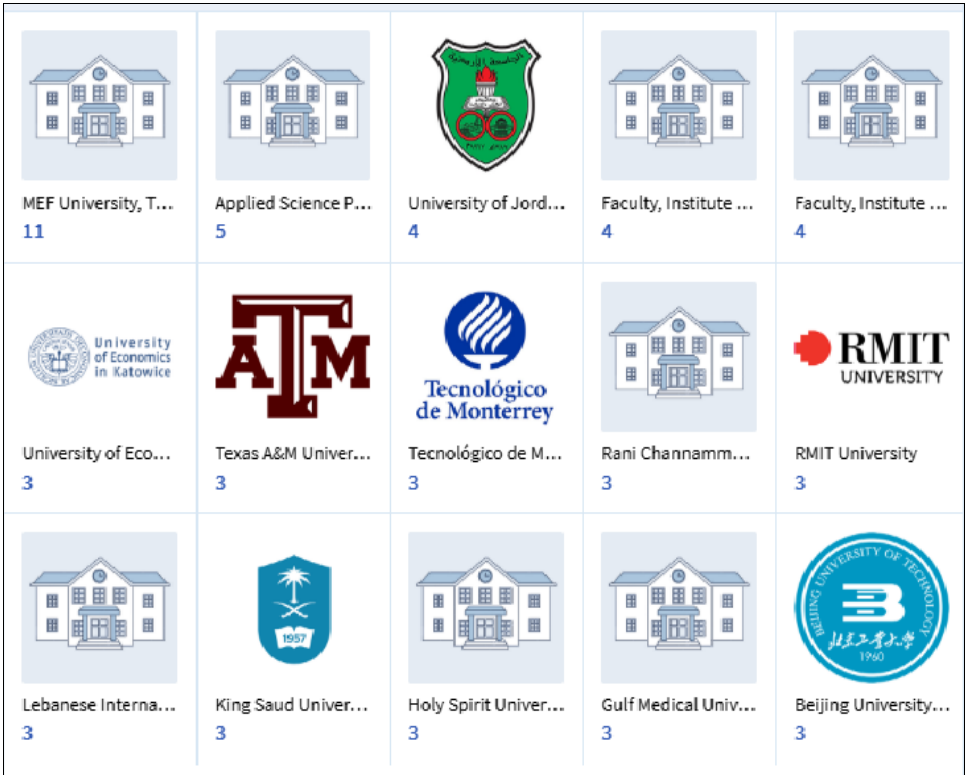


Fig 3: Top institution on Research trends of ChatGPT in Higher education

Amongst the most prolific scholars, Caroline Fell and Muhammed Sahin published 11 publications each, representing their Solid understanding in this area, followed by Malik Sallam and Muna Barakat both with 7 publications, depicting notable scholarly footprint Fig 4).

Largely, the distribution of publications depicts that while a few authors show their major contribution in this field, i.e. research on ‘ChatGPT in higher education’, however it become collective and globally import research domain.

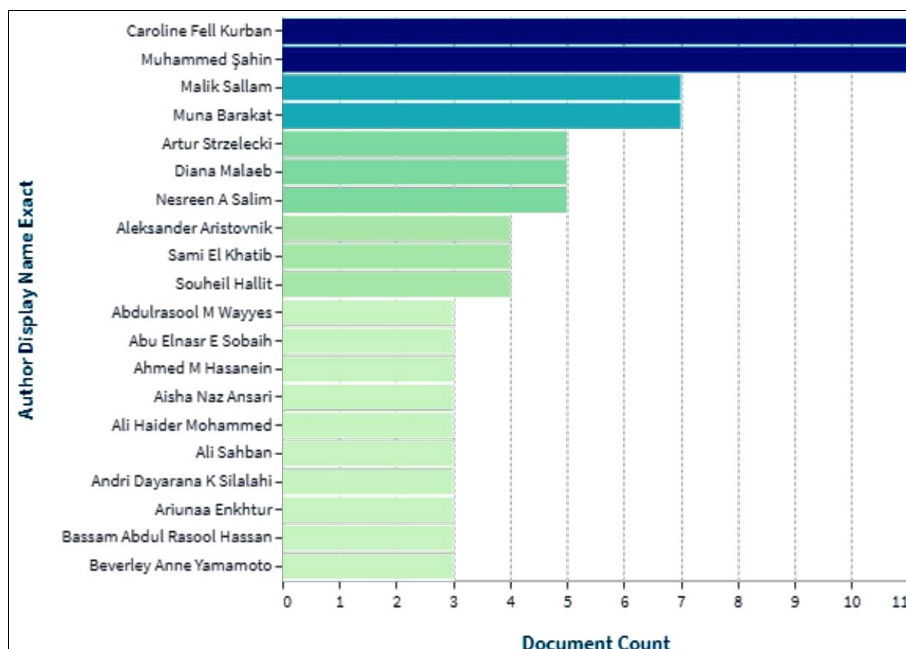


Fig 4: Most prolific scholars on Research trends of ChatGPT in Higher education

The subject wise distribution of this research a vivid multidisciplinary trends. The most prolific subject area was psychology (245), followed by computer science (212) implies that cognitive aspect of learning and the growth of AI Systems. Substantial study was noted in political science (132) and Mathematical Education (122) connote

governance, policy and pedagogical inferences of GenAI in education. Other subject areas are higher education (106), sociology (104), law (104), and artificial intelligence (73). Broadly, the findings demonstrate that ChatGPT in higher education research extends beyond technological domains to education, ethics, and social dimensions (Fig 5).

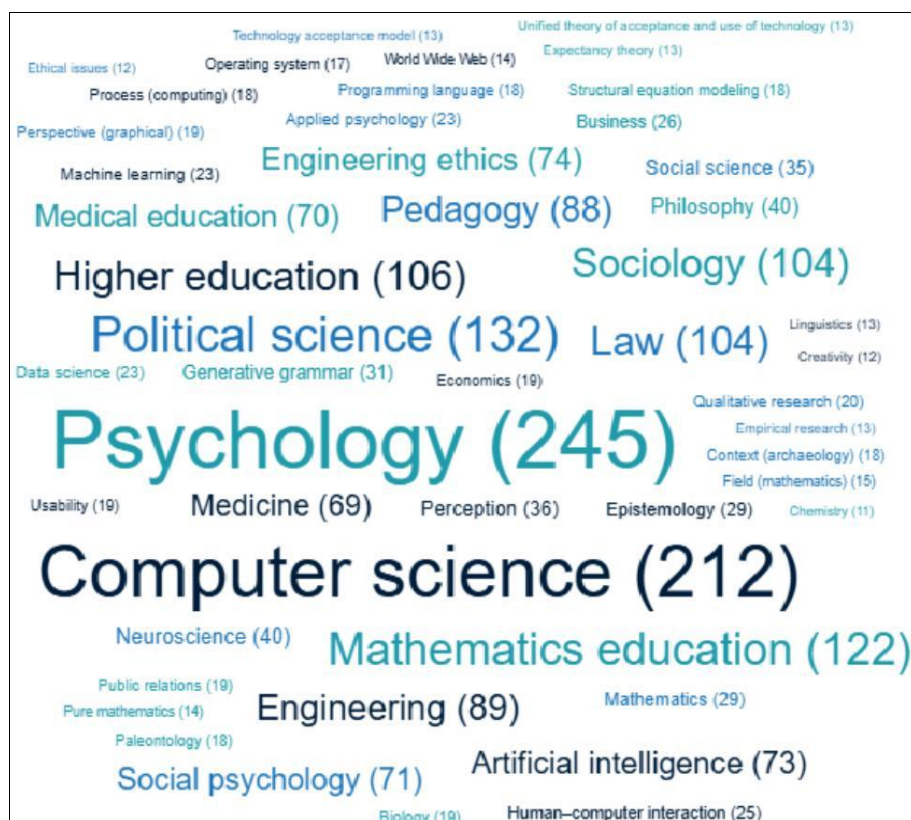


Fig 5: Top fields of study on Research trends of ChatGPT in Higher education

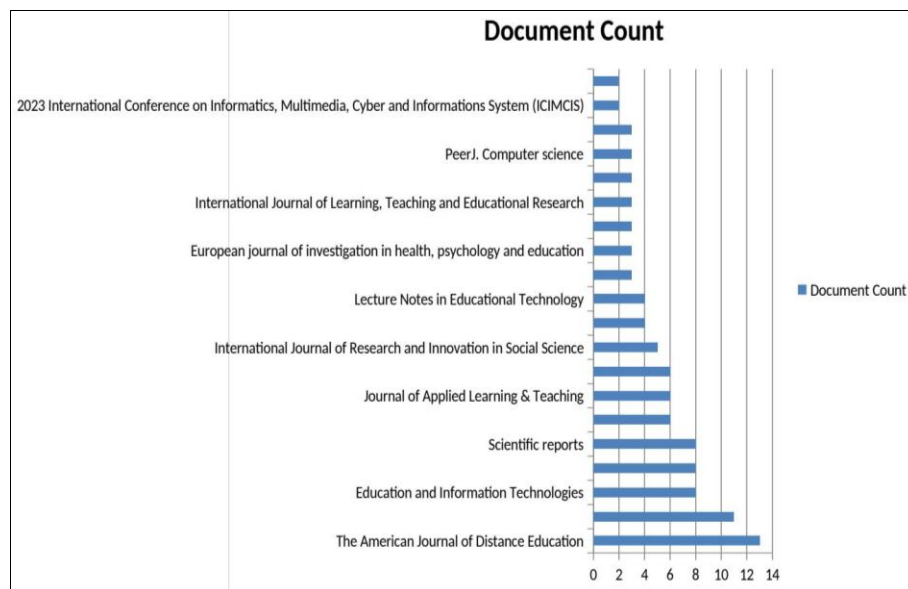


Fig 6: Top journal of study on Research trends of ChatGPT in Higher education

The analysis of source titles of the journals in which documents are published reveals that The American Journal of Distance Education has the highest number of publications (13), followed by Zenodo (11), which implies a strong scholarly interest in the integration of ChatGPT in higher education. Heliyon, Education and Information Technologies and scientific reports underwritten a reasonable number of studies publication (7-8). The distribution of publications in different journals indicates that research on "ChatGPT in higher education" is gradually maturing in terms of distance learning, educational technology, and digital pedagogy (Fig 6).

Discussion

Researches on 'Chat GPT in higher education' is in sustainable growth phase and dynamic rather than a temporal surge. Scholars from different domains show their interest in this area. Within this limit period it received huge attention from academia. The presence of maximum number of journal article followed by books, conference proceedings depicts that area received credibility, curriculum interest and wide discussion among scientific community. The global distribution of publication, particularly in Asia and developed countries, leads that certain countries and region are ahead of others in this research domain may be due to more adoption of Gen AI within the academician. Institutional and authorship patterns further confirm that no single entity dominates the field, reinforcing its collaborative and emerging nature. Furthermore, the multidisciplinary researches likely computer science, psychology, and social sciences underscores the broad implications of Chat GPT in education, including cognitive, pedagogical, ethical, and policy dimensions. Overall, the discussion recommends a prerequisite for more methodical, interdisciplinary, and regionally inclusive research to well understand and harness Chat GPT's role in higher education.

Conclusions

Generative artificial intelligence (Gen AI), especially Chat GPT-based, has revolutionized higher education in terms of

its huge adoption by scholars and academicians. Accordingly, numerous studies have been conducted in this area over the last few years, such as personalized learning, assessment, and ethical aspects. A bibliometric analysis reveals that journal articles are the major publication, followed by book chapters. The MEE university, Turkey; Srinivas University, India; University of Jordan are the prolific institutions. However, regarding regions, it is noted China, Indonesia, the United States, India and Australia are the emerging nations. The top fields of study include psychology, computer science, political science, and mathematics. The American Journal of Distance Education and ZDM-Mathematics Education are the most frequently opted journals for scholars. Regardless of the growing body of knowledge in the literature on Chat GPT in higher education, researchers have noted gaps in research on supporting disadvantaged learners and addressing digital disparities. Concerns also pointed out on ethical use, academic reliability, and data privacy. In conclusion, Chat GPT can enable changes in higher education; however, its pragmatic effectiveness resonates with ethical deliberations, vigilant planning, and policy backstopping. Hence, future research should focus on assessing the long-term impact of inclusive submissions and framing a robust agenda for responsible AI adoption in higher education.

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