Communication & Education Review
Vol.4 Iss.1 2023
https://doi.org/10.37420/j.cer.2023.010

A bibliometric analysis of mentoring education in higher education research

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Abstract

This study utilized Citespace software to conduct a bibliometric analysis of 400 articles on underground teaching education from the WoS database. The analysis revealed that there is a greater amount of research related to science and engineering, medicine, and sports, while there is a lesser amount of research related to social sciences, specifically in the area of business. Theoretical research related to psychology has become a significant source of information in this field. In higher education, mentoring education is most commonly seen in the form of teacher-student relationships and peer mentoring. The quality of relationships in coaching relationships, including traits such as empathy, engagement, authenticity, and empowerment, may become an important area of research.

Keywords

bibliometric analysis, mentoring education, higher education,Citespace

Introduction

Participation of mentoring program especially in science, technology, engineering and mathematics(STEM) field can lead to merit-based scholarships ,acceptance from graduate school, and competitive ability in career development(Haeger & Fresquez, 2016).However, systematic literature review in this field has still been unexplored. Thus, a bibliometric analysis of mentoring education is crucial for quality improving in higher education.

Research design and data collection

This review utilizes bibliometric methodology to examine the significant research on university mentoring education. The bibliometric approach employs mathematical and statistical methods, as well as computer visualization technology, to enable a comprehensive analysis of numerous documents. This allows for a more in-depth comprehension of the research hotspots and their evolution within the relevant research fields. Co-citation, co-word, and co-authorship analysis are among the commonly utilized methods of analysis. An appropriate tool developed using these research methods is Citespace(Chen, 2006; Demir et al., 2020; Rodriguez et al., n.d.; Utkarsh & Sigala, 2021).

According to Koseogluet.al. (2016), the literature data utilized in this study was obtained from the Web of Science (WoS) database, which is renowned for its extensive collection of over 171 million records from

more than 34,000 journals. Furthermore, the database contains 1.89 billion citated references and is widely recognized as a dependable source for neutralization research. As stated by the Web of Science Group, which is the world's largest publisher-neutral citation index and research intelligence platform, the database is a reliable resource for researchers seeking credible information.

Utilizing well-established metrology techniques, this study implements a keyword-based search approach to extract information from WoS. The retrieved literature is then meticulously examined to identify pertinent sources, following which Citespace is employed to conduct a comprehensive metrology analysis of the selected literature.

According to statistical data, the mean annual publication rate in this specific field is 8.8, and the cumulative number of publications over a 12-year period exceeds this average. Since 2015, there has been a notable expansion and advancement in this area, with over 10 papers being published. This demonstrates the continued enthusiasm of academics towards this subject matter.

Data analysis

Major publication of mentoring education in higher education

Based on statistical data, the yearly average of publications in this particular field is 8.8, and the total number of publications over the course of 12 years surpasses this average. Since 2015, this field has shown remarkable growth and development, with more than 10 papers published. This indicates the sustained interest of scholars in this area of study.

Principal authors of mentoring education research in higher education

According to the most cited authors leaded by Linn (2015), selection criteria, currirulum and mentoring are typical method providing research experiences. The amalgamation of theoretical and practical aspects, the augmentation of knowledge, the intensification of comprehension of scientific inquiry, the investigative pedagogical method, the seamless incorporation within and beyond the syllabus, and the reinforcement of communication and mentoring among peers are pivotal elements. In general, the authors who receive significant citations in this particular discipline exhibit a preponderance of publications postdating 2010. Furthermore, the authors who received high citations primarily focus on research within the domains of natural science and higher education.

Major countries of mentoring education research in higher education

The significance placed on the undergraduate mentorship system is sometimes indicative of a country's reserve strength for scientific research and development (Linn et al., 2015). Table 2 displays statistical findings which reveal that the top 10 countries and regions publishing relevant academic achievements include the USA, England, Australia, Canada, Spain, South Africa, Germany, Scotland, Ireland, and Pakistan. Notably, the top five countries, namely the USA, UK, Austria, Canada, and Spain, are all developed nations, thereby reflecting the advanced experience summary of higher education.

https://doi.org/10.37420/j.cer.2023.010

Major themes of mentoring education research in higher education

Keyword statistics is a bibliometric technique of utmost importance as it enables us to determine the central focus of pertinent research. By utilizing Citespace's statistical findings, we were able to identify a total of 403 keywords, with an average of one keyword per article. This indicates that the research topics are not diverse enough. Table 3 presents the top 30 keywords. Burst detection refers to the widespread use of a particular keyword during a specific period, indicating that the research field has garnered significant attention from scholars at that time. The results show that the only keyword with burstness is "medical students," which has been mentioned eight times in total. Furthermore, Citespace's utilization of co-word analysis for cluster analysis has resulted in the identification of six distinct clusters, namely undergraduate research, higher education, peer mentoring, college students, and adolescents. This is depicted in Figure 2.

This study identified six distinct clusters of research related to higher education, undergraduate research, peer mentoring, underrepresented college students, college students, and adolescents. The first cluster focused on the importance of faculty and cross-race mentoring for undergraduate research, with an emphasis on student involvement. The second cluster examined the role of women in higher education, as well as the development of science identity, leadership, and mentoring. The third cluster explored peer mentoring in various fields such as medical education and STEM, with a particular focus on protege perceptions and career development. The fourth cluster examined the experiences of underrepresented college students, including attachment, youth mentoring, and health behaviors. The fifth cluster highlighted the benefits of positive youth development among college students, with a focus on faculty involvement and STEM fields. The final cluster focused on adolescent risk, program evaluation, retention, and self-esteem. Overall, this study sheds light on the diverse areas of research within higher education and emphasizes the importance of mentorship, diversity, and positive youth development.

Conclusion

The field of research on the significance of teaching education is still in its preliminary stage and primarily focuses on logical inference. It encompasses various studies in fields such as medicine, sports, science, and engineering, with particular emphasis on gender and race-related issues. This emphasis is mainly attributed to the fact that certain learning content in these fields requires teachers to provide students with hands-on guidance, making the tutorial system more crucial. Additionally, mentorship is an effective approach to enhancing learning effectiveness and compensating for gender and racial disparities in learning.

Research has revealed a lack of comprehensive analysis of mentorship in the field of social sciences, particularly in business studies. Despite this, many areas of social science research and higher education, including business, require students to closely observe their instructors to acquire not only explicit knowledge but also tacit knowledge. This presents a gap in future research. Furthermore, current research on the factors that influence mentorship is relatively basic, focusing primarily on discipline construction, technological application, and some psychological research achievements such as self-efficacy, self-determination theory, and attachment. In addition to the traditional mentorship system between teachers and students, peer mentorship has emerged as a recent research focus. The quality of relationships in coaching relationships, such as empathy, engagement, authenticity, and empowerment, may become a crucial research area.

Funding

[1]Teaching Reform Project in entrepreneurship and innovation provided By Gansu Province(No.2022SJCX-CYJGXM03)

[2]Talent quality cultivation and improvement project provided by Northwest Minzu University (No.2022XJJG-19)

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