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Trends, Hotspots and Future Prospects: The Evolution of Teachers' Roles in Educational Settings: A Bibliometric Analysis (2005-2025)

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Abstract. This study adopts bibliometric analysis to systematically examine the research development on teachers' roles from 2005 to 2025. Based on 1,648 documents retrieved from the Scopus database, we conducted a comprehensive bibliometric analysis using both performance and science mapping approaches. The findings reveal a steady growth in teachers' roles research, with a significant acceleration after 2015, reflected in increased publication volume. The analysis identified influential journals, authors, and highly cited documents. Through co-word analysis and thematic mapping, it identified major research themes including online teaching roles, teacher professional development, learner-centered teaching approaches, and technological pedagogical content knowledge. The thematic evolution indicates a shift from traditional teaching roles to more diverse and adaptive roles in technology-enhanced learning environments. However, the study is limited by its exclusive reliance on the Scopus database, its focus on English-language publications, and the citation-latency effect, which may underestimate recent works. Future research should pursue comparative studies, address under-examined themes such as cultural responsiveness, teacher well-being, and professional autonomy, and adopt innovative methods such as large-scale text mining and social network analysis. This bibliometric analysis contributes to a deeper understanding of research trends in teachers' roles. The results offer the potential to inform educational exploration and offer valuable insights for researchers, practitioners, and policymakers.

Keywords: Teachers' roles; bibliometric analysis; research trends; educational research; professional development

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1. Introduction

The roles of teachers in educational settings have changed significantly over the past few decades, influenced by shifting educational paradigms, technological advancements, and societal demands (Darling-Hammond & Lieberman, 2012). From traditional knowledge transmitters to facilitators, mentors, and designers of learning experiences, teachers now play multiple roles in contemporary educational contexts (Hattie, 2012; Hu, Chen, et al., 2025). Consequently, recent scholarship has moved beyond general role descriptions. It now systematically dissects teachers' pedagogical, technological, socio-emotional, and leadership functions. Understanding teachers' roles is crucial for improving educational practices, informing teacher education programs, and supporting professional development (Zeichner & Liston, 2014). Rapid changes driven by digital technologies and personalized learning make it essential to map how teacher roles are defined and studied (Mishra & Koehler, 2006).

Bibliometric analysis, a quantitative approach to analyzing academic literature, provides a systematic method for mapping the intellectual structure and development of a research field (van Eck & Waltman, 2014). Despite the importance of teachers' roles, systematic bibliometric investigations that map the field's development and intellectual structure over the past two decades are still relatively limited. First of all, existing studies lack a systematic analysis of the research landscape, and they mainly focus on specific aspects of teachers' roles, such as in technology integration (Ertmer & Ottenbreit-Leftwich, 2010; Hu & Hashim, 2025; Zhou et al., 2025), inclusive education (Florian & Black-Hawkins, 2011), or specific educational levels (Beijaard et al., 2004).

However, a holistic understanding of the research landscape, including publication patterns, influential research, and thematic development, remains lacking. Secondly, scholars have examined teachers' roles from a range of perspectives. Some view teachers primarily as facilitators of student learning (Keiler, 2018; Ly, 2024). Others highlight their function as emotional supporters (Jennings & Greenberg, 2009; Ransford et al., 2009). A further line of inquiry treats teachers as subjects of professional development (Darling-Hammond & Lieberman, 2012; Hu, Mi, et al., 2025). These studies are relatively independent and lack an integrative framework to understand the multidimensionality and complexity of teachers' roles.

Furthermore, methodological tools in this area are under-applied. Zhang and Wang (2022) conduct a 20-year bibliometric study to visualize the development of teacher identity research, but in the field of teacher roles, there remains a lack of large-scale, long-term systematic research using advanced data cleaning technologies (such as OpenRefine) and analytical tools (such as Bibliometrix). Therefore, a comprehensive bibliometric study is urgently needed to reveal the overall pattern, development trends, and future directions of teacher role research, providing a scientific basis for theoretical construction and practical development in this field.

By examining publication patterns, citation networks, and thematic clusters, bibliometric analysis can reveal the evolution of research focus, identify influential works and scholars, and highlight emerging trends (Chen, 2017). This study aims to fill this gap by conducting a comprehensive bibliometric analysis of research on teachers' roles published between 2005 and 2025. Specifically, this analysis addresses the following research questions:

Question 1. What temporal trends in scientific production and citation impact characterize research on teachers' roles from 2005 to 2025?

Question 2. Who are the most productive and influential authors in this field?

Question 3. What are the major research themes, and how have they evolved over time?

Question 4. What emerging trends can be identified in teachers' roles research?

By answering these questions, the findings delineate the field's intellectual development, identify influential publications, and highlight rapidly growing themes. This evidence clarifies research gaps for scholars, supports the alignment of teacher-education curricula with documented role competencies, and informs policymakers in directing resources toward the most impactful areas.

2. Methodology

2.1 Data Collection

This study employed a bibliometric approach to analyze research on teachers' roles published between 2005 and 2025. We conducted a comprehensive search in the Scopus database (Figure 1), which is widely recognized for its extensive coverage of peer-reviewed literature across various disciplines, including education (Mongeon & Paul-Hus, 2016). While it may exclude some regional or non-English journals, Scopus covers more education research and provides more consistent citation data than Web of Science, making it more suitable for this study.

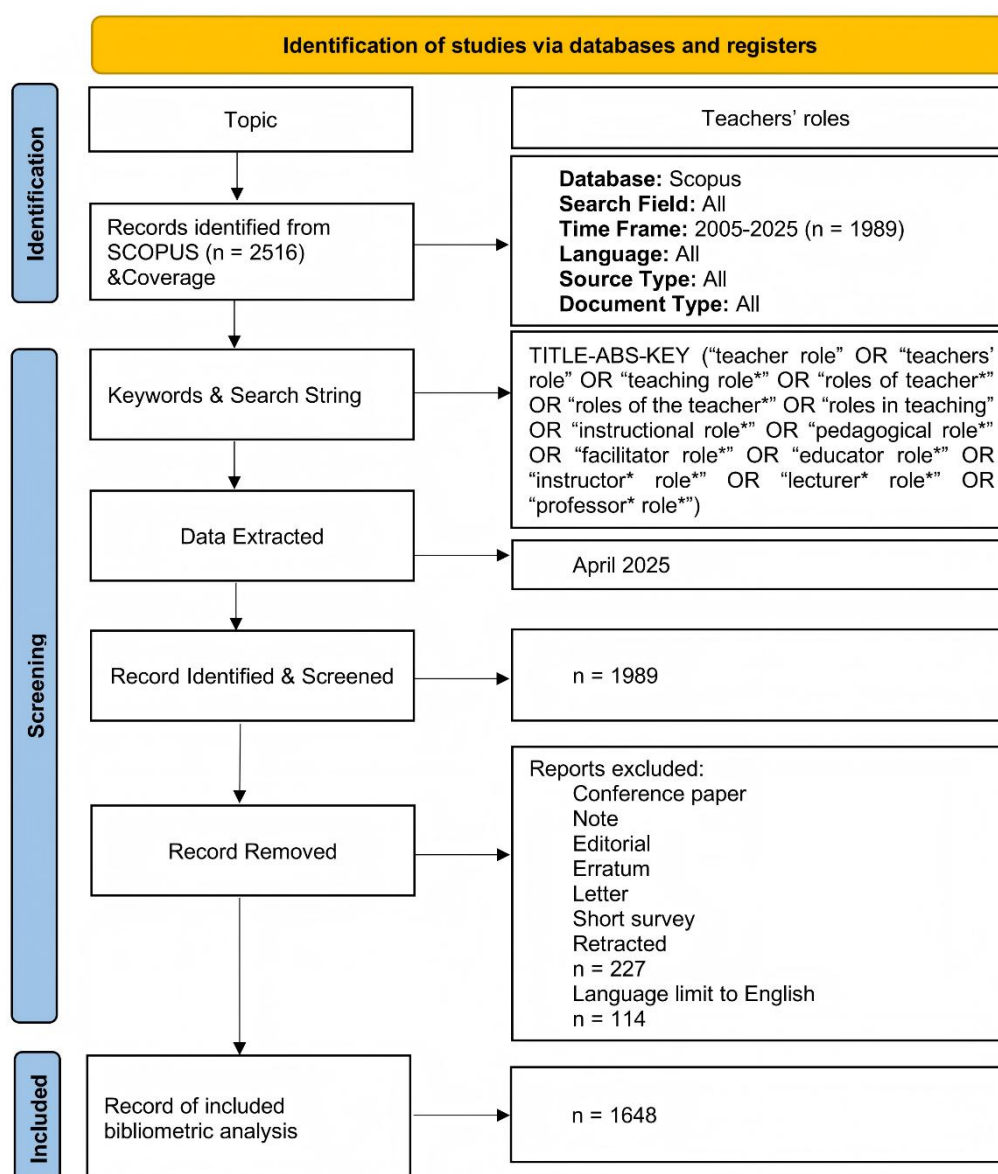


Figure 1: Flow diagram of the identification of the studies

In Scopus database, the search was conducted using the following search string: ("teacher role" OR "teachers' role" OR "teaching role*" OR "roles of teacher*" OR "roles of the teacher*" OR "roles in teaching" OR "instructional role*" OR "pedagogical role*" OR "facilitator role*" OR "educator role*" OR "instructor* role*" OR "lecturer* role*" OR "professor* role*"). This search strategy was carefully developed to capture the diverse terminology used to describe teachers' roles in educational research. The initial search yielded 2,516 documents. After limiting the timeframe to 2005-2025, 1,989 documents remained. We further refined our dataset by excluding conference papers, notes, editorials, errata, letters, short surveys, and retracted papers, resulting in 1,762 documents. Finally, we limited our analysis to English-language publications, yielding a final dataset of 1,648 documents for the bibliometric analysis.

2.2 Data Cleaning

The data-preparation workflow for this study began with the export of full-record files from Scopus in CSV format (downloaded April 2025). As the 2025 dataset only covers publications up to April, it should be considered partial and may not fully reflect annual trends. As for the database outputs inevitably introducing duplicate and inconsistently formatted records, we implemented a three-stage cleaning protocol that combined OpenRefine 3.9.3, BiblioMagika 1.9.1, BiblioMagika 2.9, and the biblioshiny in RStudio (v4.3.3).

First, all raw files were ingested into OpenRefine, where we normalized author names, institutional affiliations, and source titles, that is, a procedure shown to reduce false author splits and mergers in multidisciplinary datasets (Petrova-Antonova & Tancheva, 2020). We then used the “duplicate detection” module in BiblioMagika to identify and remove redundant records across data sources. Manual spot checks confirmed a 98% accuracy rate in duplicate elimination, comparable to benchmarks reported by Ahmi (2024). In the second stage, controlled vocabularies were applied to harmonize keyword variations (e.g., “teacher role”, “teachers’ roles”, and “roles of teachers”) and to collapse British- and American-English variants, following the term-unification guidelines proposed by Maharana et al. (2022).

Missing bibliographic fields (chiefly country information and author identifiers) were automatically flagged by BiblioMagika and completed through cross-referencing with CrossRef and ORCID registries. Finally, the refined dataset was imported into RStudio, where Bibliometrix performed an additional integrity check before converting the records into an analysis-ready data frame. The resulting corpus preserves the breadth of the original search while ensuring consistency across author, source, and keyword fields, thereby providing a reliable foundation for all subsequent performance and science-mapping analyses.

2.3 Data Analysis

This study adopted a two-step bibliometric protocol implemented in R (v4.3.3) with the “bibliometrix” package (Aria & Cuccurullo, 2017). We first carried out a performance analysis to quantify the field’s output and impact, calculating annual publication growth, cumulative citations, and the relative contributions of leading authors, journals, and documents. Building on these descriptive results, a series of science-mapping procedures was deployed to reveal the field’s conceptual architecture. Authors’ keywords served as semantic units for a co-word network whose force-directed visualization highlighted clusters of thematically related studies.

The resulting strategic diagram positioned each cluster along density (internal cohesion) and centrality (connection to the broader network), distinguishing motor, basic, declining, and niche themes. To capture dynamics rather than static snapshots, a thematic-evolution analysis compared two successive windows: 2005-2015 and 2016-2025, thereby tracing how individual themes concerning teachers’ roles have emerged, consolidated, or receded over the past two decades.

3. Results and Discussion

3.1 Main Information about the Data

Table 1 shows that the cleaned corpus comprises 1,648 publications issued between 2005 and 2025 (21 citable years). A total of 4,433 authors contributed to these papers, producing an average of 2.69 authors per article and generating 6.58 citations per author. Cumulatively, the dataset has received 29,156 citations, which translates into 17.69 citations per paper (or 22.19 citations per cited paper) and an average of 1,457.80 citations per year. Impact indicators confirm the field's solid scholarly footprint: h-index = 80, g-index = 121, m-index = 3.81, with 14,834 citations concentrated in the h-core. These metrics emphasize both the breadth of participation in teachers' roles research and the sustained attention the literature has attracted over the past two decades.

Table 1: Main information about the data

Main Information	Data
Publication Years	2005-2025
Total Publications	1648
Citable Year	21
Number of Contributing Authors	4433
Number of Cited Papers	1314
Total Citations	29,156
Citation per Paper	17.69
Citation per Cited Paper	22.19
Citation per Year	1457.80
Citation per Author	6.58
Author per Paper	2.69
Citation sums within h-Core	14,834
h-index	80
g-index	121
m-index	3.810

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

3.2 Publication Trends

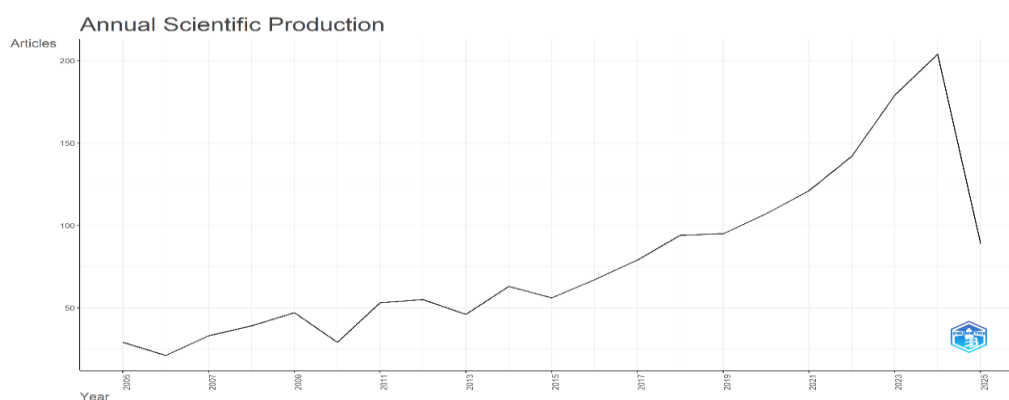


Figure 2: Annual scientific production

Figure 2 traces the annual output on teachers' roles from 2005 to 2025 and reveals a steady long-term rise that unfolds in three successive stages. In the formative phase (2005–2014), production remained modest and uneven, opening with 29 papers in 2005, slipping to a low of 21 in 2006, yet gradually climbing, despite intermittent dips, to 63 by 2014, a pattern that marked the field's initial consolidation (data presented in Table 2). A decisive acceleration emerges between 2015 and 2024. During this span, annual publications climb almost without interruption, rising from 56 to 204. The output crossed the 100-paper mark in 2020. And these figures highlight a surge in scholarly engagement and reflect the growing number of relevant outlets. The apparent fall to 89 papers in 2025 should be read with caution, as the figure reflects a partial reporting year rather than a genuine downturn in research activity. Together, these trajectories depict a maturing domain that has transitioned from early volatility to a period of sustained, vigorous growth.

Table 2: Annual scientific production

Year	Articles
2005	29
2006	21
2007	33
2008	39
2009	47
2010	29
2011	53
2012	55
2013	46
2014	63
2015	56
2016	67
2017	79
2018	94
2019	95
2020	107
2021	121
2022	142
2023	179
2024	204
2025	89

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

Of particular significance, the field's scientific output exhibited remarkable expansion, more than seven-fold over the analyzed period. Specifically, publication volume increased by 603% from 2005 (29) to 2024 (204). The most dramatic intensification occurred during the six-year interval between 2019 (95 publications) and 2024 (204 publications), representing a 115% increase. This sustained proliferation, particularly pronounced after 2018, correlates with heightened scholarly attention to technology-enhanced pedagogical approaches, emergency remote instructional modalities necessitated by the COVID-19 pandemic, and fundamental transformations in educational paradigms.

3.3 Citation Analysis

A comprehensive citation analysis clarifies how studies of teachers' roles shape academic discourse. The dataset contains 1,648 documents in total. On average, each item has received 17.69 citations. Such citation density confirms the field's substantial contribution to educational scholarship and its resonance within the broader academic community.

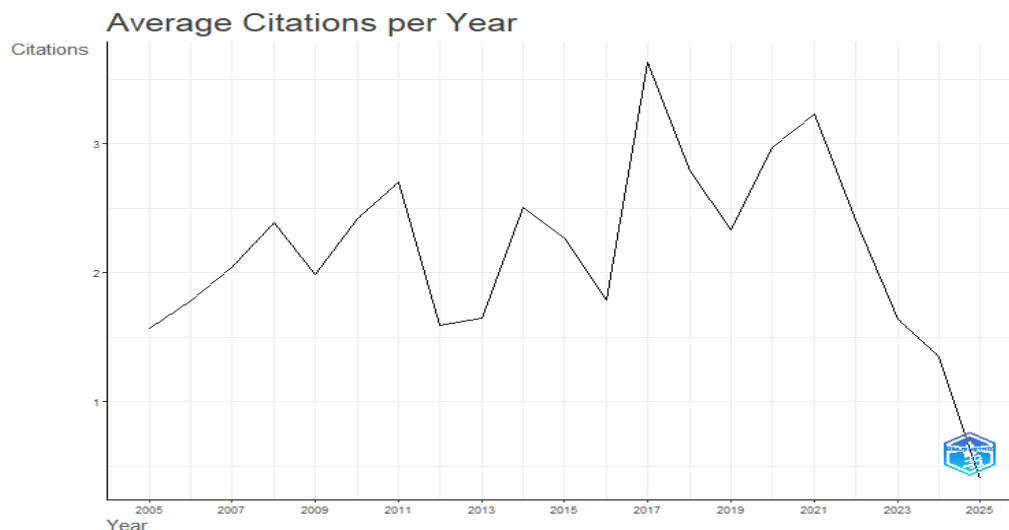


Figure 3: Average citations per year

Figure 3 summarizes the field's citation impact, presenting the mean total citations accrued per year and revealing a four-stage trajectory. During the formative period (2005-2011), average impact rose from 1.57 to 2.70, apart from a brief dip in 2009 (1.99), as the earliest contributions began to gain scholarly traction. This was followed by a fluctuation phase (2012-2017): a temporary low in 2012 (1.59) quickly gave way to a sharp ascent that peaked at 3.63 in 2017, reflecting the consolidation of influential theoretical frameworks and methodological refinements. Between 2018 and 2021, the pattern stabilized. During this span, the index swung between 2.33 and 3.23. This modest fluctuation paralleled intensified interest in technology-mediated pedagogy and the systemic shocks of the COVID-19 pandemic (Hu, Du, et al., 2025; Okoye et al., 2021; Oyedotun, 2020; Vladova et al., 2021).

Even so, the field kept an elevated citation profile. Between 2022 and 2025, the index appears to taper, dropping from 2.41 to 0.40. This decline is best explained by citation-latency effects, not by any real loss of scholarly relevance. Because citations take time to accrue, recent publications, especially from the past three years, show lower counts, so figures likely underestimate the eventual impact of those works and should not be interpreted as evidence of declining research activity or influence. The newest publications have simply not yet had enough time to accumulate references.

Citation averages have fluctuated throughout the past two decades. Much of this variation comes from the normal delay in scholarly referencing. Periodic surges also appear after landmark studies are published. These citation dynamics also

mirror shifting research priorities within the study of teachers' roles. They reflect changing theoretical orientations in educational scholarship. To some extent, these patterns suggest that the field stays responsive to contemporary educational challenges while still drawing on its established knowledge base.

Figure 4 presents a comprehensive visualization of the ten most globally cited documents within the corpus. Each of these works is a seminal contribution. As a whole, they have substantially shaped scholarly discourse on teachers' roles. Besides, these publications have exerted considerable influence on theoretical frameworks, methodological approaches, and practical applications within educational research and practice.

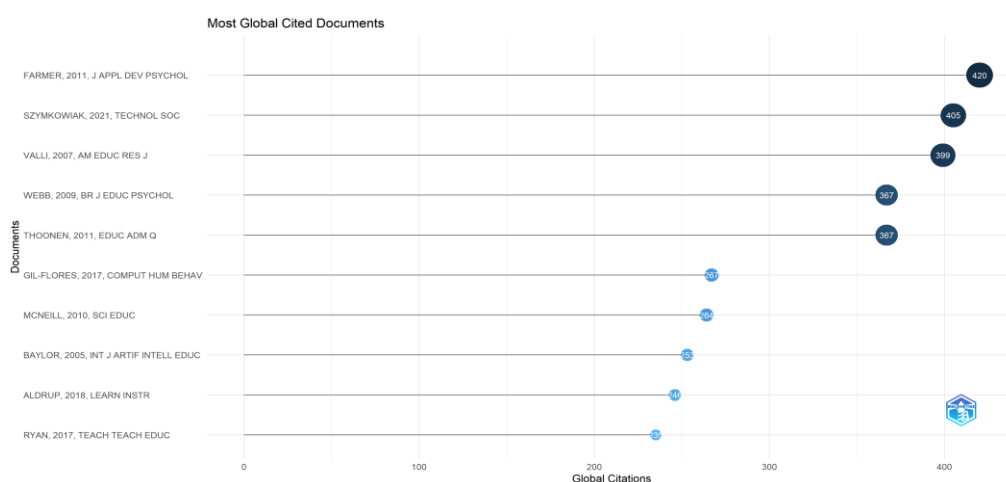


Figure 4: Most globally cited documents

The citation prominence of these scholarly works reveals several significant thematic concentrations that have gained substantial traction within the academic community. Farmer's highly cited research has advanced our understanding of teacher-student relationship dynamics. It clarifies the subtle interpersonal dimensions that support effective pedagogical interactions (Farmer et al., 2011). Baylor and Szymkowiak's frequently cited publications have advanced conceptual frameworks for integrating digital technologies and artificial intelligence in education. They also illuminate the evolving technological dimensions of teachers' professional roles (Baylor & Kim, 2005; Szymkowiak et al., 2021).

While in the domain of educational leadership, Thoonen's influential work has established critical paradigms for understanding how leadership functions intersect with instructional efficacy and institutional transformation (Thoonen et al., 2011). At the same time, Gil-Flores' widely cited research has provided substantive insights into teacher professional development and lifelong learning trajectories, emphasizing the continual evolution of pedagogical expertise throughout educators' careers (Gil-Flores et al., 2017).

The citation patterns demonstrated by these prominent publications reflect the field's multidimensional engagement with teachers' roles across interpersonal,

technological, organizational, and developmental domains. This group of highly cited works collectively constructs a solid intellectual foundation that continues to inform contemporary research initiatives and practical applications in educational settings worldwide. The diverse theoretical perspectives and methodological approaches represented in these seminal publications stress the inherently interdisciplinary nature of research on teachers' professional identities and functions within educational ecosystems.

3.4 Most Relevant Sources

Table 3: Most relevant sources

Sources	Articles	CiteScore 2024	Quartile
FRONTIERS IN PSYCHOLOGY	49	6.3	Q1
TEACHING AND TEACHER EDUCATION	38	7.8	Q1
FRONTIERS IN EDUCATION	12	3.7	Q2
PSYCHOLOGY IN THE SCHOOLS	12	3.3	Q2
ASIA-PACIFIC EDUCATION RESEARCHER	11	8.8	Q1
COGENT EDUCATION	9	2.9	Q2
EDUCATIONAL MANAGEMENT ADMINISTRATION AND LEADERSHIP	9	10.8	Q1
SOCIAL PSYCHOLOGY OF EDUCATION	9	5.2	Q1
COMPUTERS AND EDUCATION	8	23.7	Q1
EDUCATION SCIENCES	8	5.5	Q1

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

Table 3 reveals the academic landscape supporting research on teachers' roles, clarifying both the disciplinary foundations and intellectual breadth of this scholarly domain. *Frontiers in Psychology* stands as the preeminent outlet with 49 articles, establishing psychology as a central paradigm for investigating teacher identity, efficacy, and classroom dynamics. This psychological emphasis finds complementary grounding in *Teaching and Teacher Education*, which contributes 38 articles and serves as the primary channel for empirical research on professional practice and role conceptualization. Together, these two journals embody a dual disciplinary focus, anchoring the field in both psychological processes and educational practice.

The publication landscape extends into another tier, where *Frontiers in Education* (12 articles), *Psychology in the Schools* (12 articles), and *Asia-Pacific Education Researcher* (11 articles) demonstrate the field's multidisciplinary character. This clustering reflects an integration of general educational scholarship with specialized psychological applications across diverse cultural contexts. The next tier further underlines the interdisciplinary breadth, encompassing journals such as *Cogent Education*, *Educational Management Administration and Leadership*, *Computers and Education*, and *Education Sciences*, which collectively contain technology integration, leadership studies, professional development, and policy considerations.

Three critical patterns emerge from this bibliometric distribution. First, the dual prominence of psychological and educational channels confirms that understanding teachers' roles requires synthesizing insights from both cognitive-behavioral sciences and pedagogical practice. Second, the obvious presence of technology-oriented publications such as *Computers and Education* indicates how digital transformation is fundamentally reshaping role conceptualization in contemporary educational settings.

Finally, the geographical diversity of these venues, spanning North America, Europe, Asia-Pacific regions, as well as international open-access platforms. This means that teachers' role research constitutes a genuinely global scholarly endeavor. It acknowledges common professional challenges while still accommodating the distinct educational systems and cultural contexts of each region. This stratified publication ecosystem thus provides not merely a repository of research, but a sophisticated intellectual infrastructure that captures the multifaceted nature of teachers' professional identities within diverse educational ecosystems.

3.5 Most Relevant Authors

Table 4 shows the most relevant authors in research on teachers' roles, highlighting scholars who have made substantial contributions to the field. The analysis reveals two leading researchers with equal productivity: Kılınç Ali Çağatay and Van Houtte Mieke, each with seven publications. They are followed by three authors who have contributed five publications each: Bellibas Mehmet Şükrü, Gümüş Sedat, and Poulou Maria S. The next tier of authors, including Banerjee Neena, Dickenson Patricia, Han Jiying, etc., have each contributed four publications to the field.

"Articles Fractionalized" in the second column is a bibliometric method used to more accurately assess individual authors' contributions to scientific publications, especially in collaborative works. Rather than counting each publication as a whole unit per author (as in "full counting"), this method assigns each author a fraction of the credit based on how many co-authors a paper has (Rossi et al., 2019). Among the identified researchers, two authors demonstrate exceptional prolificacy in terms of fractionalized publication output. Specifically, Poulou Maria S. achieves the highest fractional score of 4.00, followed by Van Houtte Mieke with a fractional contribution of 3.00. These fractional values indicate that both researchers have accumulated scholarly output equivalent to three or more single-authored publications within the analyzed corpus.

Table 4: Most relevant authors

Authors	Articles	Articles Fractionalized
KILINÇ ALI ÇAĞATAY	7	1.93
VAN HOUTTE MIEKE	7	3.00
BELLIBAŞ MEHMET ŞÜKRÜ	5	1.67
GÜMÜŞ SEDAT	5	1.53
POULOU MARIA S	5	4.00
BANERJEE NEENA	4	0.91
DICKENSON PATRICIA	4	2.00
HAN JIYING	4	1.33
MARTIN ANDREW J	4	1.23
MOLLER STEPHANIE	4	0.91
MONTGOMERY JUDITH L	4	2.00
POLATCAN MAHMUT	4	1.20
ACAR IBRAHIM H	3	0.78
COLLIE REBECCA J	3	0.89
DEMANET JANNICK	3	1.33
DU XIANGYUN	3	0.73
ERDOĞAN ONUR	3	0.60
GLOCK SABINE	3	1.08
KIURU NOONA	3	0.70
KOKA ANDRE	3	1.53

Rather than a few scholars producing the majority of research, teachers' roles as a research domain appear to engage numerous academics, making significant contributions. The geographic diversity of these leading authors is notable, with researchers from Turkey (Kılınç, Bellibas, Gümüş, Polatcan, etc.), Belgium (Van Houtte), Greece (Poulou), the United States (Banerjee, Dickenson, Montgomery), China (Han), Australia (Martin), and Europe (Moller) among the first ten productive authors. This international representation reveals the global interest in understanding teachers' roles across different educational systems and cultural contexts.

The authorship pattern reveals a field characterized by international collaboration and diverse research interests. These authors investigate varied dimensions of teachers' roles, including teacher leadership, professional identity, classroom management, sociological aspects of teaching, emotional dimensions of teaching, and cross-cultural comparisons of teacher functions. Such diversity of research focus reflects the multifaceted nature of teachers' roles research, encompassing pedagogical approaches, organizational contexts, psychological factors, and policy implications. Figure 5 visualized using the Kamada-Kawai layout and Edge Betweenness clustering algorithm in Biblioshiny for R. The network (50 nodes; minimum 1 edge; isolated nodes removed) reveals several distinct co-authorship clusters, often organized by regional or thematic focus. Larger nodes represent authors with higher degree centrality, indicating key connectors within and across clusters.

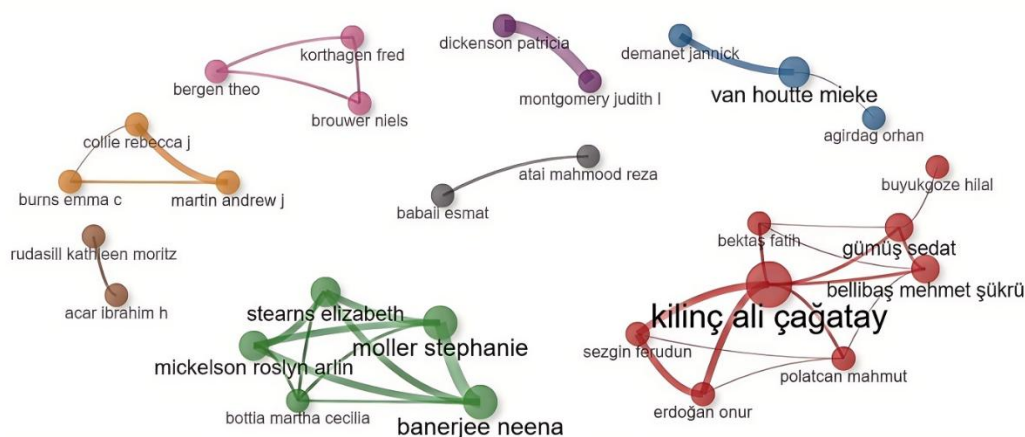


Figure 5: Author collaboration network

3.6 Co-occurrence of Author's Keywords

The co-occurrence analysis of authors' keywords provides valuable insights into the conceptual structure and main research themes in teachers' roles research. Figure 6 displays the network visualization of keyword co-occurrences, illustrating the relationships between key concepts in the field. The keyword co-occurrence network reveals four major clusters, each representing distinct but interconnected research dimensions.

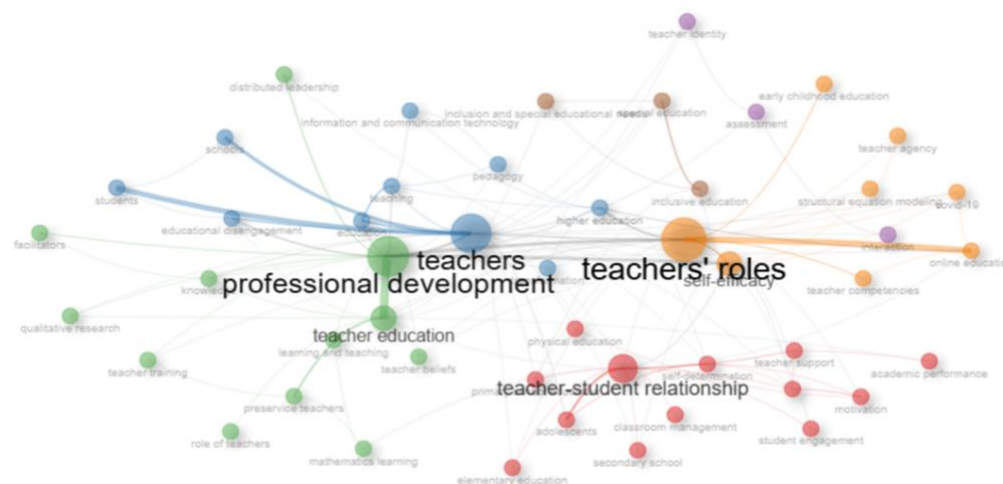


Figure 6: Co-occurrence of the author's keywords

Teachers' Roles Cluster (Orange): This central cluster contains keywords such as "teachers' roles", "teacher agency", "self-efficacy", "teacher competencies", and "online education". This cluster represents research focusing on the definition, measurement, and evolution of various teacher roles, particularly in digital contexts.

Professional Development Cluster (Green): Keywords in this cluster include "professional development", "teacher education", "teacher training", "learning and teaching", "distributed leadership", and "qualitative research". This cluster

highlights the processes through which teachers acquire and refine their professional roles through education and ongoing development.

Teacher-Student Relationship Cluster (Red): This cluster includes keywords such as “teacher-student relationship”, “classroom management”, “student engagement”, “motivation”, “elementary education”, “secondary school”, and “academic performance”. It stands for research examining how teachers’ interpersonal roles affect classroom dynamics and student outcomes.

Teaching Contexts Cluster (Blue): Keywords such as “teachers”, “teaching”, “higher education”, “pedagogy”, “schools”, and “information and communication technology” form this cluster, representing research on how different educational contexts shape teachers’ roles.

The visualization also reveals smaller but meaningful clusters in purple, focusing on “teacher identity”, “assessment”, and “interaction”. The network structure shows these four major themes as interconnected rather than isolated, with “teachers’ roles”, “professional development”, “teachers”, and “teacher-student relationship” functioning as conceptual hubs. This interconnectedness suggests that teachers’ roles research adopts an integrative perspective that recognizes how professional identity, pedagogical practices, interpersonal relationships, and institutional contexts mutually influence each other.

The prominence of both traditional keywords (classroom management, teacher education) and newer concepts (online education, structural equation modeling) illustrates the field’s evolution from conventional classroom-focused conceptions of teaching to more complex, technologically informed, and methodologically sophisticated understandings of teachers’ multifaceted roles. To further clarify these trends, Figure 7 summarizes the frequency counts of the top 15 author keywords, with “teachers’ roles” (141 occurrences), “professional development” (127), and “teachers” (114) emerging as the most frequently used terms, indicating their centrality in the field’s discourse.

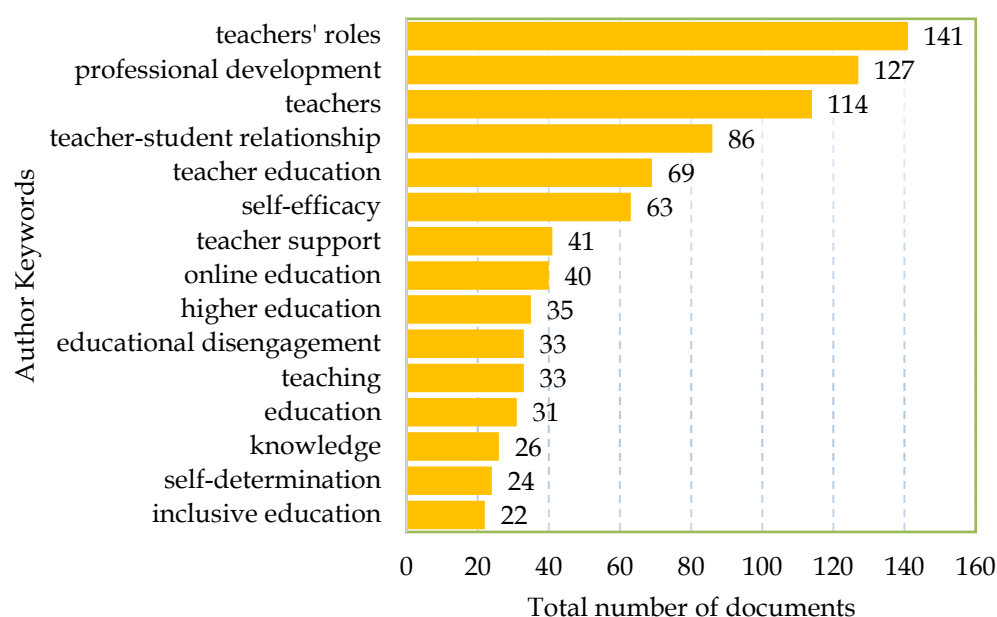


Figure 7: Frequency distribution of the top 15 author keywords

3.7 Thematic Map

The thematic map (Figure 8) provides a diagram of research themes based on their centrality (relevance to the overall research field) and density (internal cohesion of the theme). This visualization categorizes the keywords into four distinct quadrants, each representing different roles in the conceptual landscape of teachers' roles research.

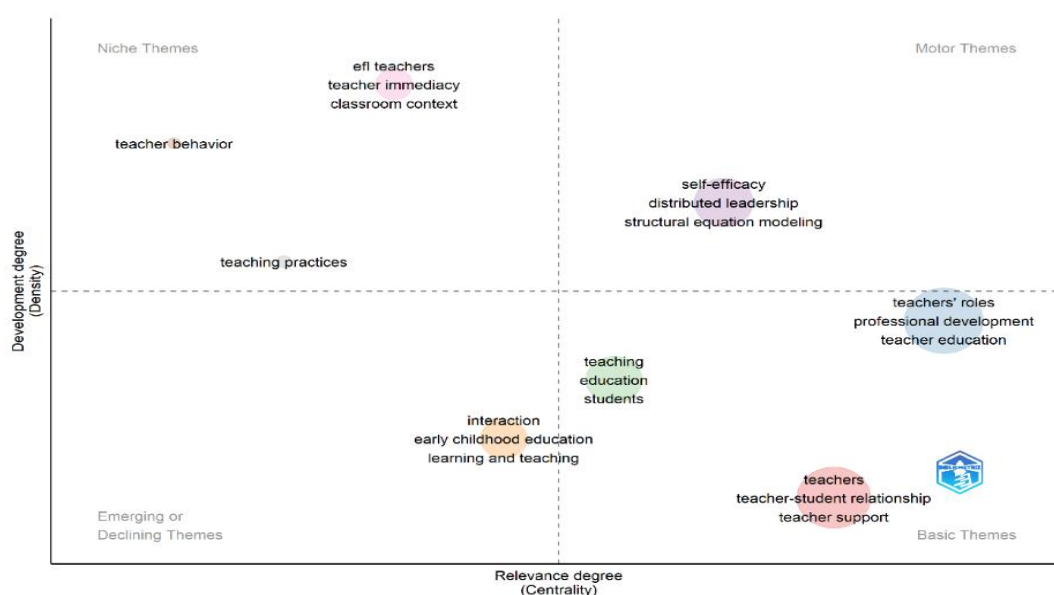


Figure 8: Thematic map

The thematic mapping analysis reveals a sophisticated intellectual landscape organized into four distinct strategic domains, each reflecting different stages of theoretical development and research centrality within teachers' roles scholarship. Motor themes, characterized by high centrality and density, occupy the upper-right quadrant and represent the field's current driving forces. Here, three concepts stand out: "self-efficacy", "distributed leadership", and "structural equation modeling". Each has reached a high level of methodological sophistication and wide integration across studies. Altogether, they show how psychological constructs, and analytical frameworks now play a significant role in advancing understanding of teachers' professional functions.

This foundation of motor themes rests on a set of basic themes located in the lower-right quadrant. In that quadrant, core concepts like "teachers' roles", "professional development", "teacher education", and "teacher-student relationship" occupy positions of high centrality, even though their internal cohesion remains comparatively low. These themes serve as essential building blocks, although somewhat dispersed in their theoretical development, and remain indispensable to the field's conceptual framework. Their positioning suggests ongoing opportunities for theoretical consolidation and deeper integration.

The intellectual ecosystem also contains niche themes in the upper-left quadrant, where specialized areas such as "EFL teachers", "teacher immediacy", and "classroom context" demonstrate strong internal development but limited broader connectivity. These represent mature sub-disciplines that have achieved theoretical coherence within their specific domains while maintaining more circumscribed influence on the overall field. From the map, the lower-left quadrant houses emerging or declining themes, including "interaction", "early childhood education", and broader educational concepts. These topics show limited development and only peripheral centrality. Such a profile may signal new research opportunities or, conversely, areas that are losing scholarly attention.

This thematic structure provides researchers with a detailed roadmap for scholarly contribution: building upon the solid foundations of motor themes, strengthening the theoretical coherence of basic themes, extending the reach of niche specializations, and identifying promising trajectories within emerging or declining domains. The thematic distribution ultimately reflects a field in dynamic evolution, where established psychological and methodological approaches drive current inquiry while fundamental educational concepts await deeper theoretical integration.

3.8 Thematic Evolution

The analysis of thematic evolution traces how research themes have developed and transformed over time. As shown in Figure 9, the thematic evolution of teachers' roles research is captured across two distinct periods: 2005-2015 and 2016-2025, revealing the continuity and transformation of research themes.

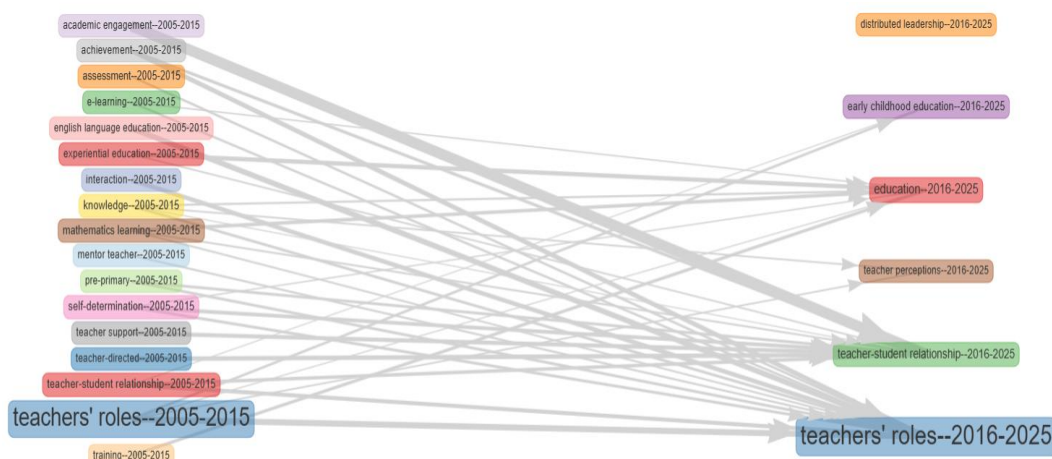


Figure 9: Thematic evolution

The thematic evolution map highlights a dynamic scholarly trajectory. Fundamental concepts have remained at the center of the field. At the same time, they have undergone significant conceptual and methodological transformations. The persistent theme of “teachers’ roles” sits at the core of this evolution. It has served as a steady anchor during both the 2005–2015 and 2016–2025 periods. Even so, its contextual applications and theoretical connections have shifted profoundly over time. This continuity demonstrates the field’s commitment to its foundational concerns while adapting to emerging educational realities.

Most remarkably, the research landscape has witnessed a pronounced shift toward relational dimensions of teaching, with “teacher-student relationship” evolving from a peripheral concern in the earlier period to a major focal point in recent scholarship. This transformation reflects a broader movement in research focus. From 2005 to 2015, scholars pursued diverse, context-specific inquiries. They examined themes such as “mathematics learning”, “English language education”, and “mentor teacher” roles. Between 2016 and 2025, attention focused on “early childhood education” and on more holistic educational frameworks.

Simultaneously, the field has undergone significant methodological sophistication, transitioning from foundational concepts like “knowledge”, “self-determination”, and “interaction” toward more structured analytical frameworks, particularly the emergence of “distributed leadership” as a prominent theme in contemporary research. The most revealing is the field’s evolution from predominantly academic orientations toward practice-centered inquiry, evidenced by the shift from “academic engagement” in the earlier period to “teacher perception” in recent years.

This practical turn appears alongside a seamless integration of technological issues. “E-learning”, once a stand-alone topic from 2005 to 2015, has been absorbed into mainstream educational practice rather than remaining a specialized domain. The strong connection lines between the two periods,

particularly linking “teacher-student relationship” across temporal boundaries and connecting early “teachers’ roles” research with its contemporary manifestations, illuminate how this scholarly domain has achieved both theoretical continuity and innovative adaptation. It also reflects education’s response to evolving pedagogical challenges while maintaining its core professional concerns.

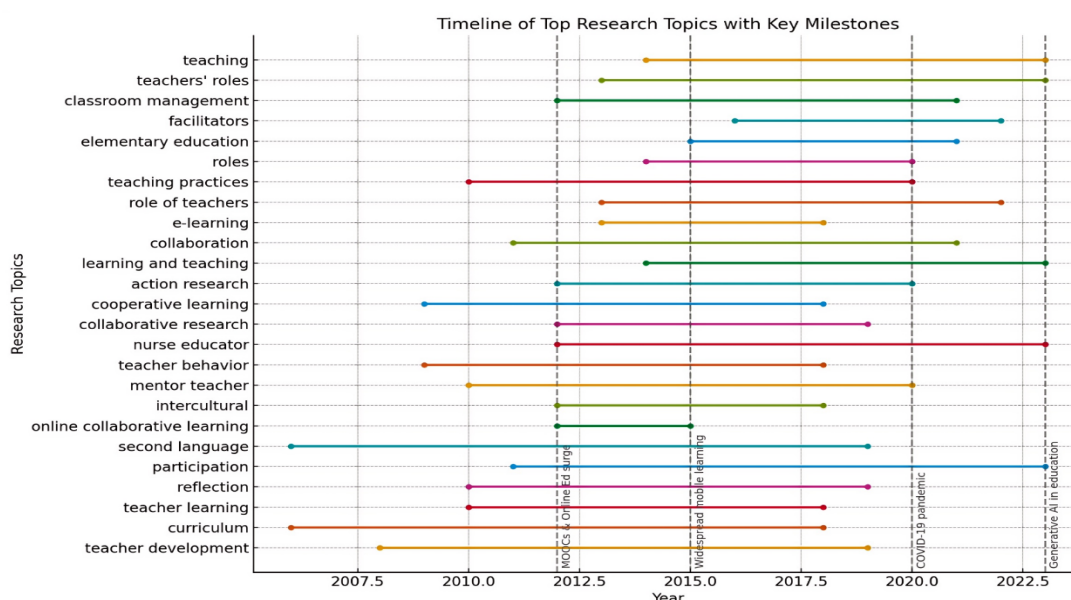


Figure 10: Timeline of top research topics with key milestones

Figure 10 presents the timeline of top research topics, with horizontal lines indicating each topic’s active research span. The vertical lines also highlight key milestones such as the 2012 surge in MOOCs and online education, the 2015 widespread adoption of mobile learning, the 2020 shift to online teaching during COVID-19, and the emergence of generative AI tools in 2023. The data reveal a progression from early, traditional themes such as curriculum, second language, and classroom management (active since 2006–2010) toward mid-period emphases on technology integration and collaborative practices (e.g., e-learning, collaboration, action research). Recent years (2021–2023) have seen the emergence of structural and technological foci, including distributed leadership and ChatGPT, reflecting the influence of systemic shifts and rapid AI adoption.

3.9 Trend Topics

In the Trend Topic visualization (Figure 11), the size of nodes indicates the publication frequency of topics, and their horizontal position shows when these topics gained prominence. According to the size and positioning of blue nodes, we can identify several key temporal patterns in the research on teachers’ roles.

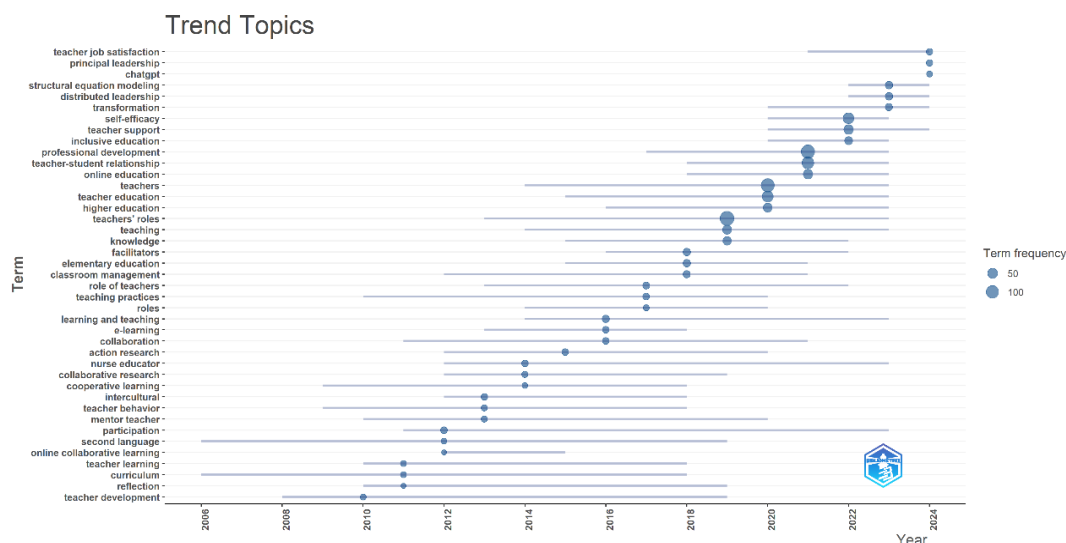


Figure 11: Trend Topics

Figure 11 provides a temporal lens for examining the evolving research priorities in studies of teachers' roles. In this graphic, node sizes reflect publication frequency, and horizontal positioning indicates the periods of peak prominence. This analysis reveals the evolutionary trajectory that moves from fundamental pedagogical concerns toward increasingly complex organizational and technological frameworks. And the research landscape demonstrates remarkable continuity in core concepts, with "teachers' roles", "teaching", and "professional development" maintaining sustained scholarly attention throughout the 2016-2022 period, establishing their status as enduring foundational elements.

However, this stability has been accompanied by significant thematic expansion, particularly evident in the emergence of "teacher-student relationship" as a particularly productive focus around 2018-2020, a period when educational relationships were undergoing fundamental reconceptualization. This relational emphasis represents a crucial shift from earlier work (2010-2015) that concentrated on basic pedagogical frameworks such as "classroom management", "role of teachers", and "teaching practices".

As for the most recent phase (2021-2024), it reveals an obvious turn toward structural and technological dimensions, with "teacher job satisfaction", "principal leadership", "distributed leadership", and "ChatGPT" gaining attention. The appearance of artificial intelligence as a trending topic in 2023-2024 signals how rapidly technological transformation is reshaping professional role conceptualization. This contemporary focus contrasts sharply with the priorities of 2016-2020. In that earlier span, researchers centered on contextual specialization, stress themes such as "inclusive education" and "online education". The shift suggests that the field has progressed from adapting to specific educational circumstances toward grappling with fundamental systemic and technological changes.

This temporal progression shows the field that has evolved from basic conceptualizations of classroom practice toward sophisticated analyses of organizational ecosystems. Themes such as “self-efficacy”, “transformation”, and “distributed leadership” continue to show strong growth potential. Their prominence signals a clear shift in contemporary studies. Researchers now situate teachers’ roles within wider social and technological systems, rather than viewing them as isolated classroom functions. This perspective highlights how education is becoming deeply embedded in complex institutional and digital environments.

Looking to the future, these emerging topics are likely to influence teacher education by embedding digital literacy, AI ethics, and adaptive leadership into pre-service and in-service training curricula. Policy frameworks may increasingly prioritize teacher well-being, distributed governance models, and the integration of AI-enabled tools, ensuring that professional role definitions remain responsive to rapid technological and societal change.

4. Conclusions

This study conducts a bibliometric review of the literature on teachers’ roles from 2005 to 2025, systematically tracing the field’s evolution and key turning points. The analysis results show that bibliometric indicators, such as the number of publications and citation trends, display a pronounced and sustained growth, with an especially steep surge in output after 2015. This acceleration not only reveals scholars’ widening interest in teachers’ increasingly multifaceted roles, but also reflects the rapid global spreading of digital technologies, the mainstreaming of learner-centered pedagogies, and a wave of education policy reforms (Timotheou et al., 2023; Wohlfart & Wagner, 2023).

At the same time, these studies have re-positioned teachers on the perspective of technological integration and pedagogical innovation, promoting the strategic importance of their professional roles in contemporary education systems. Besides, analysis of the world’s most influential, highly cited studies shows that the field’s theoretical foundation and key themes highlight teachers’ diverse and active roles in student growth, technology use, education innovation and reform. Built on these landmark studies, this field of research has further advanced the understanding of teachers’ roles and provided solid theoretical foundations for global educational reforms.

In the future, the ongoing flow of high-impact work is likely to strengthen teachers’ leadership and their ability to drive change in complex educational settings, while also pointing out new directions for theory construction and practical application. Furthermore, at the thematic level, the mapping of keywords and research clusters reveals a multifaceted landscape in which technology integration and professional development have emerged as central (Hu & Hashim, 2025), driving themes in contemporary discourse. In contrast, other topics like cultural responsiveness and teacher autonomy, although present, remain at the periphery, suggesting opportunities for deeper exploration. The thematic evolution analysis vividly tracks the field’s shift away

from traditional, teacher-centered paradigms toward more facilitative and adaptive roles, reflecting the global movement toward personalized learning and digitally mediated instructional approaches. This aligns with the international theoretical advancements on learner agency as discussed by Biesta (2015) and Vygotsky (1978). However, this review has several limitations. It relies solely on Scopus, which may exclude studies in other databases. The focus on English-language publications overlooks insights from non-English and regional sources. Citation indicators are affected by citation latency, underestimating recent work. Overall, this analysis not only demonstrates the expanding contours and rising complexity of research on teachers' roles but also highlights influential areas and uncovers emerging gaps.

Future research would benefit from methodological innovation that employs large-scale text and data mining, social network analysis, and related advanced techniques promise to clarify with far greater precision the mechanisms driving changes in teachers' roles. Comparative studies that cross national, regional, and disciplinary boundaries and cover multiple educational levels can further reveal how local conditions shape teachers' everyday practice (Powell, 2020). Additionally, deeper and sustained attention should be devoted to themes such as cultural responsiveness, teachers' psychological health, and professional autonomy, which remain comparatively under-explored. Moreover, closer collaboration among researchers, teacher educators, and policymakers is essential for narrowing the gap between theory and practice and for turning empirical insights into coherent teacher-preparation programs and policy reforms.

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