

## ***Trends in Mentoring at Higher Education: A bibliometric analysis***

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### ***Abstract***

*Learning is a complex process that requires elements that favour its development. In higher education this process can be complicated not only by the stage of education, also by the associated organisation and formalities. Universities, concerned to facilitate the inclusive participation of their members, have developed support systems. Mentoring is a reciprocal learning relationship development between the mentor whose expertise in a particular field allows him/her to guide and assist the mentee in his/her academic, professional and personal growth (Etzkorn and Braddock, 2020). In this framework, mentoring programmes have become particularly relevant as a tool to help facilitate the integration of both students and teachers. The importance of mentoring in higher education has attracted a significant amount of research. An analysis of the state of the art would therefore provide an insight into the most researched concepts associated with mentoring.*

*This paper presents a hybrid methodology, using a bibliometric approach and in-depth literature review of the most influential articles during the last period. A co-occurrence analysis is carried out by VOSviewer software whose search formula was "mentoring" and (university or "higher education"), retrieving a sample of 232 articles from Web of Science. The thematic organization shows three main topics. Firstly, the benefits of mentoring on students' transitions in university by enhancing their experiences are analysed. Secondly, universities develop programmes related to psychological aspects such as increasing satisfaction or decreasing stress and programmes related to procedures that enable self-efficacy, protection, support and retention. Thirdly, programmes related to job training related to soft skills such as leadership are analysed. The research trends during 2020 and 2021 focus on new mentoring models oriented towards mentoring training and support actions (Etzkorn and*

*Braddock, 2020), female mentoring (Hsieh and Nguyen, 2020) and disability support (Rillotta et al., 2020; Thompson et al., 2020).*

**Keywords:** *mentoring; higher education; university; soft skills, reciprocal learning; research trends.*

## **Introduction**

The complexity of the learning process requires elements that favour its development. For this reason, universities are constantly searching for tools and methodologies that favour the learning of their members and their participation in it. Mentoring is a reciprocal learning relationship that develops between the mentor, whose expertise in a particular field allows them to guide and assist the mentee in their academic, professional and personal growth (Etzkorn and Braddock, 2020). Burlew (1991) defined a mentor as "any person who provides guidance, support, knowledge and opportunities for as long as the mentor and protégé deem necessary" (p. 214). So, this relationship occurs in three different stages: institution-student, staff-student and student-student (Gershenfeld, 2014; Lunsford, Crips, Dolan, & Wuetherick, 2017). Most research on mentoring focuses on formal mentoring programmes (Erickson, McDonald and Elder 2009).

Mentoring in higher education is recognised as an effective and positive method for students and for improving their academic outcomes (Eby and Dolan, 2015). This mechanism helps the undergraduate student to succeed in research experiences or work-integrated learning, among others, taking care of their persistence in higher education (Bettinger and Baker, 2011). But this relationship is two-way, as mentors also benefit from the relationship with students, which involves communication skills and socio-emotional growth (Dolan and Johnson, 2009). In addition, mentoring is widely used to foster underrepresented students, such as women in science and engineering or students from some racial and ethnic backgrounds (Lunsford et al., 2017).

Attention about mentoring at higher education has been increased, accordingly with the amount of scientific production in recent years. To understand the intellectual structure of the field, the aim of this work is to provide an insight into the most researched topics linked with mentoring. Hence, we address the following research questions:

RQ1. How is the historical evolution of the scientific literature?

RQ2. What are the top journals and institutions around this field?

RQ3. What are the main topics studied about this research field?

RQ4. What are the research trends and patterns in this research topic?

After the introduction section, the description of the methodological process is presented. Then, bibliometric results analyse the state-of-the-art and cognitive structure of mentoring

around higher education using VOSviewer software. Finally, conclusions considering main limitations and future research lines are exposed.

## 1. Methodology

This paper uses a hybrid methodology. Firstly, a bibliometric analysis is presented by VOSviewer software (van Eck and Waltman, 2010) to display a co-occurrence analysis. Also, the historical evolution, and the most representative journals and institutions are studied. Bibliometric methods identify the intellectual structure of a specific field according to productivity measurement (Marasco, De Martino, Magnotti and Morvillo, 2018).

The search protocol in the Database Web of Sciences was the terms ("mentoring" AND (university OR "higher education")). The first search obtained 4.267 results. Thereafter, it was filtered by title and abstract, and considering only articles is retrieved a sample of 232 articles.

Secondly, a literature review of the most influential articles during the years 2020 and 2021 is examined regarding to detect the mainly research trends in the field.

## 2. Bibliometric results

### 2.1. Productivity measurement

Figure 1 shows the historical publications' evolution in the field of mentoring and higher education. It is appreciate a growing interest in this research topic, whilst the number of publications is not steady, with some periods of shortage, marked by the period 2000–2004. Highlighting that the most prolific year is 2019.

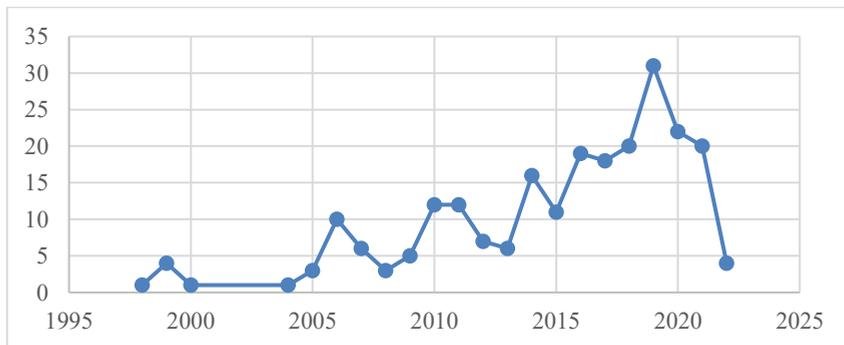


Fig. 1 Historical evolution of publications in the field. WoS (2022)

As it can be seen in Table 1, the most productive and influential journal is 'Mentoring & Tuting' (24, 439). Several journals belongs to the education research area, emphasising that some of them are related to medicine such as Academic Medicine, which belongs to the

Association of American Medical College. Regarding to institutions, universities from United States are the most influential, followed by Australia.

**Table 1.** Main journals and institutions in the field

Journal	D	C	Institution	Country	D	C
Mentoring & Tutoring	24	439	Brigham Young University	United States	2	131
International Journal Of Evidence Based Coaching & Mentoring	7	49	University of Pennsylvania	United States	4	128
International Journal of Mentoring And Coaching In Education	7	10	Curtin University	Australia	7	75
Academic Medicine	4	115	University of Idaho	United States	4	64
Gerontology & Geriatrics Education	4	61	Macquarie Unversity	Australia	4	58
Journal Of College Student Retention-Research Theory & Practice	4	38	Vanderbilt University	United States	4	36
Innovations in Education And Teaching International	4	3	California State University	United States	3	35
International Journal For Academic Development	3	47	Flinders University	United States	5	32
Teaching in Higher Education	3	38	University of Jyvaskyla	Finland	3	32
Studies In Higher Education	3	37	UNED	Spain	3	26

## 2.2. Conceptual structure: Co-occurrence analysis

A co-word analysis is carried out by VOSviewer software, developed by van Eck and Walter (2010). Co-occurrence analysis show the conceptual structure of the field, considering the links between keywords according to their frequency (Callon, Courtial, Laville, 1991). In this study, from 874 keywords and a minimum of 6 occurrences, 24 keywords met the threshold. As it can be seen in Figure 2, the keywords are grouped into three main clusters, regarding to their strength linkage (van Eck and Waltman, 2010).

The thematic organization shows three main topics regarding the clusters: 1) Red cluster is focused on the benefits of mentoring on students' transitions in university, enhancing their experiences. 2) Green cluster associates the universities programmes development related to psychological aspects – such as increasing satisfaction or decreasing stress-, and programmes related to procedures that enable self-efficacy, protection, support and retention. 3) Blue cluster linking new mentoring models related to job training to soft skills such as leadership, and also considering gender issues.

The research trends during years 2020 and 2021 are mainly focused on new mentoring models oriented on training and support actions for mentors (Etzkorn and Braddock, 2020), female mentoring (Hsieh and Nguyen, 2020), interracial faculties in higher education (Riley, Camacho and Floyd, 2020) and disability support (Rillotta, Arthur, Hutchinson and

Raghavendra, 2020; Thompson, McDonald, Kidd, Falkmer, Bolte and Girdler 2020). Table 3 summarises the most cited articles during this period.

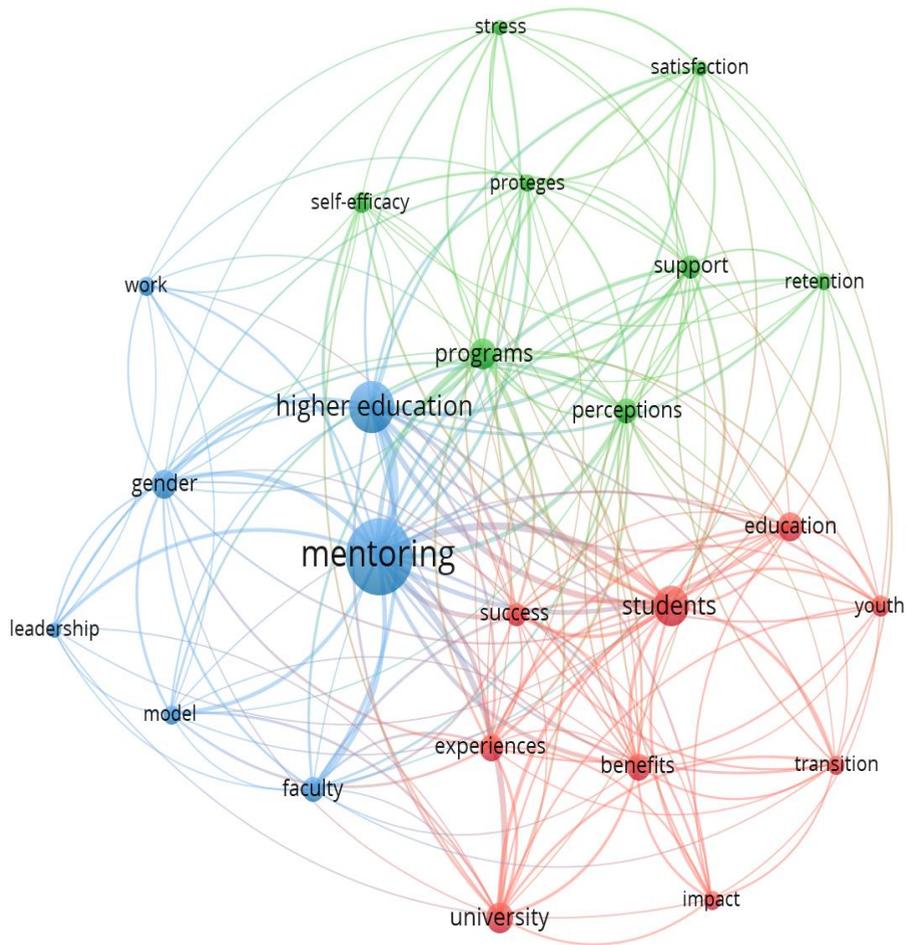


Fig. 2 Co-occurrence analysis in the field. By VOSviewer software van Eck and Waltman (2010)

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**Table 3.** Most influential articles in the field during 2020 & 2021

No.	Reference	Journal	Objective	C
1	Thompson et al., (2020)	Scandinavian Journal of Occupational Therapy	Analyse the Specialist Peer Mentoring (SPM) in autistic students at university to distinguish the partnership as crucial, in order to change social motivation and cognition.	14
2	Hsieh and Nguyen (2020)	Journal of Diversity in Higher Education	An autoethnographic and acculturate work about mentoring for Asian-American women faculty fellow to explore experiences and impacts in their journeys.	12
3	Rillotta et al., (2020)	Journal of Intellectual Disabilities	Provide inclusive future practices in mentoring and recommendations for intellectual disability students at university in Australia.	12
4	Brabazon and Schulz (2020)	Gender and Education	Examining the standardisation of a gender program by means of leadership and mentoring in higher education to reverse the scarce of women representation in academic positions.	8
5	Okolie et al., (2020)	Education and Training	Exposing suggestion for Nigerian's Career Training and Mentoring (CTM) in higher education to facilitate graduate's employability and career development.	8
6	Salinas et al., (2020)	Hispanic Journal of Behavioral Sciences	Exploring experiences and challenges of Latino male faculties in higher education and the positive impact of professional development mentoring.	4
7	Guerra-Martín et al., (2020)	Cultura de los Cuidados	Studying the level of students and professor satisfaction with mentoring at the University of Seville, focused on nursing degree.	4
8	Etzkorn and Braddock (2020)	International Journal of Mentoring and Coaching in Education	Comparison between senior and junior faculty about mentoring, highlighting beliefs, perceptions, participation and outcomes.	3
9	Kaplar-Kodacsy and Dörner (2020)	Innovations in Education and Teaching International	Analysing the adaptation to mentoring and career development from a relational perspective in Hungary.	3
10	García A.I. et al., (2020)	Sustainability	Examining mentoring programmes with pre-university's high intellectual capacities in Spain considering mentors, mentees and technicals satisfaction.	3

## Conclusions

Mentoring programmes play a key role in the guidance to students towards professional development and also in personal growth (Etzkorn and Braddock, 2020). For this reason, understanding the state-of-the-art around the topic is fundamental as a guidance to continue investigating in this research field.

Results show that mentoring at higher education has attracted a significant amount of research. The historical evolution of the scientific literature is not steady, highlighting 2019 as the most prolific year in the field (RQ1). Mentoring & Tutoring, and Brigham Young University are the most representative journal and institution, respectively (RQ2). Benefits of mentoring for students, psychological issues and new models concerning leadership, taking into account gender issues, are the main topics in the field of research (RQ3). According to the most cited articles in recent years, specialised peer mentoring

taking into account intellectual disability, intercultural and gender issues are the main models in this field (RQ4).

To facilitate the implementation or adaptation of mentoring programmes, further research on training aspects of both mentors and mentees would be required. As concluded from the clusters obtained, soft skills are fundamental to the success of this tool, so training programmes should be developed in this aspect. Similarly, establishing measurement indicators would allow both institutions and stakeholders to know the degree of compliance and areas for improvement in this type of programmes. It would also favour comparisons between programmes and institutions.

This work is not free of limitations. Only articles in English have been considered, using exclusively WoS database for retrieving the sample. In future research, more software can be used such as HistCite, SciMat or BibExcel, among others, to amplify the scope of the bibliometric analysis.

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