The Uncertainties of Knowledge and Learning: Crossroads of the Teacher-Researcher

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ABSTRACT

Aim/Background: This study analyzes the uncertainties surrounding knowledge and learning, focusing on the dilemmas faced by teacher-researchers regarding what can be learned, taught, and required in contemporary education. In a dynamic and changing educational context, hidden knowledge, symbolism, and policy crossroads pose challenges to the teacher-researcher's role. **Methodology:** A scientometric analysis was conducted using the Tree of Science methodology. Publications indexed in Scopus and Web of Science were systematically reviewed and processed with bibliometric tools (Bibliometrix, PRISMA flow, and text mining techniques). This qualitative and interpretative approach sought to map trends, identify prominent authors, and analyze the teacher-researcher nexus over the last two decades. **Results:** The analysis revealed a fragmented transmission of knowledge, often obscured by symbolism, anagrams, and puzzles, leading to interpretative difficulties. Research production has grown steadily, particularly in the United States, the United Kingdom, and Australia. Key publications and collaboration networks demonstrate that teacher-researchers experience uncertainty in navigating knowledge, but also opportunities to integrate research and teaching. **Discussion:** Findings suggest that the teacher-researcher is central to confronting epistemic uncertainty, balancing the demands of scientific production with pedagogical responsibilities. The study highlights ethical, methodological, and practical tensions that affect the quality of education, creativity, and innovation. It also underscores the importance of dismantling barriers between research and teaching to promote critical thinking and awareness. **Conclusion:** Teacher-researchers play a crucial role in the formation of students and in the advancement of education. Their ability to unveil hidden knowledge, adapt to change, and critically engage with symbolic and fragmented information is essential for fostering meaningful learning. The ToS framework provides a useful tool to navigate and synthesize the complex landscape of knowledge and learning.

Keywords: Teacher Research, Hidden Science and Learning, Uncertainty in EDUCAT, Research-Teaching Nexus, Scientometric Mapping.

INTRODUCTION

In the realm of uncertainty surrounding knowledge, learning, happiness, and teaching, the perplexity of embarking upon this investigation arises. As Ghoreifi and Djaladat (2022) mention, knowledge hiding is understood and practiced in the higher education context. We find ourselves pondering: should we evaluate, plan, analyze, interpret, define, or explore? We are confronted with an extensive ocean of information that saturates and bewilders us. However, the objective at hand is not to assess academic programs, which is why it becomes necessary to turn to the insights of Freire (2006) when he discusses the emancipatory teacher. As Zhang *et al.*, (2022) explain, individual differences influence knowledge hiding. The teacher leads us through unlearning to perceive the realities of a predetermined program. Nonetheless, numerous obstacles place the teacher in a paradigm, whether it is teaching for professional life or striving for comprehensive education. Thus, the teacher faces the profound dilemma of questioning the veracity of what is learned to transmit it as teaching. We find ourselves entangled in an unresolved quandary: Is education in the current era an object of hope? As Quiceno (2018) affirms, there is no doubt that our thinking was centered or distracted by the presumed cognitive development, which amounted to nothing more than a mechanical performance in the classroom, seemingly leading

us toward despair. Zhao and Luo (2024) explore how knowledge hiding affects student creativity and performanc

This is why hope transforms into uncertainty, and despite having a structured platform, the teacher encounters what Freire (2006) explains as despair-a means of silencing, denying the world, and escaping from it. It is akin to speaking of dehumanization, which casts a somber shadow over the imparting of knowledge. As Finkielkraut (1988) states in his book *The Defeat of Thought*, he denounces the joy with which the servants of intellectual activity, contradicting their millennia-old vocation, scorn the sentiment of the universal and glorify particularisms. The teacher must not forsake their concern for knowledge or the formation of the learner; therefore, the teacher must first remove the veil from their eyes to perceive reality. Additionally, as Xing (2022) describes, ethical conflicts arise when there is no unity between and shared ethical priorities.

It is imperative to discuss the teacher's capacity for learning and the ontological uncertainty between object and subject, as addressed by Hessen (1938). In this case, we must take a closer look at the investigating teacher, who studies and manages to attain a status of knowledge. However, doubts linger regarding the objectivity of the research conducted. Regarding the observer, Maturana (1997) refers to the teacher's self as the generator of all reality through their distinguishing operations in the praxis of living. This brings us back to the question: What happens to the hidden knowledge within learning? As Liu *et al.*, (2020) describe, a poor knowledge-sharing atmosphere can lead to the formation of interpersonal distrust.

We embarked on a journey through the realm of artificial intelligence, aiming to provide support and guidance to the scientific community regarding the research teacher, as well as the crossroads and uncertainties inherent in both knowledge and learning. We conducted an extensive search in Scopus and another in Web of Science (WoS), combining the results and analyzing them using Core of Science to create a structured tree-like framework (Zuluaga *et al*., 2022). This approach lends coherence to research and instills confidence by enabling us to trace the management of information. We consulted renowned classical authors, whose works amplify the level of uncertainty and raise numerous questions regarding the role of the educator.

We continue to explore pathways based on the contributions of the scientific community in relation to the subject matter. When Marina (2010) remarks that Franz Kafka always considered himself a failure-not due to a lack of literary success but due to his difficulty in living-it raises questions for the teacher who has experienced these crossroads: Should education be for life or for science? There are numerous prejudices, many unknowns, and hidden sciences in the desert of knowledge, where cries and tears overshadow a formation that evolves over time. This writing analyzes the uncertainties and crossroads faced by both

the teacher and the learner. However, it is unsettling to hear the voices of Machiavelli and Montesquieu, as expressed by Joly (2017), who warns against altering the character of a nation when its original vigor needs to be preserved. Joly continues to say, "I would not even ask for twenty years to completely transform the most indomitable European character and make it as submissive to tyranny as the smallest of the Asian peoples." Nevertheless, we witness an education in revolution and researchers who contribute to the growth of the teacher and the learner daily. Through this investigation, we aim to synthesize the contributions that science has made in the last decade regarding knowledge, learning, research, and formation.

Due to the above, a theoretical scheme of perception and understanding of the world investigated is proposed through a qualitative methodology, structured in a scientometric analysis by countries and prominent authors, organizing science in the form of a tree: analyzing the classical authors at the root, structuring it with those who stand out worldwide for their research, and forming the stem. These uncertainties and crossroads lead us to modern science to shape the branches and finally obtain what Valencia-Hernández *et al.*, (2020) have called the tree of science (ToS).

METHODOLOGY

Knowledge has particularities, and one of them becomes apparent when observing researchers endowed with unique qualities and methods of disseminating information. To illustrate this point, we can consider examples such as *The Bible; Faust; The Divine Comedy; The Secret Doctrine*; books from enlightened communities; and the works of Enuwosa and Idamarhare (2010) and Colvin (2010).

The interpretative investigation of qualitative order has allowed us to delve into phenomenology and the study of anagrams, symbols, and enigmas, emphasizing the understanding and interpretation of educational realities based on meanings. This entails positioning ourselves at the forefront of research, enabling us to engage with authors who have emerged from Plato's allegory of the cave.

The quest for authors of hidden knowledge enables us to navigate a theoretical landscape concerning educational phenomena. It also affords us the opportunity to explore lesser-known researchers who, for various reasons, remain underrepresented. Their circumstances receive little attention. In doing so, we highlight, through our methodology, individuals intrigued by the enigmatic realm of science.

This investigation, based on the teaching researcher at the crossroads of true knowledge, leads us to propose a qualitative methodology, as described by Ben-Ari and Enosh (2011). With an applied purpose, it seeks to interpret the practical problems that affect the quality of education without confusion. It is necessary

to specify the scope of temporality with specific realities and moments-namely, ten years. In the same methodological sense, we conduct an in-depth analysis and interpretation within space and time.

The framework in which this research takes place is global education, vulnerable to fragmented information. The conception of the educational phenomenon deals with the individual and particular without prefigurations, referring to *The Secret Doctrine* and analyzing the possible causes of hidden knowledge. Finally, this research has an applied purpose: utilizing scarce yet significant documents and researchers in this area provide answers to key questions.

For this reason, it is necessary to develop a theoretical scheme of perception and understanding of the word of knowledge to reach the instruments that we will describe.

This study employed a scientometric analysis to identify significant research related to the Figure of the teacher-researcher. The methodology underpinning this study is based on research within the WoS and Scopus databases. Notably, to execute this, it was necessary to merge and measure these databases through the development of Exploratory Data Analysis (EDA) using scientometric tools such as *Bibliometrix* (Aria and Cuccurullo, 2017). These tools facilitate the grouping of relevant data and references. This approach provides a comprehensive description of recent studies and enables a more efficient bibliometric analysis of the studied variable.

Table 1 delineates the primary parameters employed. For instance, to identify papers concerning the role of an academic in their capacity as a researcher, the phrase "research teach" was utilized in the title, abstract, and keywords. The yield from WoS was 267 entries, while Scopus produced 439 entries. Despite Scopus yielding a greater number of entries, it remains essential to incorporate WoS due to its inclusion of 166 documents (30.64%) that are not present in Scopus. The *Bibliometrix* and *ToS* packages were utilized to consolidate the data from both databases (A. *et al.*, 2023; Botero *et al.*, 2023).

Figure 1 depicts the PRISMA flowchart, elucidating the overarching process employed for data preprocessing. Upon the consolidation of both datasets, yielding a total of 568 documents, it became necessary to implement various text mining and web scraping techniques to facilitate a detailed exploration of the data. The outcome of this process is an Excel file comprising 22 sheets, each containing intricate information about the papers, including citation data and collaboration network details (Figure 2).

Scientometric Mapping

Scientific production marks pathways for teacher-researchers, and this study aims to understand those pathways through targeted searches. Scientometric analysis facilitates the identification of trends and patterns within scientific data, thereby enabling researchers to discern emerging trajectories in scholarly discourse (Aguirre and Paredes Cuervo, 2023; Robledo *et al.*, 2023). In the present study, we delineate four key areas of focus: scientometric production, country-specific contributions, journal analysis, and author collaboration analysis. Our approach begins with a broad perspective, examining annual scientific production, and culminates in a more specific exploration of author collaboration networking strategies (Robledo *et al.*, 2023).

Tree of Science

The ToS is an algorithm designed to identify significant and relevant scientific papers (Robledo *et al.*, 2022; Zuluaga *et al.*, 2022) and present them in a hierarchical structure akin to a tree. The ToS methodology has been implemented across diverse disciplines, including mathematics (Zuluaga *et al.*, 2022), management (Erazo-Muñoz *et al.*, 2022), and the natural sciences (Durán-Aranguren *et al.*, 2021). Eggers *et al.*, (2022) provide a detailed description of the initial diffusion process.

The methodology used in this study is complex, as it must relate to authors from previous centuries who discussed education as an object of intervention. The purpose is to analyze the fragmentation of knowledge in education (Geboers *et al.*, 2015). According to Geboers *et al.*, (2015), four crucial aspects must be considered in training: societal interest, prosocial ability, reflective thinking, and assertiveness. However, our methodology leads us to conclude that students require not only knowledge but also the ability to intuit and "remove the veil from their eyes" to escape Plato's allegory of the cave.

RESULTS

The results of this research reveal a critical lack of information regarding hidden knowledge. This indicates that academic and scientific training does not always convey necessary information in a comprehensive manner; rather, it presents fragmented knowledge to the academic community.

Additionally, a significant number of researchers employ symbolism, anagrams, and puzzles that lead to subjective and biased interpretations, as exemplified by Geboers *et al.*, (2015). The ordinary reader, who may believe they are engaging in critical thinking, often struggles to interpret the researcher's intentions or make sense of the findings. This challenge has led us to turn to scientometrics to better understand the teacher-researcher relationship. Below, we present our scientometric mapping analysis.

Scientific Annual production

Figure 3 provides an overview of the article production pertaining to the role of the teacher-researcher over the past 22 years. It is evident that research has shown a progressive increase in the Scopus database, consistently surpassing the number of publications in WoS.
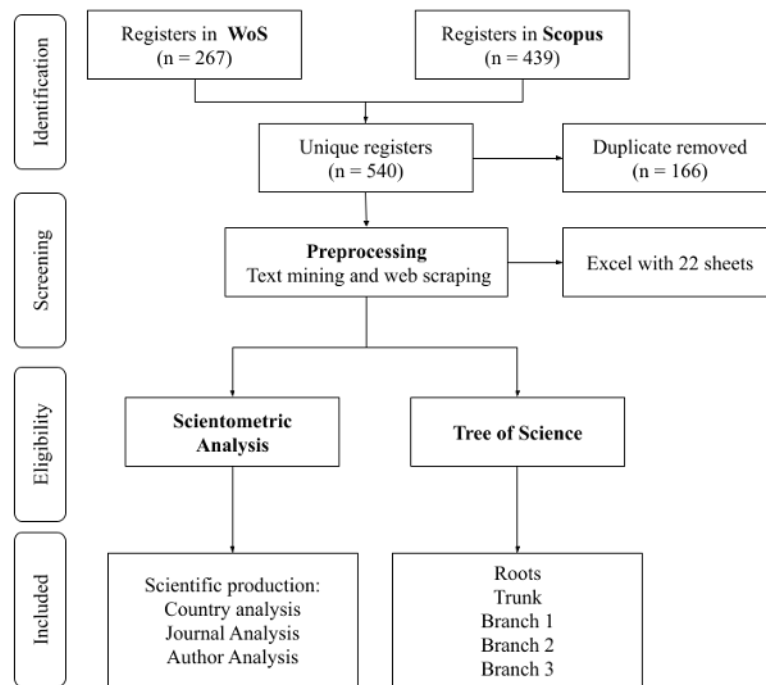
Figure 1: PRISMA diagram for preprocessing data. Self.

Literature production can be classified into three significant stages or milestones. The initial phase of growth, spanning from 2000 to 2012, is marked by the influential article of Griffiths (2004), which has made a substantial impact on the academic community, garnering the highest number of citations with 325. Another noteworthy contribution comes from Loughran (2007) with 205 citations. Additionally, Newell *et al*., (2011) emphasizes the importance of argumentative reading and writing in learning and teaching, accumulating 180 citations.

The phase of thematic growth and consolidation (2013-2019) highlights the work of Tight (2016), who examines the interconnectedness between teaching and research. However, the most cited article during this phase is Cadez *et al*., (2017), which evaluates academia and the quality of knowledge management, accumulating 123 citations. Stakeholders have been extensively studied in literature, with notable contributors such as Mitchell and Freeman. Nevertheless, Spanierman and Smith (2017) provide a practical approach to understanding roles and responsibilities. Exploring the realm of digital knowledge transmission and online courses, McDaniels *et al*., (2016) introduce their work on creating communities focused on dynamic learning. The subsequent stage is further developed in the branches section.

Country Analysis

In the United States, there are 151 publications in high-impact scientific journals by 1,445 researchers. Out of these 151 publications, 31% (48) were published in Q1 quartile journals, 13% (20) in the Q2 quartile, 6.6% (10) in the Q3 quartile, and 6.6% (10) in the Q4 quartile. The most cited article, with 180 citations,

focused on demonstrating the importance of inquiry-based techniques in the process of teaching university-level research (Griffiths, 2004).

As for the United Kingdom, with 71 publications, it holds the second position behind the United States. Among these publications, 33% (24) are in the Q1 quartile, and their citations reach 22.84%. The most cited article, with 325 citations, studied the nature and significance of research, highlighting the key factors in knowledge production modes (Griffiths, 2004).

Furthermore, Australia accounts for 6.04% of the publications, with a notable 46% in the Q1 quartile. It holds the third position due to a total of 385 citations. The most cited article in Australia explores the need for documenting learning through self-directed learning (Loughran, 2007).

In the fourth position, both Canada and South Africa have 21 publications. However, South Africa stands out with 7.01% of the citations, in contrast to Canada's 1.33%. Regarding the journal distribution, Canada obtains 38% in Q1, while South Africa has a mere 9.5%. The most cited article in Canada, with 30 citations, showcased the advantages of translingual pedagogy in English for academic purposes contexts. On the other hand, in South Africa, the most cited article, with 42 citations, focused on studying conceptual understanding and examining the nature of expert knowledge (Anderson and Schönborn, 2008).

Lastly, noteworthy publications from countries such as China, Germany, and Spain can be highlighted, with 20, 20, and 16 publications respectively. Among this group, Spain stands out

with 25% of these publications in the Q1 quartile, while Germany does not have any. It is worth noting that the article with the highest number of citations in China investigates teaching and learning in relation to ethics (Albury *et al.*, 2011).

It should be noted that the intention of the previous analysis was focused on countries with higher numbers of research and citations, which does not necessarily imply that interest in the teacher-researcher topic is limited to these countries alone. In conclusion, a total of 492 publications were examined across the 10 countries discussed (Table 2).

Journal Analysis

The analysis of journals facilitates the recognition of the most prolific publications and their correlation with a specific research topic. This section is bifurcated into two parts: the first part scrutinizes the top 10 most productive journals, while the second part investigates the clustering of journals around a particular topic. As depicted in Table 3, six out of the top 10 journals are ranked in the First Quartile (Q1). Intriguingly, the journal with the highest productivity does not necessarily correlate with the highest quality, and it primarily focuses on biochemistry
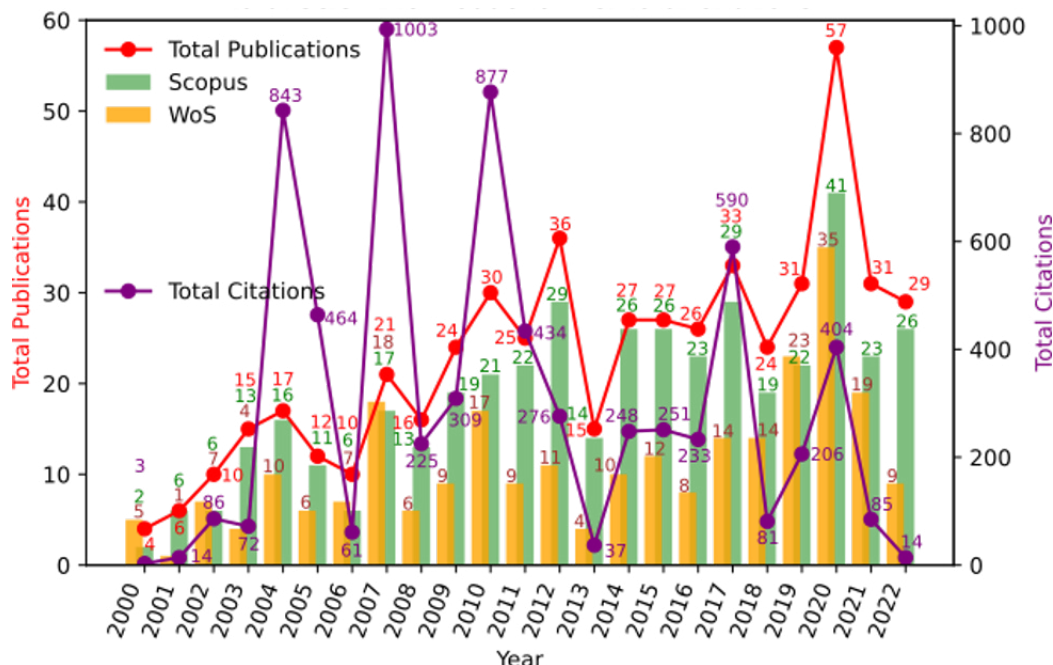

Figure 2: Collaboration network among countries. Construction of the authors based on RStudio, Gephi y EDA.
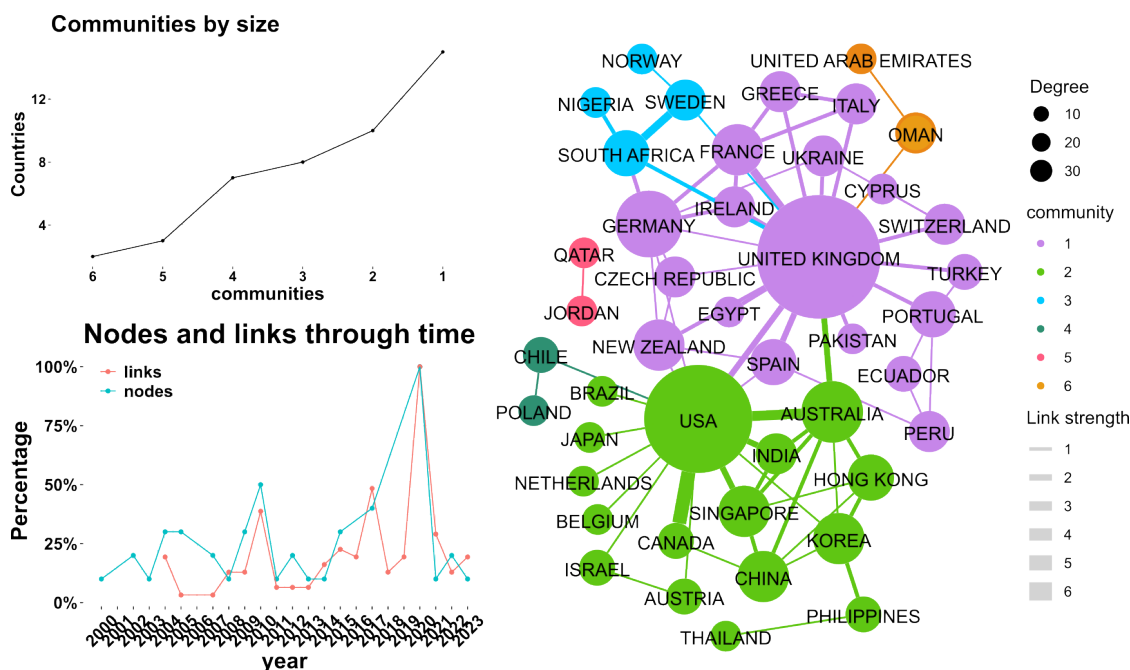

Figure 3: Total production annual vs. total citations. Construction of the authors based on RStudio, Gephi y EDA.

education. This anomaly can be attributed to the fact that this journal published a series of papers in 2010 that explored the intersection of research and teaching (Anderson and Rogan, 2010; Parra *et al.*, 2010; Schönborn and Anderson, 2010).

The *Journal of Higher Education*, boasting the second-highest h-index, has published papers exploring the role of the teacher and the relational nature of research (Kaasila *et al.*, 2021; Mathieson, 2019). Another journal, the *International Journal of Radiation Oncology Biology Physics*, which specializes in health, has also published papers on the research-teacher paradigm, specifically within the context of oncology (Wallner *et al.*, 2014). In essence, the table underscores the broad and dynamic range of research pertaining to the research-teacher topic.

Figure 4 presents a citation network of journals, delineating three principal thematic clusters. The first cluster (depicted in orange) encompasses journals that focus on education within specific disciplines, such as mathematics or biology. The second cluster (illustrated in green) comprises medical journals, reflecting the academic literature's emphasis on the research-teaching paradigm from a caregiving perspective (Merrilees, 2016). The third cluster (represented in purple) pertains more to the field of education sciences, signifying studies that explore the intersection of research and teaching (Reid and Gardner, 2020).

Author Collaboration Network

This section presents the most significant researchers according to their academic production on the topic of research-teacher, along with the scientific collaboration network of each individual's personal networks (ego-network). Table 4 displays significant productivity from authors affiliated with the United States, including Professor Trevor Anders, who is widely recognized for his proposed models to bridge the gap between research and teaching (Schönborn and Anderson, 2010).

Figure 5 presents the scientific collaboration network of authors with the most research. It is observed that there is a community around Professors Anscher and Barker, possibly due to their thematic affinity around health topics (Wallner *et al.*, 2014), which also causes it to be a community that clearly differentiates itself from others. Additionally, only Professors Gauthier and Griffin appear with scientific collaborations due to their thematic affinity to animal research (Griffin and Gauthier, 2004) and geographical proximity.

Tree of Science

A visual depiction of the ToS for the research-teacher domain. The ToS metaphor commences with seminal or classic studies, which lay the foundation for the field. This is followed by the trunk, comprising papers that structurally underpin the research topic. The leaves represent the most recent studies in the field. However, the primary focus of this paper lies in the branches rather than the leaves, signifying the evolution and diversification of the research-teacher domain over time.

Roots

The first article identified within the roots was Professor Neumann's work regarding academic perceptions of the relationship between research and teaching as components of their profession (Neumann, 1992). The findings revealed a strong belief in the symbiotic relationship between these two aspects.

Table 1: Parameters used in teacher-researcher. Source: Self.

Parameters	WoS	Scopus
Range	2000-2023	
Date	July 9, 2024	
Document types	Papers, books, chapters, and conference proceedings.	
Search field	Title, abstract, and keywords.	
Words	"Research teach"	
Results	267	439
Total (WoS+Scopus)	540	

Table 2: Top 10 most productive countries.

Country	Production		Citation		Q1	Q2	Q3	Q4
Usa	151	30.38%	1445	32.49%	48	20	10	10
United Kingdom	71	14.29%	1016	22.84%	24	9	5	3
Australia	30	6.04%	385	8.66%	14	3	3	1
Canada	21	4.23%	59	1.33%	8	3	1	1
South Africa	21	4.23%	312	7.01%	2	3	3	8
China	20	4.02%	52	1.17%	2	2	3	1
Germany	20	4.02%	108	2.43%	0	2	4	6
Spain	16	3.22%	75	1.69%	4	3	2	0
Brazil	13	2.62%	17	0.38%	0	5	2	0
New Zealand	11	2.21%	179	4.02%	3	2	0	1

Source: Construction of the authors based on Scopus y EDA.

Table 3: Top 10 most productive journals.

Journal	WoS	Scopus	Impact Factor	H index	Quantile
Biochemistry And Molecular Biology Education	9	9	0.4	43	Q3
Abstracts Of Papers Of The American Chemical Society	7	0	-	-	-
Higher Education	7	7	1.95	118	Q1
Studies In Higher Education	6	6	1.72	120	Q1
Childhood Education	0	6	0.15	27	Q4
Asia-Pacific Journal Of Teacher Education	4	4	0.8	43	Q1
International Journal Of Radiation Oncology Biology Physics	3	3	2.09	268	Q1
Teaching In Higher Education	3	0	0.94	69	Q1
Contemporary Physics	0	3	1.34	62	Q1
Educational Action Research	2	3	0.64	43	Q2

Source: Scimago Journal Ranking and EDA.

However, the second study posits that this relationship may not always be fruitful. Although both components contain the element of learning, they are applied differently depending on the context. For this reason, Professors Hattie and Marsh conducted a review of this relationship, concluding that there is no inherent connection between research and teaching (Hattie and Marsh, 1996). Nonetheless, Hattie and Marsh (1996) propose that these relationships can be either positive or negative. While the majority of researchers may perceive these relationships as positive, a wide array of factors can influence this relationship and create a divide. In this initial stage, proposals emerge that highlight both the positive and negative aspects of the research-teaching relationship, without reaching a consolidated understanding of the topic.

Trunk

When discussing the trunk in research, we are facing a structure that stems from the knowledge of a scientific community that explores the paths of the researcher and teaching daily. It is timely to mention in this case the study of Kaasila *et al.*, (2021), referring to the role of the researcher and teaching. It is an approach to the fragmented identities of the professional, which puts tensions of equivalence that hinders the role of the teacher. Hence the importance of the pedagogical processes of teaching, learning, and production of knowledge remains uncertain. For this, we have analyzed Griffiths (2004), resorting to the nexus between research and teaching and the disciplines of the environment. Despite investigating the forms of knowledge production, the teacher returns to the crossroads of life, where he receives validated knowledge but in doubt of its truthfulness.

This is how another actor becomes part of knowledge, and it is the consciousness, experiences, and perceptions of the student and the teacher. For Healey *et al.*, (2010), the fact of having teachers recognized by the scientific community enthuses and redirects teaching. But we consider that it can be an inflexible point that prevents curiosity to investigate or teach in another sense, and we can come to take for granted what is imparted, without room for discussion. This is what we call directed research, and it is what we are exposed to in science, a reduction of the teacher's and learner's spectrum in relation to the consciousness of knowledge. This is when the doubt of performance evaluation in academia comes in, as noted by Cadez *et al.*, (2017). That is, the risks in creativity and innovation in teaching and learning, which is timely to mention, given the model to follow or implemented in school.

This process could be defined as alienating, both in the teacher and the learner. In the words of Freire, it is easy to dominate consciences. It arises like the bird of satisfaction, the educator of vocation, that creative one that in a significant way originates new didactic and pedagogical techniques. The one who must compete even with Mephistopheles, a character in the book *Faust*, who satirically says:

"I will tell you, as for this other science, because I do not want to cause errors, that it is very difficult to escape false paths: that in it much poison is hidden and of the triaca it is barely distinguished."

The two actors are already paradigms and uncertainties, but it is not easy to remove that veil from the eyes, it is not easy to go to the awakening of consciousness to achieve emancipation. As described by Freire, this is achieved through techniques supported by advanced pedagogical theories and extensive research, seeking to remove a man from his ignorance, not through the direct action of a teacher, but from the very exercise of the faculties that he is interested in developing, such as awareness, self-reflection, and full freedom. It is worth clarifying that this freedom is nourished by free will, which in turn strengthens knowledge and exercises that force called will, that which few nourish.

Branch 1 - Student Learning

The thematic characteristic of this subarea revolves around student learning when there is a relationship between teaching and research. For instance, Jänicke (2022) elucidates the principal components of a class with a research-teaching focus through data visualization. Additionally, Howell (2021) conducted an experiment with medical students, identifying the primary positive and negative impacts of this type of teaching. Gros *et al.*, (2020) validate that when learning connects with research, it enables students to develop broader competencies. In this vein, Mathieson (2019) utilized a social approach to comprehend the integration of research and teaching. The authors conducted a qualitative study to understand how researchers construct narratives and integrate them into teaching.

Branch 2: Teaching process with research

It is imperative to discuss the ethics of the teacher and the learner in a knowledge community, where education takes on significant importance. In this context, Aristotle (1984) alludes to the virtue of dignity. He majestically displays this dignity amidst self-sufficiency and servile courtesy, simultaneously highlighting the dignified individual. Meanwhile, Hulpke (2022) analyzes the ethical teacher and related research, teaching, and practical life, emphasizing the characteristics or qualities of the conscious teacher: to research, to teach, and to serve. However, we must not lose sight of what Nietzsche (2015) pointed out, how we have allowed our senses to freely rest on all that is superficial, and that our thinking has a divine longing to leap and to make false reasoning as a prank.

In the case of Clark and Hordosy (2019), they delve a bit further into the connection between teacher and learner and the findings in the context of a post-truth society. Thus, uncertainties increase in learning and knowledge, which is projected into life with obstacles. Particularly, Chen (2018) denotes the need for objectivity in business academia. They highlight the need to have a respected teacher and to train students in ethics, making teaching and research a balance in pedagogical conception. It is here where the concern for the truthfulness of what is researched plays with what is taught, and the ethics of the teacher is at stake, given the responsibility in the search for knowledge. In this sense, we find works that highlight the concern for the gaps between research and teaching, as shown by Burke-Smalley *et al.*, (2017), emphasizing the value of systematic scientific research for understanding.

We are going through a critical moment in research, and it is related to social influence, perhaps fragmented and distorted information at the service of an educational structure that, undoubtedly, the teacher and the learner ignore. It is complex to talk about evaluation in academia in fields of research and education, especially when knowledge or what is allowed to be known is generally imparted to a school population like a recipe. It is no longer about banking education, but an education directed according to what is needed, which has mutilated the interest in research. Cadez *et al.*, (2017) consider that the academic load is one of those obstacles that reduce the researcher's time. They also describe the danger that this load represents in reducing creativity and innovation and how it separates quality in education from productivity in teaching.

We cannot assume that excellent researchers are good for teaching, according to Giangreco *et al.*, (2013). Teaching experience is very important considering the ability to inquire, ask, and reach a reliable source. Perhaps we are talking about the knowledge
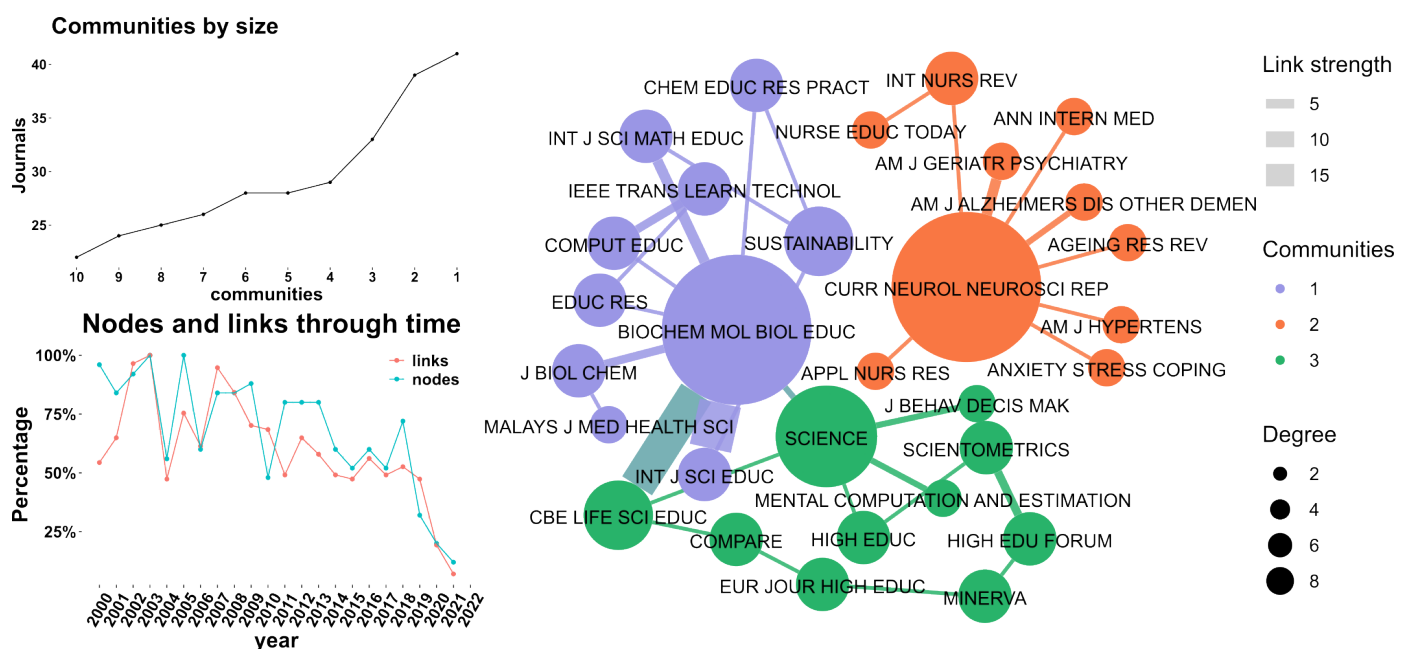

Figure 4: Journal citation network with three clusters. Construction of the authors based on RStudio, Gephi y EDA.

Table 4: Production by author.

Sl. No.	Researcher	Total Articles*	Scopus-Index	Affiliation
1	Anderson T	10	15	Purdue University, West Lafayette, United States
2	Souto-Manning M	4	22	Erikson Institute, Chicago, United States
4	Anscher M	3	67	University Of Texas Md Anderson Cancer Center, Houston, United States
5	Barker C	3	35	Memorial Sloan-Kettering Cancer Center, New York, United States
6	Derr J	3	10	Virginia Polytechnic Institute And State University, Blacksburg, United States
7	Elen J	3	27	Centre For Instructional Psychology And Technology, Leuven, Belgium
8	Gauthier C	3	5	Canadian Council on Animal Care
9	Griffin G	3	12	Canadian Council on Animal Care
10	Mathieu R	3	48	Universidad De Wisconsin-Madison, Madison, Estados Unidos

Source: Construction of the authors based on Scopus y EDA.
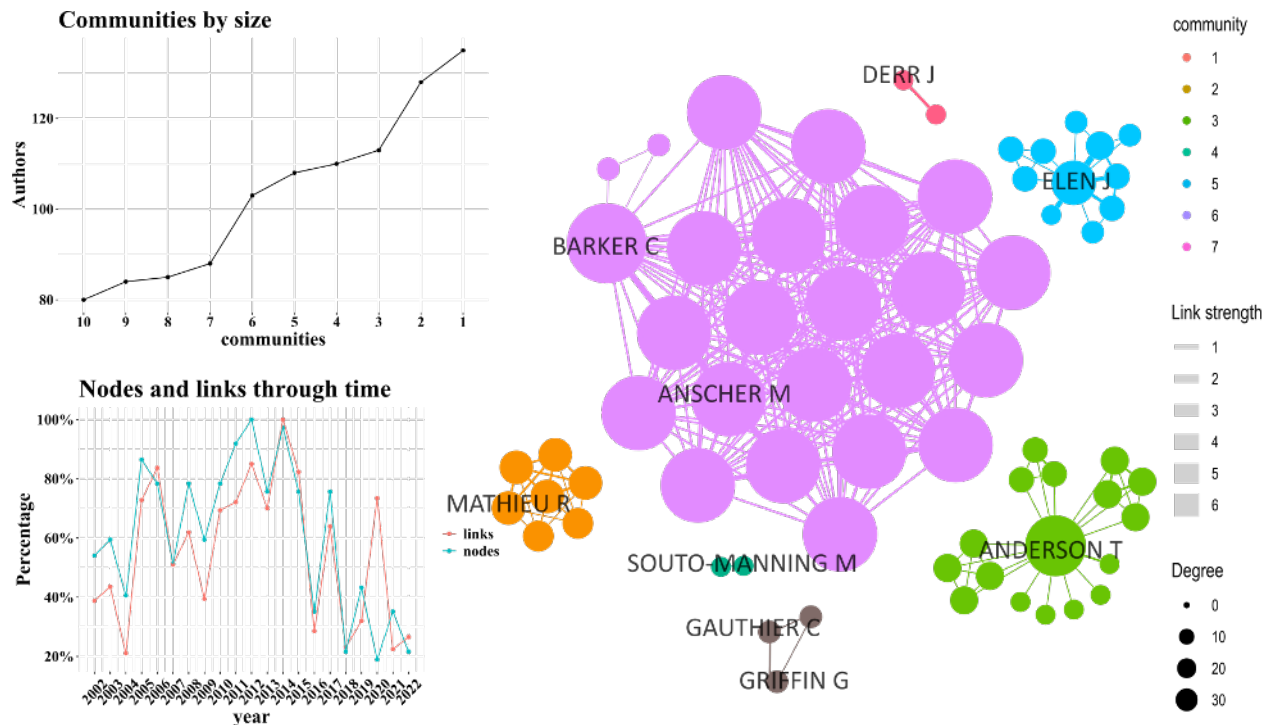

Figure 5: Collaboration network of the top 10 researchers. Construction of the authors based on RStudio, Gephi y EDA.

of knowledge and the self-management of growth described by Ho *et al.*, (2013). That filigree between intellectual capital is accompanied by research and teaching. We must appreciate that, apparently, intellectuality is given by knowledge and will as well, to reach free will, but what makes us think of the achievement of intellectuality? We give recognition to that emancipating teacher, to that restless learner, but we lack appreciation for the capacity of that being to reach a good living, a quality of life, and an awakening of consciousness. A great confusion exists between

intellectuality, knowledge, and skill-the ability to remove the veil from the eyes and know reality.

For this reason, some authors speak of dialogue as a means of relating to knowledge, to reach a truthful investigation, not simply one accepted and supported in scientific communities. Griffiths (2004) argues that research and teaching should be seen with respect to the environment and the modes of knowledge production in practice-oriented fields. We need to ask ourselves about the type of knowledge and tools for investigating the learner

and their qualities. In this sense, Lindsay *et al.*, (2002) analyzes what postgraduate students ask themselves about the topic. They show how postgraduate students highlight the interest, relevance, and usefulness of that research teacher, who feeds their learning and generates teaching models.

Branch 3: Bridging the Gap between Practice and Knowledge

The inaugural article of this branch illustrates how theory and analytical approaches have engendered an interactive digital narrative, proposing a model for researchers to engage students through diverse narratives, as discussed by Koenitz and Eladhari (2022). Additionally, Caron *et al.*, (2020) proposed a social engagement approach, which was substantiated by Lambert and Penney (2020), demonstrating that educators interpret and enhance classes through adaptive and pluralistic development when linked to political aspects.

Another intriguing aspect of the gap between teaching and research is the implications and responsibilities towards minorities, as analyzed by Lewis *et al.*, (2018), who critique the lack of integration in the classroom. Finally, Menter (2017) consolidates in his chapter the needs and advantages of a research-focused education.

CONCLUSION

The academic programs offered in institutions are shaped by public policies, Many times as democratization of access to education and the right to knowledge. The information has been hidden and for this purpose technology has been implemented over the centuries. The school has maintained curricular programs modeled and projected to societies. Hence, the importance of the role of the teacher-research developing a teacher´s research capacity, the essential role of teacher education.

In conclusion, this study sheds light on the critical role of teacher-researchers in navigating the uncertainties and complexities of knowledge and learning. This is the case of reflections on a field of questioned conceptions. As education continues to evolve, it is essential for educators to approach their work with objectivity, "critical thinking" (not possible), and a willingness to adapt to new ideas and approaches. The ToS platform provides a valuable tool for analyzing outstanding publications in Scopus and Web of Science, enabling researchers to stay up to date on the latest developments in their field.

Ultimately, the success of education depends on the harmonious relationships between teachers, researchers, and students, as they work together to find pertinent solutions to the problems of current education and life. By embracing uncertainty and seeking out new knowledge, teacher-researchers can help shape the future of education for generations to come.

This is why, during beliefs and attitudes, it is necessary to develop a technical framework for perceiving and understanding the investigated world, supported by didactics. In the face of crossroads and uncertainties, the teacher should firmly embrace sensitivity, emotion, understanding, and knowledge, but above all, they should know how to explore hidden knowledge to help the learner comprehend a world of joy rather than uncertainties. Likewise, it is necessary to reject flattery from the ignorant. They argue that praise binds and controls the students instead of liberating them, and value the advice of the wise. It is striking how much trust is placed in those who impart knowledge, and this is frightening because they are given the title of integrity, which is validated by the learner, someone who does not strive to seek scientific reason to achieve certainty but rather engages in the game of flattery.

Finally, it is necessary to understand that, if knowledge is hidden in symbols, anagrams, enigmas and training is directed by suggestion, hermeticism, rhetoric and vanity, we will continue to think as others think and we will continue repeating what others say, whether true or false. This is why science validates what it wants to validate.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

WoS: Web of Science; **EDA:** Exploratory Data Analysis; **ToS:** Tree of Science.

SUMMARY

This study investigates the uncertainties surrounding knowledge and learning, particularly focusing on the role of teacher-researchers. It employs a scientometric analysis of publications from Scopus and Web of Science to map trends, country-specific contributions, journal analysis, and author collaborations. The Tree of Science (ToS) methodology is used to structure significant research papers hierarchically. The results highlight a lack of comprehensive information regarding hidden knowledge, and the challenges teacher-researchers face in interpreting knowledge and adapting to changes in education. The study concludes that teacher-researchers play a crucial role in research training by unveiling hidden knowledge and fostering critical thinking.

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