Bibliometric Analysis Of The Evolution Of Educational Quality During A 10-Year Research Period (2012–2022)

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Abstract

This study consists of a quantitative bibliometric methodology, that was carried out to determine from what perspective the concept of educational quality is being approached in the scientific community using the following keywords: performance, indicators, curriculum, management team, and teaching. The evolution of scientific research on educational quality in the Social Sciences and Education has been studied in the last 10 years. To investigate the existing literature on this topic, the Web of Science database was used and the results obtained from the scientific literature were based on concepts such as quality assurance and improvement, evaluation, professional development, higher education, and learning outcomes, among others. This study revolves around four components: education, curriculum, educational quality, and health education.

Keywords: Educational quality, indicators, evaluation, teaching—learning, psychological well-being.

I Introduction

Psychological well-being and educational quality are closely related, as both significantly influence the development and success of students (Losada et al., 2022). Here are some ways in which they are related: a) Positive Learning Environment: Educational quality benefits from a positive and healthy learning environment. When students feel safe, supported, and emotionally balanced, they are more willing to learn and actively engage in the educational process; b) Stress and Anxiety Reduction: High levels of stress or anxiety can hinder learning and academic performance. Promoting psychological well-being in schools can help reduce these negative factors and improve concentration and student performance; c) Self-Esteem and Motivation: Psychological well-being

is related to self-esteem and motivation (Ventaja et al., 2023). When students feel good about themselves and have a sense of belonging in the school community, they are more motivated to learn and take on academic challenges; d) Social and Emotional Skills: Promoting psychological wellbeing in the educational environment also involves developing social and emotional skills (Rodriguez et al., 2021). These skills are essential for conflict resolution, effective communication, and building positive interpersonal relationships, which can improve the quality of interaction between students and teachers; e) Academic Performance: When students experience adequate psychological wellbeing and emotional support, they tend to achieve better academic results. This is because they are in a more receptive mental state for learning and can

address academic challenges more effectively; f) School Retention: An educational environment that promotes psychological well-being can also help reduce dropout rates. Students who feel valued and supported are more likely to continue their education and complete their studies; g) Adaptation to Challenges: Psychological well-being strengthens students' ability to face academic and personal challenges. They can develop emotional resilience, allowing them to overcome obstacles and persevere in their education (Olmos, 2009; Olmos et al., 2023).

The concept of quality is complex in its definition as well as in the characteristics that form it. Bernal et al. (2015) define quality as the set of processes that are oriented to the achievement of objectives based on the criteria of recipients of a service and their levels of satisfaction. Moreover, when the concept of quality is investigated in terms of the field of education, its complexity increases.

Arriagada-Poblete et al. (2023)view the concept of quality from a multidimensional approach because it not only covers the functions and activities of an institution, such as higher education, but also the impact it has on society based on societal needs and demands. In Lemaitre et al., (2018), this characteristic of the concept of quality depends on the assessment that each institution makes based on the context where it is developed. Although the concept of quality arose from the industry, it first emerged in the 1980s in the United States (Fontalvo & De la Hoz, 2018) and in the 1990s in Europe (Mejía, 2015) where in the context of higher education, this concept was linked to the idea of process control (Tumino & Poitevin, 2014) in which education was increasingly recognized as a service industry, thus placing emphasis on satisfying the needs of participating clients (Boon et al., 2016), that is, the agents participating in the educational process (students, academics and teachers, businessmen, state, and society). Therefore, the more accurate the assessment, the more successful the education will be (Boyko et al., 2021). In this way, educational quality consists of the consolidation of strategies

with a view to achieving effectiveness and efficiency in the educational practices in which it is contextualized (Rodríguez Arocho, 2010). It is, from here, that the quality of education is determined by the evaluation system (Vásquez Olivera, 2015); in other words, evaluation and educational quality converge as two interdependent motors to potentiate education as a reference in social transformation (Mejía-Rodríguez & Mejía-Leguía, 2021), with education being a fundamental piece of power relations and symbolic relations between classes (Olmos et al., 2019).

Consistent with these interests, and from the perspective of educational quality, Hortigüela et al., (2019) argue that evaluation must be directly related to learning; therefore, it must be part of the teaching–learning process. The learning evaluation system consists of a disciplinary component where the construction of rigorous knowledge is elaborated in the identification of achievements obtained from the actions that have been developed to fulfill the objectives set in education (Chaves-Manzano, & Ordoñez-López, 2020).

To undertake this, institutions have identified that they require certain strategies to achieve these objectives and to improve teaching and learning. Since this development, the discussion of creating indicators that contribute to the linking of educational management processes in the learning community (Hernández & Miranda, 2020) to achieve improvement in educational quality (Arjona-Granados, 2022) has been raised.

Lemaitre et al., (2018), highlight in the same line of argument that it is important to take into account, as we demonstrate in this study, the value of adopting a multidimensional vision of the concept of quality and the importance of the definition of quality including the perspectives of the agents involved and the characteristics that each institution entails, and to also highlight the relativity of this concept along with the assessments of the protagonists involved (Arriagada-Poblete et al., 2023).

Given the changes that have been experienced in education with the advent of globalization, educational centers are entering the quality management circuit to achieve efficiency and effectiveness in teaching processes (Gutiérrez & Morales, 2020). Globally, assessment in schools aims to develop learning that is both accountable and mindful, for both students and teachers, in order to deliver quality learning (Cruzado Saldaña, 2022; García et al., 2021). The current scientific literature (Darling-Hammond et al., 2017; OCDE, 2019; Vaillant & Cardoso, 2017; López-Yáñez et al., 2018: Olmo-Extremera &Domingo, 2018) investigates the concept of teacher professional development as a way of reflecting on the improvement in pedagogical practices in the classroom and, at the same time, stimulating systematic reflection on their performance (Aravena et al., 2023). For this, the authors (Díaz-Barriga, 2020; Mosquera Albornoz, 2018; Rodríguez et al., 2018), concur in affirming that the concept of evaluation is a referent that is oriented to the improvement in the processes related to the search for educational quality and proposals for curricular and social improvements (Vásquez Olivera, 2015).

The present study analyzes, through a quantitative bibliometric methodology, the evolution of scientific research on educational quality using the following keywords: performance, indicators, curriculum, management team, and teaching. From this basis, the intended objective is to investigate from what perspectives educational quality has been approached in the educationalsocial scientific world during the last 10 years, thus providing a generic vision that enables identification of the concepts being linked to educational quality.

Table 1. Summary of the literature sample.

Description	Results	
Time interval	2012–2022	
Documents (articles)	1000	
Sources (magazines)	607	
Authors' keywords	2830	

2 Materials and methods

In this study, a quantitative bibliometric methodology was carried out from which a total of 1000 scientific documents from the field of Social Sciences and Education were recovered from the Web of Science database comprising our study sample.

The procedure to search for information was conducted by selecting the article title, abstract, and keywords in the database. For this, the Boolean operators "and" and "or" were used and the following search sequence was carried out: Educational quality and (performance or indicators or curriculum or management team or teaching). Next, the search was carried out over the time period of the last 10 years, that is, the period between 2012 and 2022. And finally, the search was filtered by the type of document, limited to only empirical works, so that the sample of 1000 documents responds exclusively to scientific articles from journals indexed in databases such as the Web of Science.

The Biblioshiny interface of RStudio v.4.0.4 (Aria & Cuccurullo, 2017) was used for the construction and visualization of graphs, networks, and thematic maps. For the analysis of the data, the sources of information, authors, countries, the authors' keywords, and KeyWords Plus terms were used as variables.

3 Results

Table 1 presents the study sample of 1000 documents. The information collected consists of the main reference sources, the number of keywords in its two types, as well as the number of authors as the main variables to be investigated.

KeyWords Plus terms	2757
Authors	4287
Collaboration index	4.64

Figure 1 presents the evolution of the topic studied over time. A growth in the production of scientific articles around educational quality and different educational aspects can be observed; specifically, an annual growth rate of 16.7% is demonstrated.

There is a first stage of growth in the production of scientific papers from 2012 to 2013, from there it decreases slightly, going back to trace

its rise in 2014 with greater production of articles until 2017. From then on there is a slight decrease in production. But it is in 2018 that the production of articles responds to growth, reaching more than 100 scientific articles in 2019. This growing evolution continues until 2022, being the most productive year with a total of 171 articles on the subject of educational quality and aspects of social life.

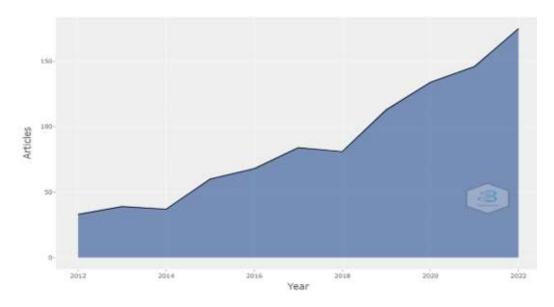


Figure 1. Annual production of scientific articles on the quality of education (2012–2022).

Table 2. Distribution of authors according to papers published.

Published documents	No. of authors	
1	4094	
2	165	
3	19	
4	4	
5	2	
6	2	
7	1	

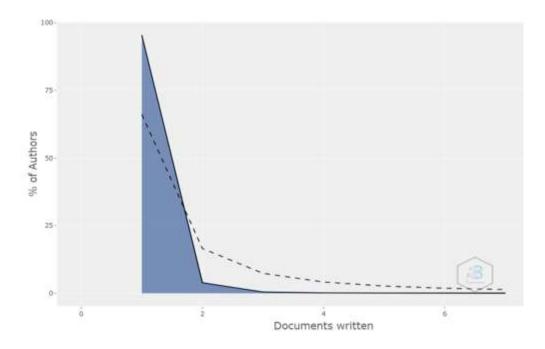


Figure 2. Frequency distribution of scientific productivity by authors.

According to the data (figure 2), we observe that there is a major producer, Chen M., with eight papers produced related to the topic of educational quality. The rest of the authors produced between

two and seven articles and can, therefore, be considered medium contributors to this topic. Finally, the remaining 4049 authors produced only one document, which means that their incursion into the subject has been occasional.

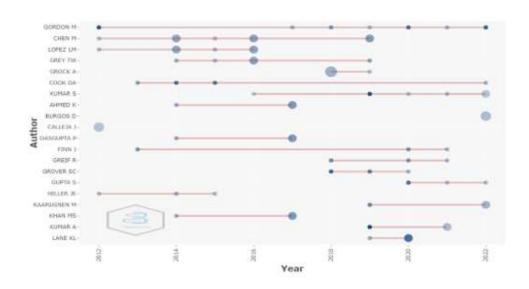


Figure 3. Production of the main authors over time.

With regard to the production of scientific papers distributed over time, it should be noted whether the authors with more publications published their research at a given time and in a shorter period of time, or whether it is an example of more specialized research with more relevant results for the scientific community on a regular basis. Figure

3,4 and 5 shows the production of the most prolific authors over time, with Gordon M. identified as the main author to highlight because his production

spans from 2012 to 2022, that is, covering the 10-year time span investigated in our sample (Lotka's, 1926).

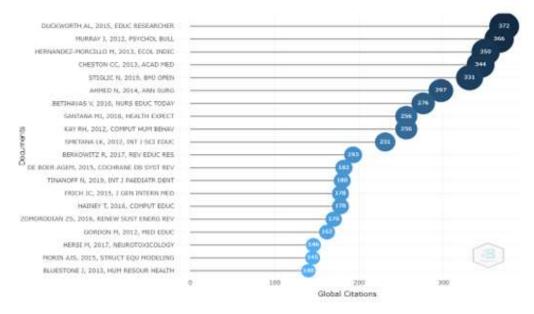


Figure 4. Most relevant journals based on global citations.

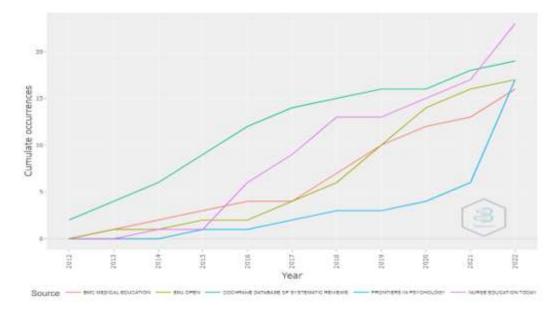


Figure 5. Annual growth of the top 5 academic journals.

Next, we developed an analysis of the conceptual structure of educational quality and its relationship with aspects such as performance, curriculum, management team, education policy, and teaching. For this purpose, factor analysis was carried out independently using the authors' keywords and the KeyWords Plus terms. The two types of keywords

provide precise information on the topics of the articles. On the one hand, the authors' keywords are words freely chosen by the authors themselves or extracted from different thesauri, thus giving a more specific view of the phenomenon under investigation. On the other hand, KeyWords Plus terms are generated automatically by the databases

from the titles of the documents cited. Using the Multiple Correspondence Analysis (MCA) method for the two keyword classes, the aim was to reduce the data to latent factors and to represent them in a lower dimensionality space. Below, two clusters differentiated by the colors blue and red can be

observed. Figure 6 shows that dimension 1 has the highest variance with 18.06% while dimension 2 has 14.76%. Following the same pattern, in Figure 7, dimension 1 is the one with the highest explained variance of 26.62%, while the percentage of variance of dimension 2 is 15.75%.

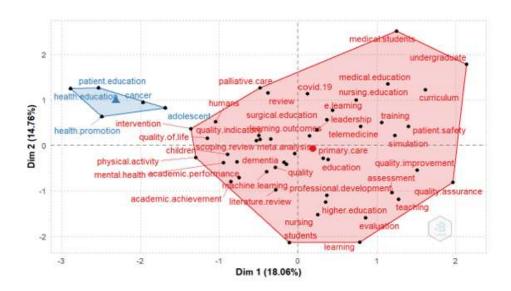


Figure 6. Map of the conceptual structure of the topic of educational quality based on the authors' keywords.

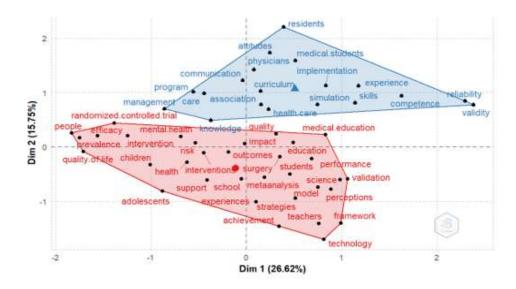


Figure 7. Map of the conceptual structure of the topic of educational quality based on the KeyWords Plus terms.

Continuing with the map of he conceptual structure, in Figure 6, corresponding to the authors' keywords, we find in the red cluster that the main component is education and around it are related aspects such as quality improvement, evaluation, professional development, higher education, and learning outcomes. As for the blue cluster, the main component would be health education and, in this case, its relation to issues such as patient education, cancer, adolescence, and health promotion.

However, in the KeyWords Plus terms map (Figure 7), the blue cluster has the term curriculum as the main component, referring specifically to implementation, simulation, skills, health care, communication, and partnership. In the case of the red cluster, it is quite apparent that the main component is the term quality education and that the studies focus around the topic of health interventions, surgery, risk, and other topics of education with terms related to school, meta-analysis, achievement, outcomes, and students.

Next, we further analyzed the keywords found in each of the clusters of both dendrograms (Figures 8 and 9), classifying the terms according to the close relationships between the keywords. This proximity between terms analyzes the percentage of articles that include these keywords together as a function of the number of articles.

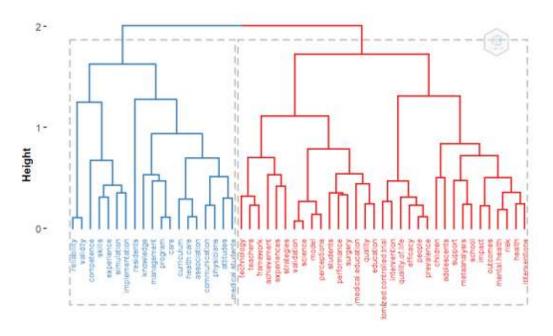


Figure 8. Dendrogram between the different authors' keywords on the topic of educational quality.

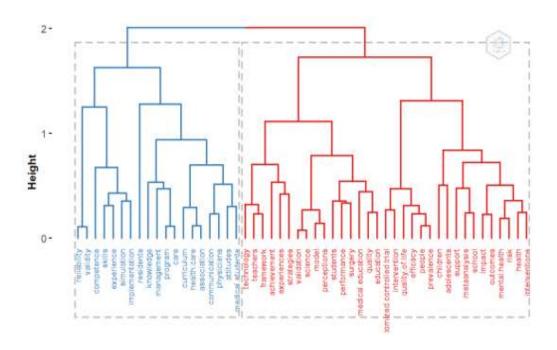


Figure 9. Dendrogram between the different KeyWords Plus terms on the topic quality in education

Next, we provide more information about the main focuses of interest and thematic trends. In Figure 8, in the blue cluster, we can see that a pair of keywords formed by the terms cancer and adolescent is a little out of line with the rest of the terms on the relationship between health promotion through health education and patient education. As for the red cluster, we can point out some subgroups of keywords such as assessment, teaching, quality assurance, and quality improvement, and other pairs of words such as learning and evaluation. Given the nature of these words, we can see the growing tendency in the scientific community to study aspects of educational quality and the influence of the term quality in teaching. There are also lines of research related to aspects of health quality, COVID-19, and palliative care.

Finally, from Figure 9 corresponding to the KeyWords Plus terms, in the blue cluster, relevant terms such as skills, validity, knowledge, management, curriculum, and attitudes can be detected. However, in the red cluster, no specific problems or new trends in research other than those already detected can be inferred. In addition, there

are numerous studies that investigate aspects of terms related to quality and health in adolescents.

4 Discussion and conclusion

The topic of educational quality and its relationship with elements such as performance, curriculum, management team, and teaching can be considered a booming research area in view of its evolution and growth over the last 10 years. In addition to the analysis of scientific production, we analyzed the most productive authors and those who could be considered to be specialists in the field given their regularity and incursion into this line of research over time.

The sources of information used were entirely scientific journals, the titles of which allow us to see the editorial lines governing the works that were subsequently published. Through this, it was possible to observe that research on educational quality demonstrates a strong trend line and that it attracts the attention of the scientific community more than other subjects, also in areas of great interest, such as educational health. This is corroborated by the most relevant journals in terms of the total number of articles published and growth

over time and by the analysis of the conceptual structure of the topic of educational quality based on the different types of keywords included in the articles and databases.

The analysis of the conceptual structure was carried out on the basis of a factorial approach and cluster analysis by classifying the keywords in dendrograms with which to observe and analyze the proximity between terms and, therefore, the main focuses of interest of the research. In the Multiple Correspondence Analysis (MCA), Figures 6 and 7 identify four main components: education, health education, curriculum, and educational quality (Bernal et al., 2015). Around these, other topics and trends such as quality assurance and improvement, quality indicators, evaluation, professional development, higher education, and attainment, (Hernández & Miranda, 2020; Arjona-Granados, 2022), among others, are developed. Then, in relation to the dendrograms in Figures 8 and 9, specific issues emerge that revolve around the relationship between educational and health quality and pairs of terms such as evaluation and teaching and quality improvement and learning.

In summary, psychological well-being and educational quality are intrinsically linked, as an educational environment that promotes students' emotional and social well-being tends to enhance learning, academic performance, and school retention. Schools and educators play a vital role in promoting an environment that fosters both psychological well-being and educational quality. It is necessary to carry out a panoramic vision of the scientific studies that have been conducted in this regard in order to determine where the scientific interest in educational quality is heading.

4.1. Study limitations and Proposal for Future Research

Among the main limitations of the study is the use of only one database. In future work, the use of more databases to explore and retrieve documents for the sample could be considered. However, the coverage provided by the Web of Science database for the field of Social Sciences and Education, as investigated in this study, is considered appropriate and complete. However, this is a fairly broad field of study in which it is difficult to delve deeply into any specific discipline or area of knowledge. In this case, and with a view to future work to complement the present study, consultation of specialized databases in this discipline such as Eric or Scopus may provide us with a more specific and detailed vision of the state and interest of the scientific community regarding aspects directly related to quality and education in the future.

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