Generative AI in Education: A bibliometric analysis

Huseyin BICEN

Educational Sciences Research Center, Department of Computer Education and
Instructional Technology, Near East University, Nicosia

huseyin.bicen@neu.edu.tr

Abstract: *In this study, a search was conducted in the Web of Science database on the topic of "Generative AI in Education". This search was tabulated with bibliometric analysis and the data was presented. The bibliometric analysis was performed using VosViewer software. The aim of this study is to determine which authors, sources and countries have done the most work by performing a bibliometric analysis of "Generative AI in Education". On February 6, 2025, topics were selected in the Web of Science database and studies on "Generative AI in Education" were scanned. The countries with the most citations are the United States, Peoples r China and Spain. In addition, "Asia Pacific Journal of Education", "Integrating Generative AI in Education to Achieve Sustainable" and "Interactive Learning Environments" are the most important studies related to "Generative AI in Education". As a result, the majority of studies in this field are shaped around the concepts of artificial intelligence, chatgpt, education, generative AI, generative AI in education and higher education.*

1. Introduction

Today, it examines the role of Generative AI in education and its connection to the UN Sustainable Development Goals (SDGs). The interdisciplinary, technical and ethical dimensions of AI in education are addressed by Doshi, Dadhich, Poddar, & Hiran (2024). Ching, Hsu & Hung (2024) stated in their study that AI in education has become widespread using OpenAI's ChatGPT and Google's Gemini, and that guides have been published by various institutes and organizations to increase AI literacy, but it is emphasized that the integration of Generative AI into education must be addressed robustly.

Okaiyeto, Bai & Xiao (2023) emphasized that as Generative AI has become widespread in education, concerns about AI and cheating, such as AI-assisted cheating, have emerged. In the US, some schools have imposed bans on the use of AI in homework and exams. OpenAI stated that ChatGPT has developed solutions to this issue and has suggested collaboration with educators. Adhikari, Kumbhakar, Indra & Karforma (2024). When the Impact of Generative AI in Education 2030 is examined in the book section, the foundations, evaluation, working process and

applications of Generative AI in 2030 education are examined. While examining the role of AI in innovation, education policy, research, teacher guidance in content production are highlighted.

Ng, Chan & Lo (2025) stated that the main challenges of integrating Generative AI into education, opportunities and strategies for its adoption, with data from 76 Canadian educators, are teachers' readiness levels, competencies and students' AI literacy. Lindell, & Utterberg (2025) examined the social impacts of 40 Swedish educators' challenges with generative AI by managing the Cultural-Historical Activity Theory.

Giannakos, Azevedo, Brusilovsky, Cukurova, Dimitriadis, Hernandez-Leo & Rienties (2024). Generative AI tools can be used for the development of practices such as automatic educational content, instructional design feedback, but ethical issues and potential for misuse are also emphasized. The research addresses the role of human experts, policy, support and design requirements. Considering Generative AI in education research in general, the aim of the research is to analyze current studies in this field with bibliometric analysis regarding citation of authors, co-occurances of a keyword, bibliographic matching (coupling) of documents, bibliographic matching of sources and bibliographic matching of countries.

2. Method

In this study, a bibliometric analysis of the studies scanned in the Web of Science database under the title of "Generative AI in Education" was conducted. The aim of this study, which was conducted using the VosViewer software, was to determine which authors, which sources, and which countries conducted the most studies on the subject of "Generative AI in Education" through bibliometric analysis. On February 6, 2025, topics were selected in the Web of Science database and studies on the subject of "Generative AI in Education" were scanned. While performing the analyses, "Authors' citations, Synchronicity of all keywords, Bibliographic matching of documents, Bibliographic matching of sources, Bibliographic matching of countries" were examined. Within the scope of the research, the analyses of 47 studies on the subject of "Generative AI in Education" were tabulated and presented with graphics.

3. Findings

3.1 Citation of authors

When analyzing the data regarding citations of authors, the "minimum number of documents of an author" was identified as 1. The "minimum number of citations of an author 11 of the 164 authors, 9 meet the thresholds. Figure 1 and Table 1 show the most cited authors.
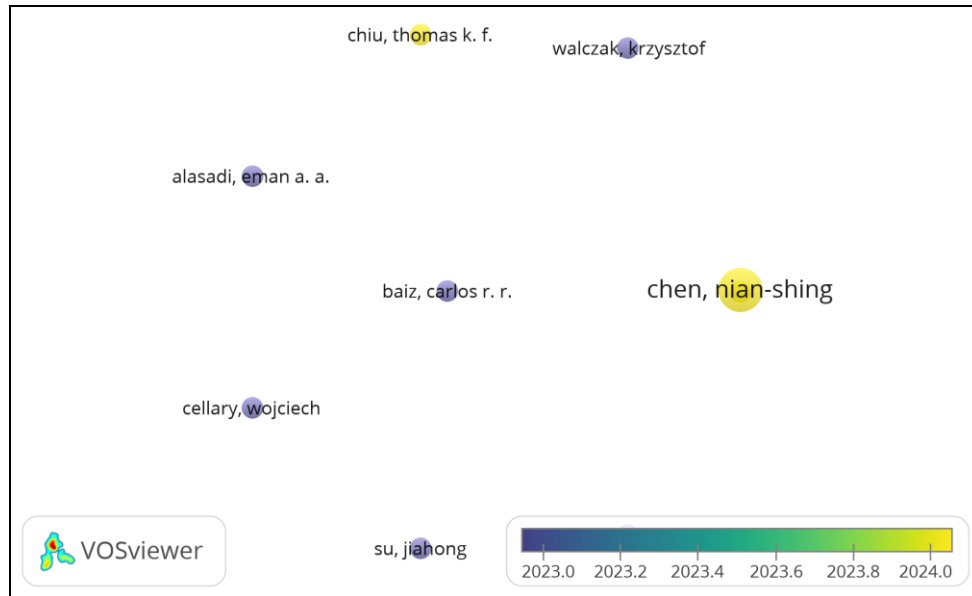
Figure 1. Graph generated with VosViewer for citation of authors

Table 1. Table of citations of authors

Author	Documents	Citations	Total link strength
"alasadi, eman a. a."	1	89	0
"baiz, carlos r. r."	1	89	0
"cellary, wojciech"	1	20	0
"chen, nian-shing"	2	17	1
"chiu, thomas k. f."	1	123	0
"lan, yu-ju"	1	16	1
"su, jiahong"	1	118	0
"walczak, krzysztof"	1	20	0
"yang, weipeng"	1	118	0

3.2 Co-occurrence-all keywords

While performing the relevant analysis, the "minimum number of occurrences of a keyword" was identified as 5. Among the 172 keywords, 7 meet the thresholds". In Figure 2 and Table 2 highlights the "Co-occurrence-all keywords".
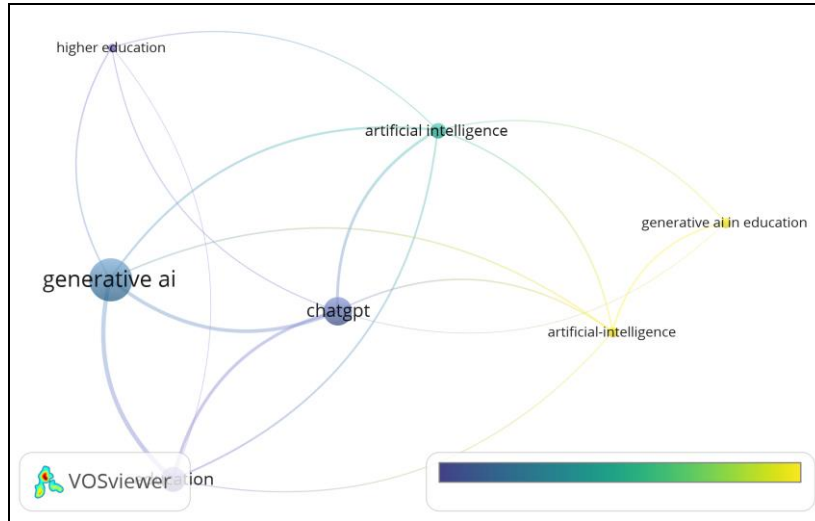
Figure 2. Graph generated with VosViewer for co-occurrence-all keywords

Table 2. Table for co-occurrence-all keywords

Keyword	Occurrences	Total link strength
artificial intelligence	9	23
artificial-intelligence	6	14
chatgpt	16	31
education	14	28
generative ai	24	34
generative ai in education	6	6
higher education	5	8

3.3 Bibliographic coupling of documents

While conducting the relevant analysis, the "minimum number of citations of a document" was selected as 5 of the 47 documents, 9 meet the threshold. In Figure 3 and Table 3 shows that "bibliographic coupling of documents".
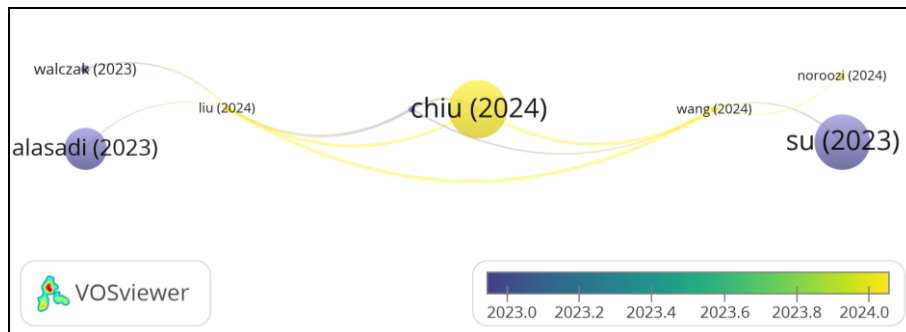
Figure 3. Graph generated with VosViewer for bibliographic coupling of documents

Table 3. Table for bibliographic coupling of documents

Document	Citations	Total link strength
liu (2024)	10	18
su (2023)	118	2
alasadi (2023)	89	1
lan (2024)	16	0
walczak (2023)	20	2
chiu (2024)	123	13
wang (2024)	10	16
noroozi (2024)	8	1
bozkurt (2023)	9	9

3.4 Bibliographic coupling of sources

While conducting the relevant analysis, the "minimum number of documents of a source" was identified as 2. Minimum number of citations of a source" was selected as 0 of the 40 sources, 3 meet the thresholds. Figure 4 and Table 4 shows that bibliographic coupling of sources.
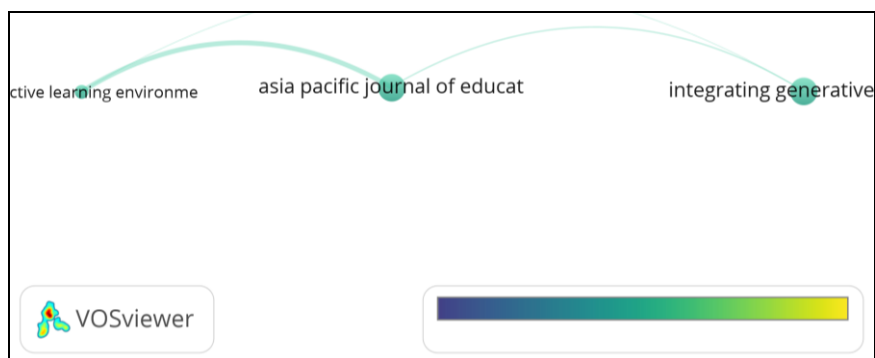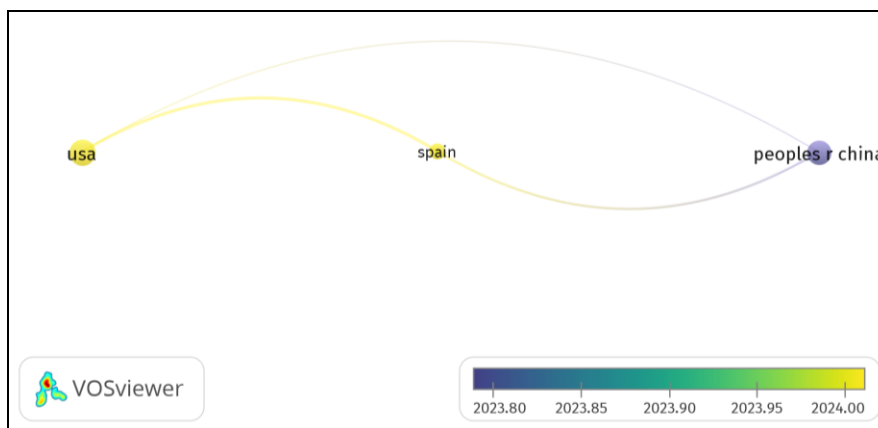

Figure 4. Graph generated with VosViewer for bibliographic coupling of sources

Table 4. Table for bibliographic coupling of sources

Source	Documents	Citations	Total link strength
asia pacific journal of education	4	25	20
integrating generative ai in education to achieve sustainable	4	0	6
interactive learning environments	2	123	18

3.5 Bibliographic coupling of countries

While conducting the relevant analysis, the "minimum number of documents of a country" was selected as 5. Minimum number of citations of a country 0 of the 35 countries, 3 meet the thresholds. Figure 5 and Table 5 shows the bibliographic coupling of countries.

Figure 5. Graph generated with VosViewer for bibliographic coupling of countries

Table 5. Table for bibliographic coupling of countries

Country	Documents	Citations	Total link strength
Peoples Rep. China	9	270	145
Spain	6	9	267
USA	10	92	190

4. Discussion

The bibliometric analysis of the studies scanned with the keyword "Generative AI in Education" in the Web of Science database was presented with graphs and tables using VosViewer. When the findings were examined, it was seen that the most cited authors in this field were "Chiu, Thomas K. F." (1 study, 123

citations), "su, jiahong" (1 study, 118 citations) and "yang, weipeng" (1 study, 118 citations).

According to the "Co-occurrence-all keywords" analysis, the most frequently used keywords in "Generative AI in Education" studies were generative ai, chatgpt, education, artificial intelligence, artificial-intelligence, generative ai in education, higher education, respectively.

Wen, Zhao & Zang (2025) emphasize the benefits of Geneative AI such as personalization, content production, as well as concerns about addiction and academic ethical violations in information production. In their study on "higher education", one of the most used keywords, Francis, Jones & Smith (2025) highlight the need to address the disadvantages and digital divide risks in ethical issues while offering advantages with personalized learning and innovative assessment in higher education with generative AI. Nguyen (2025) expanded the article on the risks and academic honesty that may be experienced in the integration of generative AI in higher education, along with pedagogical and ethical principles. It is foreseen that the importance of human-artificial intelligence collaboration will be at the forefront, with ethical usage guidelines also taking an important place in the future by drawing attention to the importance of artificial intelligence literacy.

The most cited study according to the keyword "Generative AI in Education" is the study titled "The impact of Generative AI (GenAI) on practices, policies and research direction in education: a case of ChatGPT and Midjourney" by Chiu (2024). This study investigates the impact of Generative AI on school education from the perspective of teachers and administrators. The study presents 4 main themes and 12 sub-themes based on data collected from 88 participants. The study findings provide professional standards and implications for policy. The reason for the high citation of the study can be thought to be due to the fact that it suggests six future research directions for Generative AI in education.

It is seen that the most published sources are "Asia Pacific Journal of Education" and "integrating generative ai in education to achieve sustainable". In addition, the countries with the most publications are the USA, Peoples r China and Spain. These countries are among the countries where the most studies on Generative AI in Education have been conducted.

Su & Yang (2023) examined the advantages and difficulties of Generative AI tools such as ChatGPT in education. The advantages of Generative AI such as personalized learning and rapid feedback were emphasized. However, issues such as data quality, security and ethics were also addressed as disadvantages.

5. Conclusions and future studies

In this study, the studies scanned under the title "Generative AI in Education" in the Web of Science database were examined with the bibliometric

analysis method. VosViewer software was used to determine the most published authors, the most published sources, and the most researched countries.

When the findings were examined, Thomas K. F. CHIU from The Chinese University of Hong Kong, Jiahong Su from The University of Hong Kong, and Weipeng Yang from The Education University of Hong Kong are among the most influential academics in studies on Generative AI in Education. The countries with the most citations are the United States, Peoples r China, and Spain. In addition, the most important studies related to "Generative AI in Education" are "Asia Pacific Journal of Education", "Integrating Generative AI in Education to Achieve Sustainable" and "Interactive Learning Environments".

As a result, most of the studies in this field are shaped around the concepts of artificial intelligence, chatgpt, education, generative ai, generative ai in education and higher education. This research aims to guide future research in the relevant field by showing the current studies and the most cited studies on Generative AI in Education. In general, future studies on Generative AI should investigate its impact on the teaching-learning process, how the role of the teacher will transform, the development of artificial intelligence literacy, ethical risks, and how it can be integrated into educational policies.

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