Bartin University Journal of Faculty of Education
https://doi.org/10.14686/buefad.1795223

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Research Article

Mapping the Research Landscape of Teacher Mindset: A Bibliometric Analysis (1984–2024)

Öğretmen Zihniyeti Alanının Araştırma Haritası: Bibliyometrik Bir İnceleme (1984–2024)

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Citation: Derinalp, P., Agaç, G., & Göçer, B. D. (2026). Mapping the research landscape of teacher mindset: A bibliometric analysis (1984–2024). *Bartin University Journal of Faculty of Education, 2026*(3), 795-825. https://doi.org/10.14686/buefad.1795223

Article Information

Article History

Received:
01 October 2025
Accepted:
06 March 2026
Published:
12 May 2026

Keywords

Bibliometric
Growth mindset
Mindset
Research patterns
Research trends
Teacher education

Abstract

Purpose: Research *on teacher mindset has expanded considerably over the past decades, reflecting growing interest in its theoretical and pedagogical implications. Nevertheless, limited attention has been given to systematically mapping the field's intellectual structure and thematic evolution through an integrative bibliometric approach. This study was conducted to reveal the intellectual structure, scientific evolution and thematic transformation of the teacher mindset literature.* ***Method:*** *A total of 335 eligible publications between 1984 and 2024 obtained from the Web of Science Core Collection database were evaluated through quantitative and visual bibliometric analysis techniques employing Biblioshiny and VOSviewer software. The analysis reveals that the field has gained significant momentum in the post-2007 period, scientific productivity has been steadily increasing annually, and literature is largely shaped around the concepts of growth mindset and implicit theories.* ***Findings:*** The *deviations observed in the productivity analysis based on Lotka's Law reveal that teacher mindset research has not yet reached academic maturity, in other words, there is potential for expansion in this field. In addition, thematic mapping highlights a gradual shift from purely theoretical discussions toward more practice-oriented foci. In particular, themes such as pedagogical practices, instructional decision-making, teacher beliefs, and motivation have become increasingly central in recent years, indicating a stronger integration of mindset research into classroom practice and teacher professional development.* ***Conclusion:*** Overall, *the findings reveal that the teacher mindset literature has evolved into a more holistic and dynamic structure with practice-based research while maintaining its theoretical framework.*

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Makale Bilgisi

Makale Tarihçesi

Geliş Tarihi:
01 Ekim 2025
Kabul Tarihi:
06 Mart 2026
Yayımlanma Tarihi:
12 Mayıs 2026

Anahtar Kelimeler

Bibliyometrik
Geliştirilebilir zihniyet
Zihniyet
Araştırma desenleri
Araştırma eğilimleri
Öğretmen eğitimi

Öz

Amaç: *Öğretmen zihniyetine ilişkin araştırmalar, teorik ve pedagojik etkilerine olan ilginin artmasıyla birlikte son yıllarda önemli ölçüde çoğalmıştır. Bununla birlikte, bu alandaki entelektüel yapının ve tematik gelişimin bütünleştirici bir bibliyometrik yaklaşımla sistematik olarak haritalandırılmasına yönelik ilgi sınırlı kalmıştır. Bu çalışma, öğretmen zihniyeti literatürünün entelektüel yapısını, bilimsel evrimini ve tematik dönüşümünü ortaya koymak amacıyla gerçekleştirilmiştir.* ***Yöntem:*** *Web of Science Core Collection veri tabanından elde edilen ve 1984-2024 yılları arasında yayımlanmış toplam 335 uygun yayın, Biblioshiny ve VOSviewer yazılımları kullanılarak nicel ve görsel bibliyometrik analiz teknikleriyle değerlendirilmiştir. Yapılan analizler, alanın özellikle 2007 sonrası dönemde önemli bir ivme kazandığını, bilimsel üretkenliğin yıllar içinde istikrarlı bir şekilde arttığını ve literatürün büyük ölçüde geliştirilebilir zihniyet ve örtük kuramlar kavramları etrafında şekillendiğini ortaya koymaktadır.* ***Bulgular:*** *Lotka Yasası'na dayalı üretkenlik analizinde gözlemlenen sapmalar, öğretmen zihniyeti araştırmalarının henüz akademik olgunluğa ulaşmadığını, bir diğer ifadeyle bu alanda genişleme potansiyelinin bulunduğunu göstermektedir. Ayrıca tematik haritalama sonuçları, kuramsal tartışmalardan uygulamaya dönük odaklara doğru kademeli bir kayma olduğunu ortaya koymaktadır. Özellikle pedagojik uygulamalar, öğretimsel karar alma süreçleri, öğretmen inançları ve motivasyon gibi temaların son yıllarda giderek daha merkezi hale gelmesi, zihniyet araştırmalarının sınıf içi uygulamalara ve öğretmen mesleki gelişimine daha güçlü bir şekilde entegre edildiğini göstermektedir.* ***Sonuç:*** *Genel olarak bulgular, öğretmen zihniyeti literatürünün kuramsal çerçevesini koruyarak daha bütüncül ve dinamik bir yapıya evrildiğini ve uygulamaya dayalı araştırmalarla zenginleştiğini ortaya koymaktadır.*

Introduction

The origin of mindset goes back to implicit theory, which combines entity and incremental theories (Dweck & Yeager, 2019). The former refers to a performance goal orientation while the latter is associated with mastery goals (Dweck & Leggett, 1988). In her later work, Dweck (2006) renamed the concept of implicit theory as mindset. A mindset is the collection of attitudes, beliefs, and assumptions that an individual has developed, influencing how they think and approach various situations. It is a set of beliefs pertaining to both the nature and malleability of intelligence (Dweck, 2006). According to the mindset theory that Dweck (2006) developed, our ability beliefs are divided into two major categories – a fixed mindset and a growth mindset. A fixed mindset often manifests as the beliefs that one's abilities are constant and immutable. Those with a fixed mindset typically assume that an individual possesses a predetermined level of potential for a specific task. Individuals who possess a fixed mindset would agree with the assertion that they cannot alter their level of intelligence (Kapasi & Pei, 2022). Conversely, one with a growth mindset holds the belief that intelligence is adaptable and can be nurtured and enhanced through experiences. This perspective emphasizes the role of environmental factors and experiences in shaping an individual's development. The impact of the growth

mindset transcends personal development to encompass professional development in various disciplines. Despite originating from the discipline of psychology, the influence of the mindset concept extends across various fields such as marketing, business, and sports, with particular salience in the educational field (Dweck, 2006).

In the field of education, teachers stand as important figures who influence various aspects of students' lives. Beyond the transmission of academic knowledge, educators hold the profound capacity to shape their students' personal growth and development. This dynamic is underscored by the symbiotic relationship between a teacher's growth mindset and student achievement, fostering not only academic success but also facilitating personal growth (Chandrasegaran & Padmakumari, 2018). At the heart of this interaction lies the concept of a teacher's growth mindset—an orientation inclined toward embracing challenges, recognizing effort as a pathway to mastery, and maintaining the conviction that abilities can be cultivated over time. Teachers' mindsets significantly influence their expectations, predictions, labels, and comments regarding their students (Chandrasegaran & Padmakumari, 2018). Teachers' expectations can influence the development of children from their initial days in school and its effects last on later educational achievements and outcomes (Gentrup et al., 2020). Teachers' inaccurate achievement expectations may impede students' learning whereas high expectation can promote greater academic achievement. Recent empirical findings emphasize the pivotal mediating role of teachers' academic expectations in shaping both their instructional practices and students' academic outcomes. Specifically, Wang et al. (2019) demonstrated that teachers with high expectations tend to employ more cognitively engaging and supportive instructional strategies. Complementarily, Szumski and Karwowski (2019) provided evidence that such expectations, mediated by students' academic self-concept and classroom context, significantly influence academic achievement. The confluence of these perspectives highlights the imperative of exploring the concept of a teacher's growth mindset—an inclination to embrace challenges, perceive effort as a path to mastery, and maintain the conviction that abilities can be cultivated over time. This necessity has drawn the attention of researchers and found a place for itself in the respective field.

A growing body of research within education explores the nuanced interplay between mindset and diverse related concepts such as the influence of teachers' mindsets on motivation (Daniels et al., 2021; Nalipay et al., 2021a; Vermote et al., 2020), teaching emotions (Nalipay et al., 2021b; Frondozo et al., 2022), teacher beliefs (Yeager et al., 2021; Yu et al., 2022), growth mindset pedagogy (Rissanen et al., 2019; Rissanen et al., 2021), learning outcome (Cutumisu, 2019). To exemplify, Nalipay et al. (2021a) investigated the influence of mindset on teachers' motivation and engagement. The researchers explored whether teachers' beliefs regarding their teaching abilities would predict their work engagement alongside motivation towards teaching. The findings indicated that possessing a growth-oriented mindset in teaching positively correlated with autonomous motivation. Furthermore, this autonomous motivation was subsequently associated with

increased levels of work engagement. In another study, Frondozo et al. (2022) explored how teachers' mindset was related to their emotions and work engagement with the participation of 547 teachers. The results showed that possessing a growth mindset about one's teaching ability was positively associated with enjoyment and engagement and negatively associated with anxiety and anger. With regards to teaching beliefs, Yu et al. (2022, p.1) assert that "teachers may transmit their mindset beliefs to students because teacher beliefs guide their practices, which in turn may shape students' mindset". In another study, Rissanen et al. (2019) created a framework for a growth mindset pedagogy by delineating the teacher's pedagogical thinking and practices. The aim was to find the impact of a teacher's pedagogical thinking on the key elements of growth mindset pedagogy in the classroom and the influence of the teacher's entity beliefs on pedagogical decisions. The findings showed that teachers' pedagogical thinking was affected by their entity beliefs.

While the teacher mindset literature has expanded, this field has been discussed more critically in recent years in terms of effect sizes, contextual variables, and measurement issues. Moreover, meta-analytic findings examining the relationship between teachers' growth mindset and various outcomes generally point to small effect sizes and show that results vary depending on the type of outcome and contextual conditions (Bardach et al., 2024). Similarly, large-scale experimental studies reveal that intervention effects are conditioned by the classroom context created by teachers and the nature of implementation (Yeager et al., 2021). Furthermore, classroom-based studies emphasize that teacher practices and measurement processes can be decisive for outcomes (Schmidt et al., 2015). These discussions indicate that teacher mindset research should be approached with context-sensitive and methodologically rigorous approaches while also highlighting the importance of systematically mapping the intellectual structure of the field.

In academic discourse, some literature review and systematic review studies can be found (Laine & Tirri, 2023; Lambright, 2023; Zhang et al., 2017). For instance, in their review study, Zhang et al. (2017) synthesize articles published between 1998 and 2017 concerning the correlation between mindset and academic achievement, analyzing the role of mindset in shaping academic success. The research suggests that students' mindsets serve various functions as both causal factors and mediators in academic achievement. Also, it is found that both teachers' mindset and students' mindset have an influence on students' academic achievement. Laine and Tirri (2023), in turn, conduct a comprehensive systematic review examining 64 articles published between 2012 and 2023. Their focus was on teachers' mindsets and their beliefs about the malleability of human qualities, particularly intellectual capacities. The results revealed the critical role of teachers' mindsets and their cultivation of growth-oriented learning environments. The review also highlighted significant associations between teacher mindsets, student mindsets, and subsequent learning outcomes. There is also another systematic review study found in the literature, titled "The Effect of a Teacher's Mindset on the Cascading

Zones of Proximal Development: A Systematic Review" (Lambright, 2023). However, upon meticulous examination, it becomes apparent that the primary emphasis lies in the exploration of the Zone of Proximal Development (ZPD), diverging from the allegedly indicated subject of teacher mindset.

Given the limited number of systematic and literature review studies, the overall landscape of teacher mindset research remains only partially synthesized. Therefore, this bibliometric study provides a broader perspective on mindset by incorporating other studies in educational context. Given the importance of teachers' mindset and the recent increase in research on this topic, it is of great importance to conduct a bibliometric study to map the ever-evolving trajectory of this field (Donthu et al., 2021). Hence, aiming to fill this gap, the current study employs a bibliometric analysis to chart the teacher mindset field in terms of its patterns, trends, and future directions. In this regard, the research questions (RQ) for the current study are framed as:

RQ1) What are the bibliometric characteristics of teacher mindset research (including dataset statistics, publication and citation trends, author productivity patterns, and source impact)?

RQ2) What is the pattern in the teacher mindset field regarding authors, institutions, and countries' productivity, impact, and collaboration?

RQ3) What are the trends in the teacher mindset field? How have they evolved over time?

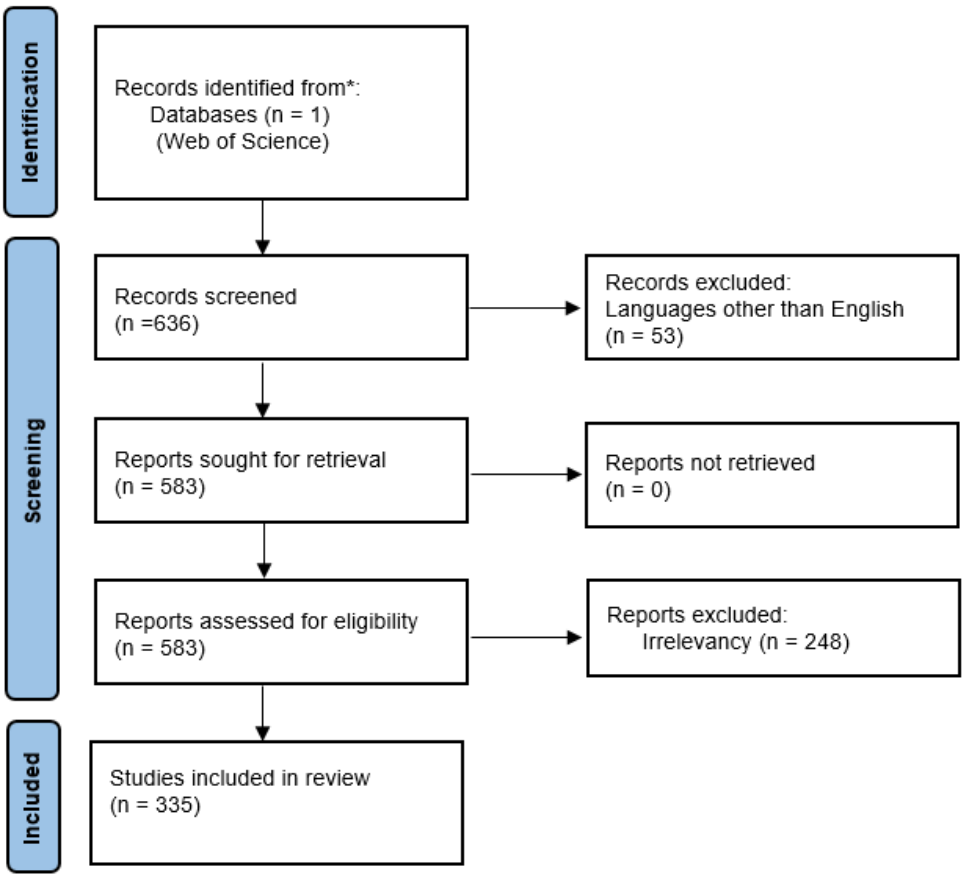
Methodology

Data Collection and Screening

The current study employs bibliometric analysis as a methodological approach. Bibliometric analysis, also known as scientific mapping, studies and assesses the links and structural elements of the body of current literature by a thorough examination of a large volume of bibliometric data (Pan et al., 2023). Identifying the most suitable database that comprehensively captures scientific content stands as the primary phase in conducting a bibliometric investigation, following the decision of a specific topic, such as teacher mindset, in this context. This study specifically selected the Web of Science (WoS) database due to its widely recognized status as a preeminent and comprehensive repository encompassing a vast range of scientific literature across various disciplines (Mongeon & Paul-Hus, 2016; Zupic, & Čater, 2015). Its reputation for indexing high-quality, peer-reviewed journals and its extensive coverage of scholarly content globally were pivotal factors influencing its selection for this study's bibliometric analysis.

Following the database selection, several parameters were applied to obtain the meta-data. Those parameters included but were not limited to the keywords for screening and where those keywords were located. A detailed workflow of the analysis is illustrated below (Figure 1.).

Figure 1: *Workflow of the analysis (adapted from Page et al., 2021)*



The keywords for the screening were selected as teacher* AND (((growth OR fixed) AND mindset*) OR implicit theor*) AND education (Topic). To attain a comprehensive understanding of the topic at hand, no time limit was imposed. This means that all the studies indexed in the WoS were included. The last search was conducted on 22 October 2024. The initial screening resulted in 636 documents. The documents published in languages other than English (n=53) were excluded. Next, each document was screened to check its relevancy. Irrelevant 248 publications were detected as their focus was not directly on teacher mindset. Hence, the analyses were conducted on 335 studies.

Data Cleaning Process

Data cleaning was performed on the dataset prior to analysis. In this regard, different spelling variations belonging to the same author (such as “Cimpian, A.” and “Cimpian, Andrei”) were identified and duplicate records were merged under a single standard form. Spelling, singular–plural, and abbreviation differences in keywords were also standardized. For example, mindset/mindsets was reduced to a single form, the term PCK was updated to pedagogical content knowledge. Similarly, the uses of preservice teacher, preservice teachers, and pre-service teacher were also consolidated under a single standard spelling. These procedures were performed to ensure consistency in the dataset and increase the reliability of the analysis results.

Data Analysis

In this bibliometric analysis, several analyses were employed to gain a holistic understanding of the teacher mindset concept. With this in mind, this study aimed to answer three research questions. The first one focused on the overview of the teacher mindset field. In this regard, basic structure analysis and Lotka's Law analysis were conducted on the Biblioshiny program run by R Studios while a descriptive analysis was employed on the VosViewer Software. The basic structure analysis aimed to provide an insight into the teacher mindset field in terms of the main information about data such as the number of involved authors and documents, and annual growth rate. Lotka's Law analysis, in turn, revealed the author's productivity. The descriptive analyses included annual scientific output and the most relevant sources and their impact. As for the second research question, authors', institutions', and countries' productivity, impact, and collaborative links were examined on VosViewer. When it comes to the third question, which aimed to reveal the trends in the teacher mindset field, the trend topics, dynamicity, and their evolution over time have been analyzed on the Biblioshiny program.

Findings

Overview of the Teacher Mindset Field

This study aimed to quantitatively analyze and evaluate various aspects of publications on the concept of teacher mindset. The study compromises the analysis of the documents published between spanning from 1984 to 2024. Table 1 visualizes the main information analysis.

Table 1. *Main Information Analysis*

Description	Results	Description	Results
Main Information About Data		Authors	
Timespan	1984:2024	Authors	881
Sources (Journals, Books, etc.)	210	Authors of single-authored docs	47
Documents	335	Authors collaboration	
Annual growth rate %	10.87	Single-authored docs	50
Average citations per doc	15.84	Co-Authors per doc	3.09
References	14019		
Document Contents		Document Types	
Keywords Plus (ID)	601	Article	268
Author's Keywords (DE)	867	Article; book chapter	6
		Article; early access	17
		Article; proceeding paper	1
		Collection	2
		Editorial material	4
		Meeting abstract	5
		Proceeding paper	29
		Review	3

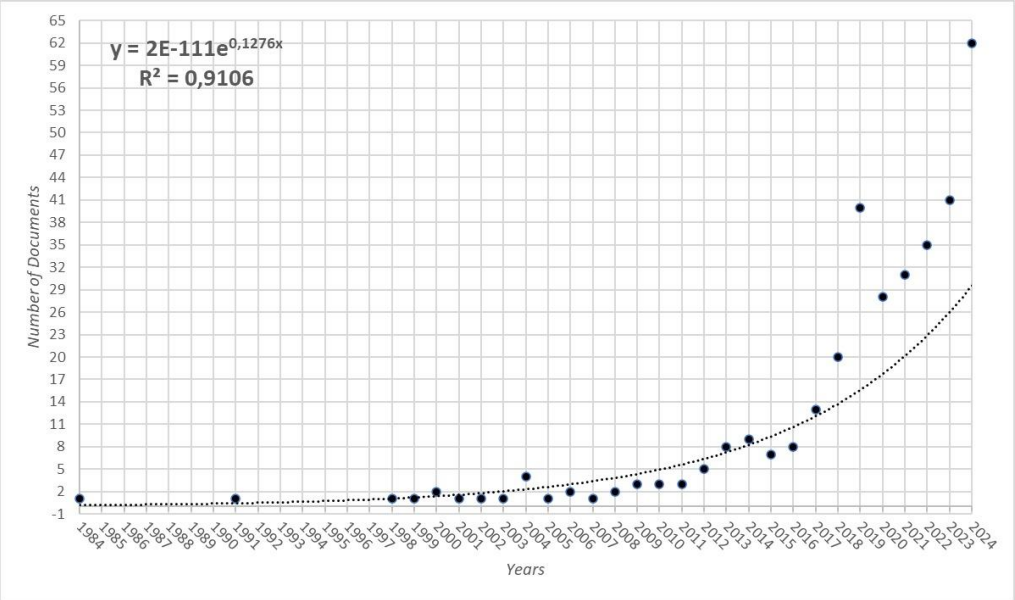
Between the years 1984 and 2024, 335 documents were produced in 210 different publication outlets by 881 authors focusing on teacher mindset. Of these studies, 50 were single-authored. The average of co-authors per document is calculated as 3.09 which shows that the majority of studies in this area have been conducted with the contribution

of multiple authors. Additionally, the annual growth rate amounted to 10.87%, which suggests that the field is expanding drastically.

Annual Scientific Output and Average Citation per Year

The annual volume of scientific publications and the average yearly citation scores on teacher mindset were analyzed bibliometrically as illustrated in Figure 2.

Figure 2: *Annual Scientific Production and Average Citation per Year*

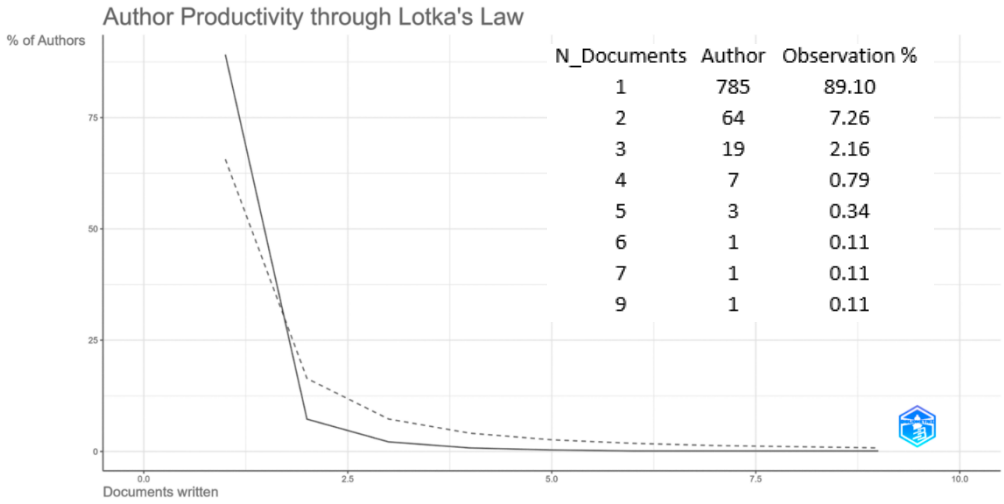


Examining the growth of scientific production over time, this analysis reveals that the development in the field of research occurs at different speeds through exponential growth values and doubling times calculated for the periods 1984-2024, 1984-2006 and 2007-2024. When the general trend between 1984-2024 is analyzed (R^2 = 0.9106), the growth rate was calculated as 12.76% and it was determined that scientific production doubled every 5.43 years on average. This reflects a continuous upward trend in the long run. On a closer examination, it is revealed that the exponential growth rate between 1984 and 2006 was calculated to be only 2.68% and the doubling period was 25.86 years, which is considerably longer. These values reveal that scientific production in this period progressed much more slowly. On the other hand, the growth rate of 22.04% calculated for the 2007-2024 period indicates the fastest period of scientific production, with a doubling time of 3.14 years. The results of this analysis indicate that academic production has gained extraordinary momentum compared to the previous period. In general, all these findings suggest that after the nascent period between 1984-2006, the growth trend in the field of mindset, which accelerated as of 2007, and scientific production exhibited a much more dynamic and regular increase.

Author productivity: Lotka's Law

Lotka's Law was employed to assess authors' scientific productivity in the teacher mindset field. Being a principle used in bibliometric studies, Lotka's Law describes the productivity distribution of authors in a certain field (Lotka, 1926). Figure 3 illustrates Lotka's Law of author productivity in the teacher mindset field.

Figure 3. *Author productivity through Lotka's Law*



N_Documents	Author	Observation %
1	785	89.10
2	64	7.26
3	19	2.16
4	7	0.79
5	3	0.34
6	1	0.11
7	1	0.11
9	1	0.11

The findings of the analysis revealed that 785 authors published only one document, corresponding to 89.10% of the total publications. According to Lotka's Law, the percentage of scholars who authored a single document is anticipated to be 60.79%. The rate of the authors who published two documents, in turn, was calculated as 7.26%. This rate is expected to be 15.2% as per Lotka's Law. In this study, the ratio of authors who produced three publications amounted to 2.16% while the rate of the authors with four publications was observed as 0.79%. These rates were expected to be 6.75% and 3.8% respectively as per Lotka's Law. The dramatic discrepancy between these rates indicates that this field is still in its nascent stages of development. Hence, this field presents an expansive scope for further research and investigation.

Most relevant sources and their impact

To determine the most relevant sources in the teacher mindset field, a descriptive statistical analysis was employed. The parameters were the number of published documents, and their citation counts. Their average citation rates were also calculated. The results are illustrated below.

Figure 4. *Most Relevant Sources and Their Impact*

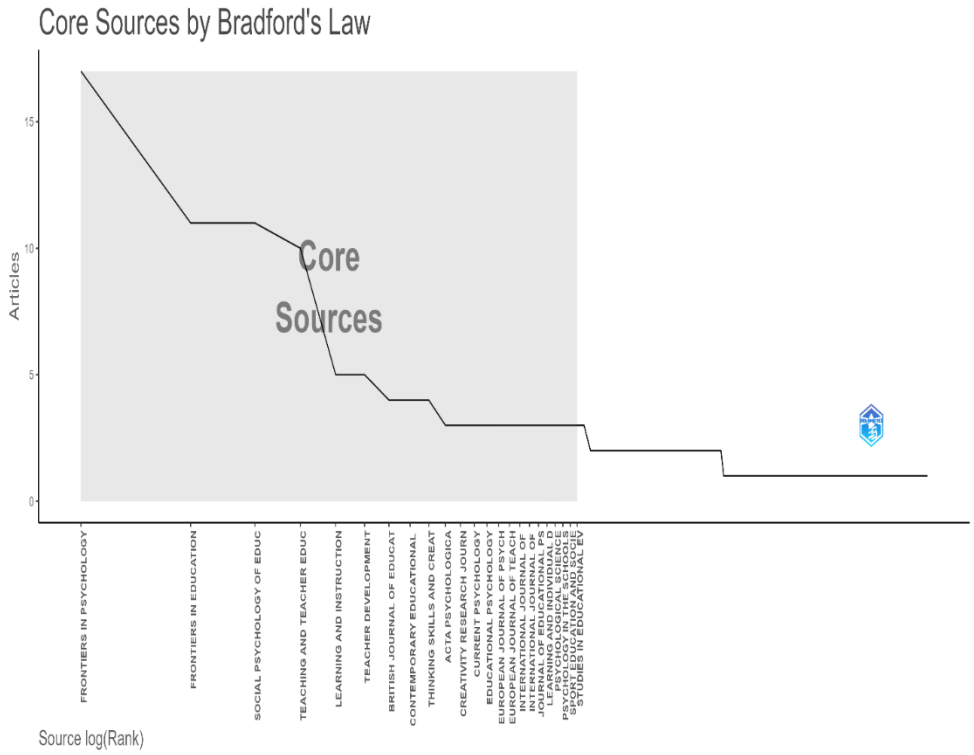


Figure 4 shows that Frontiers in Psychology has the highest number of publications in the related field. This journal is followed by Frontiers in Education and Social Psychology of Education with 11 publications each and Teaching and Teacher Education with 10 publications. Also, the fact that Teaching and Teacher Education, Learning and Instruction and Social Psychology of Education journals are among the core sources shows that the research area focuses on instructional psychology, teacher education and learning processes. Given the general focus of these journals on education and psychology, it is clear that there is a high academic interest in educational psychology and teacher education. The findings show that the studies in this field are carried out in an interdisciplinary framework and are located at the intersection of educational sciences and psychology.

Authors, Institutions, and Countries

This section highlights the most influential authors, institutions, and countries in the field, considering their productivity, impacts, and collaborative partnerships.

Authors: productivity, impact, and collaborations

This subsection investigates the teacher mindset topic from the authors' aspect. In this regard, the most relevant authors, their impacts, and the collaborative links were analyzed. Table 2 presents the most prolific and most cited authors in the field.

Table 2. *Most Relevant Authors and Their Impact Top 10 Authors (NP)*

Author	NP	TC	h_index	g_index	PY_start
Tirri K	9	171	6	9	2016
Kuusisto E	7	162	6	7	2016
Murphy MC	6	480	5	6	2019
Rissanen I	5	139	5	5	2018
Mordeno IG	5	129	5	5	2019
Nalipay MJN	5	129	5	5	2019
Dweck CS	4	595	4	4	2017
Yeager DS	4	410	4	4	2020
Muenks K	4	298	3	4	2019
Cimpian A	4	132	3	4	2022

According to the results of this bibliometric analysis, Tirri K stands out as the researcher who produced the most articles in this field with 9 publications. This is followed by Kuusisto E (7 publications) and Murphy MC (6 publications). The authors' h-index measures the scientific impact of their work as well as their academic productivity. Tirri K and Kuusisto E (h = 6) are among the researchers with the highest h-index values, indicating that at least 6 articles of both researchers are highly cited. The authors with the highest values in terms of g-index, in turn, are Tirri K (g = 9) and Murphy MC (g = 6), and this finding indicates that the most cited studies of these researchers exhibit a denser distribution. In addition, Yeager DS, Dweck CS and Murphy MC are among the prominent researchers with high citation counts and contribute significantly to the theoretical and applied development of the field. The high g-index values reveal that the works of these authors have had a wide academic impact and played a decisive role in shaping the field.

Table 2 demonstrates the most productive authors in the field, showcasing their publication output and the frequency of citations their work has received. Figure 5, in turn, provides a visualization of the connections and collaborative relationships among the authors involved in this field of study. This visual representation offers insights into the network of collaborations and partnerships existing among researchers and contributors within this academic domain.

Figure 5. *Collaborations Among the Authors Involved in the Field*

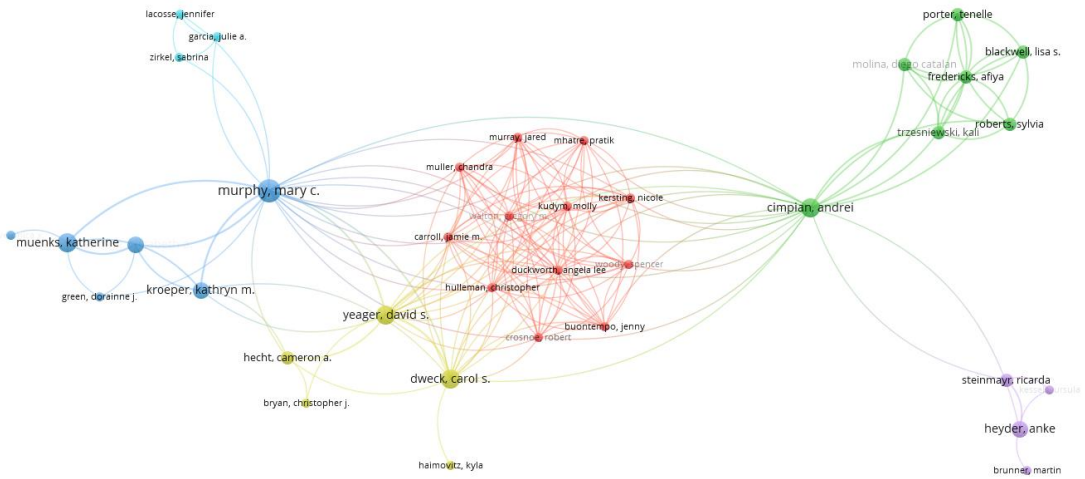


Figure 5 reveals a network structure comprising 37 authors organized into six clusters. Within the network, Murphy, Cimpian, Yeager, and Dweck are positioned as central actors connecting different clusters. Their collaboration with multiple clusters indicates that inter-cluster transitions in the collaboration network are concentrated around a limited number of central figures. In particular, Murphy and Cimpian's connections to five different clusters suggest that the collaboration structure expands through specific researchers. Similarly, Yeager and Dweck's connections with four clusters reinforce the central structure of the network. This structure indicates that certain researchers play a decisive role in both intra-cluster and inter-cluster interactions within the teacher mindset literature.

Following these productivity and collaboration indicators, a co-citation analysis was also conducted to reveal how the intellectual structure of the field is organized and around which studies it clusters. The findings of co-citation analysis with unit of cited references are presented in Table 3.

Table 3. *Top 10 Co-Cited References with Citation Counts and Total Link Strength (TLS)*

Authors (Year)	Title	Citations	TLS
Blackwell et al. (2007)	Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention	121	860
Dweck (2006)	Mindset: The new psychology of success	103	565
Rattan et al. (2012)	It's ok—Not everyone can be good at math: Instructors with an entity theory comfort (and demotivate) students	78	633
Dweck and Leggett (1988)	A social-cognitive approach to motivation and personality	73	564
Dweck et al. (1995)	Implicit theories and their role in judgments and reactions: A word from two perspectives	63	378
Yeager and Dweck (2012)	Mindsets that promote resilience: When students believe that personal characteristics can be developed	57	458
Dweck (2013)	Self-theories: Their role in motivation, personality, and development	55	397
Yeager et al. (2019)	A national experiment reveals where a growth mindset improves achievement	48	454
Dweck and Yeager (2019)	Mindsets: A view from two eras	43	401
Burnette et al. (2013)	Mind-sets matter: A meta-analytic review of implicit theories and self-regulation	42	370

Table 3 reveals that the intellectual structure of teacher mindset research is predominantly centered around Dweck and her colleagues. The most influential reference in the network is Blackwell et al. (2007), which has the highest number of citations (121) and the strongest total link strength (TLS = 860), reflecting its central position in the co-citation network. This is followed by Dweck (2006) (103 citations; TLS = 565) and Dweck and Leggett (1988) (73 citations; TLS = 564). The high TLS values of these early foundational studies indicate that they are frequently cited together in the literature and form the theoretical backbone of the field.

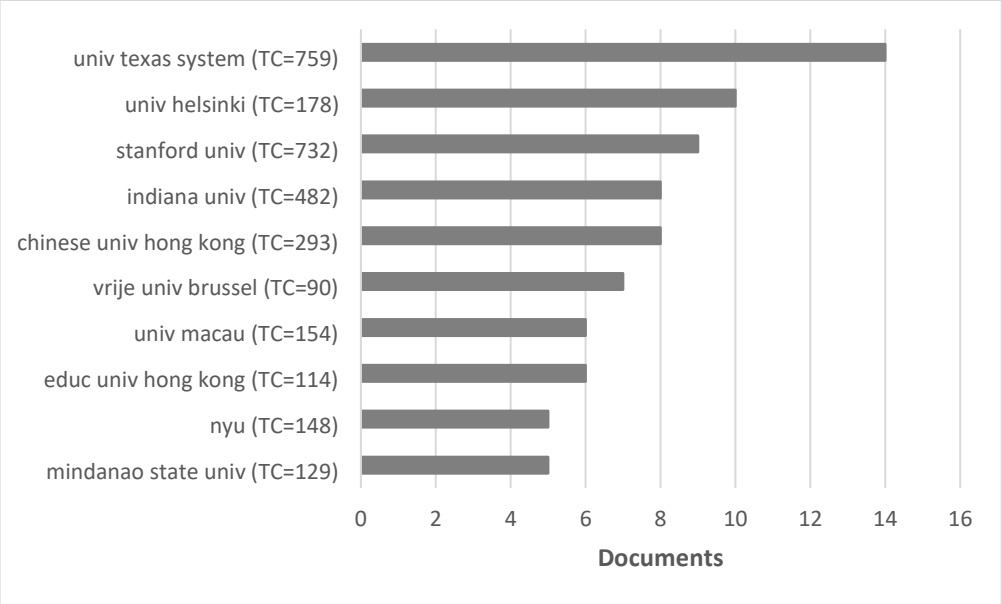
Studies whose impact has expanded over time include Rattan et al. (2012), Yeager and Dweck (2012), Yeager et al. (2019), and Dweck and Yeager (2019). The TLS values of these publications, ranging from 401 to 633, indicate that these studies are strongly integrated into the existing citation network and expand the Dweck-centered theoretical framework. Furthermore, inclusion of the meta-analytic study by Burnette et al. (2013) among the most cited sources indicates that theoretical accumulation in the literature is

beginning to be synthesized and consolidated. Overall, it appears that a highly integrated, Dweck-centered co-citation structure has emerged since 2007, with its influence steadily increasing.

Institutions: productivity, impact, and collaborations

Following the investigation of the most relevant authors and their impact in the field, this subsection offers insight into the institutions regarding their productivity, impact, and collaborations. Within this context, an investigation into the most productive institutions, their impacts, and collaborative associations has been conducted. The figure below provides an analysis of the most relevant institutions along with their impacts.

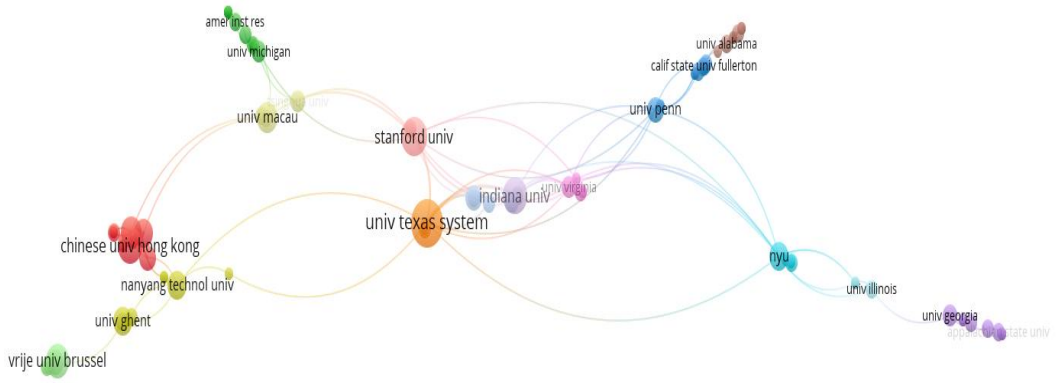
Figure 6. *Most Relevant Institutions and Their Impact*



An analysis of the findings according to the number of publications produced revealed that the University of Texas System was the most relevant institution with a total of 14 publications. This is followed by the University of Helsinki (n=10) and Stanford University (n=9). In terms of productivity and impact, Stanford University ranks at the top of the list with an average of 81.1 citations per publication. It is followed by Indiana University with an average of 60.25 citations and Texas System University with an average of 54 citations. Although the University of Helsinki ranks second in the top ten list in terms of number of documents, it falls to ninth place in terms of productivity and impact. This indicates that productivity and impact are separate criteria and that not every productive institution can be impactful in its field.

Figure 6 shows the most relevant institutions in the subject and how often their publications are cited. On the other hand, Figure 7 displays the connections and cooperation between these institutions in this field. This analysis indicates how these institutions work together.

Figure 7. *Collaborations among the Institutions involved in the Field*

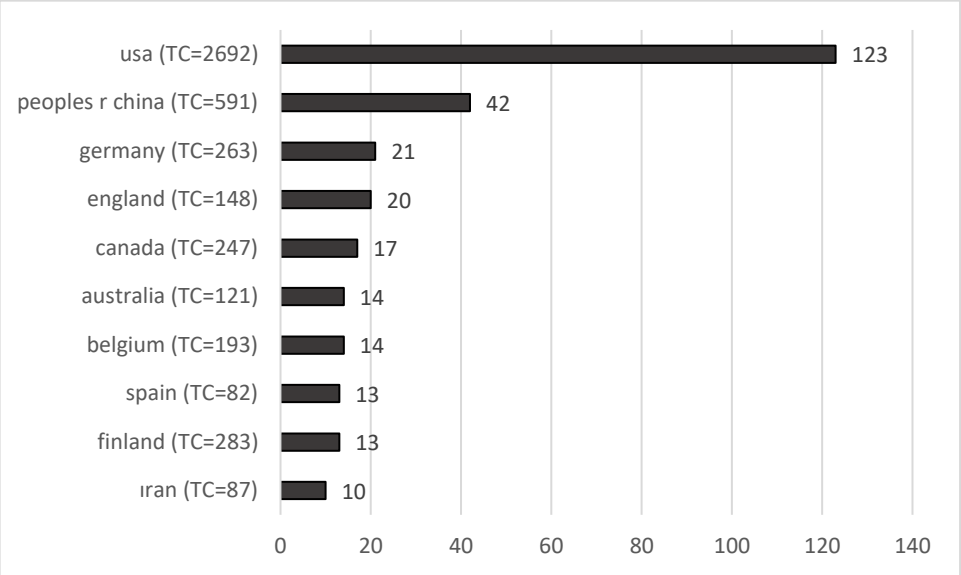


As a result of the analysis, it is concluded that 122 institutions are gathered in 15 different clusters, creating a total of 244 links with a total link strength (TLS) 274. The institutional collaboration network exhibits a centralized structure concentrated around specific universities. In particular, the Texas University System, with its connections to eight different clusters (TLS=26), 14 documents and a collaboration network involving 18 different institutions, is positioned as one of the strongest centers within the network. Stanford University (15 links, 9 documents), Indiana University (13 links, 8 documents) and The Chinese University of Hong Kong (7 links, 8 documents) similarly contribute to the structural integrity of the network by establishing relationships with multiple clusters. The high number of connections for the University of Macau and New York University demonstrates that collaboration is related not only to document production but also to the breadth of institutional networks. This distribution suggests that certain research centers play a decisive role in the network structure in teacher mindset research and that institutional collaboration is shaped through inter-cluster connections.

Countries: productivity, impact, and collaborations

Last but not least, this subsection portrays the findings regarding the countries' visibility in this field. Hence, below, the countries with the highest number of publications and citations, and their collaborative links are analyzed in detail.

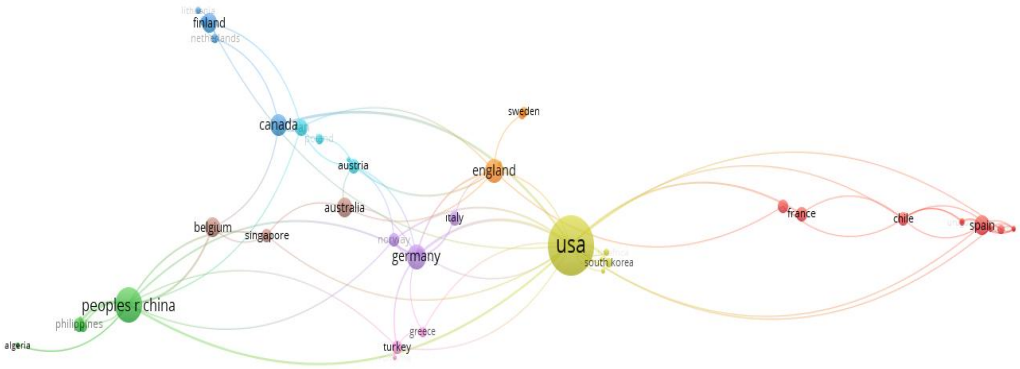
Figure 8. *Most Relevant Countries and Their Impact*



Upon the examination of Figure 8, it can be seen that the USA establishes its place at the first rank in terms of both the number of publications and the total number of citations. From these parameters, the USA is followed by China. Although Finland ranks ninth in terms of total document count, it rises to third place in total citation count.

Figure 8 demonstrates the most relevant institutions in the field. The leading institutions' publication and citation numbers, and consequently their impacts were visualized. Figure 9, in turn, investigates the topic at hand from the countries' aspect. In this regard, the most collaborative countries are examined in detail.

Figure 9. Collaborations among the Countries Involved in the Field



The collaborative analysis across countries is presented in Figure 9. The analysis of international cooperation is presented in Figure 9. The findings show that 44 countries are positioned within nine clusters and that the cooperation network exhibits a centralized structure around certain countries. The US stands out as the strongest central actor in the network, connecting with eight different clusters, producing 123 documents, and collaborating with 19 countries (TLS=31). China (42 documents, 12 countries,

TLS=23) and Germany (21 documents, 10 countries, TLS=18) also contribute to the expansion of the network through multiple connections. The position of the United Kingdom (20 documents, 9 countries, TLS=11) supports the European dimension of the collaboration network. This distribution indicates that production and collaboration intensity cluster around specific research ecosystems in the teacher mindset literature. Furthermore, given that nine countries have no international collaboration links, it appears that the field is not evenly distributed globally and that the collaboration network exhibits a tendency toward centralization.

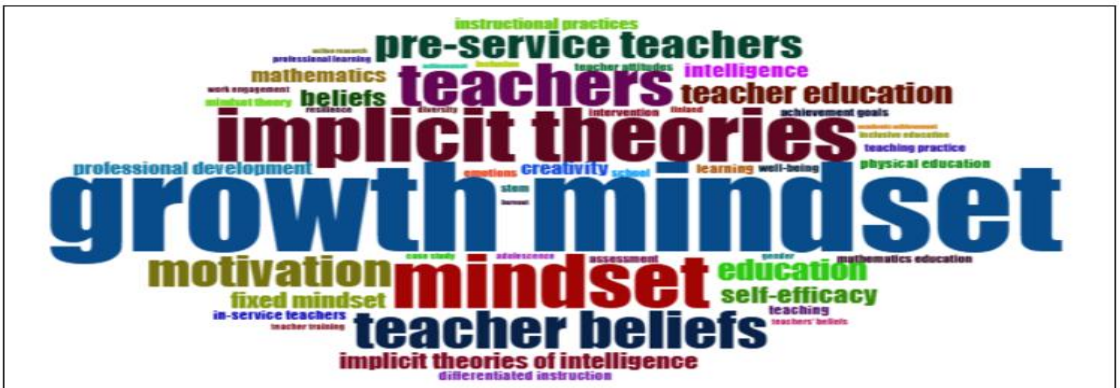
Thematic Analysis of Teacher Mindset: Trend Topics, Thematic Map, and Thematic Evaluation

This section presents the results of the thematic analyses in this bibliometric study. In this context, thematic analyses have been conducted to reveal the most frequently used author keywords and subsequently trend topics, thematic maps, and thematic evaluations in the teacher mindset field.

Trend topic

This subsection presents the findings of the keywords analysis. Keywords are terms chosen by authors to identify the key concepts and content of an article. These terms offer a preliminary impression to readers, often reflecting the main ideas and focal points of the article. As keywords are considered to represent article content (Corrin et al. 2022), analysis of these words plays an important role in identifying current issues and themes in the field of study. Hence, this study ran a keyword analysis to determine the trend topics in the field. To analyze keyword frequency, the Bibliometrix tool of the R Software package was employed. This tool provides insights into the prevalence and recurrence of specific concepts in the literature on teacher mindset. Therefore, keyword analyses are a valuable tool for understanding trends and focal points in literature. The word cloud visualizes the results of the keywords analysis.

Figure 10. *Word Cloud*



Terms	f	Terms	f	Terms	f	Terms	f	Terms	f
Growth mindset	57	Teachers	27	Pre-service teachers	18	Beliefs	11	Fixed mindset	10
Implicit theories	34	Teacher beliefs	24	Teacher education	13	Self-efficacy	11	Intelligence	9
Mindset	34	Motivation	20	Education	13	Implicit theories of intelligence	10	Mathematics	9

The size of the keywords indicates the frequency of these words in the dataset. Figure 10 displays a visual representation showcasing the 15 most frequently used author keywords along with their respective frequencies. Upon the analysis of Figure 10, it can be seen that of all the author keywords, growth mindset dominates the field with a frequency of 57. This keyword is followed by implicit theories (f=34) and mindset (f=34). Moreover, the existence of keywords such as teacher (27), teacher beliefs (f=24), and motivation (f=20) draws attention.

An analysis of author keywords and their frequency revealed emerging trend topics over time. The keywords that were repeated at least twice a year were included in the analysis. Figure 11 below illustrates the trend topics in the teacher mindset field across the years.

Figure 11. *Trend Topics in Teacher Mindset across the Years*

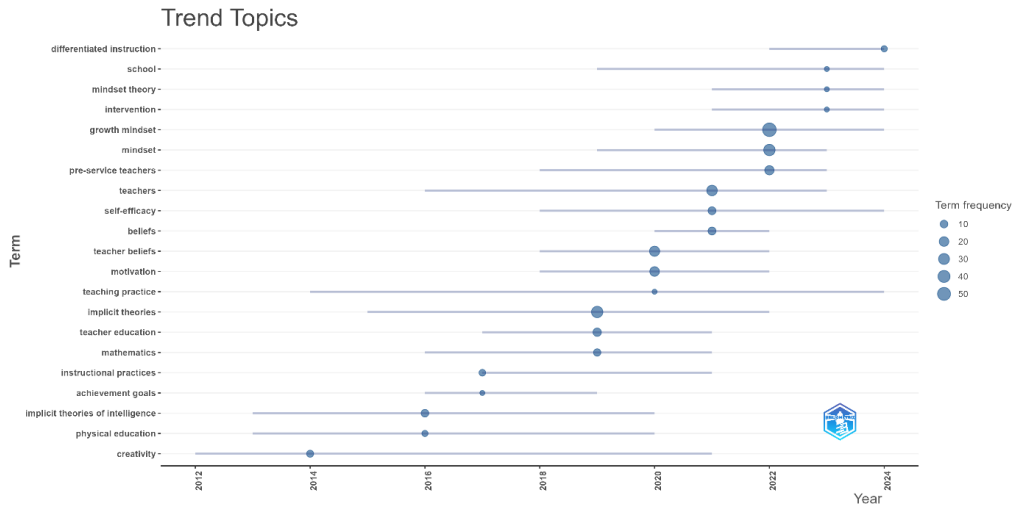


Figure 11 shows that in the early period (2012–2015), concepts such as creativity, physical education and implicit theories of intelligence dominated the literature, revealing that these themes were shaped within a more theoretical and discipline-focused framework in the initial stages of the literature. When it comes to the 2016–2018 period, themes such as implicit theories, teaching practice, mathematics, teacher education, and teacher beliefs became more prominent. This finding indicates that the field expanded from a theoretical foundation towards pedagogical practice and teacher beliefs. In particular, the increasing frequency of the themes of teacher beliefs and teacher education suggests that the literature has taken on a teacher-centered orientation. After 2019, concepts such as growth mindset, mindset theory, intervention, and differentiated instruction were observed to appear with higher frequency. The bubble sizes indicate the increased intensity of the growth mindset theme during this period. In recent years (2021–2024), the themes of school, beliefs, and intervention have shown continuity, while growth mindset has been integrated more into the context of practice and school. Overall, trend topics analysis reveals that the literature has evolved from theoretical foundations to teacher-focused pedagogical expansion and, finally, to application, intervention, and

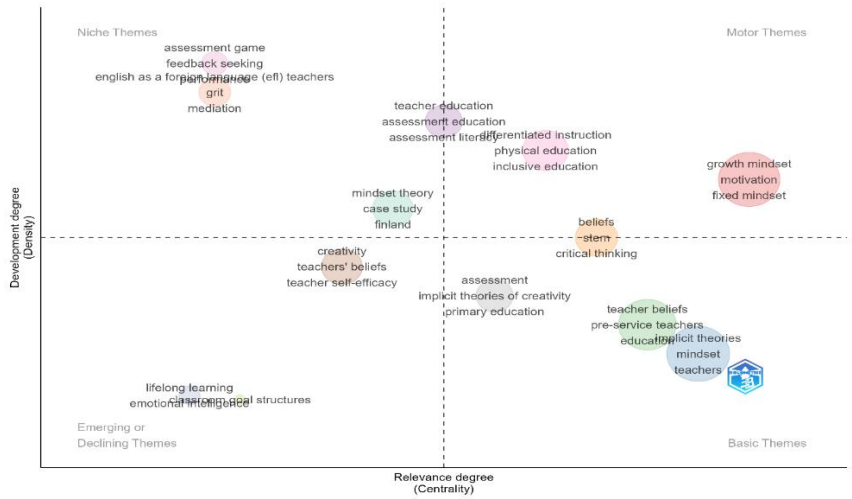
the school context. It shows that the field is becoming increasingly contextual and application-oriented.

Thematic map

Below, a Strategic Diagram displaying the subsets of teacher mindset research was created by Bibliometrix. The Strategic Diagrams map research topics and their connections in a specific field. The Strategic Diagram below illustrates thematic clusters determined by keywords repeated at least five to three times, using the top 250 author keywords. The clusters are represented by the three most recurrent words, and the circle sizes reflect the frequency of keyword usage. The Strategic Diagram is segmented into four slices, each interpreted in a distinct manner. For this purpose, two parameters, centrality and density, are defined. The density parameter is represented on the y-axis of the thematic map, while the centrality parameter is outlined on the x-axis. The centrality of a selected theme indicates its importance, and its intensity reflects its level of development (Nasir et al., 2020).

In the Strategic Diagrams, on the top right section, Motor Themes are located. Motor Themes are the first quadrant themes. Expressing high density and centrality, these themes denote advanced and essential concepts for the research field. The Niche Themes, representing highly developed but isolated high density and low centrality, constitute the second quadrant theme and are positioned in the top left section of the thematic map. Low centrality and low-density values are represented by the Emerging and Declining, constituting the third quadrant themes, and are situated in the bottom left section of the thematic map. Emerging themes denote recent trends while declining themes relate to declining interest in the field of study. Comprehensive, extensively researched, and well-developed internal connections, low density, and high centrality characterize the Basic Themes, constituting the fourth quadrant themes, and are located in the bottom right section of the thematic map (Cobo et al., 2011). The findings of the thematic map analysis are shown below.

Figure 12. *Strategic Diagram*



When examining Figure 12, four main quadrants can be observed based on the themes' centrality and density levels. Two distinct clusters are observed in the first quarter, namely Motor Themes. The larger of these clusters consists of the themes growth mindset, motivation, and fixed mindset. This clustering indicates that these concepts are both central to the field and are mature themes with high conceptual density and strong internal connections. The other motor cluster consists of the themes differentiated instruction, physical education, and inclusive education. Although not as dominant as the first cluster, this second cluster indicates that pedagogical practices and inclusive education contexts have gained a relatively strategic position in the literature. The presence of two separate motor clusters in the first quadrant indicates that the field exhibits a high level of structural maturity and conceptual integration both on the psychological-theoretical axis and on the pedagogical practices dimension.

In the niche themes quadrant, four clusters can be observed. Two of these clusters include the themes of assessment game, feedback seeking, English as a foreign language (EFL) teachers, performance, grit, and mediation. The location of these themes demonstrates a conceptually developed and consistent structure within themselves, but it must be noted that they are only integrated to a limited extent with the overall thematic network of the research field.

Located in the third quadrant, the clusters of lifelong learning and emotional intelligence, and the classroom goal structures both exhibit low centrality and low density values. This position indicates that the aforementioned themes have limited visibility within the main research line of the field. The themes of creativity, teachers' beliefs, and teacher self-efficacy, which are located closer to the axis boundaries in the same region, exhibit a transitional position, indicating a potential area for expansion within the field.

Finally, the clusters of teacher beliefs, pre-service teachers, education, implicit theories, mindset, and teachers, located in the basic theme quadrant, exhibit high centrality but relatively lower density values. This structure reveals that these themes have strong connections with the general thematic structure of the field but do not exhibit a conceptual integrity as concentrated as the motor themes within themselves. It is also important to note that the cluster of beliefs, STEM, and critical thinking, positioned close to the boundary line between the motor and basic themes, exhibits a structure with high centrality but only threshold-level density. This indicates that these themes have strong connections with the overall structure of the field but that their own conceptual integrity has not yet fully matured.

Thematic evaluation

Building upon the insights gained from the Strategic Diagram, a Thematic Evolution Map (Figure 13) was employed to investigate deeper into the temporal dynamics and transformative trends within the teacher mindset field. The Thematic Evolution Map was created by dividing it into four periods with 5 minimum cluster frequency. The number

of keywords is shown by the size of the nodes. (Cobo et al., 2011). The flow lines connecting the nodes indicate the direction of the topic clusters' progression over time. The thickness of the flow lines between nodes on the Thematic Evolution Map, in turn, indicates the strength of the link between themes and the intensity of conceptual continuity. The figure below demonstrates the thematic evolution map of the teacher mindset concept.

Figure 13. *Thematic Evolution Map*

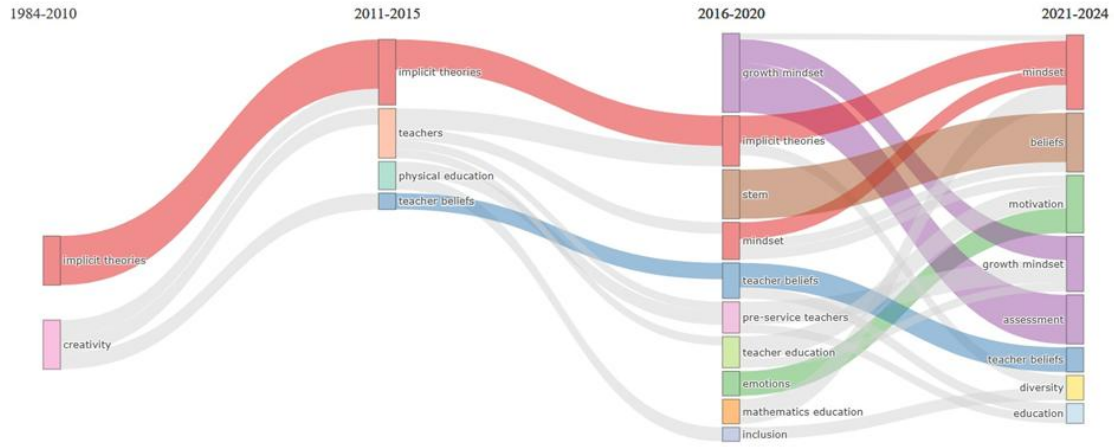


Figure 13 illustrates the approximately forty-year development of the growth mindset literature through thematic flows. The thickness of the lines in the diagram represents the intensity of a theme's transmission to the subsequent period and its conceptual continuity. Thin lines indicate limited impact, while thick bands represent powerful and structural flows that determine the direction of the field. Implicit theories appear to be the fundamental reference point for the literature in the 1984–2010 period. The thickest flow emerging from this node shows that the field was initially structured around the framework of implicit theories. The creativity theme, which emerged during the same period, has a more limited impact, feeding the implicit theories, teachers, and teacher beliefs nodes in the 2011–2015 period through thin lines. This suggests that creativity was a supportive but non-central line of research in the early period.

During the 2011–2015 period, four key nodes emerged, namely, implicit theories, teachers, physical education, and teacher beliefs. The thickest line again belongs to the implicit theories node, which continues to strongly feed the node of the same name in the 2016–2020 period. The teachers node has a thinner flow than implicit theories, but a thicker flow than the other nodes. This indicates that the theme of teachers is a research area that is growing in strength but is still in a secondary position. Furthermore, the teachers node feeds the mindset, pre-service teachers, and teacher education nodes with thinner lines, revealing that the literature is expanding towards the context of teacher education. The physical education node connects to the pre-service teachers and inclusion themes with thin flows, thus showing that discipline-based and inclusion-focused developments have become limited but visible. During the same period, the teacher

beliefs node feeds the node of the same theme for the 2016–2020 period with a line that is thinner than that of implicit theories but thicker than that of other nodes, indicating that teacher beliefs have become a continuous subfield.

A notable development during the 2016–2020 period is the growth mindset node, which emerged relatively independently from previous nodes. This node forms the thickest line of the period. The growth mindset feeds both the node of the same named node and the assessment node in the 2021–2024 period. In particular, the thicker line extending to assessment indicates that the growth mindset is strongly integrated with the measurement and evaluation literature. The emergence of the STEM, emotions, and mathematics education nodes in the same period indicates that the field is expanding towards discipline-based and affective dimensions. Notably, the STEM node feeding the beliefs node with a thick line during the 2021–2024 period indicates that discipline-specific belief studies are gaining strength.

In general, the diagram reveals that the literature has progressed from an implicit theory-centered theoretical starting point, through pedagogical expansion via teachers and teacher beliefs, to a more systemic phase where the growth mindset has become a dominant node, integrating with assessment, belief systems, and discipline-based research.

Discussion & Conclusion

The chronological and exponential growth analyses conducted in this study reveal the academic development of the field of teacher mindset over time. In particular, the low growth rate observed between 1984 and 2006 and the doubling period of nearly three decades suggest that the field was in its early stages and had limited academic interest at that time. These findings support Price's (1963) model of scientific growth. The model predicts that scientific fields initially start at a low level of production, then enter a period of rapid growth and eventually reach a saturation stage. In this framework, since the development of the field of teacher mindset follows a similar phase, it can be said that the field is still in its early developmental stage and is therefore open to expansion.

Indeed, an acceleration that has been observed in the post-2007 period and an annual growth rate of 22.04% was reached in this process. This indicates that the field has left the pre-maturity transition period and entered a dynamic development phase. At the same time, the doubling of scientific production every 3.14 years on average between 2007 and 2024 indicates that this increase continues steadily not only qualitatively but also quantitatively. These results are in line with the general momentum in teacher education research since the 2000s. It can be argued that teachers' professional identities, pedagogical belief systems, and approaches to learning play a central role in the theoretical underpinnings of the concept of teacher mindset. There is a growing body of empirical evidence in the literature on how the “growth mindset” in particular shapes teachers' pedagogical reflections, classroom management and interactions with students

(Farrington et al., 2012; Rattan et al., 2012). Furthermore, it can be claimed that the integration of Dweck's (2006) mindset theory into educational sciences is one of the main theoretical transformations that triggered this increase.

These developments suggest that the increase in academic interest in the field is not only limited to the volume of publications, but also the emergence of certain structural dynamics in the research ecosystem. Thus, it can be concluded that the field of teacher mindset is evolving into a more institutionalized and productive structure with increasing academic interest. This further means that the field has the potential to produce more in-depth theoretical and empirical contributions in the coming years. At this point, it is important to reveal which types of researcher profiles are responsible for this increased scholarly production in order to better understand the level of development of the field. In this regard, Lotka's Law, which analyzes author productivity, provides a meaningful framework for assessing the structure of academic engagement in the field.

The findings of this study reveal that author productivity in the field of teacher mindset deviates significantly from the theoretical predictions of Lotka's Law. In particular, the high proportion of authors with single publications and the limited number of authors with multiple publications indicate that a stable and institutionalized community of researchers has not yet formed in the field. This contradicts Lotka's (1926) assumption that scientific fields should be based on a small number of intensely productive authors and a large number of single-contributor researchers according to the classical productivity model. As reported in the literature, in maturing research fields, prolific authors with systematic contributions become more visible over time, leading to a more balanced publication pattern (Pao, 1985; Pranckutė, 2021). However, the productivity pattern revealed by this study shows that teacher mindset research is still at an early stage and needs to be strengthened with sustainable academic contributions. Indeed, in recent years, there has been a growing academic interest in the effects of teacher mindset on pedagogical approaches (Nadelson et al., 2019; Nalipay et al., 2021a), teacher behavior (Nalipay et al., 2021a), and student learning (Bardach et al., 2024). In this context, structural gaps in the field need to be considered not only as an indicator of weakness but also as an important area of opportunity for new research. The results indicate that sustained, in-depth research efforts are likely to enhance the scientific consolidation of teacher mindset research.

The analysis of the most cited journals in the field of teacher mindset reveals the interdisciplinary nature of this field. In particular, Frontiers in Psychology, Frontiers in Education, Social Psychology of Education and Teaching and Teacher Education (TATE) journals have been found to contribute intensively to the publications in the field. Considering that only TATE is directly located in the field of teacher education and the others are psychology-oriented journals, it is seen that teacher mindset research has developed within a psychology-based framework. This is in line with the fact that the concept of mindset is rooted in cognitive psychology (Dweck, 2006). In particular, growth mindset theory is a psychological model developed to explain individuals' beliefs about

learning, change, and skill development, and it has significant effects on teacher behavior as well as students' motivation to learn (Burnette et al., 2020; Yeager & Dweck, 2020). Hence, it is not surprising that psychological journals are at the forefront of teacher mindset research. On the other hand, in recent years, teacher mindset has been addressed not only as an individual psychological trait, but also in relation to cultural, social, and institutional contexts through more complex models (Farrington et al., 2012; Nadelson et al., 2019). This development reflects the expansion of the field from psychology to the discipline of teacher education and educational sciences.

When the productivity and impact levels of the prominent authors in the teacher mindset literature are evaluated together, remarkable trends regarding the structural dynamics of the field emerge. The findings show that Tirri, Kuusisto and Murphy are among the authors with the highest number of publications, whereas Dweck, Yeager, and Murphy stand out in terms of number of citations and impact level. This is in line with a particular trend reported in the literature regarding maturing research fields. Indeed, in assessing bibliometric trends, Pranckutė (2021) found that certain authors have the potential to shape the direction of the field through both their productivity and the content of their contributions. It is also noteworthy to address that academic impact is shaped not only in terms of quantitative criteria such as the number of publications, but also in terms of qualitatively deep theoretical contributions and their capacity to generate scientific resonance. Indeed, the mindset theory developed by Dweck (2006) provides a basic framework for understanding individuals' beliefs about ability development, learning processes and perceptions of success, and their learning motivation and behaviors. This theoretical approach constitutes one of the epistemological foundations of the teacher mindset literature. More recent work by Yeager and Dweck (2020) has empirically demonstrated that this conceptual framework is effective not only at the individual level but also at the social context and system level. On the other hand, Murphy's studies (see, for example, Muenks et al., 2024; Yeager et al., 2021) integrate mindset theory into educational practices and examine its effects on teacher behaviors and classroom practices, thus making an applied contribution to the field.

In this framework, the high impact level of these authors seems to be related not only to their numerical productivity but also to the fact that they produce studies supported by theoretical depth, methodological innovation and empirical validity. This suggests that there is not always a direct and linear relationship between scientific productivity and scientific impact, and that qualified, transformative and field-shaping contributions are more decisive in terms of academic visibility (Bornmann & Daniel, 2008). However, beyond individual productivity, one of the determinants of scientific impact is the academic network structures and collaboration patterns that researchers are involved in. In this regard, collaboration analyses reveal that authors such as Cimpian, Yeager, and Dweck stand out in both publication production and scientific impact not only through their individual contributions but also through their intensive academic collaborations. Similarly, Dweck's central position in co-citation analysis findings

demonstrates that this impact persists not only at the level of productivity but also in the intellectual structure of the field. These authors have multi-centered and strong research networks, suggesting that scientific productivity is increasingly based on collective knowledge production. Indeed, as emphasized in the current philosophy of science and sociology of science literature, the structural strength of the epistemic network to which the researcher belongs is one of the main determinants of scientific impact (Wagner & Leydesdorff, 2005). In this regard, a more comprehensive assessment of academic effectiveness is not limited to focusing only on individual achievement indicators. The contribution of collaborations between researchers, intellectual interactions, and the development of multidimensional perspectives to academic production needs to be taken into account as well. Hence, it can be said that collaboration stands out as a key structural element that fosters not only co-production processes but also knowledge sharing, theoretical diversity, and collective thinking.

Another finding of this study is that the most prominent countries in terms of productivity, impact and collaboration levels are the USA and China. This is in line with bibliometric studies in similar thematic areas such as teacher identity (Zhang & Wang, 2022) and teacher cognition (Feifei & Abdullah, 2023). Not only the number of publications, but also the central position of the USA and China in scientific collaboration networks is noteworthy. Their strong research infrastructures, access to financial resources and pioneering roles in international networks enable them to become leading actors in this field at the global level (Barrett et al., 2011). Indeed, international research collaborations not only increase scientific productivity but also deepen research quality through knowledge sharing, experience transfer and multi-perspective approaches (Freshwater et al., 2006). Thus, the decisive position of the USA and China in this field reveals that research capacity on a global scale is not only driven by quantitative productivity, but also by collaborative knowledge production, network centrality, and the power to drive epistemic diversity.

When the distribution of the prominent key concepts is examined, it can be said that it reflects the thematic structure and conceptual priorities shaped in the teacher mindset literature. Among the most frequently recurring concepts, “growth mindset”, “implicit theories”, “mindset”, “teacher”, “teacher beliefs”, and “motivation” stand out, providing important clues about the theoretical depth of the field. These findings are in direct correspondence with how mindset theory was defined for the first time within the framework of the concept of “implicit theories” and transformed over time into a model that guides pedagogical practices, especially in the context of education (Dweck & Yeager, 2019). Moreover, mindset's structural relationship with positive psychology (Fredrickson, 2003; Cherkowski, 2018) explains its connections with psychological variables such as teacher beliefs and motivation. In this respect, mindset is not only an individual attitude but also a multidimensional construct that shapes teaching strategies, classroom decisions, and pedagogical relationships with students. In the literature, significant relationships have been found between growth mindset and autonomous

motivation (Vermote et al., 2020), teacher beliefs (Daniels et al., 2021), and pedagogical approaches to learning environments (Yeager et al., 2021; Yu et al., 2022). These findings suggest that mindset-based approaches in teacher education play a strategic role not only for individual development but also for pedagogical competence.

In addition to the word cloud analysis, the trend topic analysis reveals a thematic transformation in the teacher mindset literature over time. While in the pre-2022 period, individual cognitive concepts such as creativity, implicit theories of intelligence, teacher beliefs, and motivation were prominent, in the post-2022 period, pedagogically oriented themes such as “growth mindset”, “mindset”, “pre-service teachers”, and “school” gained prominence. This change indicates that teacher mindset research has expanded from individual belief systems to classroom practices and deepened in pedagogical context. Indeed, Yeager and Dweck (2020) emphasize that mindset is not only an individual psychological disposition but also a social process that shapes student-teacher interaction in instructional settings. Especially the prominence of applied themes such as “differentiated instruction” and “intervention” studies has made the functionality of teacher mindset in classroom pedagogical processes more visible. The impact of teachers' mindsets on the quality of learning environments and student achievement has been confirmed in numerous studies (Farrington et al., 2012; Vermote et al., 2020). Moreover, the most frequently encountered concepts in the analysis were “implicit theories” and “growth mindset”, indicating the continuity of these two theoretical constructs in the literature. This finding underscores the growing orientation towards pedagogical practices, while remaining committed to the theoretical foundations of the field. Laine and Tirri's (2023) systematic review also highlights that teacher mindset is not only considered as an individual cognitive construct, but also as a dynamic and practical aspect closely related to teaching processes. This thematic transformation brings about both theoretical diversification and an increase in empirical research in the teacher mindset literature, thus revealing that the field is evolving towards a holistic structure.

The diagrammatic analysis demonstrates that theoretical continuity and the orientation towards pedagogical practices continue simultaneously in the teacher mindset literature. The positioning of concepts such as “growth mindset”, and “fixed mindset” as the motor themes in the strategic diagram reveals that the literature is still centered around the theoretical framework developed by Dweck (2006). However, the inclusion of concepts such as “differentiated instruction”, “physical education”, and “inclusive education” among the motor themes shows that the field has evolved into a dimension more directly related to teaching processes.

The findings of the thematic evolution map reveal that the literature on teacher mindset has undergone a transformation that progresses between paradigmatic continuity and contextual expansion. In the early period (1984–2015), the field was predominantly structured around implicit theories. The strong flow extending from this node into subsequent periods reveals that the literature has a stable theoretical backbone based on the framework of implicit theories (Dweck & Leggett, 1988; Dweck, 2006). This

indicates that the field initially consolidated around a consistent theoretical paradigm. The emergence of growth mindset as a strong and independent focus during the 2016–2020 period signifies a conceptual reframing rather than a theoretical break. While the tradition of implicit theories continues, growth mindset terminology has provided a more functional conceptual tool for intervention studies and practice-oriented work. Indeed, large-scale studies examining the conditions for the effectiveness of growth mindset interventions have become prominent in the literature during this period (Yeager et al., 2021), while critical meta-analytic discussions regarding effect sizes have also increased (Sisk et al., 2018). In recent years (2021–2024), the concentration of flows in the nodes of motivation, beliefs, and especially assessment indicates that the field has entered a more systemic phase. The integration of growth mindset with measurement and evaluation processes and motivational mechanisms suggests that the research agenda has moved beyond classroom applications to touch upon institutional and policy levels. Furthermore, the increased visibility of the theme of diversity indicates that mindset research is beginning to be linked to perspectives of equity and context sensitivity. Overall, the map reveals that the teacher mindset literature has evolved from a theoretical core based on implicit theories into a multi-layered field of research that opens up to practice through the growth mindset and, in the final stage, integrates with the dimensions of assessment, motivation, and diversity.

In conclusion, in recent years, the teacher mindset literature has exhibited a multidimensional development that both maintains its theoretical depth and is oriented towards pedagogical practices. The increase in scientific production, continuity of core concepts and thematic diversification indicate that the field is in the process of maturation. However, imbalances in the distribution of productivity and limited institutional collaborations reveal that teacher mindset research still has room for improvement. In this regard, encouraging more sustainable, collaborative, and practice-based research in the field has the potential to offer holistic contributions to the teacher mindset literature.

Limitations and Recommendations for Further Research

While this study provides a comprehensive analysis of the teacher mindset literature, it has some methodological and procedural limitations. First, the analysis was confined to 335 eligible publications in the WoS database. This excludes studies found in other academic databases such as Scopus, ERIC or Google Scholar but not included in WoS. Therefore, the findings reflect the sample in this database, not the entire teacher mindset literature. Given that bibliometric outcomes may vary across databases (Mongeon & Paul-Hus, 2016), diversifying data sources in future studies could provide a more comprehensive mapping of the literature.

Bibliometric analyses offer effective methods for mapping the structural relationships, emerging trends and, intellectual landscape of a research field. However, these methods may not fully represent the theoretical positioning of concepts within the text and the interpretive and contextual layers of meaning-building processes in

pedagogical contexts (Zupic & Čater, 2015; White & McCain, 1998). Therefore, supporting dimensions such as how the growth mindset is conceptualized in different cultural and institutional contexts, how it is operationalized in classroom practices, and how it is reinterpreted within critical pedagogical approaches through qualitative content analysis or meta-synthesis studies can reveal the theoretical depth of the field in greater detail. Such an integrated approach will not only track thematic trends but also provide the opportunity to evaluate conceptual transformation processes and epistemological diversification in a more analytical manner.

Third, the productivity and collaboration analyses conducted in this study are based on numerical data only at the level of authors, institutions, and countries. Future research may use methods such as social network analysis (SNA) and epistemic community modeling to examine which research communities have shaped the field of teacher mindset literature, whether psychology-based epistemic networks or education research-focused collaborations hold a more central position, and to what extent interdisciplinary interaction has occurred (Wagner & Leydesdorff, 2005). Such analyses can reveal not only the intensity of collaboration within the field, but also the distribution of power in knowledge production and the center-periphery structures in greater detail, thereby clarifying the institutional and intellectual positioning of teacher mindset research more clearly.

Finally, trend analyses and thematic maps in this study are based on specific keywords and indexing. This carries the risk that some themes may not be adequately represented due to indexing errors, differences in terminology between authors, or implicit conceptualizations. For this reason, it is recommended that further studies use manual coding or natural language processing (NLP)-based approaches to identify key concepts in a more refined way. Such methods can increase the conceptual depth of thematic maps by analyzing not only keyword frequencies but also the contextual usage patterns of concepts within the text.

Considering all these limitations, conducting more comprehensive and multi-method research in the field of teacher mindset will contribute to deepening the literature in terms of both scope and depth.

Ethical Approval

This study did not involve human participants; therefore, ethical approval was not required. However, all ethical considerations were duly taken into account throughout the research process.

Author Contributions

Pelin Derinalp: Conceptualisation, Theoretical Background, Methodology, Data Analysis, Data Visualisation, Writing, Review and Editing

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Conflict of Interest

The authors declare no conflict of interest.

Plagiarism Checks

Turnitin

Artificial Intelligence Usage Statement

ChatGPT 3.5 was used to enhance the manuscript's readability. The authors carefully reviewed and revised the output and took full responsibility for the final content.

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