



Research Trends in the Last 3 Years Related to Distance Education : A Bibliometric Study

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Abstract: This study aims to analyze the research trends related to distance education over the past three years by examining the publication patterns and key topics within the field. This study used a quantitative descriptive research approach with a bibliometric method. Data was collected through the Scopus database with the keyword "Distance learning" by searching for journals based on keywords, article titles, and abstracts with the condition of publications in 2020-2022. The software used in data analysis in this study was the Bibliometrix R-Package, which was part of R-Studio. A total of 1936 articles were found and analyzed. The study results showed that the number of articles related to distance education has been increasing each year, with a growing trend from 2020 to 2022. The study analyzed the top journals, affiliations, and countries publishing articles and identified the most productive authors and relevant affiliations. The trend topics discussed were social media, distance learning, and learning analytics, with new topics emerging in 2021, such as university students, motivation, and Covid-19. Theme classifications were divided into two, connected by blue and red lines. The study also identified future research opportunities using a thematic map.

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Introduction

Distance education has gained significant attention and popularity in the past few years, especially due to the pandemic that has forced educational institutions to adopt alternative learning methods (Abdimusa et al., 2022). As a result, many researchers have been investigating the latest trends and developments in distance education. Distance education has become an increasingly popular mode of learning in recent years, with advancements in technology making it easier for students to study from anywhere, at any time (Abuhassna et al., 2021; Ahied et al., 2020).

Distance education has been rapidly growing in recent years, offering individuals the opportunity to study from anywhere, at any time (Al Hashimi, 2021; Aljarrah et al., 2021). With the advent of technology, distance education has become more accessible and convenient for students, providing an alternative to traditional face-to-face learning (Al-Taweel et al., 2021; Chick et al., 2020; Scanlon, 2021).

State of the art in distance education has evolved rapidly in recent years, with new technologies and teaching methods being developed and implemented. The scientific novelty of this study lies in its analysis of the latest research trends in distance education and the identification of the most productive authors, institutions, and countries in this field. This study also aims to identify research gaps and opportunities for future research. The research



problem addressed in this study is understanding the latest research trends related to distance education and the patterns of authorship and collaboration in this field. Furthermore, this study aims to identify the most productive institutions and countries in this field and the gaps and opportunities for future research.

This research aims to provide a comprehensive bibliometric analysis of the research trends in distance education over the past three years. The results of this study will provide a comprehensive overview of the research trends in distance education over the past three years. This information will be valuable for educators, researchers, and policy makers interested in this field as it will provide insight into the current state of research and highlight the key focus areas. This study will also identify the dominant authors, institutions, and countries contributing to the research in distance education, offering a comprehensive understanding of the field. Specifically, the research question addressed in this article are:

- RQ1: How is the development of "distance education" literature from 2013 to 2022?
- RQ2: What are the main journals, authors, affiliations, countries, and documents in distance education?
- RQ3: What are the trend topics related to distance education?
- RQ4: What are the theme classifications about distance education? and
- RQ5: What are future distance education topics that provide opportunities for further research?

Research Method

This research approach used a descriptive quantitative research method with a bibliometric approach. The bibliometric approach aims to review the number of publications and citations from various pieces of literature (Desiana & Soebagyo, 2022); Martínez & Anderson, 2015; Pinto-López & Montaudon-Tomas, 2020; Romero et al., 2019). The tool used to analyze bibliometrics in scientific publications is a network data database that can be obtained from websites or by creating your database. The software used in data analysis in this study was the Bibliometrix R-Package, which is part of R-Studio. This software will help display bibliometric visualization results with statistics and graphics. Before using R-Studio, the R programming language was used to manipulate data, statistical analysis, and data visualization. R-Studio, or the Integrated Development Environment (IDE), is a platform to hold various packages using the R language to analyze text mining and matrix (Batra et al., 2022; Gupta et al., 2022; Hassan, 2022).

To see the results of mapping scientific knowledge in the research field with a specific subject written in scientific publications, you can use co-word analysis using keywords. Subsequently, bibliometric mapping also examines and looks at the level of productivity and collaboration in research and scientific writing activities, referred to as Co-Authorship. According to Brady Land in bibliometric studies, Co-Authorship aims to see the level of productivity of the authors, both as individual authors and group authors, when conducting research (Ben Mamia et al., 2022; Desalegn & Tangl, 2022). In addition, by analyzing authors, it can also be seen which institutions or departments and countries often contribute to research and publish scientific works.

Data was collected through the Scopus database with the keyword "Distance learning" by searching for journals based on keywords, article titles, and abstracts with the condition of publications in 2020-2022. A journal is a form of publication that serves as a scholarship registry, writes the results of activities related to scientific requirements, and widely publishes and archives all scholarly findings (Dikti, 2019). The type of document obtained is a CSV file



extension. The population of this study is scientific publications on distance learning in countries around the world indexed by Scopus during the period 2020-2022. Articles obtained on December 7, 2022, were 1936 scientific publication titles.

Results and Discussion

Graph 1 shows students' views on using digital platforms that are more suitable for their needs. In using video conferencing, students prefer to use zoom cloud meetings. At the same time, with the use of messaging applications such as social media, students prefer WhatsApp and telegram because it is easier and faster, and the use of WA or telegram is familiar to students. In learning websites, students prefer to use LMS or learning websites provided by the government. However, when viewed, the average score provided is relatively

RQ1: How is the development of "distance education" literature from 2013 to 2022?

The Scopus database shows 1936 articles related to distance education on December 7, 2022. The articles discussed that distance learning is developing year by year. The result of this research found that in 2020 there were 473 articles. The number of the article increased to as many as 719 articles in 2021 and 747 articles in 2022. It proves that the distance learning topic in a trend during these past three years. However, the increase in article publications regarding the topic from 2021 to 2022 is not as great as from 2020 to 2021. It presents that interest in the topic is slowly decreasing these days.

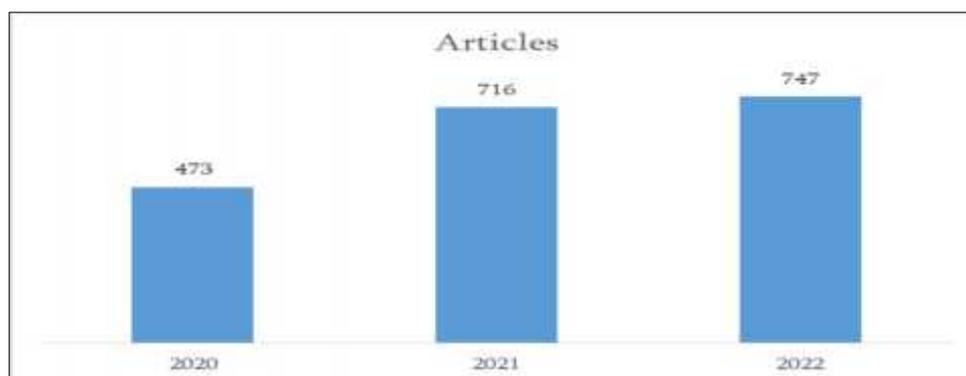


Figure 1. Distribution of Articles "distance education" from 2013 to 2022

RQ2: What are the main journals, authors, affiliations, countries, and documents in the field of distance education?

This research also aims to analyze the main journals, affiliations, and countries in terms of publishing articles related to distance learning. According to 50 bibliometric analyses, ten main journals have published learning distance articles the most in the past three years. International Journal of Emerging Technologies is leading in the first place by publishing 63 articles regarding the topic. The Turkish Online Journal of Distance Education successfully published 59 articles in the second position. In third place, Computers and Technologies published 49 articles related to distance learning in the past three years. Sustainability Journal of Switzerland, World Journal on Education Technology, and Education and Information Journal are in fourth, fifth, and sixth place, with the publication numbers consecutively reaching 44, 40, and 38 articles. In seventh and eighth place are the Education Science Journal with 29 articles and IEEE Access with 28 articles. The last two journals are the Cypriot Journal on Educational Sciences which successfully published 27 articles, and the international review of Research in Open and Distance Learning, which published 24 articles in the past three years.

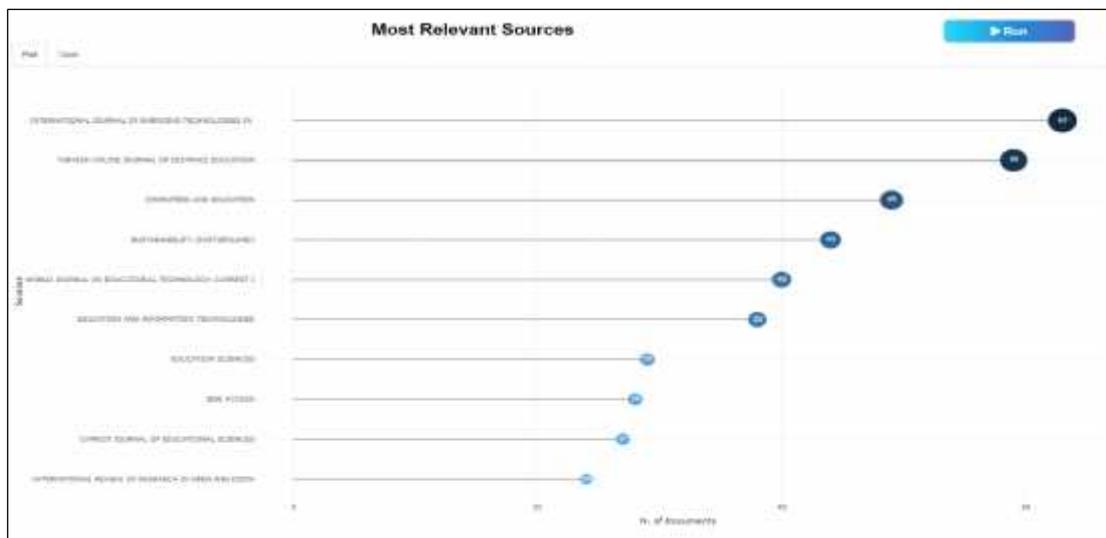


Figure 2. Most Relevant Sources

Besides the ten main journals, this research analyzes the Scopus database to find the ten most productive authors using bibliometrics. The analysis showed the ten authors with the highest publication regarding distance learning topics. Bozkurt A is in first place by producing 11 articles related to the topic from 2020 to 2022. Burgos D, DR, and Zhang Y have nine articles in the 2nd, 3rd, and fourth. Bervell B, Zhang J, and Zhang X are in the 5th, sixth, and seventh place after producing seven articles in the past three years. In the 8th, ninth, and 10th places, Li Y, Lukasiewicz-Wielba Jang Romaniuk MW successfully published six articles. The bibliometric analysis also provides information on the most relevant affiliation to distance learning. The ten most relevant affiliations are (1) Abai Kazakh National Pedagogical University producing 54 articles, (2) Anadolu University, with 41 articles published, (3) The Open University, with 37 articles, (4) King Faisal University by, published 35 articles, (5) Monash University also published 35 articles, (6) University of Cape Coast with 33 articles, (7) Notreported who successfully published 28 articles, and (8) Jordan University of Science and Technology, (9) Near East University, (10) South Kazakhstan State Pedagogical University by publishing 27 articles about distance learning in the past three years.

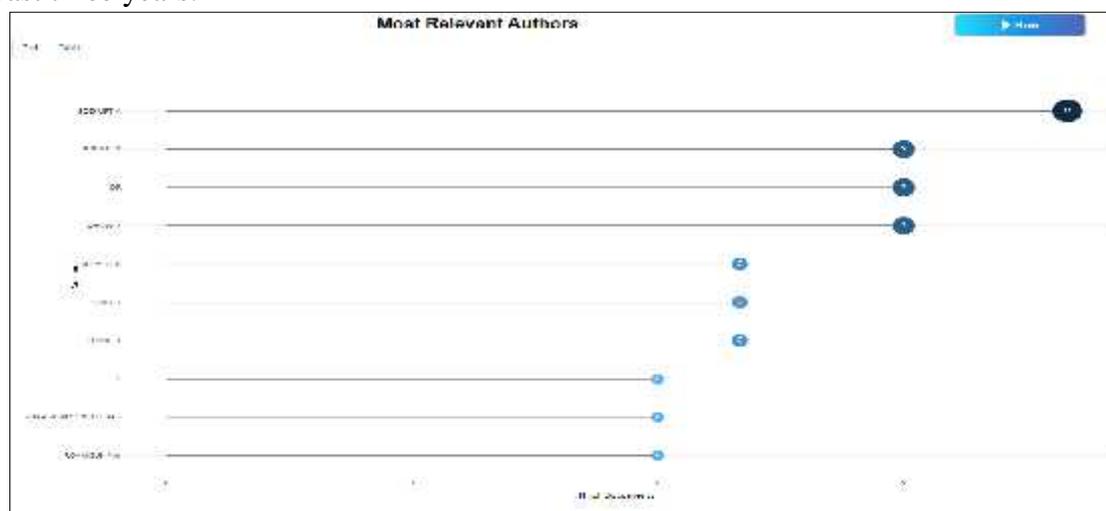


Figure 3. Most Relevant Authors

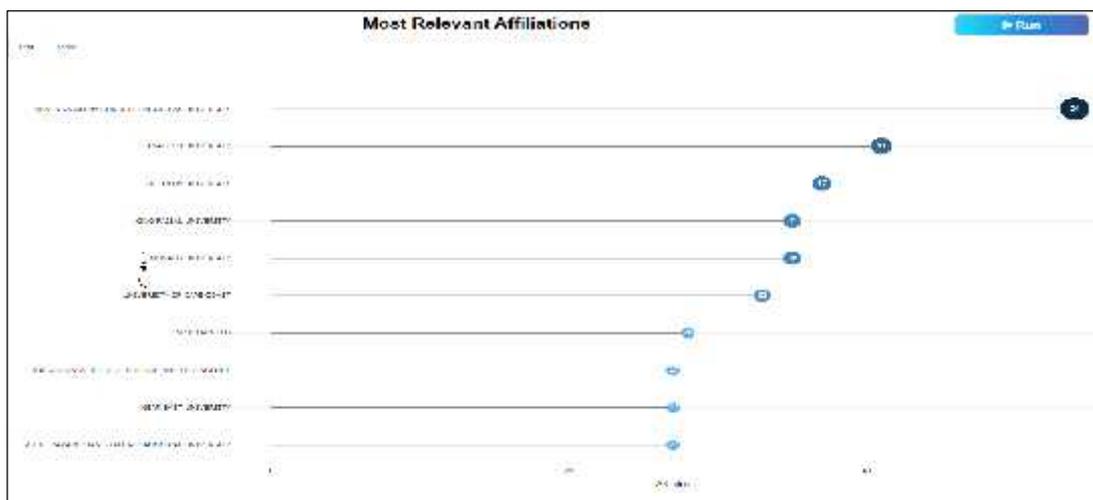


Figure 4. Most Relevant Affiliations

Furthermore, the research aims to list the performance of countries in producing articles related to distance learning from 2020 to 2022. The bibliometric analysis results show that USA and Turkey are leading the trends by producing more than 150 articles in the past three years. China is in third place by publishing over 100 articles in three years. Moreover, based on how the article was produced, Turkiye performs best for inter-country collaboration, while Kazakhstan has the least intra-country collaboration.

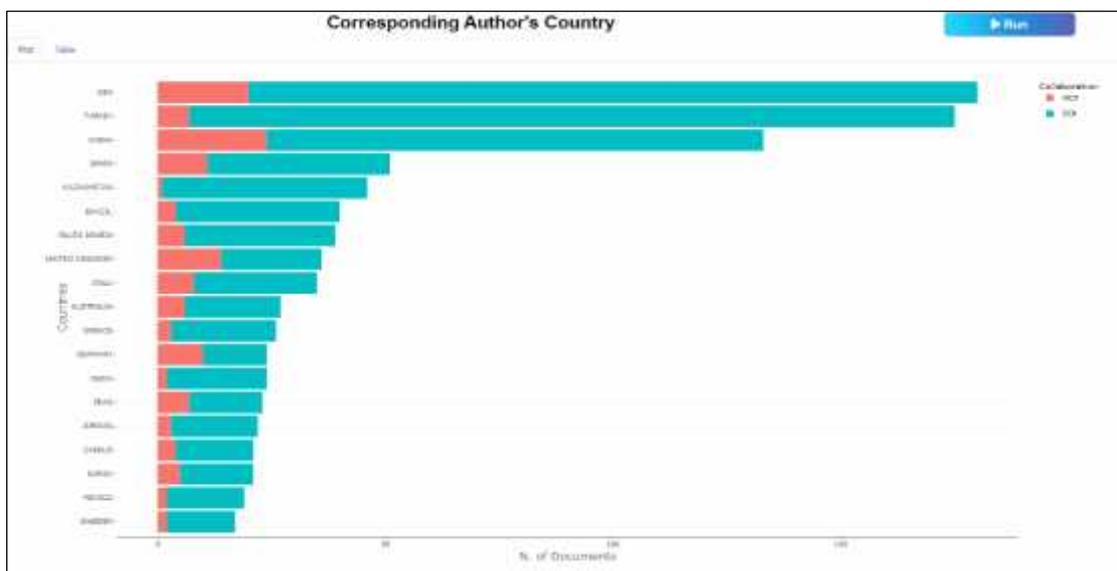


Figure 5. Corresponding Author's Country

RQ3: What are the trend topics related to distance education?

Trend topic contains several themes that can be related by time. In the trend topic analysis, we can see what theme trends are being discussed each year. Many topics can be discussed regarding distance learning; the bibliometric analysis results show the related topic mostly discussed. In 2020, distance learning publications discussed social media, distance learning, learning analytics, curriculum, and continuing education. However, three topics that are kept being discussed until 2022 are social media, distance learning, and learning analytics. In 2021, several new topics were discussed, i.e., university students, motivation, distance education, and covid-19.



Figure 6. Trend Topics

Based on the bibliometric analysis, the trend topics in research on distance learning can be identified. University students, social media, motivation, distance education, covid-19, and curriculum are the most prevalent topics in the field. These topics are highly relevant to the current research trends as university students have become the primary subjects of distance learning research (Abakumova et al., 2020; Besschetnova et al., 2022). Social media has become an important tool that can be developed and used in distance learning. Many researchers have explored the use of social media in distance learning (Fourie, 2016; Kalita et al., 2015; van Wyk, 2014). One of the challenges in distance learning is increasing motivation, which has become an important focus of research (Aristeidou, 2021; Kusumastuti et al., 2017; Zaikin et al., 2016). The trend of research in the past three years (2020-2022) has been greatly influenced by the Covid-19 pandemic. The pandemic has led to increased research on the impact of Covid-19 on distance learning (Mahasneh et al., 2022; Mathew & Chung, 2020; Mikhael & Ong, 2022). The Covid-19 pandemic has created an urgent need for research examining the pandemic's effects on distance learning. As such, the number of research articles published on the topic has increased significantly, reflecting the field's growing importance.

Moreover, the curriculum has been identified as one of the trend topics in distance learning research. Curriculum design and development are critical in ensuring that distance learning is effective. Researchers have focused on developing effective curricula specifically designed for distance learning (Chen et al., 2009; Congwei, 2015; Rasseneur et al., 2003). Based on the bibliometric analysis, the trend topics in research on distance learning are university students, social media, motivation, distance education, covid-19, and curriculum. These topics are highly relevant to the current research trends and reflect the growing importance of distance learning research, particularly considering the Covid-19 pandemic.

RQ4: What are the theme classifications about distance education?

According to the Scopus database regarding distance education analyzed using bibliometrics, there are two theme classifications about the topics. The first classification (connected by blue lines) consists of more than ten themes, some of which are evaluation, motivation, teacher education, blended learning, artificial intelligence, social media, and pandemic. The second classification (connected by red lines) consists of 9 topics they are data science application, post-secondary education, cooperative/collaborative learning, teaching/learning strategies, pedagogical issues, distance education and online learning, adult learning, media in education and secondary education.

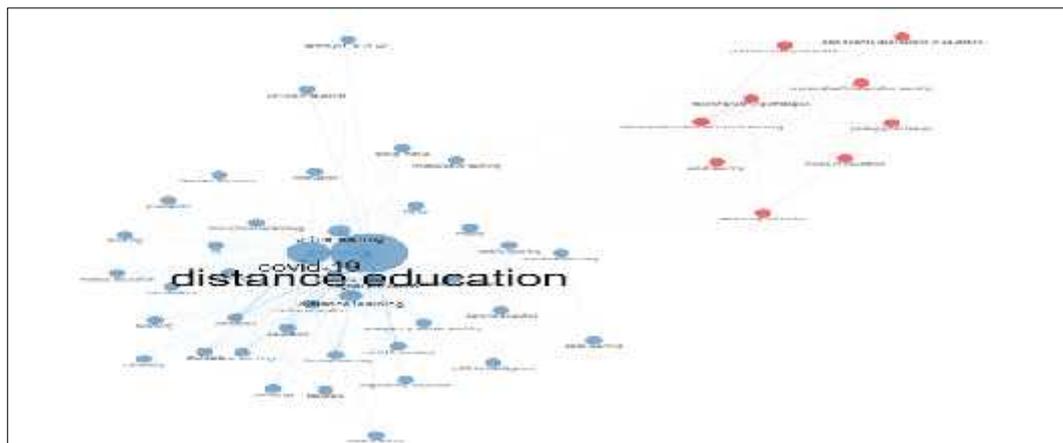


Figure 7. Theme Classifications About Distance Education

RQ5: What are future distance education topics that provide opportunities for further research?

A thematic map analyzes certain theme groups based on density and centrality. In simple terms, it can be interpreted if density; the more upward means, the more researched (Trend issues and many texts related to the topic). Meanwhile, centrality is related to the theme's relevance to the big topic being studied. The more to the right, the more relevant and impactful the theme. Thematic Map is a very intuitive plot, and we can analyze themes according to the quadrant in which they are placed: There are four quadrants on the thematic Map, namely: (1) upper right quadrant: Motor themes; The themes in this quadrant are interpreted as relevant and widely researched themes because they are on the right (centrality) and the top (density). The themes in this quadrant have been widely researched and studied, (2) bottom right quadrant: Basic themes; The theme in this quadrant is considered a central theme, but the density is still low, so the theme in this quadrant can still be used as a research topic, (3) lower left quadrant: Emerging or Declining themes; There are two possibilities if a theme is in this quadrant, i.e., the theme starts to decline, or the theme starts to rise. If the theme starts declining, it is best to leave it. However, if the theme starts to rise, it will be a good opportunity to research related to it. It is possible to determine whether a theme is rising or falling by studying the script, and (4) top left quadrant: Niche themes (very particular theme); The themes in this quadrant are usually custom themes. The themes could be more central, but these themes have a high density.

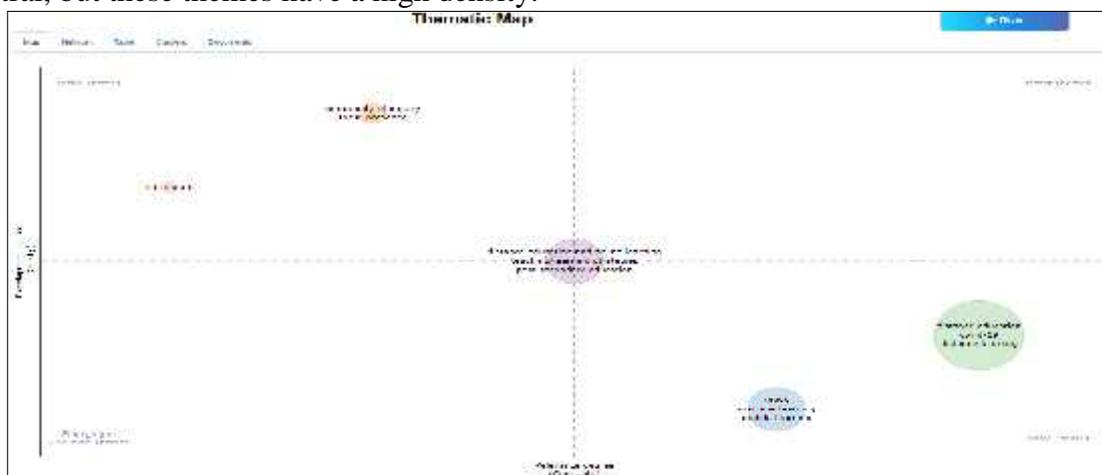


Figure 8. Thematic Map



Not only drew the fact on distance education, but in the past three years, bibliometrics has also provided future opportunities for researchers to produce articles about distance education topics. As shown in the thematic map below, several topics are undeveloped but central (see the second quadrant): distance education, distance learning, covid-19, mooc, machine learning, and mobile learning. The six topics are still to be developed and have a good centrality to be discussed and published in the future.

Conclusion

The number of articles related to distance education has been increasing yearly, with a growing trend from 2020 to 2022. The study analyzed the top journals, affiliations, and countries publishing articles and identified the most productive authors and relevant affiliations. The trend topics discussed were social media, distance learning, and learning analytics, with new topics emerging in 2021, such as university students, motivation, and COVID-19. Theme classifications were divided into two, connected by blue and red lines. The study also identified future research opportunities using a thematic map.

Recommendation

Based on the findings, it is recommended that future research in distance education should focus on the integration of technology to enhance the effectiveness and accessibility of distance education. Research should also explore the effectiveness of distance education compared to traditional face-to-face education, particularly in student learning outcomes.

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