Teacher qualifications:
A bibliometric analysis of Scopus (1952-2023) *

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Abstract: This bibliometric study offers a comprehensive analysis of the evolving research landscape on teacher qualifications, employing advanced scientific mapping techniques based on data from the Scopus database. The study utilises a comprehensive dataset comprising 13,080 articles and 690 reviews, spanning the period between 1952 and 2023. This analysis illuminates the pivotal global collaborations and the most influential contributors within this domain. The United States, Australia, England, China, and Türkiye are at the vanguard of research output and citation impact. Notable scholars such as Dan Goldhaber, Linda Darling-Hammond, and Susanna Loeb have made a substantial impact on the development of this field. Over the past seven decades, there has been a steady increase in academic publications on teacher qualifications, reaching its zenith in 2023. Despite this upward trend, the findings suggest that the research on teacher qualifications has yet to fully mature, leaving ample room for further exploration. It is recommended that future research focus on the intersection of teacher education and professional development, particularly in relation to diverse educational policies. These insights open promising avenues for advancing this critical area of study.

Keywords: Bibliometric analysis, education policies, professional development, Scopus database. teacher education, teacher qualifications, teachers.

Derleme
Review

Öğretmen nitelikleri:
Scopus verileri üzerine bibliyometrik bir analiz
(1952-2023)

Öz: Bu bibliyometrik çalışma, Scopus veri tabanından elde edilen verilere dayanan gelişmiş bilimsel haritalama tekniklerini kullanarak öğretmen nitelikleri üzerine gelişen araştırma ortamının kapsamlı bir analizini sunmaktadır. Çalışmada, 1952-2023 yılları arasındaki dönemi kapsayan 13.080 makale ve 690 incelemeden oluşan kapsamlı bir veri seti kullanılmıştır. Bu analiz, bu alandaki önemli küresel iş birliklerini ve en etkili katkıda bulunanları aydınlatmaktadır. Amerika Birleşik Devletleri, Avustralya, İngiltere, Çin ve Türkiye, araştırma çıktısı ve atıf etkisinde öncü konumdadır. Dan Goldhaber, Linda Darling-Hammond ve Susanna Loeb gibi önemli akademisyenler bu alanın gelişiminde önemli bir etki yaratmıştır. Geçtiğimiz yetmiş yıl boyunca, öğretmen niteliklerine ilişkin akademik yayınlarda istikrarlı bir artış olmuş ve bu artış 2023 yılında zirveye ulaşmıştır. Bu artış eğilimine rağmen bulgular, öğretmen nitelikleri üzerine yapılan araştırmaların henüz tam olarak olgunlaşmadığını ve daha fazla keşif için geniş bir alan bıraktığını göstermektedir. Gelecekteki araştırmaların, özellikle çeşitli eğitim politikalarıyla ilişkili olarak, öğretmen eğitimi ve mesleki gelişimin kesişimine odaklanması tavsiye edilmektedir. Bu görüşler, bu kritik çalışma alanını ilerletmek için umut verici yollar açmaktadır.

Anahtar Kelimeler: Öğretmenler, mesleki gelişim, öğretmen eğitimi, öğretmen nitelikleri, eğitim politikaları, bibliyometrik analiz, Scopus veri tabanı.

OKUL YÖNETİCİLERİ
SCHOOL HEADS

Okul Yöneticileri Derneği

Introduction

Teacher qualifications play a pivotal role in shaping the quality of education, influencing both student learning outcomes and the broader educational landscape. As the primary agents responsible for transmitting knowledge and fostering intellectual development, teachers serve as key actors in cultivating future generations. This study adopts a comprehensive bibliometric approach to examine the research trajectory on teacher qualifications, with a particular focus on scholarly outputs indexed in the Scopus database between 1952 and 2023.

Teacher qualifications are generally defined as a set of knowledge, competencies, values, and dispositions that enable effective teaching and student guidance. These attributes typically include formal education, subject-matter expertise, communication skills, classroom management, responsiveness to student diversity, and engagement in continuous professional development (Klingebiel & Klieme, 2016; Liakopoulou, 2011). The literature increasingly emphasizes that effective teaching is a complex, multifaceted process, involving both cognitive and affective domains (Kunter et al., 2013; Biesta, 2017).

Multiple frameworks and theoretical perspectives have been proposed to explain what constitutes teacher quality. Among these are Process Skill Theory, which stresses the development of pedagogical environments that foster active learning (Bruner, 1974), and Reflective Practice Theory, which underscores the importance of ongoing self-evaluation and adaptation (Brandenburg et al., 2017; Schön, 2017). Other relevant models include Big Second-Hand Theory, rooted in sociocultural learning theory (Schwartz et al., 2014), value-based approaches to teaching (Palmer, 2007), and contemporary performance frameworks such as Danielson's Framework for Teaching (2007) and Hattie's Visible Learning (2009). Additionally, career development theories (e.g., Super, 1980) provide insight into how teachers develop expertise over time and adapt to professional challenges.

In recent years, the concept of teacher qualifications has expanded further to include digital competence, adaptability, cultural sensitivity, social-emotional skills, and commitment to sustainability (Bremner, 2022; Cebi et al., 2022; Wang, 2012). The integration of technology, in particular, has become indispensable in modern pedagogical practices.

Despite this expanding body of work, gaps remain in synthesizing the existing literature to provide a holistic picture of research trends, influential contributors, and conceptual developments in the field. Thus, this study aims to conduct a large-scale bibliometric analysis to map the intellectual structure of the literature on teacher qualifications. Specifically, it seeks to answer the following research questions:

1. What is the quantitative status of research on teacher qualifications from 1952 to 2023?

2. Which keywords are most frequently used in these studies?

3. Which countries and institutions have contributed most significantly to the field?

4. Who are the most cited authors and what are the most cited publications?

5. What is the status of co-authorship and collaboration patterns?

6. What are the relationships between the most cited studies?

Literature

By addressing these questions, the study contributes to an improved understanding of the field's intellectual development and provides a valuable reference for scholars, policymakers, and education professionals. The global discourse surrounding teacher qualifications—particularly within the contexts of social justice, economic development, and educational reform—is expected to remain a critical area of research in the years to come (Atar, 2014; Buddin & Zamarro, 2009; Hanushek & Rivkin, 2006; Hsien et al., 2009; Kazu & Çam, 2019).

Teacher qualifications encompass the knowledge, skills, attitudes, and values required to support effective teaching and student learning. Empirical evidence strongly links teacher quality to student academic achievement (Hattie, 2009). Seminal studies in this area have examined various dimensions, including the quality of pre-service teacher education (Darling-Hammond, 2010), the impact of continuous professional development (Desimone & Garet, 2015), and the assessment of teaching performance (Papay, 2012).

Bibliometric analysis offers a powerful method to capture and synthesize fragmented research landscapes by identifying thematic concentrations, intellectual structures, and collaborative networks. In recent years, several bibliometric studies have emerged in education focusing on subfields such as teacher education (Altay et al., 2020), STEM education and teacher training (Zhan et al., 2022),

professional development (Pham et al., 2023), and educational leadership (Mertkan & Gümüş, 2024). These studies highlight critical trends but fall short of systematically addressing the broader domain of teacher qualifications as a unified research area. Furthermore, bibliometric research has increasingly reflected interdisciplinary influences by integrating themes such as digital transformation in education (Bond et al., 2021), teacher resilience and stress management (Üstündağ-Kocakuşak & Akar-Vural, 2023), and social justice pedagogy. These evolving dimensions suggest that teacher qualifications must be understood not only in pedagogical terms but also in relation to broader socio-cultural and technological contexts.

In light of these gaps, the current study provides a comprehensive bibliometric mapping of global research on teacher qualifications. By identifying temporal trends, prominent contributors, key research clusters, and collaboration patterns, the study aims to generate a strategic knowledge base to inform both academic research and educational policymaking.

Method

Research Design

This study adopted a bibliometric analysis approach to systematically map the scientific landscape of research on teacher qualifications. Bibliometric analysis enables the examination of large volumes of academic publications to identify key trends, influential works, and patterns of collaboration. This study applied scientific mapping techniques in line with the framework outlined by Donthu et al. (2021), incorporating citation analysis, co-citation, bibliographic coupling, co-authorship, and keyword co-occurrence analyses. These methods collectively provide a comprehensive overview of both the intellectual structure and thematic evolution of the field.

Data Source and Collection

Data were retrieved from the Scopus database, which is recognized for its extensive multidisciplinary coverage, quality control mechanisms, and advanced indexing standards. The dataset was collected on January 7, 2024, using the most updated Scopus interface. Scopus was chosen due to its broad scope, inclusion of peer-reviewed literature, and suitability for bibliometric extraction. The dataset included 18,229 documents published between 1952 and 2023. Only documents written in English and classified as articles, reviews, or conference papers were included in the analysis. Non-English publications and grey literature were excluded to maintain consistency and ensure data quality.

Search Strategy

The search terms were formulated based on a preliminary scan of the literature and expert consultation. The final Boolean search string used was: "teacher qualifications" OR "teacher qualities" This query ensured that only documents explicitly addressing the core concepts of teacher qualifications or teacher qualities in their titles, abstracts, or keywords were included. The search was not restricted by subject area to preserve the interdisciplinary scope of the analysis.

## Conceptual Delimitation of "Qualification" and Exclusion of "Competency"

Although the terms "teacher qualification" and "teacher competency" are often used interchangeably in educational research, this study deliberately focused on the concept of qualification. In line with international definitions (Darling-Hammond & Bransford, 2007; OECD, 2005), teacher qualifications were operationalized as formal credentials, degrees, certifications, and professional development records. In contrast, teacher competencies—understood as observable skills, attitudes, and performance-based indicators—were excluded from the bibliometric query to maintain a focused scope and to avoid conceptual conflation. This decision ensured that the analysis remained anchored in literature addressing the formal structural characteristics of the teaching profession rather than its behavioral or dispositional dimensions.

Data Analysis

The bibliographic data were analyzed and visualized using VOSviewer 1.6.20 (Van Eck & Waltman, 2010), a widely utilized software for bibliometric mapping. VOSviewer was chosen for its robust capability in producing network visualizations that reveal co-authorship patterns, keyword clusters, citation networks, and thematic developments over time. Descriptive statistics, co-occurrence matrices, and density visualizations were generated to identify significant patterns and trends.

Data Filtering and Scope

From the initial set of 18,229 records retrieved from Scopus, a refined dataset of 13,770 publications was obtained through the application of specific inclusion criteria. This final dataset consisted of 13,080 peer-reviewed journal articles and 690 review papers. To maintain the integrity and academic rigor of the analysis, non-peer-reviewed documents such as books, book chapters, editorials, and conference abstracts were excluded. This filtering ensured that the dataset represented high-quality, scholarly contributions. The selected studies covered a broad range of disciplinary domains, with the majority (approximately 58%) classified under Social Sciences, reflecting the interdisciplinary nature of research on teacher qualifications. The remaining publications spanned fields such as pedagogy, educational policy, psychology, and applied linguistics—demonstrating the diverse conceptual and methodological approaches used to explore teacher qualifications (Figure 1).
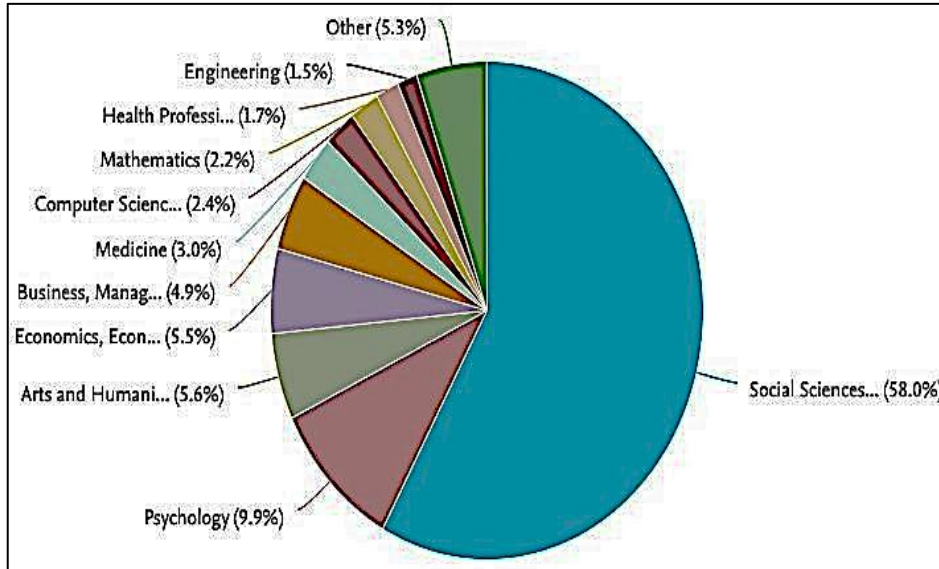
Figure 1. *Distribution of publications produced between 1952-2023 according to scientific fields.*

Analytical Dimensions

The bibliometric analysis examined the data through multiple dimensions:

- *Author-level metrics*: total citations, productivity, and h-index patterns

- *Source-level metrics:* impact factor and journal co-citation patterns

- *Geographic patterns:* country and institutional affiliations

- *Keyword co-occurrence analysis:* thematic clusters and research trends

The outcomes were visualized through network maps, overlay visualizations, and density plots, generated using VOSviewer. These visual representations facilitated the identification of dominant research themes, emerging trends, and intellectual linkages in the field of teacher qualifications. This systematic and structured analytical approach contributes to a nuanced understanding of the evolution and current landscape of the field.

Findings

The bibliometric analysis revealed a steadily growing interest in the topic of teacher qualifications over the period from 1952 to 2023. The most prolific year was 2023, with a total of 1,324 publications, indicating heightened scholarly attention in recent years. This growth trend underscores the increasing recognition of teacher qualifications as a critical determinant of educational quality worldwide.

Keyword Frequency and Thematic Focus

Among the most frequently occurring keywords were "teacher education," "professional development," and "teachers." These keywords suggest that research on teacher qualifications predominantly revolves around teacher training systems, continuous development processes, and the evolving roles of educators. The emphasis on professional development in particular reflects global policy trends that position lifelong learning as central to teacher effectiveness.

Country Contributions and Citation Impact

In terms of citation influence, the United States, Australia, and England emerged as the most cited countries, reflecting their strong institutional investment and historical leadership in teacher education research. As for publication output, the top five countries were the USA, Australia, England, China, and Türkiye. The inclusion of Türkiye signifies a notable rise in national academic interest in teacher quality, possibly aligned with recent policy reforms and expanded graduate research.

Influential Authors and Publication Outlets

The most prolific author identified was D. Goldhaber with 75 publications, followed by L. Darling-Hammond (49) and S. Loeb (45). These scholars are widely recognized for their empirical contributions to the study of teacher effectiveness, credentialing, and education policy. Their work has shaped discourse around how qualifications impact student outcomes.

The most frequently publishing journals in this domain were:

- *Teaching and Teacher Education*

- *Education Policy Analysis Archives*

- *Teachers College Record*

All three are peer-reviewed and highly respected within the educational research community, suggesting that teacher qualification studies are situated within reputable and influential scholarly forums.

Interpretative Insights

The findings highlight an increasingly globalized and interdisciplinary research effort in understanding teacher qualifications. The upward trajectory in publications reflects growing concern about teacher preparedness in addressing complex classroom demands. Additionally, the concentration of research in a few countries suggests potential imbalances in global knowledge production. Future research could explore underrepresented regions and diversify theoretical perspectives to provide a more comprehensive understanding of teacher quality across contexts.

Co-authorship Network of Authors

To explore collaboration patterns in the field of teacher qualifications, a co-authorship network was constructed using VOSviewer. Authors with a minimum of two publications and at least two citations were included in the analysis. The resulting network consists of 312 authors connected through 4,311 links, forming a single large cluster. This dense structure illustrates a highly collaborative academic community where interconnectedness among scholars is both widespread and structurally centralized (see Figure 2).
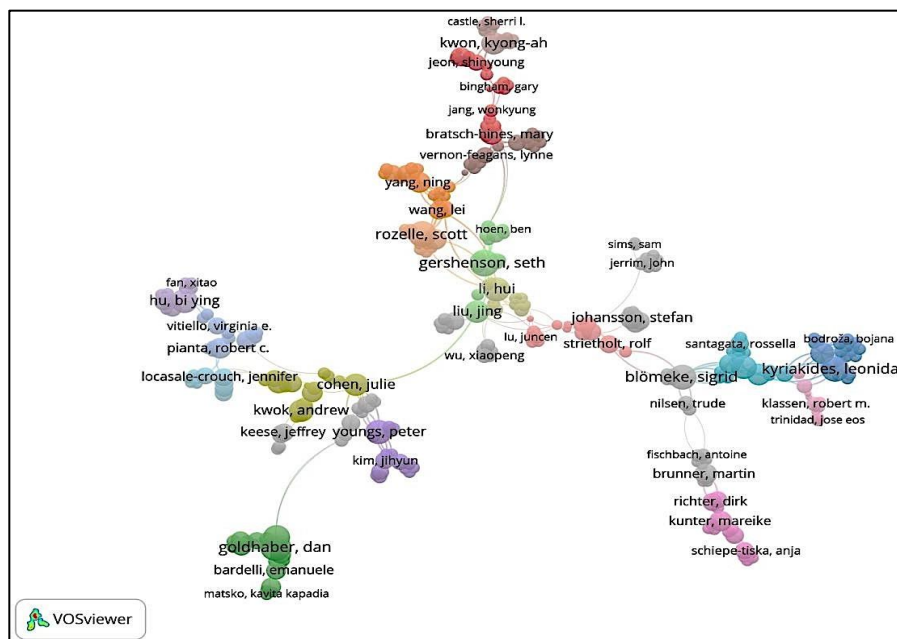

**Figure 2.** *Co-author links indicating collaboration between authors*

Despite the prominence of some highly cited scholars, co-authorship connectivity did not always align with citation influence. For instance, while Yan Liu (1,417 citations), Kathryn Asbury (1,345), Lisa E. Kim (1,345), and Mehmet Şükrü Bellibaş (1,130) stand out in terms of citation count, they were not among the most collaborative authors in terms of network centrality. Similarly, prolific contributors such as Michal Perlman, Ridwan Maulana, and T. Gregory Rushton were not positioned as key connectors in the network. Notably, the 26 most connected authors collectively accounted for 773 co-authorship links, suggesting that collaboration intensity is driven by a smaller core group of networked researchers. This indicates that research influence and productivity do not necessarily translate into collaborative dominance, underscoring a nuanced structure of scholarly participation.

Overall, the findings highlight that co-authorship in the teacher qualifications domain is shaped by diverse patterns—where productivity, impact, and collaboration are partially overlapping but distinct dynamics. Understanding these relational structures allows for the identification of influential knowledge brokers who act as bridges, enabling idea diffusion and fostering interdisciplinary engagement.

Citation Network of Authors

To explore intellectual influence within the field of teacher qualifications, an author citation network was constructed using VOSviewer. Authors with a minimum of two publications and at least two citations were included in the analysis. The resulting network consisted of 548 nodes, organized into 29 distinct clusters, connected through 1,679 links, with a total link strength of 5,634. These metrics reflect a vibrant and densely linked scholarly environment in which research is frequently inter-referenced, highlighting the dynamic exchange of ideas within the field (Figure 3).
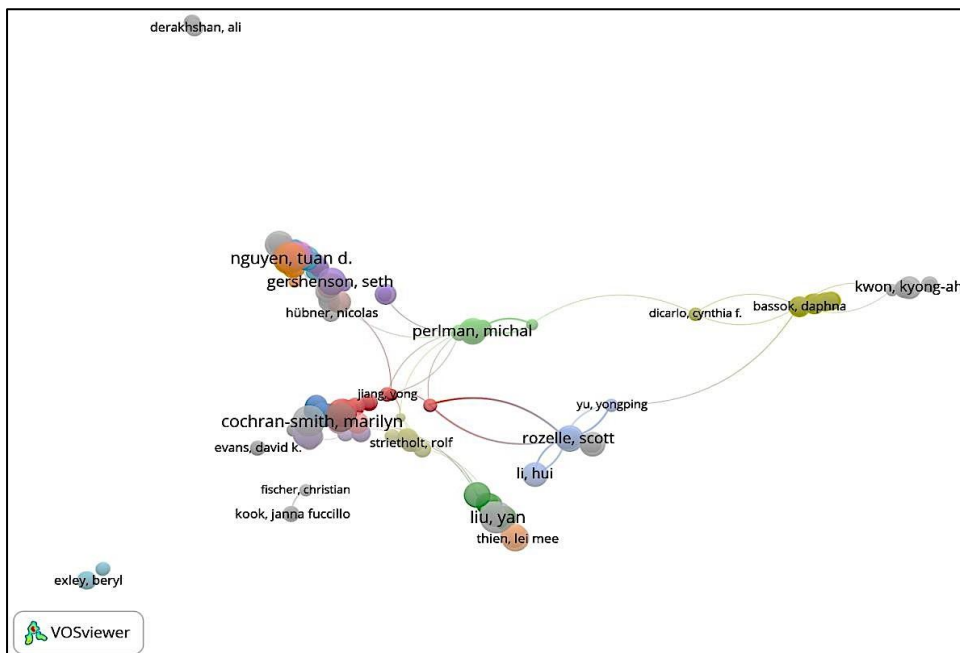
Figure 3. *Authors' citation link*

Among the most frequently cited authors, Yan Liu emerged as the most cited with 1,417 citations, followed by Kathryn Asbury and Lisa E. Kim, each with 1,345 citations. These citation counts point to the substantial influence these authors have had on the development of the literature in teacher education and related domains.

In contrast, when analyzing total link strength—an indicator of an author's structural connectivity in the citation network—C. June Maker, Lei Wang, and Siqi Zhang were the most central figures. While their raw citation counts may be lower, their extensive citation ties to other scholars signal a strong integration within the intellectual fabric of the field.

This distinction between citation frequency and link strength illustrates different dimensions of academic influence: the former indicates recognized authority, while the latter highlights connectivity and idea propagation. Mapping these patterns allows for the identification of core intellectual contributors who shape, bridge, and advance discourse within the teacher qualification literature.

Country-Level Citation Analysis

To evaluate global influence in the research landscape of teacher qualifications, a country-level citation network was constructed using VOSviewer. The analysis included 87 countries with at least two publications and two citations, producing a map of international citation links. A total of 21 clusters and 327 links were identified, with a combined link strength of 1,404, indicating the presence of a moderately dense and interconnected global research network (see Figure 4).

In terms of citation impact, the United States stood out with 28,323 citations, followed by Australia (9,391) and the United Kingdom (8,234). These nations not only dominate in volume but also in influence, shaping much of the global discourse on teacher qualifications.

When assessed by publication volume, the USA again led with 4,835 documents, followed by Australia (1,175) and China (1,019). Interestingly, China—despite a lower citation count—has shown a significant increase in output, indicating its emerging prominence in the field. Australia's high ranking in both metrics reflects a balanced academic presence in both productivity and influence.

The network visualization highlights the central role of the United States, serving as a hub of intellectual exchange and acting as a citation source for numerous countries. The visible linkages also reflect collaborative interdependencies among leading research nations, affirming the globalized nature of research in education.
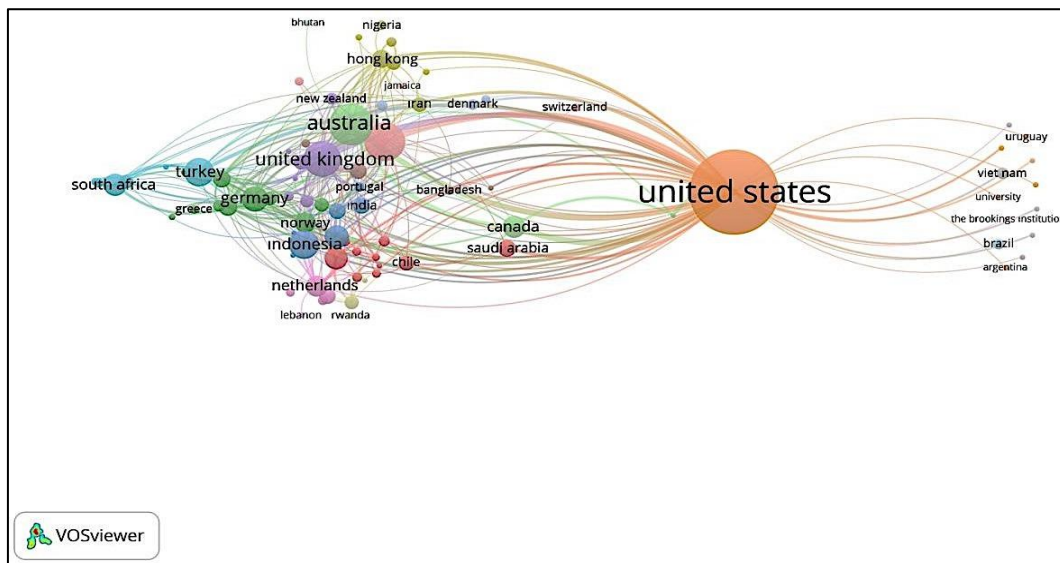

Figure 4. *Citation ties of countries*

These findings underscore how citation ties mirror global research hierarchies while also revealing rising contributors such as China. The presence of diverse clusters suggests thematic and geographic specialization, yet with strong intellectual linkages across national boundaries.

Institutional Citation Analysis

To examine institutional contributions to the field of teacher qualifications, a citation network of academic organizations was constructed. The analysis included 310 institutions, each having published at least two documents and received a minimum of two citations. The aim was to explore both the scholarly impact and interconnectedness of institutional research activity (see Figure 5).
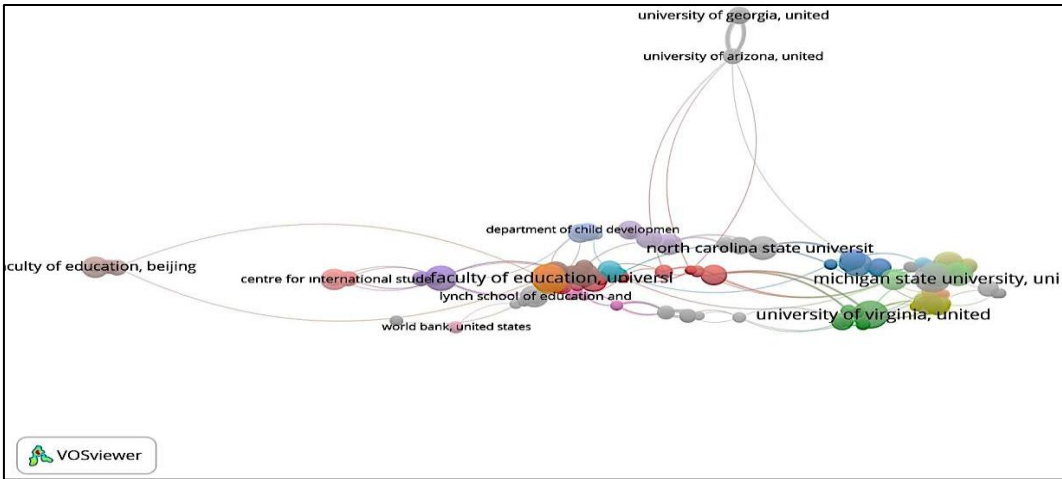
Figure 5. *Citation links of institutions*

In terms of publication volume, the most prolific institutions were Michigan State University (47 publications), University of Virginia (45), and University of Macau (44). These figures point to well-established research communities with a sustained focus on teacher education and professional development.

When examining citation counts, which serve as indicators of scholarly influence, the University of York led with 1,393 citations, followed by the University of Gothenburg (1,194) and the University of Virginia (886). These institutions not only produce a high volume of research but also shape academic conversations and theoretical developments across national boundaries.

The network structure revealed 26 clusters, 613 inter-institutional links, and a total link strength of 1,832, indicating the presence of a diverse yet cohesive global research network. These figures suggest that while institutional research may vary in focus, extensive citation-based interrelations foster a collaborative scholarly ecosystem.

Overall, the citation map underscores the role of select institutions as both knowledge producers and intellectual hubs within the field. Their academic influence is not solely based on output but also on their ability to connect, disseminate, and enrich educational research through sustained academic engagement and collaboration.

Keyword Co-occurrence Analysis

A keyword co-occurrence analysis was conducted to uncover the conceptual structure of research on teacher qualifications. Based on a dataset of 4,651 keywords, each occurring at least three times, the analysis yielded 120 clusters, 22,666 keyword links, and a total link strength of 111,000. These figures indicate a rich and multifaceted field, characterized by dense conceptual interrelations across multiple thematic areas (see Figure 6).
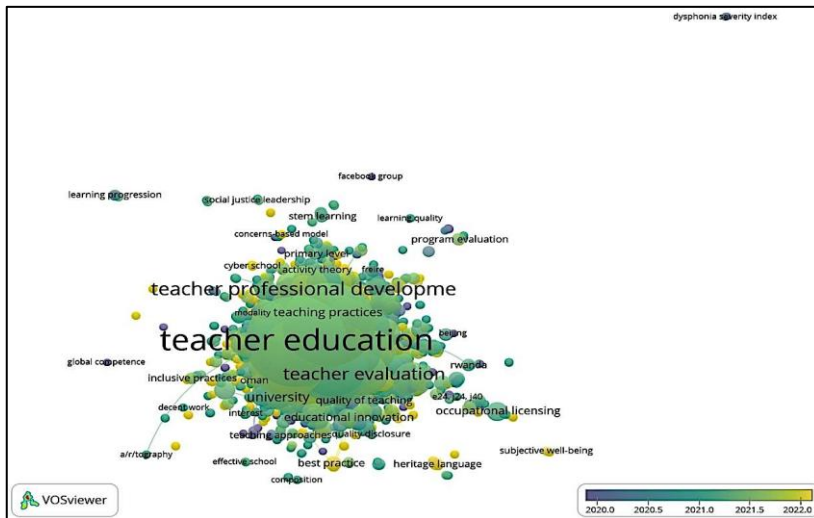
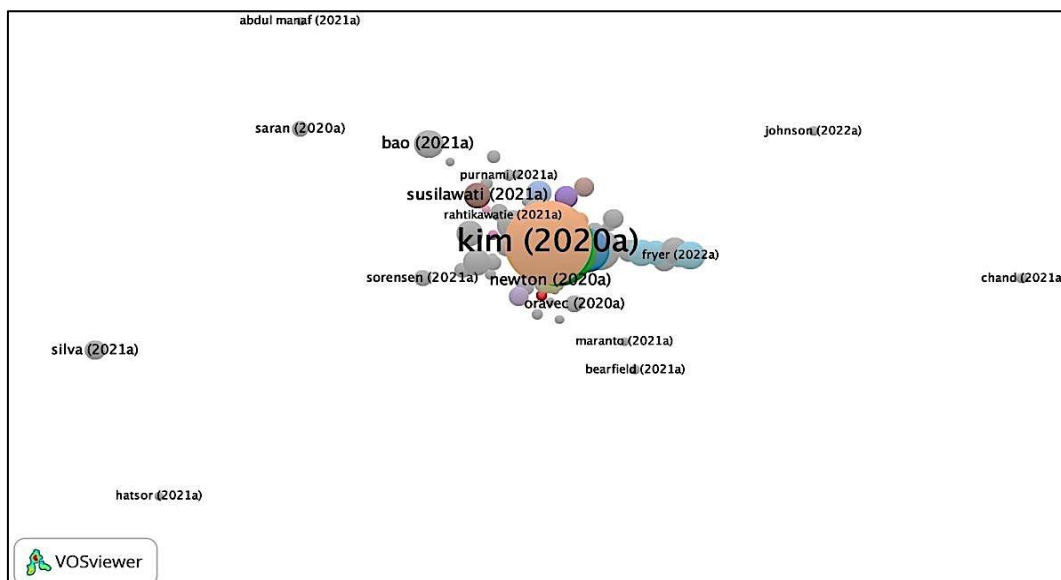**Figure 6.** *Most frequently used keyword links*

The most frequently occurring keywords were "teacher education" (706 occurrences), "professional development" (590), "teachers" (388), "teacher quality" (354), and "higher education" (320). In terms of total link strength, the keywords "teacher education," "professional development," and "teachers" also demonstrated the highest degrees of connectivity, indicating their central role within the intellectual landscape of the field.

These findings suggest that the literature on teacher qualifications is largely anchored in discourses surrounding initial teacher preparation and ongoing professional learning. The emphasis on teacher education and development signals the continued importance of equipping educators not only with foundational skills, but also with opportunities for lifelong learning. The presence of terms like "teacher quality," "teacher evaluation," and "teaching practices" further underscores a focus on accountability, efficacy, and instructional improvement as dominant concerns. Together, these co-occurring keywords offer insight into both the epistemological orientation and the practical concerns driving research in the field.

Bibliographic Coupling of Documents

Bibliographic coupling refers to the phenomenon in which two documents are linked by their shared references to a third source. This analytical method reveals the degree of intellectual overlap between studies and offers insight into the structural organization of the literature. In the present analysis, 6,724 publications with at least three citations were examined, resulting in 56 clusters, 1,368,196 links, and a total link strength of 3,094,760 (see Figure 7). These values reflect a complex and densely connected scholarly field.

Figure 7. *Most frequently used keyword links*

Among the documents with the highest citation counts were Kim (2020a) with 269 citations, followed by Toropova (2021a) with 215, and Liu (2021d) with 121. These works have played a central role in shaping the discourse on teacher qualifications and are frequently referenced across diverse studies.

In terms of total link strength, which indicates the degree of shared references with other publications, the most prominent works were authored by Nguyen (2020a), Reeves (2022b), and Er (2021a). These studies serve as connective hubs within the field, enabling the integration of various research strands and contributing significantly to thematic convergence in the literature.

Overall, the bibliographic coupling map highlights thematic intersections and influential anchor publications within the teacher efficacy and qualification literature. High levels of coupling indicate a shared intellectual foundation across studies, suggesting the emergence of cohesive subfields and methodological convergence.

Bibliographic Coupling of Authors

To investigate the shared intellectual foundations among leading scholars in the field of teacher qualifications, a bibliographic coupling analysis of authors was conducted. The analysis included 4,572 authors, each of whom had published at least two documents and had received at least two citations. This process generated 56 clusters, 849,236 links, and a total link strength of 52,846,800, reflecting a highly interconnected author network (see Figure 8).

The author with the highest citation count and bibliographic coupling strength was Yan Liu, with 1,417 citations and a link strength of 331,295. Kathryn Asbury and Lisa E. Kim followed with 1,345 citations each, both having a link strength of 13,086. These values indicate not only the scholarly influence of these authors but also the extent to which their works are conceptually aligned with a broad range of other studies in the field.

The exceptionally high link strength of Yan Liu suggests that their work draws upon and is cited alongside a large number of influential sources, making it highly integrated within the field's intellectual network. The shared coupling strength of Asbury and Kim indicates parallel yet possibly distinct thematic contributions, both of which occupy central positions in the discourse on teacher qualifications and professional development.

Overall, this analysis reveals the core group of intellectually cohesive authors who contribute to shaping the field's trajectory. Bibliographic coupling at the author level highlights not just individual influence, but also the epistemic alignment between scholarly contributions, offering a valuable lens to trace thematic convergence and collaborative potential.
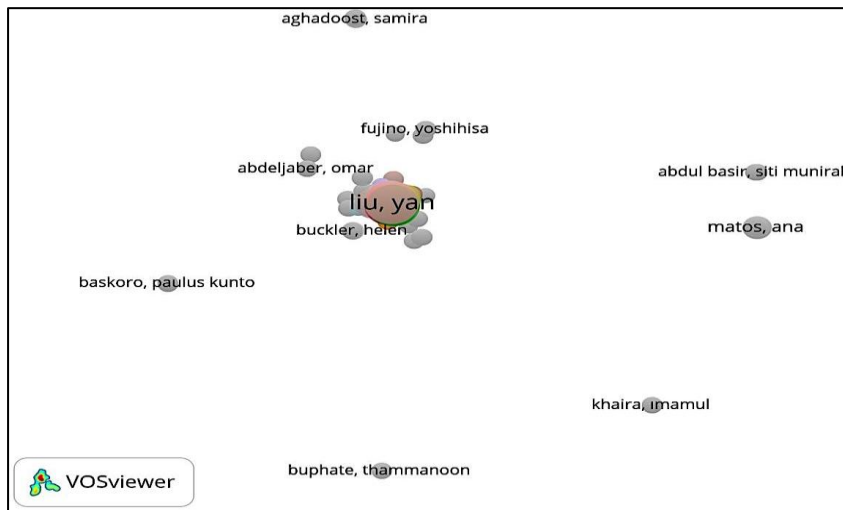

Figure 8. *Authors' bibliographic matching links*

Co-Citation Analysis of Authors

Co-citation analysis is employed to identify the intellectual structure of a research field by examining how frequently two authors are cited together in other scholarly works. In this study, co-citation data were extracted from a corpus of over 1,000 cited authors, applying a minimum threshold of 20 citations per author. The resulting network revealed six major clusters, 309,282 citation links, and a total link strength of 10,013,475, reflecting a densely interconnected scholarly field (see Figure 9).
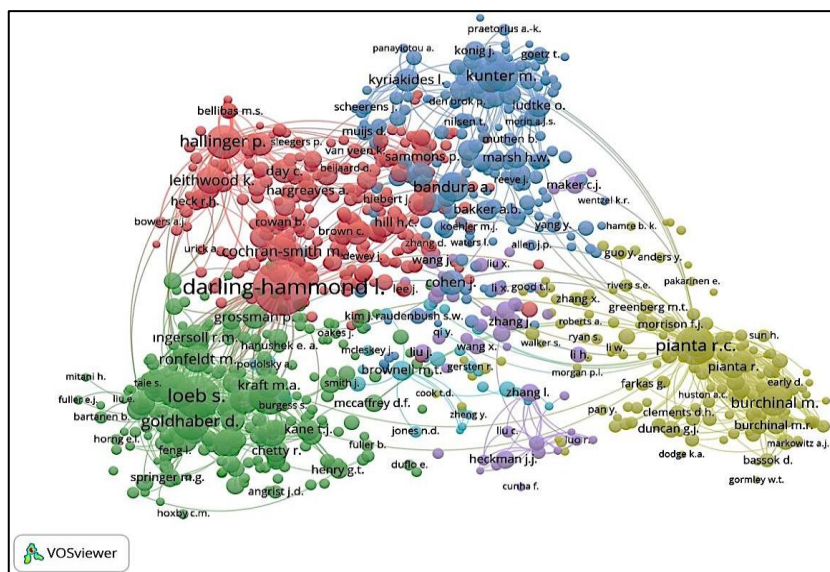

Figure 9. *Links between co-cited authors*

The most frequently co-cited authors were Linda Darling-Hammond (6,268 co-citations), Susanna Loeb (3,819), and R. C. Pienta (3,085). Their repeated co-occurrence in citations highlights the foundational influence of their work within the field of teacher qualifications and effectiveness. Darling-Hammond's prominence is especially notable, suggesting that her research constitutes a central theoretical axis in discussions of teacher quality and professional standards.

The clustering of authors also offers insights into thematic divisions and epistemic communities. For instance, the red cluster appears to center around empirical studies in teacher evaluation and policy, whereas the green cluster focuses on psychological and motivational aspects of teaching. The blue cluster, meanwhile, includes scholars contributing to measurement and methodology in teacher education research.

Taken together, these findings provide a map of influential thought in the field and reveal the theoretical anchors that shape the discourse on teacher qualifications. Co-citation analysis not only identifies intellectual leaders, but also delineates how knowledge is structured and transmitted through scholarly networks.

Conclusion and Recommendations

This study provides a comprehensive bibliometric overview of the evolving literature on teacher qualifications spanning over seven decades. Drawing upon 13,770 peer-reviewed publications indexed in the Scopus database, the analysis identified dominant themes, influential scholars, collaborative networks, and global research trends shaping the discourse on teacher effectiveness and competencies.

The results indicate a steadily increasing interest in teacher qualifications, with a significant peak observed in 2023. Key thematic areas include teacher education, professional development, and teacher evaluation—concepts that have remained central to educational research despite growing diversification. The co-occurrence of these themes in the literature reflects an ongoing effort to conceptualize teacher quality as a multidimensional construct, influenced by personal, institutional, and systemic factors.

Prominent countries contributing to this field—such as the United States, Australia, and the United Kingdom—also host leading institutions and scholars, including D. Goldhaber, L. Darling-Hammond, and S. Loeb. Türkiye's growing presence in the publication landscape is noteworthy, signaling its emerging engagement in international educational discourse.

Despite their frequent citation, studies also reveal nuanced debates: some scholars have questioned the direct impact of teacher qualifications on student achievement (Danişman et al., 2019; Maphoso & Mahlo, 2015), while others highlight the contextual role of school climate and institutional support (DeAngelis & Presley, 2011). Nevertheless, consensus remains on the foundational role of teachers in shaping learning outcomes (Coenen et al., 2018; Wedel, 2021).

The analysis was limited to Scopus-indexed journal articles and review papers, excluding books, reports, editorials, and other grey literature. As a result, influential contributions published in platforms such as Web of Science, ERIC, or regional journals may have been overlooked. Moreover, bibliometric methods focus on citation metrics and structural relationships rather than substantive content. This restricts the capacity to explore theoretical or pedagogical nuances inherent in the research corpus.

Recommendations for Future Research

To advance the field and address current limitations, the following recommendations are offered:

- Expand Data Sources: Future studies should integrate additional databases (e.g., WoS, ERIC, PubMed) to provide a more comprehensive and globally inclusive view of teacher qualification research.
- Integrate Mixed Methods: Combining bibliometric and content analysis approaches would allow for a deeper theoretical understanding and help identify research gaps or paradigm shifts.
- Address Regional Disparities: More research is needed on teacher qualifications in underrepresented regions, particularly in developing countries, to promote comparative educational insights.
- Support Interdisciplinary Approaches: Researchers should explore the intersection of teacher competencies with fields such as educational psychology, digital pedagogy, and sociology to better capture the complexity of teaching in the 21st century.
- Bridge Research and Practice: Future research should prioritize translating theoretical findings into applied models that inform teacher training programs and educational policymaking.

- • Promote Sustainable Competency Models: Given the changing educational landscape, there is an urgent need to reconceptualize teacher competencies with a focus on adaptability, emotional resilience, and digital fluency.

Abbreviations

USA: United States of America; UK: United Kingdom; VOS: Visualization of Similarities; COVID: Corona (CO), virus (VI), and disease (D)

Acknowledgements

Conflicts of Interest

The author declare that there is no conflict of interest regarding the publication of this article.

Author's Responsibilities

Author have significantly contributed to the conception, design, data analysis, and writing of this manuscript. Author have reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

Ethical Considerations

As this is a bibliometric study that relies exclusively on secondary data from the Scopus database, no ethical approval was required. The study did not involve human participants or personal data.

AI Use Disclaimer

AI tools, specifically OpenAI's ChatGPT, were used to support language editing and proofreading during the preparation of this manuscript. All content was critically reviewed and finalized by the author to ensure accuracy, originality, and compliance with academic integrity standards. No AI tools were used for data analysis or content generation.

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GENİŞLETİLMİŞ ÖZET
Giriş

Öğretmen yeterlikleri, eğitim kalitesinin şekillenmesinde temel bir rol oynamakta; öğrenci öğrenme çıktıları ve eğitim sisteminin genel işleyişi üzerinde doğrudan etkili olmaktadır. Öğretmenler, bilgi aktarma ve entelektüel gelişimi destekleme noktasında kilit aktörler olarak görülmektedir. Bu çalışma, 1952–2023 yılları arasında Scopus veri tabanında yayımlanan çalışmalara odaklanarak öğretmen yeterlikleri alanındaki akademik yayınların gelişimini bibliyometrik yöntemle incelemeyi amaçlamaktadır. Öğretmen yeterlikleri; bilgi, beceri, değerler ve tutumların bir bileşimi olarak tanımlanmakta olup, etkili öğretimi ve öğrenci rehberliğini mümkün kılan niteliklerdir (Klingebiel & Klieme, 2016; Liakopoulou, 2011). Literatürde bu yeterlikler arasında pedagojik bilgi, konu uzmanlığı, iletişim becerileri, sınıf yönetimi, öğrenci çeşitliliğine duyarlık ve sürekli mesleki gelişim yer almaktadır. Etkili öğretimin hem bilişsel hem duyuşsal boyutları kapsayan çok boyutlu bir süreç olduğu vurgulanmaktadır (Kunter vd., 2013; Biesta, 2017). Öğretmen niteliğini açıklamak üzere çeşitli kuramsal çerçeveler geliştirilmiştir. Süreç Becerisi Kuramı (Bruner, 1974), Yansıtıcı Uygulama Kuramı (Brandenburg et al., 2017; Schön, 2017), Sosyokültürel öğrenme temelli modeller (Schwartz et al., 2014), değer temelli yaklaşımlar (Palmer, 2007), Danielson'un Öğretim Çerçevesi (2007) ve Hattie'nin Görünür Öğrenme modeli (2009) bunlar arasındadır. Ayrıca kariyer gelişim kuramları da öğretmenlerin mesleki gelişimi ve uzmanlaşma süreçlerine ışık tutmaktadır (Super, 1980). Son yıllarda, öğretmen yeterliklerine dijital yetkinlik, uyum sağlama becerisi, kültürel duyarlılık, sosyal-duygusal beceriler ve sürdürülebilirliğe bağlılık gibi yeni boyutlar eklenmiştir (Bremner, 2022; Cebi vd., 2022; Wang, 2012). Özellikle teknolojinin öğretim süreçlerine entegrasyonu kaçınılmaz hale gelmiştir. Ancak mevcut literatürdeki bu zenginliğe rağmen, öğretmen yeterlikleriyle ilgili yayınların bütüncül bir haritasını sunan derli toplu bir sentezin eksik olduğu görülmektedir. Bu çalışma bu boşluğu doldurmak amacıyla; 1952–2023 döneminde yayımlanan çalışmaları bibliyometrik analiz yoluyla incelemeyi ve aşağıdaki sorulara yanıt aramayı hedeflemektedir: Öğretmen yeterlikleri konusunda yapılan araştırmaların niceliksel durumu nedir? En sık kullanılan anahtar kelimeler hangileridir? Alana en fazla katkı sağlayan ülkeler ve kurumlar hangileridir? En çok atıf alan yazarlar ve yayınlar kimlerdir? Ortak yazarlık ve iş birliği örüntüsü nasıldır? En çok atıf alan çalışmalar arasındaki ilişkiler nelerdir? Bu sorulara yanıt aranarak öğretmen yeterlikleri alanının entelektüel gelişimi daha iyi anlaşılacak ve araştırmacılar, eğitim yöneticileri ve politika yapıcılar için stratejik bir bilgi temeli oluşturulacaktır (Atar, 2014; Buddin & Zamarro, 2009; Hanushek & Rivkin, 2006; Hsien vd., 2009; Kazu & Çam, 2019).Öğretmen yeterliklerinin öğrenci başarısıyla ilişkisi güçlü bir şekilde ortaya konmuştur (Hattie, 2009). Bu alandaki öncü çalışmalar; hizmet öncesi öğretmen eğitiminin kalitesini (Darling-Hammond, 2010), sürekli mesleki gelişimin etkisini (Desimone & Garet, 2015) ve öğretmen performansının değerlendirilmesini (Papay, 2012) incelemiştir.Bibliyometrik analiz yöntemi, parçalı bir şekilde dağılmış akademik bilgiyi tematik kümeler, entelektüel yapılar ve iş birliği ağları temelinde sentezleyerek anlamlı hale getirmektedir. Ancak mevcut çalışmalar (ör. Altay vd., 2020; Zhan et al., 2022; Pham vd., 2023; Mertkan & Gümüş, 2024) öğretmen eğitimi ya da mesleki gelişim gibi alt alanlara odaklanmakta ve öğretmen yeterliklerini bir bütün olarak ele almamaktadır. Son dönemde eğitimde dijital dönüşüm (Bond et al., 2021), öğretmen dayanıklılığı ve stres yönetimi (Üstündağ-Kocakuşak & Akar-Vural, 2023) ile toplumsal adalet pedagojisi gibi temalar da bu alana entegre edilmektedir. Dolayısıyla öğretmen yeterlikleri, yalnızca pedagojik değil, aynı zamanda sosyo-kültürel ve teknolojik bağlamlarda da ele alınmalıdır. Bu bağlamda, çalışma öğretmen yeterliklerine dair literatürün kapsamlı bir haritasını çıkararak akademik araştırmalara ve eğitim politikalarına yön verecek stratejik bir bilgi birikimi sunmayı amaçlamaktadır.

Yöntem

Bu çalışma, öğretmen yeterlikleri konusundaki bilimsel literatürü sistematik biçimde haritalamak amacıyla bibliyometrik analiz yöntemi benimsemiştir. Bibliyometrik analiz, büyük ölçekli akademik yayınları inceleyerek temel eğilimleri, etkili çalışmaları ve iş birliği örüntülerini ortaya koymaya imkân sağlar. Araştırma sürecinde, Donthu ve arkadaşlarının (2021) önerdiği bilimsel haritalama çerçevesine dayalı olarak atıf analizi, eş-atıf, bibliyografik eşleme, ortak yazarlık ve anahtar kelime eş-görünüm analizleri uygulanmıştır. Bu yöntemler, alanın entelektüel yapısı ve tematik evrimi hakkında bütüncül bir görünüm sunmayı amaçlamıştır.Veriler, disiplinlerarası kapsamı ve gelişmiş dizinleme standartlarıyla tanınan Scopus veri tabanından elde edilmiştir. Veritabanı sorgusu 7 Ocak 2024 tarihinde gerçekleştirilmiş ve yalnızca 1952–2023 yılları arasında yayımlanmış İngilizce makaleler, derleme yazılar ve bildiri metinleri çalışmaya dahil edilmiştir. İngilizce dışındaki yayınlar ve gri literatür çalışma kapsamı dışında bırakılmıştır. Arama stratejisi, ön taramalar ve uzman görüşleri doğrultusunda oluşturulmuştur. Kullanılan kesin Boolean sorgusu: "teacher qualifications" OR "teacher qualities" şeklindedir. Bu sorgu, yalnızca bu kavramları başlık, özet veya anahtar kelimelerde açıkça kullanan çalışmaları kapsamıştır. Konu alanı kısıtlamasına gidilmemiştir; böylece analiz disiplinlerarası karakterini korumuştur. Çalışmada, kavramsal sınırlandırmaya gidilerek "teacher qualification" kavramı odakta tutulmuş; "teacher

competency" terimi ise dışarda bırakılmıştır. Nitelik (qualification), uluslararası literatürde (Darling-Hammond & Bransford, 2007; OECD, 2005) diploma, sertifika, formel yeterlikler ve mesleki gelişim kayıtları olarak tanımlanırken; yeterlik (competency), gözlenebilir beceri, tutum ve performansa dayalı göstergeleri kapsamaktadır. Bu ayrım, kavramsal karışıklığı önlemek ve öğretmenlik mesleğinin yapısal özelliklerini odağa almak amacıyla yapılmıştır. Verilerin analizi, VOSviewer 1.6.20 yazılımı ile gerçekleştirilmiştir (Van Eck & Waltman, 2010). VOSviewer, iş birliği ağları, anahtar kelime kümeleri, atıf ilişkileri ve tematik gelişmeleri görselleştirme konusunda etkin bir araçtır. Betimsel istatistikler, eş-görünüm matrisleri ve yoğunluk haritaları aracılığıyla anlamlı örüntüler belirlenmiştir.

Sonuç

Bu çalışma, öğretmen yeterlikleri üzerine yürütülen akademik literatürü kapsamlı bir bibliyometrik çerçevede incelemiş ve bu alandaki 70 yılı aşkın sürece yayılan gelişmeleri ortaya koymuştur. Scopus veri tabanında yer alan 13.770 hakemli yayına dayanan analiz, öğretmen niteliği ve yeterlikleri alanında öne çıkan temaları, etkili araştırmacıları, iş birliği ağlarını ve küresel eğilimleri haritalandırmıştır. Bulgular, özellikle 2023 yılında zirveye ulaşan artan bir akademik ilgiye işaret etmektedir. Öğretmen eğitimi, mesleki gelişim ve öğretmen değerlendirme gibi konular; literatürde en çok işlenen temalar olup, öğretmen niteliğinin çok boyutlu bir yapı olarak kavramsallaştırılma çabasını yansıtmaktadır. Bu yapı; bireysel, kurumsal ve sistemik etmenlerle şekillenmektedir. ABD, Avustralya ve Birleşik Krallık gibi ülkeler; alana yön veren araştırmacılar (ör. D. Goldhaber, L. Darling-Hammond, S. Loeb) ve kurumlara ev sahipliği yapmaktadır. Türkiye'nin de yayın çıktılarındaki artışı dikkat çekicidir; bu durum, ülkenin uluslararası eğitim araştırmalarındaki etkileşimini artırdığını göstermektedir. Ancak literatürde bazı tartışmalar da mevcuttur: Öğretmen yeterliklerinin öğrenci başarısı üzerindeki doğrudan etkisi bazı çalışmalarca sorgulanmış (Danişman et al., 2019; Maphoso & Mahlo, 2015); okul iklimi ve kurumsal destek gibi bağlamsal etkenlerin rolü vurgulanmıştır (DeAngelis & Presley, 2011). Yine de öğretmenlerin öğrenci başarısındaki merkezi rolü genel kabul görmektedir (Coenen et al., 2018; Wedel, 2021). Çalışma yalnızca Scopus kapsamındaki makalelere ve derlemelere dayandığı için; kitap, rapor, editöryal yazılar ve gri literatür gibi bazı önemli katkılar dışarıda bırakılmıştır. Ayrıca bibliyometrik yöntemler, atıf ilişkilerine ve yapısal örüntülere odaklandığından, içeriksel ve kuramsal derinliğe sınırlı ölçüde ulaşılabilmiştir.

Gelecek Araştırmalar İçin Öneriler

1. *Veri Tabanlarının Genişletilmesi*: Web of Science, ERIC ve PubMed gibi ek veri tabanlarının dahil edilmesiyle daha bütüncül ve küresel bir analiz sağlanabilir.

2. *Karma Yöntemlerin Kullanılması*: Bibliyometrik analiz ile içerik analizinin birleştirilmesi, teorik derinliğin artırılmasına ve araştırma boşluklarının belirlenmesine katkı sunabilir.

3. *Bölgesel Eşitsizliklerin Giderilmesi*: Özellikle gelişmekte olan ülkelerde öğretmen yeterliklerine dair daha fazla araştırma yapılması, karşılaştırmalı eğitim perspektifine katkı sağlar.

4. *Disiplinlerarası Yaklaşımların Desteklenmesi*: Öğretmen yeterlikleri; eğitim psikolojisi, dijital pedagojik tasarım ve sosyoloji gibi alanlarla kesişimsel olarak ele alınmalıdır.

5. *Araştırma-Bilimsel Uygulama Köprüsünün Kurulması*: Kuramsal bulguların, öğretmen eğitimi programlarına ve eğitim politikalarına dönüştürülebilir modeller haline getirilmesi önemlidir.

6. *Sürdürülebilir Yeterlik Modellerinin Geliştirilmesi*: Eğitimde yaşanan dönüşümler doğrultusunda; uyum becerisi, duygusal dayanıklılık ve dijital okuryazarlık gibi alanlara dayalı yeni yeterlik tanımları yapılmalıdır.