

Educational Platforms and Students' Performance: A Bibliometric Analysis

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Abstract

Despite the increasing popularity of the term "educational platforms," its implementation in actual educational settings remains restricted. As a result, this study thoroughly investigates educational platforms using bibliometric analysis. Using the similarity visualization software Vosviewer, this study broadened its research scope from 2013 to 2023. In May 2024, we examined a total of 258 publications from the Scopus database to identify the most significant topics the journal addressed. We have identified a number of emerging topics, including digital learning, online learning environments, and remote learning. The study presents a strategic blueprint for ambitious researchers, with a specific emphasis on key areas where attaining success is attainable.

Keywords: Educational Platforms, Students' Performance, Bibliometric Analysis

Introduction

The modern world is currently experiencing rapid advancements in various aspects of life, especially in communications and information technology. As a result, educational institutions are actively seeking to utilize these significant technological advancements and incorporate them into the educational process (Abdulah, 2024). The Internet is a crucial manifestation of technical progress. It has become essential in education due to its ability to provide extensive information, enhance learners' knowledge and technological skills, and boost students' motivation for learning. Education provides vast sources of information, raises the knowledge and technical level of the learner, and increases the motivation of students for the educational process. Multiple research studies have highlighted the importance of integrating technological resources into the education system, such as flipped classrooms, virtual reality platforms, and mobile learning. These materials have proven to have a beneficial impact on developing students' creative and critical thinking skills while also increasing their motivation to participate in the learning process (Huang, et al., 2023; Akhil et al., 2024; Araiza-Vazquez et al., 2023)

These technologies have transformed the education system, giving rise to new learning styles, such as educational platforms that have spread widely around the world. These platforms are characterized by their high quality in the educational process, as they evoke excitement and motivation among learners. The purpose of this study is to examine educational platforms and articles on students' performance indexed in Scopus. This will be done using bibliometrics and visualization analysis. Furthermore, we exclusively gathered the data for this particular study from Scopus, a globally recognized abstract and citation database for peer-reviewed research. The research data included a wide range of well-known academic journals on education, as well as materials specifically relevant to educational technology. This investigation has given us valuable insights into the progression of research interests on educational platforms over time. Furthermore, we employed visualization approaches in this work to analyze and investigate scientific collaborations among the most significant contributors to learning platforms, a topic not previously explored in current literature. We had one specific objective, which was to tackle the research questions that followed.

1. What is the spread of educational platforms and student performance publications by year over the past decade?
2. Which journals and authors are considered most significant in the fields of educational platforms and student performance research?
3. Which countries are the most prolific in terms of research on educational platforms and student performance?
4. What are the main research terms used in the past ten years to study educational platforms and student performance?

Materials and Methods

This review aims to uncover the body of research over the past ten years on the preparation for learning through educational platforms. To accomplish this objective, we have employed bibliometric methods, which involve tracking intellectual production in various fields and analyzing it based on various characteristics (Chloe, 2009). We have accessed high-quality publications using Scopus data. We did not consider conferences and books in our May 10, 2024 research. We specifically searched the keywords in the title, summary, or keyword sections by selecting the "Topic" option. We also queried the articles in English using the Scopus database, which incorporates sophisticated capabilities for assessing studies in diverse sectors such as the humanities and educational technology. To ensure precise statistics, we performed a meticulous analysis to eliminate articles that were not pertinent, adhering to the criteria outlined in Table 1. Therefore, an in-depth evaluation of 258 papers remains necessary. Figure 1 also depicts the analytical research framework.

The Bibliometric Analysis

The study also applied the bibliometric analysis method. The bibliometric analysis examined the top keywords, highly cited journals, extensively published journals, journals with the highest number of studies on the topic, countries with the most studies on the topic, international collaboration in publications, relationships between popular keywords, highly cited authors and their relationships, jointly cited journals, and the most published areas. The VOS Viewer software, a commonly utilized tool for displaying bibliometric networks, generated a visible representation of the network analysis.

The following goals are the foundation for this review: First, the fascinating field of educational platforms is experiencing a surge in research activity. This necessitates the use of

an accurate machine learning technique capable of independently searching through substantial amounts of documented literature data to investigate the topic structure within this field. Consequently, we are conducting an ongoing study to provide insights into the topics covered and the patterns observed in educational platforms.

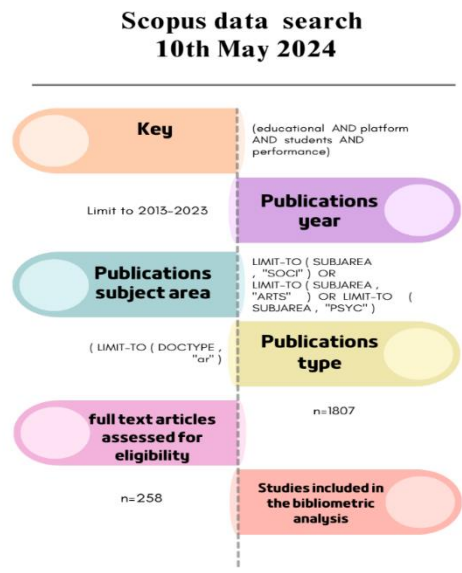


Fig. 1. Analytic framework of the study

Table 1
The inclusion and the exclusion criteria for data screening

Inclusion criteria	Online learning platform, online learning, technology adoption, educational platform, educational technology
	Students' achievement, students' performance, learning performance
Exclusion criteria	Learning plat form in (medical and engineering fields)
	Publication in languages other than English

Findings

The study seeks to uncover the characteristics and trends of educational platforms and students' performance during the past ten years. The findings of the review were analyzed and discussed with respect to the study subjects.

Research Question 1

What has been the annual distribution of educational platform publications over the last decade? To investigate the original finding, we conducted a comprehensive analysis of the publications' publication dates over the last ten years. The analysis showed that 2021, with its highest count of 45 publications, accounted for the majority of the articles published in recent years. On the other hand, 2016 saw the lowest number of publications, totaling 5. According to the literature graph, the number of articles on educational platforms and students' performance published during a specific period showed a consistent increase, reaching a total of 202 publications.

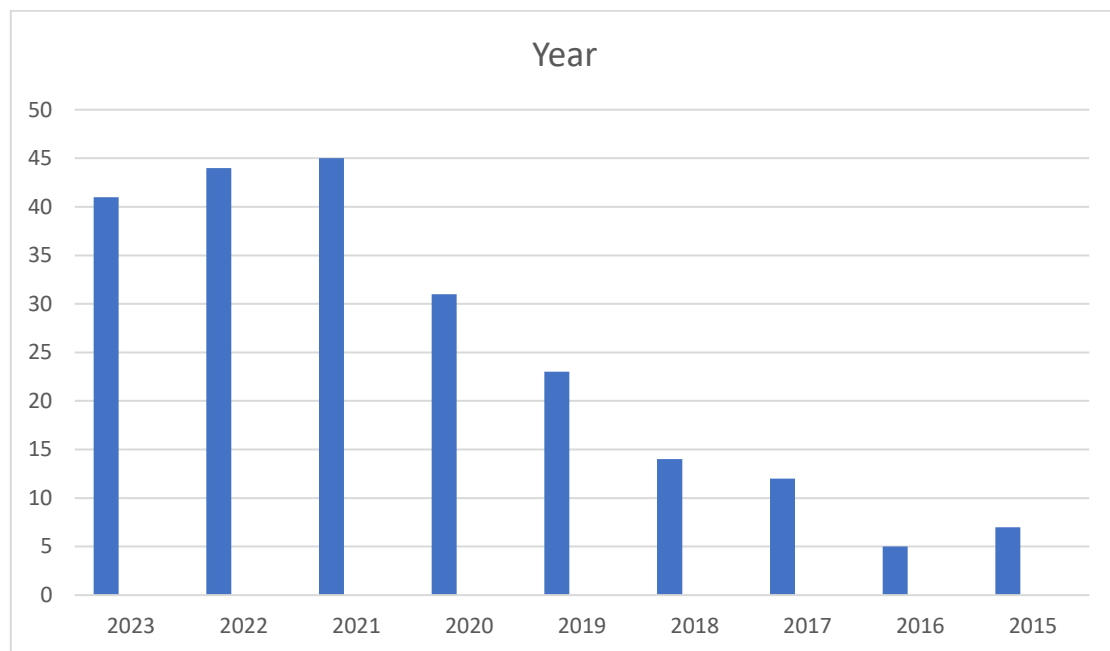


Fig. 2. Distribution of publications by years (2013–2023)

Research Question 2

Which journals and authors are considered the most significant in the field of educational platform research? As shown in Table 2, the content analysis criteria for the most cited journals were "total publication," "total citation," "cite score of the journal," "the most cited article," "times cited," and "publisher."

Table 2

The top 10 highly productive journals on educational platforms and students' performance in the years (2013–2023)

Journal	TP	TC	Cite Score (2022)	The Most Cited Article (References)	Times Cited	Publisher
Computers and Education)	757	20404	23.8	Effects of artificial Intelligence–Enabled personalized recommendations on learners’ learning engagement, motivation, and outcomes in a flipped classroom	64	Elsevier
Education and Information Technologies	1767	17516	8.2	Interacting with educational chatbots: A systematic review	149	Springer Nature

Journal	TP	TC	Cite Score (2022))	The Most Cited Article (References)	Times Cited	Times Cited
Journal of Information Technology Education: Research	100	622	4.9	ATTRIBUTES OF BLENDED LEARNING ENVIRONMENTS DESIGNED TO FOSTER A SENSE OF BELONGING FOR HIGHER EDUCATION STUDENTS	3	Informing Science Institute
IEEE Transactions on Learning Technologies	273	2037	8.5	Metaverse in Education: Contributors, Cooperations, and Research Themes	14	IEEE
Education Sciences	3334	15809	4	What Is the Impact of ChatGPT on Education? A Rapid Review of the Literature	258	Multidisciplinary Digital Publishing Institute
British Journal of Educational Technology	450	7018	13.8	Human and artificial intelligence collaboration for socially shared regulation in learning	22	Wiley-Blackwell
Computers in Human Behavior	1511	28679	17.8	Social benefits of living in the metaverse: The relationships among social presence, supportive interaction, social self-efficacy, and feelings of loneliness	93	Elsevier
Formacion Universitaria	339	954	2	Estimating student performance in a mobile learning experience	4	Centro de Informacion Tecnologica

				[Estimación del rendimiento de los estudiantes en una experiencia de aprendizaje móvil]		
Journal	TP	TC	Cite Score (2022))	The Most Cited Article (References)	Times Cited	Times Cited
Interactive Learning Environments	698	8384	11	Covid-19 pandemic and online learning: the challenges and opportunities	951	Taylor & Francis
International Journal of Modern Education and Computer Science	138	641	3.6	Analysis of Student's Academic Performance based on their Time Spent on Extra-Curricular Activities using Machine Learning Techniques	6	Modern Education and Computer Science Press

Note: TP = Total Publications, TC = Total Citation.

Table 2 indicates that the journal "Computers and Education" had the highest productivity in terms of publications and citations in the field of educational platforms and students' performance. It had a total of 757 publications and 20,404 citations. The journal "Education and Information Technologies" followed with 1,767 publications and 17,516 citations. Additionally, "Journal of Information Technology Education: Research" had 100 publications and 622 citations. Furthermore, Table 2 displays the distribution of the most productive journals in relation to educational platforms and students' performance. Additionally, RQ2 examined the writers who have produced the highest number of publications in the field of educational platform research. Prolific authors were the focus of the content analysis in the research area of educational platforms and students' performance. The analysis criteria included "author," "total publications," "h-index," "total citations," "current affiliation," and "country," as displayed in Table 3.

Table 3

List of the 10 most prolific authors in the educational platforms and students' performance research area

	Author	Year of 1st Publication	TP	h-Index	TC	Current Affiliation	country
1	Mansouri, Khalifa	2011	241	14	848	Hassan II University of Casablanca The institution will open in a new tab	Morocco
2	Poirier, Franck	1989	75	10	345	Universite de Bretagne-Sud Campus de Vannes The institution will open in a new tab	France
	Author	Year of 1st Publication	TP	h-Index	TC	Current Affiliation	Country
3	Safsouf, Yassine	2017	11	6	101	Laboratoire des Sciences et Techniques de l'Information, de la Communication et de la Connaissance (Lab-Sticc) The institution will open in a new tab	France
4	Al-Adwan, Ahmad Samed	2015	90	24	1782	Al-Ahliyya Amman University The institution will open in a new tab,	Jordan
5	Al-Rahmi, Ali Mugahed	2019	16	12	563	Universiti Tun Hussein Onn Malaysia	Malaysia

6	Mugahed Al-Rahmi, Waleed Mugahed	2014	114	38	3748	King Saud University	Saudi Arabia
7	Albreiki, Balqis	2019	8	5	176	United Arab Emirates University	United Arab Emirates
8	Aljohani, Naif Radi	2011	136	28	2636	King Abdulaziz University The institution will open in a new tab	Saudi Arabia
9	Baldominos, Alejandro	2014	35	14	838	Smile and Learn Digital Creations	Spain
10	Bañeres, David	2004	55	18	633	Universitat Oberta de Catalunya	Spain

note: TP = Total Publications, TC = Total Citation.

Table 3 presents a roster of 10 exceptionally prolific authors who have conducted research on educational platforms and students' academic achievement. Moreover, "Mansouri, Khalifa" emerged as the most prolific author, having published a remarkable total of 241 works. The author had the highest h-index of 14 and garnered a total of 848 citations. It is noteworthy that the author hails from Morocco. The subsequent author on the list is "Poirier, Franck," with a cumulative count of 75 publications, an h-index of 10, and 345 citations. Franck Poirier hails from France. The next author is "Safsouf, Yassine," with a cumulative count of 11 publications, an h-index of 6, and a total of 101 citations. The author is of French origin. Furthermore, Table 3 included details regarding other prominent authors in the realm of educational platforms and students' performance research.

Research question 2

What are the most productive countries in the educational platforms and students' performance research area? The content study aimed to identify the most productive countries in terms of educational platforms and student performance. As indicated in Table 4 and Figure 3, the parameters used for analysis were "country," "total publications," and "most productive academic institution."

Table 4

List of the 15 most productive countries in the educational platforms and students' performance research area

Rank	Country	TP	Most Productive Academic Institution	Rank	Country	TP	Most Productive Academic Institution
1	USA	53	Loyola Marymount University	9	Canada	8	Abdul Wali Khan University
2	Spain	31	University of A Coruña	10	India	8	Guru Nanak Dev University
3	China	18	Guangxi Normal University	11	Russian Federation	8	Guangxi Normal University
4	Saudi Arabia	12	Information Technology University	12	United Arab Emirates	8	United Arab Emirates University
5	Taiwan	12	Lincoln University College	13	Australia	7	University of Adelaide
Rank	Country	TP	Most Productive Academic Institution	Rank	Country	TP	Most Productive Academic Institution
6	Malaysia	10	Universiti Tun Hussein Onn Malaysia	14	Greece	7	Liverpool Hope University
7	United Kingdom	10	Information Technology University	15	Mexico	6	Universidad Autónoma de Occidente
8	Pakistan	9	Information Technology University				

Note: TP = Total Publications

Table 4 displays the top 15 countries that have the most efficient educational systems and extensive research on student achievement. The visual representations illustrate the allocation of subjects among the leading countries, regions, and institutions. From a national standpoint, most of the countries and areas mentioned showed a sustained interest in all study subjects related to educational platforms and students' academic performance. In contrast, some countries and areas showed a clear preference for specific trends. For example, Loyola Marymount University had 53 publications, making the United States the most productive country in this regard. Spain ranked second in terms of the number of publications, specifically 31 from the University of A Coruña. Guangxi Normal University

contributed a total of 18 articles, placing China in the third position in terms of publication count. Furthermore, Table 4 contained information about other exceptionally productive nations in terms of educational platforms and studies on students' performance.

Research question 4

What are the primary areas of study that require original investigations? Over the past decade, keywords related to educational platforms and student performance. The goal of the bibliometric analysis was to pinpoint the most frequently used keywords. The selected analytic method was "co-occurrence," and the unit of analysis was "author keywords," as depicted in Figure 3.

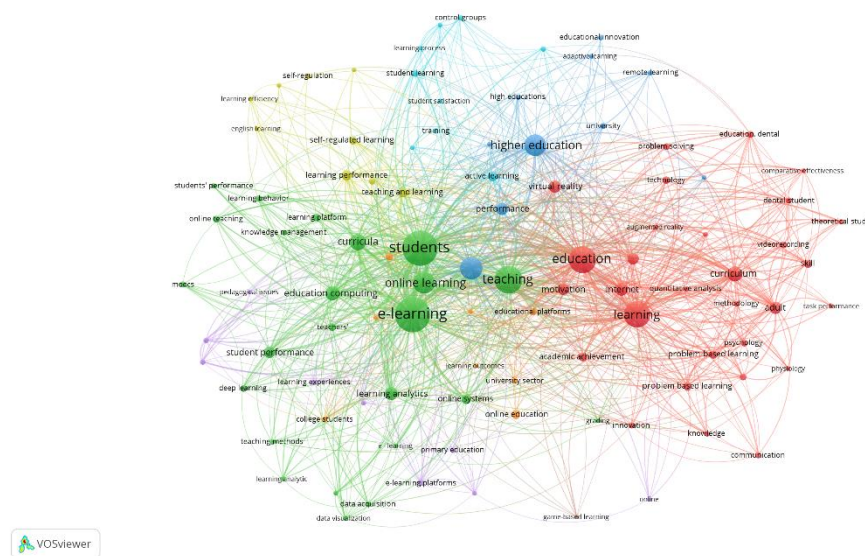


Fig3. Analysis results of publications by keywords

Upon analyzing Figure 3, it is evident that the studies mentioned under the topic "educational platforms and students' performance" had a total of 78 occurrences. The terms "online education" had 46 occurrences, "e-learning" had 49 occurrences, "online learning" had 58 occurrences, "curriculum" had 16 occurrences, and "educational technology" had 21 occurrences. Subsequently, education distance, virtual reality, student performance, and blended learning emerged.

Discussions

This study review provides an overview of educational platforms and students' performance using content analysis and bibliometrics, based on 258 research publications collected from the Scopus database. The research review analysis reveals a growing interest in educational platform research as a viable area of study. An examination of the publishing sources reveals that interdisciplinary disciplines primarily embrace online learning preparedness, focusing on the correlation between technology and its impact on education as a whole (See Figure 4).

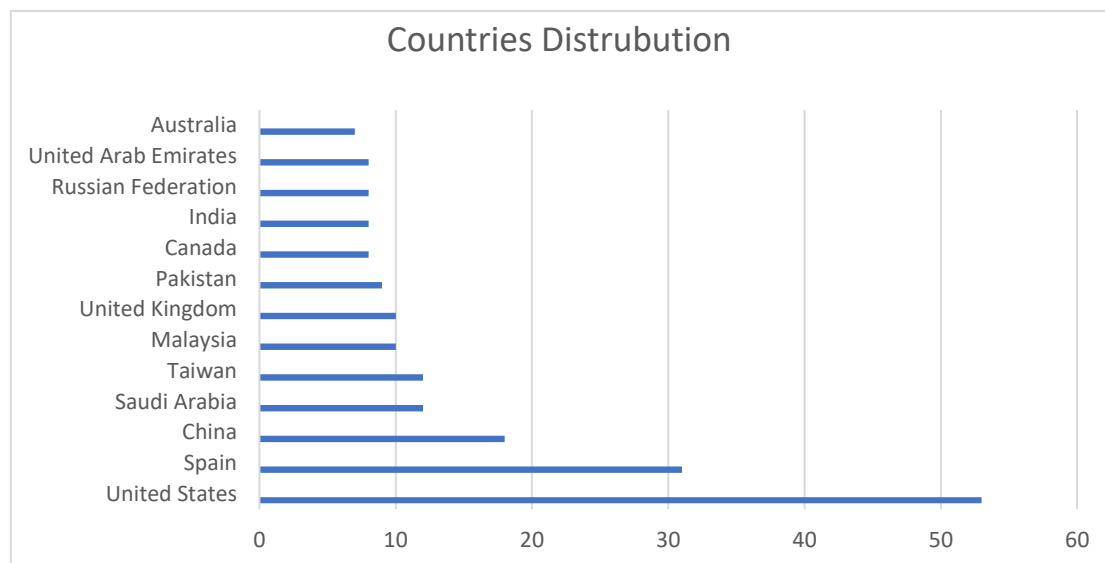


Fig. 4. Country distribution and total publications

The United States of America has provided almost 40% of the assessed literature, with Loyola Marymount University being the most prolific educational institution. Furthermore, a review of scientific collaboration indicates that nations and regions like the USA, China, Taiwan, and the United Kingdom, demonstrating a greater degree of global cooperation, are likely to experience more rapid progress. Moreover, the partnerships between the identical institutions or regions are far more substantial. This study has identified the most pertinent research topic regarding educational platforms and their influence on students' academic performance. The topics include online learning platforms, students' scholastic achievements, and the incorporation of technology in educational settings. Furthermore, this study showcases the prevailing trends and advancements in the realm of educational platform research. We can classify these into six basic themes: (1) preparedness for online learning; (2) computer and internet proficiency; (3) self-regulation skills; (4) communication and confidence in online settings; (5) independent learning; and (6) motivation to learn.

Conclusion and Implications

The swift progression of information and communication technology has led to technical advancements in all fields, capturing the attention and interest of scholars from all academic disciplines. The emergence of novel technological tools, such as educational platforms, has occurred simultaneously with the advancement of the educational process. This article uses bibliometrics and content analysis to examine 258 publications in the field of educational platforms and student performance research. The goal is to identify the research subjects and trends in this area. The proliferation of educational platforms and publications on students' performance demonstrates a significant surge of interest in this research topic. Extensive research on educational platforms indicates a highly promising trajectory for future development. Interdisciplinary journals that examine the connection between education and technology are conducting research on educational platforms. Loyola Marymount University was the foremost country and institution in terms of disseminating research on educational platforms. Global collaborations possess the capacity to amplify scientific accomplishments. Articles on educational platform preparation often make use of terms such as "e-learning platforms," "technology adoption," "educational technology," "online learning

environments," and "students' achievement." The main areas of research focus on technology integration, the combination of traditional and online learning, and the study of educational technology. Researchers specializing in educational platforms and student performance have demonstrated an increasing interest in several topics, including online education, blended learning, student achievement, satisfaction, autonomy, and technology in education.

Limitation

This research has certain drawbacks. Originally, we only used the Scopus database to gather statistics. Therefore, it does not encompass all scholarly publications. Therefore, it is possible that journals from other databases, such as the WoS, were not considered in this analysis. Furthermore, we ignored the latest articles for the year 2024 in Scopus. Nevertheless, it is improbable that these restrictions will impact the trends and patterns identified in this study. Additionally, we have limited data retrieval to the search phrases "educational platform" and "students' performance." Utilizing specific search phrases can lead to a more limited dataset. We evaluated all potential technologies for implementing online learning, including "online learning," "virtual classroom," "learning analytics," "educational technology," "education settings," and "online education." As a result, our investigation focused on employing more specific search phrases, namely "educational platforms" and "students' performance," to examine the implementation of educational platforms. rather than the potential approaches that

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