A Bibliometrics Analysis of Scopus-Indexed Research on Teachers' Well-Being from 1995-2022: Emerging Research Trends

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Abstract: Teacher well-being has gained significant prominence in academic publications indexed by Scopus in recent years. This study employs rigorous bibliometric analysis to trace the evolution of teacher well-being literature, examining 326 relevant publications from 1995 to 2022. Our findings reveal two crucial inflexion points in 2013, driven by the global economic downturn, and 2020, propelled by the widespread repercussions of the COVID-19 pandemic, including teacher unemployment. These inflexion points underscore the real-world events' profound impact on academic discourse in teacher well-being. Traditionally, authors from the United States, Australia, and the United Kingdom have shaped this discourse. Dutch scholars have also gained recognition, accumulating substantial citations. This paradigm shift is paramount as emerging nations like Iran, Ireland, China, and Austria increasingly contribute, challenging the dominance of Western authors. This shift underscores the evolving dynamics of scholarly contributions in teacher well-being research, emphasizing the need for a more diverse and inclusive academic dialogue. This study provides a panoramic view of the trajectory of teacher well-being research, shedding light on the interplay between global events and scholarly responses. It highlights nations' evolving roles in shaping this discourse, acknowledging established influences while recognizing the contributions emerging from voices in the field. These findings enrich the global dialogue surrounding teacher well-being and offer insights into the dynamic forces shaping this vital field of study, compelling the academic community to adapt, diversify, and foster a more inclusive conversation on teacher well-being.

Keywords: *Bibliometrics analysis, emerging trends, teacher well-being.*

Introduction

In recent years, the heightened recognition of teacher well-being, primarily driven by the critical issue of teacher attrition within educational contexts, has led us to delve deeper into this subject. This growing awareness finds robust support in Viac and Fraser's (2020) publication, which reinforces Johnson et al.'s (2005) assertion that teaching ranks among the most stress-inducing professions among 26 different occupations. Moreover, McCallum et al. (2017) offer a comprehensive perspective on teacher well-being, shedding light on its multifaceted and dynamic nature, influenced by a complex interplay of individual factors, familial dynamics, community values, personal experiences, cultural influences, opportunities, and evolving circumstances over time. Their study notably emphasizes the profound emotional engagement of teachers within their functional ecosystem.

As we transition to exploring potential strategies to address these challenges and enhance teacher well-being, it becomes evident that various approaches have been proposed. For instance, Seaton (2018) advocates for the maintenance of learning journals and the inclusion of additional exercises, a viewpoint echoed by Rahm and Heise (2019). Additionally, Tang et al. (2018) have uncovered the pivotal role played by professional learning communities in mediating the relationship between salary satisfaction and teacher well-being, surpassing the influence of community engagement. Furthermore, research has illuminated the importance of fulfilling fundamental needs, such as cultivating meaningful connections with colleagues and students, fostering autonomy, and nurturing competence, as key mediators between perceived autonomy support and various facets of teacher well-being (Ebersold et al., 2019).

However, it's crucial to underscore the motivation behind our study more prominently. The existing body of research on teacher well-being, while valuable, leaves gaps and unanswered questions within the field. These gaps include the

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absence of comprehensive bibliometric reviews specifically focused on teacher well-being spanning the period from 1995 to 2022. This underscores the pressing need to evaluate the literature comprehensively and highlight global concerns of scholars, thereby identifying emerging trends in educational research. These factors serve as the driving force behind our study.

Literature Review

Introduction to Teacher Well-Being

Teacher well-being has become a subject of substantial interest and investigation, drawing attention from scholars, policymakers, and educators across the globe in recent times. It stands at the confluence of education, psychology, and workplace studies, representing a complex interplay between individual teachers, their professional environments, and the broader educational landscape. This literature review aims to provide a comprehensive grasp of teacher well-being, delving into its theoretical foundations, contributing factors, and profound implications for both educators and students.

At its core, the concept of well-being, as articulated by Michalos (2008), recognizes the intricate dance between objective conditions and individual or collective responses to these conditions. It acknowledges that well-being isn't solely determined by external circumstances but is deeply influenced by how individuals perceive, think, and feel about their circumstances. Diener et al. (2018) further stress the subjective nature of well-being, highlighting that it varies from person to person. In the realm of teaching, this perspective assumes particular significance, as it acknowledges that the challenges and stressors teachers face often coexist with the positive aspects of their profession (Lavy & Eshet, 2018).

Teacher well-being, within this framework, goes beyond conventional notions of health and job satisfaction. It encompasses the holistic experiences of educators, considering cognitive dimensions like satisfaction in addition to emotional well-being (Diener et al., 2018). This multidimensional view of teacher well-being sets the stage for a deeper exploration of its intricate dynamics within educational settings.

Research into teacher well-being has uncovered its far-reaching implications. It has been found to predict how students perceive their teachers' behavior, which, in turn, influences the well-being of these students (Van Petegem et al., 2007). Moreover, teacher well-being is closely tied to factors such as teacher presenteeism, which can impact both educators and students (Harding et al., 2019). Additionally, it serves as a critical mediator in the face of various stressors, including those arising from interactions with students, colleagues, and parents (Hung et al., 2016).

Furthermore, teacher well-being transcends the classroom, significantly contributing to variations in student performance, even surpassing other influential factors (Darling-Hammond, 2000). In essence, teachers are not just educators; they are also the architects of future educational achievements, making their well-being a cornerstone of the educational landscape.

Recognizing the pivotal role of teacher well-being, this literature review aims to comprehensively explore the existing body of knowledge. It seeks to identify gaps and unanswered questions within the field while underscoring the importance of conducting bibliometric analysis to further advance our understanding of teacher well-being spanning the years from 1995 to 2022. By delving deep into the literature and addressing these gaps, this study aspires to make a substantial contribution to the ongoing discourse on teacher well-being and its far-reaching implications for educators, students, and the broader educational community.

Factors Influencing Teacher Well-being

To gain a comprehensive understanding of teacher well-being, it's crucial to delve into the various factors that can significantly impact educators' overall quality of life and job satisfaction. These factors encompass workload, classroom management, school culture, leadership, and external pressures. Drawing upon existing research, it is advisable to explore how these factors can shape teacher well-being.

(i) Workload

Workload is a fundamental aspect that can deeply influence teacher well-being. Educators often grapple with demanding responsibilities, from crafting lesson plans to grading assignments and managing classroom dynamics. These demands, when excessive, can lead to stress and burnout, as consistently highlighted in research (Ingersoll & Strong, 2011). Strategies for managing workload and enhancing time management have been recognized as pivotal in improving teacher well-being (Johnson et al., 2005).

(ii) Classroom Management

Effective classroom management is essential for creating a conducive and positive learning environment. However, the challenges associated with maintaining discipline and managing student behavior can take a toll on teacher well-being. Research consistently underscores that teachers facing classroom management difficulties are at a higher risk of experiencing stress and reduced job satisfaction (Emmer & Stough, 2001). Implementing interventions to bolster classroom management skills can mitigate these adverse effects (Romano, 2023).

(iii) School Culture

The culture and climate within a school wield considerable influence over teacher well-being. A supportive and collaborative school culture fosters a sense of belonging and job satisfaction among educators. Conversely, a toxic or unsupportive culture can lead to stress and burnout. Research underscores the pivotal role of positive school cultures in promoting teacher well-being (Bryk & Schneider, 2002). Cultivating a culture characterized by respect, collaboration, and appreciation is essential for enhancing teacher well-being (Skaalvik & Skaalvik, 2023).

(iv) Leadership

Effective school leadership is a cornerstone in shaping teacher well-being. Principals and administrators who provide clear direction, support, and opportunities for professional growth contribute to a positive working environment. Conversely, ineffective or unsupportive leadership can lead to frustration and job dissatisfaction among educators. Existing studies emphasize the impact of leadership on teacher well-being, underscoring the importance of strong and supportive school leadership (Leithwood et al., 2004).

(v) External Pressures

Teachers often grapple with external pressures stemming from educational policies, standardized testing, and societal expectations. These pressures can translate into stress and a sense of being undervalued. Research demonstrates that external pressures can have detrimental effects on teacher well-being (Hargreaves, 2001). Strategies for mitigating the impact of these pressures include granting educators' professional autonomy and recognizing their contributions (Klassen & Chiu, 2010).

In summary, numerous factors influence teacher well-being, ranging from the demands of workload and classroom management to the school culture, leadership, and external pressures. Existing research provides valuable insights into the intricate interplay between these factors and teacher well-being, underscoring the importance of addressing these issues to cultivate a positive and supportive educational environment for educators.

Bibliometric Analysis and Its Significance

Understanding bibliometric analysis is pivotal in academic research, including its relevance in studying teacher well-being. This approach involves quantitatively examining publication patterns, citations, and bibliographic data to gain insights into a field's evolution and knowledge landscape (Van Raan, 2005).

(i) Relevance in Academic Research

Bibliometric analysis is crucial in academia for several reasons. It provides a comprehensive view of a field's state, helping identify trends, influential papers, and knowledge gaps. It also gauges the impact of publications and aids in positioning one's research within the academic landscape (Donthu et al., 2021).

(ii) Applications in Other Fields

Bibliometric analysis has been widely used in various fields. In medicine, it tracks research development and clinical trial impacts (Sweileh et al., 2017). In economics, it identifies influential papers and authors (Van Eck et al., 2010).

(iii) Previous Bibliometric Reviews

In education, while specific bibliometric reviews on teacher well-being from 1995 to 2022 are limited, broader reviews exist. For instance, in mathematics education (Drijvers et al., 2020), international student mobilities (Pham et al., 2021), learning management systems (Phan et al., 2022), and environmental, social, and governance research (A. K. Singh et al., 2022).

(iv) Key Findings and Limitations

Past reviews uncovered influential authors, highlighted key papers, and tracked subfield growth. Limitations include a lack of focus on teacher well-being within these reviews and the absence of a dedicated analysis for the specific 1995-2022 period. Addressing these gaps is crucial for advancing understanding in teacher well-being within education.

Research Gaps and Unanswered Questions

In examining the existing literature on teacher well-being, it becomes evident that certain gaps and unanswered questions persist, warranting further exploration. These gaps encompass underexplored subtopics, limited geographical scope, and temporal gaps that necessitate comprehensive analysis. Notably, the literature review reveals:

(i) Underexplored Subtopics

While teacher well-being has garnered significant attention, certain subtopics remain relatively underexplored. For instance, detailed examinations of the factors influencing teacher well-being, such as classroom management strategies or leadership practices, remain limited in comparison to broader discussions on the topic.

(ii) Limited Geographical Scope

Much of the existing literature predominantly focuses on specific geographic regions, such as North America and Europe. There is a dearth of comprehensive cross-cultural analyses that consider teacher well-being within diverse global contexts. This limitation hinders the development of a holistic understanding of the subject.

(iii) Temporal Gaps

The temporal scope of existing research varies, with few studies encompassing the complete period from 1995 to 2022. Consequently, there exists a need for an up-to-date and inclusive analysis that encompasses the evolving landscape of teacher well-being research.

Research Objectives and Rationale

In light of the identified gaps and unanswered questions in the literature, this study seeks to address these issues through a comprehensive bibliometric analysis. The primary research objectives include:

(i)   *To Chart the Evolution of Teacher Well-being Research*: By examining publication trends and geographical distribution, this study aims to map the evolution of teacher well-being research from 1995 to 2022.

(ii) *To Analyze Co-Authorship Patterns:* This study will investigate how collaboration and co-authorship have evolved within *the* teacher well-being literature during the specified period.

(iii) *To Identify Influential Papers:* The research will pinpoint the most influential papers that have significantly impacted the teacher well-being literature between 1995 and 2022.

(iv) *To Identify Frequent Research Topics*: This study will determine which research topics within teacher well-being have received the most attention and exploration during the same timeframe.

The rationale for conducting this study lies in its potential to bridge existing gaps and significantly contribute to the understanding of teacher well-being. By conducting a thorough bibliometric analysis, this research aims to provide a comprehensive overview, address temporal and geographical limitations, and offer valuable insights that can inform future studies and policy development. Furthermore, by identifying influential papers and emerging research topics, this study seeks to facilitate collaboration and innovation in the field, ultimately fostering the well-being of educators and enhancing the quality of education worldwide.

Research Questions

Hence, the primary objective of this study is to address four key research questions (RQs):

RQ1. What changes have transpired in the literature on teacher well-being concerning publication growth trends and geographical distribution between 1995 and 2022?

RQ2. How have co-authorship patterns evolved within the teacher well-being literature from 1995 to 2022?

RQ3. Which papers have exerted the most significant influence on the teacher well-being literature between 1995 and 2022?

RQ4. What research topics have received the most frequent attention within teacher well-being research from 1995 to 2022?

By thoroughly investigating these research questions, our study aims to make a substantial contribution to the understanding of teacher well-being literature, its evolution over time, and the critical topics and influential publications that have shaped this field.

In conclusion, the literature review has illuminated the complex and multifaceted nature of teacher well-being, underscoring its significance in the realm of education. It has highlighted the influence of various factors, such as workload, classroom management, school culture, leadership, and external pressures, on teacher well-being. Furthermore, the literature review has stressed the relevance of bibliometric analysis in advancing the understanding of teacher well-being. It has showcased the effectiveness of bibliometric analysis in uncovering trends, gaps, and influential papers in other fields and underscored the importance of applying this methodology to teacher well-being research.

Overall, this study's significance lies in its potential to bridge gaps and contribute to the field of teacher well-being research by conducting a comprehensive bibliometric analysis. Through this approach, it aims to provide a holistic view of the literature, address existing limitations, and offer insights that can inform future research and educational practices, ultimately enhancing the well-being of teachers and the quality of education they provide.

Methodology

Research Design

Bibliometrics has emerged as a widely accepted and commonly employed technique in diverse fields (Hallinger & Kovačević, 2023). This approach facilitates collaboration among researchers in the field and analysts, academics, and investigators from various disciplines, leveraging citation analysis, computer science, and the applications of information visualization, visual analytics, data mining, and knowledge discovery (Cobo et al., 2011). It is advisable to utilize bibliometric analysis to discern emerging trends in article and journal performance, collaboration patterns, and research constituents (Donthu et al., 2021).

A range of quantitative methods have been proposed and utilized to explore different aspects of scientific knowledge. Examples include co-word methods, hybrid approaches combining co-citation and word analysis (Klavans & Boyack, 2017), analysis of cited authors (McCain et al., 2005), and the study of network evolution (Rosvall & Bergstrom, 2010). These methods enable researchers to delve into various dimensions of scientific knowledge.

In this quantitative study, the authors aimed to identify publication trends on teacher well-being by meticulously analyzing extensive volumes of unstructured data. Through this process, they sought to decode and delineate the cumulative scientific knowledge and evolutionary nuances of research on teacher well-being. Therefore, employing this method aligns with their research questions and allows for the rigorous exploration of answers.

Sample and Data Collection

Bibliometrics are examined based on bibliography information. Choosing reliable sources could get trustworthy findings. Scopus and Web of Sciences are the most significant scholarly databases; however, within the social sciences category, Scopus has more documents than Web of Sciences in the exact condition search (Pham et al., 2021). Therefore, the authors selected Scopus as a source to collect data.

The authors of this study have demonstrated an unwavering commitment to rigorous and systematic research methodologies by diligently following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Applying these guidelines is paramount in ensuring the credibility and reliability of the data collection process, a critical foundation for this study's findings.

As elucidated in Figure 1, the authors embarked on a meticulous journey to systematically gather data from its inception. To initiate this comprehensive data collection endeavour, they left no stone unturned in compiling all relevant documents for teacher well-being. This process was executed with precision, harnessing the formidable Scopus search engine.

In their systematic search, the authors employed a well-crafted search query designed to encompass a broad spectrum of keywords and their synonyms, including variations such as "teacher's well-being," "faculty's well-being," "researcher's well-being," and more. These keywords were strategically targeted in titles, abstracts, and keyword fields. This extensive search, carried out on September 30, 2022, at 11:00, yielded a substantial corpus of 667 documents.

The search query employed for this purpose was meticulously constructed as follows: TITLE-ABS-KEY ("teacher* wellbeing" OR "teacher* well-being" OR "faculty* wellbeing" OR "faculty* well-being" OR "researcher* wellbeing" OR "researcher* well-being").

By rigorously adhering to the PRISMA guidelines, the authors have fortified the methodological integrity of their data collection and underscored their unwavering commitment to upholding the highest standards of scholarly rigour. This meticulous approach is a cornerstone of their study, ensuring their findings are grounded in comprehensive and methodologically sound research practices.

During the screening phase, the initial set of documents underwent a rigorous evaluation process based on predefined research scope criteria. Several critical criteria were applied to ensure a focused and relevant dataset for this study. The inclusion criteria comprised documents falling within the social sciences category, written in English at the final publication stage, and belonging to four document types: articles, conference papers, books, and book chapters.

The decision to include only English-language documents was pragmatic, given the prevalence of English in academic publications and the resources available for this study. While this choice may introduce potential language bias, it was made to balance comprehensiveness and feasibility.

Furthermore, the screening process was facilitated by utilizing the filtering function within the Scopus interface. This systematic approach yielded a refined set of 356 records that met the specified criteria. Subsequently, the bibliographic details of these selected records were meticulously extracted and recorded in text and Excel formats. This comprehensive data capture encompassed critical information such as authors' affiliations, source publications, publication years, citation counts, keywords, and references.

By meticulously adhering to these screening and data extraction procedures, the authors ensured that the dataset used for analysis was consistent and aligned with the research objectives. The systematic application of inclusion criteria and

the rationale for selecting English-language publications demonstrate the study's commitment to maintaining methodological rigor and relevance in the context of bibliometric analysis.

During the eligibility phase, the downloaded files underwent a rigorous assessment to ascertain their suitability for inclusion. The authors divided into two groups and thoroughly examined each document, scrutinizing titles, abstracts, and even full texts. Each document was then categorized as "eligible" or "not eligible."

The criteria used to categorize documents for the study as either "eligible" or "not eligible" include:

(i) *Relevance to Research Scope:* Documents were assessed to determine if their content aligned with the research scope and objectives. Those related to teacher well-being and falling within the specified timeframe (1995-2022) were considered eligible.

(ii) Content *Examination:* The documents' titles, abstracts, and full texts were scrutinized for their content—papers needed to contain information relevant to teacher well-being to be categorized as eligible.

(iii) Consensus *Decision: In* cases of disagreement between reviewers regarding a document's eligibility, discussion and consensus were sought. This collaborative approach ensured consistency in the categorization process.

(iv) Exclusion *of Irrelevant Documents:* Documents that did not pertain to teacher well-being or fell outside the study's timeframe were categorized as "not eligible" and subsequently excluded from the analysis.

These criteria ensured that the final analysis dataset included only documents directly related to the study's research questions and within the specified parameters.

Discrepancies in categorization were addressed through discussion until a consensus was achieved. Subsequently, 30 documents that did not conform to the research scope were excluded. Consequently, the final analysis dataset consisted of 326 papers.
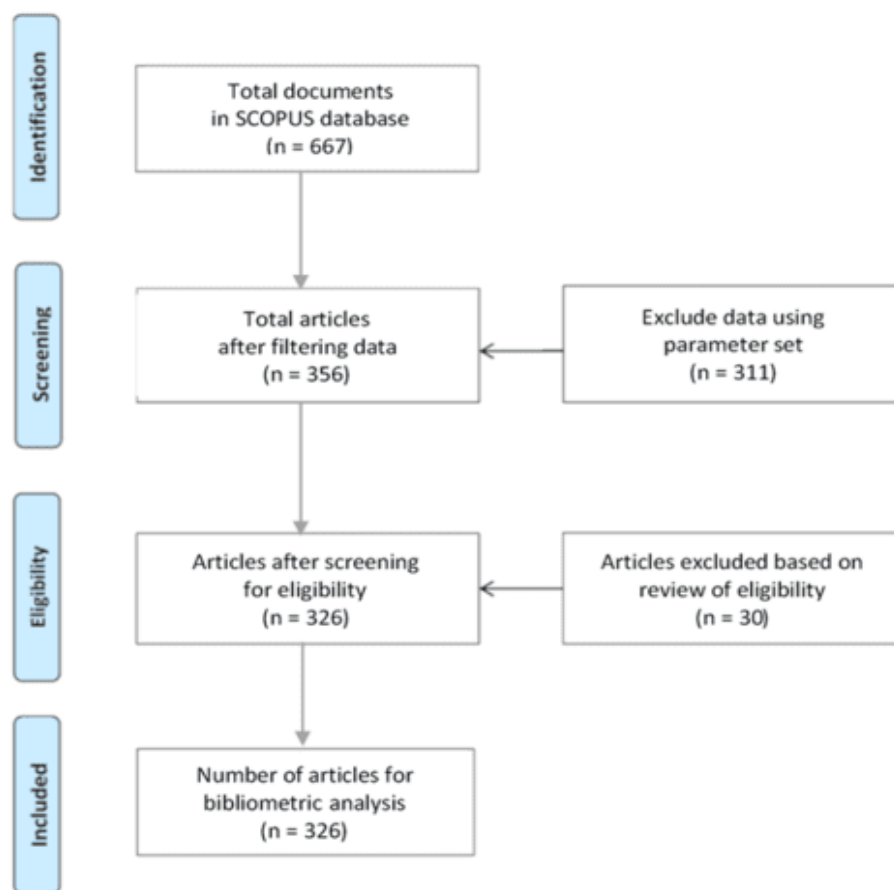
Figure 1. PRISMA Guidelines

Analyzing of Data

The final dataset underwent thorough bibliographic analysis to address the research questions. Two distinct types of analysis were employed for each research question: descriptive statistics and science mapping. Descriptive statistics were utilized to identify the most relevant entities within the dataset, such as authors, keywords, sources, etc. Science-based mapping techniques were employed to examine the relationships between these entities.

Regarding the statistical description, the number of publications and citations was crucial in organizing the entities. For instance, by considering both productivity and citation count, the research community leaders were identified. These leaders ranked highly in terms of producing significant research and being frequently cited by others.

Regarding science mapping, various analytical methods were used to illustrate the connections between entities. Co-author analysis was employed to represent the collaborative nature of the research community, shedding light on the collaborative efforts among authors. Co-word analysis was particularly effective in exploring emerging topics and trends. A co-citation analysis was conducted to investigate the interest in specific sources and the prevalent themes in the field.

VOSviewer, an accessible data visualization application, supported all these investigations. VOSviewer facilitated the visualization and interpretation of the analyzed data, aiding in identifying patterns, relationships, and trends within the dataset (downloaded at https://www.vosviewer.com/.)

Findings/Results

The aim was to comprehensively investigate the scope, evolution, and geographical distribution of the knowledge base. This exploration would enable the identification of prominent authors and materials, ultimately unveiling the conceptual structure of the literature. This section of the study was organized according to four key research questions.

The Growth Trajectory of Publication and Geographical Allocation of Publications from 1995 - 2022

To illustrate the geographic scope of the study, this section examines country-specific publications and how they collaborate. It outlines a nation's research priorities, objectives, and viewpoints, and contains all written works, citations, and collaboration networks. We can better grasp the nature and extent of a research problem and identify potential solutions by examining research patterns in various geographies.

Research Materials

Figure 2 presents a pie chart illustrating the distribution of research materials used in the present study. The various colors represent the total number of publications, expressed as a percentage. Analyzing the Scopus dataset from 1995 to 2022, most publications comprised articles, accounting for 295 out of 326 publications, equivalent to 90.49% of the total. Book chapters were the second most prevalent research material, comprising 19 publications, corresponding to 5.83% of all publications. Books in the research field ranked third, with 11 publications representing 3.37% of the total. Lastly, conference papers held the lowest position in the list, with only one publication, making up 0.31% of the overall publications.

Figure 2. Research Materials
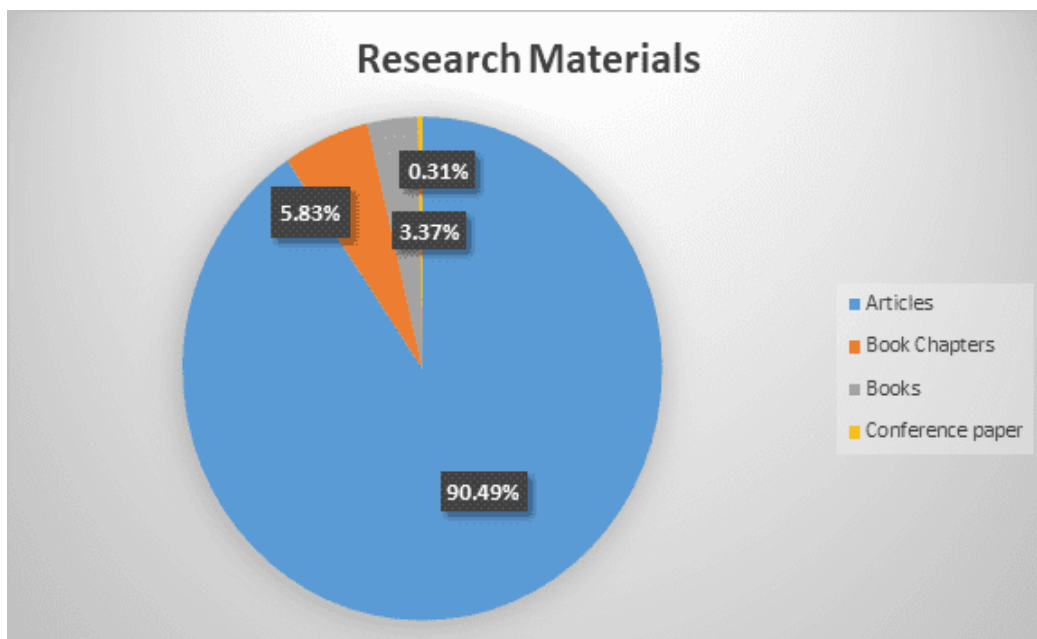
Publication Trends Over Time

Figure 3 provides insights into the recent publication trend concerning teacher well-being. The movement originated in 1995 with the first paper by Hubbard and Atkins (1995). From 1995 to 2013, the publication volume increased gradually, and it experienced rapid growth from 2013 to 2022. The publications can be clearly divided into three distinct periods:

(i) The period from 1995 to 2013 had a modest annual publication volume, with fewer than ten publications each year. During this time, the total number of publications amounted to only 24 documents, accounting for 7.36% of the overall publications.

(ii) In 2013–2018, there was a significant surge in the publication trend on teacher well-being, with 89 publications representing 27.31% of the total. The annual publication counts nearly quadrupled, ranging from 10 to 30 publications per year.

(iii) 2019–2022 witnessed an even more remarkable increase, with 219 publications in just three years. We accounted for 65.33% of the total publications, almost double the combined publications from the previous 23 years.
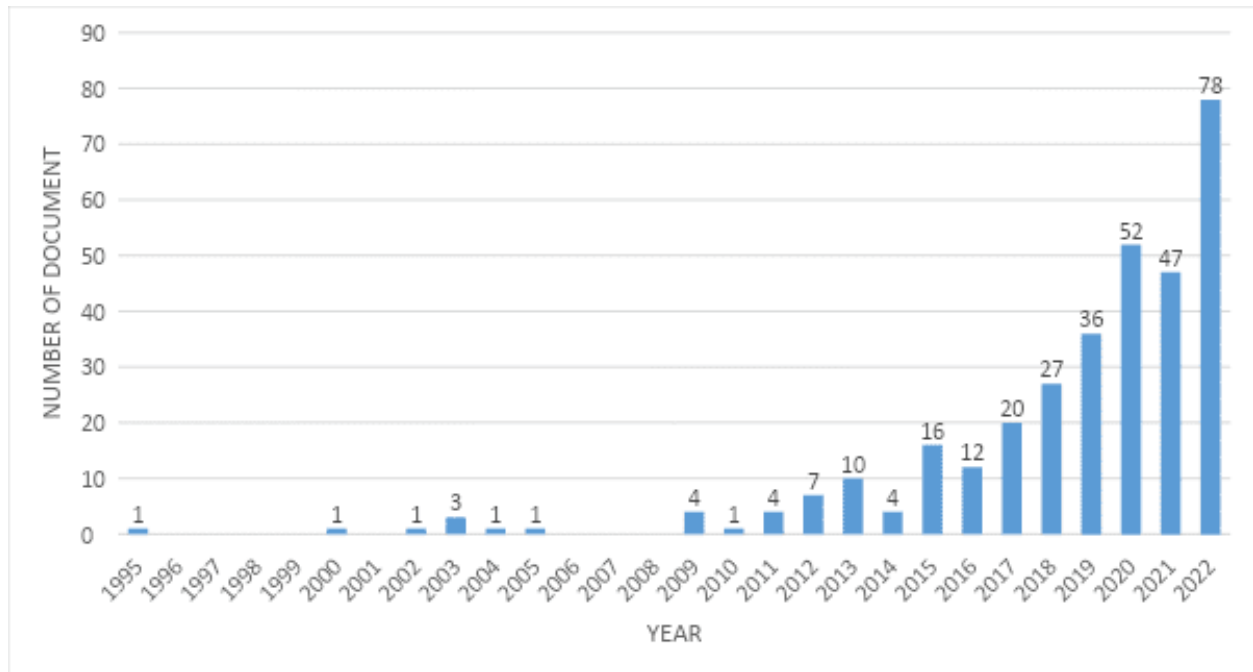
Figure 3. Publication Trends Over Time

Publication Distribution by Countries

The investigation focuses on the distribution of publications and citations among countries significantly contributing to the field from 1995 to 2022. Based on publication numbers, the top countries are as follows:

1. America: 89 publications with 13 collaborative links with other countries.

2. Australia: 51 publications with 11 collaborative links.

3. Britain: 37 publications with 16 collaborative links.

4. Germany: 20 publications with nine collaborative links.

5. Austria, China, and Hong Kong have an equal number of 15 publications, with link values of eight, five, and seven, respectively. Notably, Australia has established close links with America regarding research collaboration.
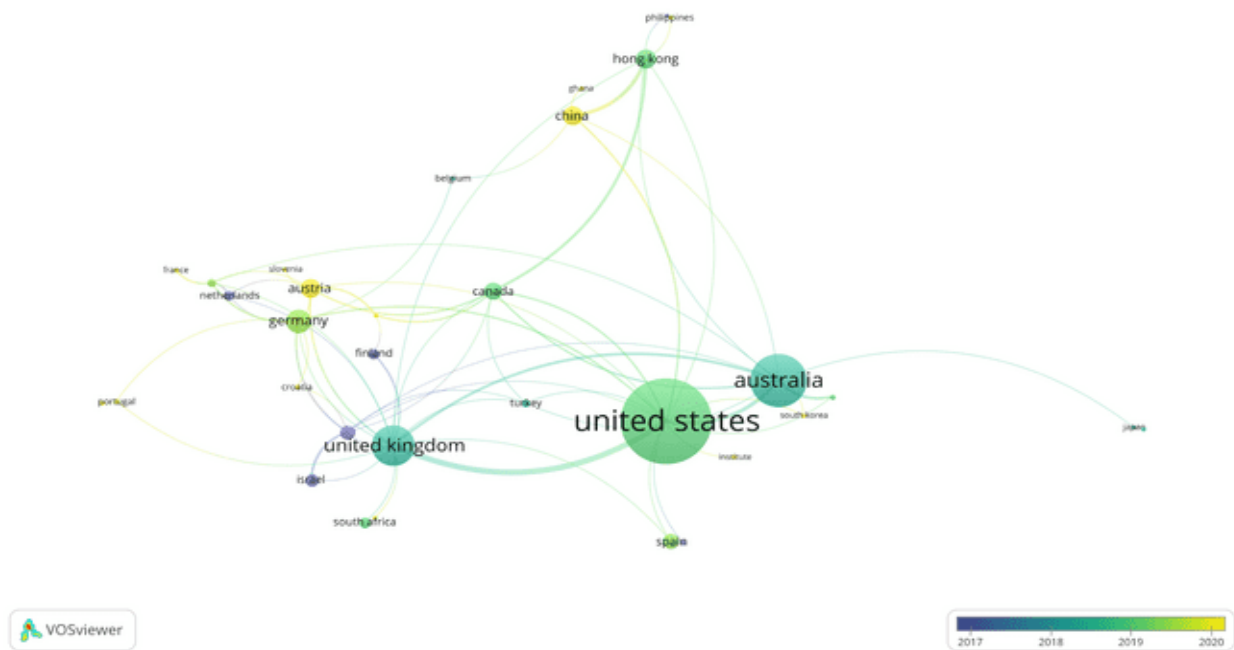
Figure 4. The Largest Collaboration Group of 34 Countries over Time Based on Co-author Analysis

Co-authorship Patterns Evolved in Teacher Wellbeing Literature from 1995- 2022

Research Community

Regarding the research community, Table 1 presents the top 10 authors in the research field based on their citation index and number of publications from 1995 to 2022. This table encompasses 889 authors. The authors who have published the most and received the highest number of citations between 1995 and 2022 include Koomen, Mercer, Zee, McCallum, Jennings, Jeon, Babic, Greenberg, and Hall. Notably, Koomen and Zee from the University of Amsterdam in the Netherlands are the leading authors, with 496 citations in 2016.

Table 1. Top Ten Authors Sorted by Citations and Publications

ID	Author	Affiliations	TC	PY	ID	Element	Affiliations	NP	PY
1	Koomen	University of Amsterdam, Netherlands	496	2016-2016	1	Mercer	University of Graz, Austria	11	2018-2022
2	Zee	University of Amsterdam, Netherlands	496	2016-2016	2	Mccallum	The University of Adelaide, Australia	7	2015-2022
3	Jennings	University of Virginia, United States	411	2013-2019	3	Jeon	Johns Hopkins University School of Education, United States	6	2019-2022
4	Mercer	University of Graz, Austria	288	2018-2022	4	Babic	University of Graz, Austria	6	2021-2022
5	Greenberg	Pennsylvania State University, United States	256	2013-2021	5	Hall	McGill University, Canada	5	2019-2022
6	Frank	Fordham University, United States	255	2013-2019	6	Mairitsch	University of Graz, Austria	5	2021-2022

Table 1. Continued

ID	Author	Affiliations	TC	PY	ID	Element	Affiliations	NP	PY
7	Klusmann	Leibniz Institute for Science and Mathematics Education, Germany	248	2016-2022	7	Jennings	University of Virginia, United States	4	2013-2019
8	Coccia	Pennsylvania State University, United States	224	2013-2013	8	Hall-Kenyon	Brigham Young University, United States	4	2011-2017
9	Snowberg	Pennsylvania State University, United States	224	2013-2013	9	Yin	The Chinese University of Hong Kong, China	4	2018-2020
10	Hagenauer	Murdoch University, Perth, Australia	213	2014-2014	10	Herman	University of Missouri, United States	4	2019-2022

Notes: NP denotes the number of publications; PY denotes year; TC denotes total citations

Figure 5 provides an overview of the research community from 1995 to 2022, focusing on co-author analysis. The analysis identified 889 authors who are part of 246 research groups. Among these groups, the most prominent members are Jeon's and Kwon's, each with 33 members. Additionally, Jennings's and Greenberg's groups each have 27 members, while Mercers, Babic's, and Mairitsch's groups have 19 members each. Furthermore, there are 193 groups in the research community with fewer than five members and 43 authors who work independently.
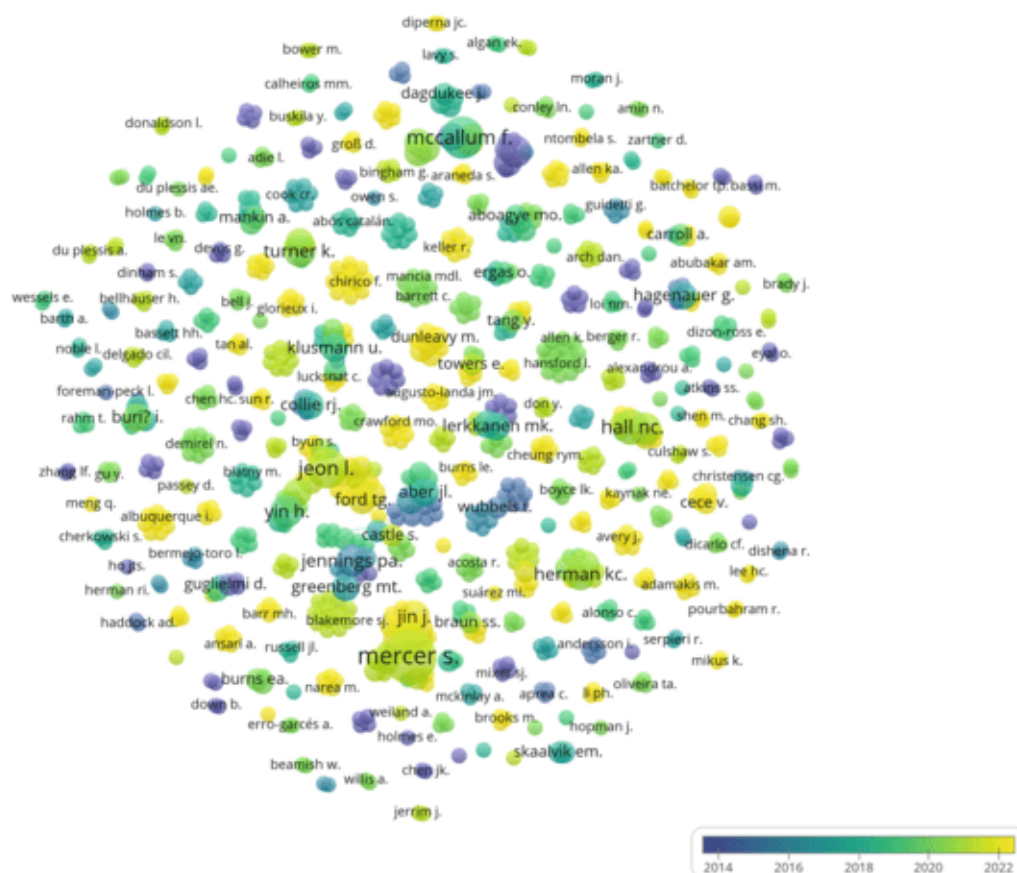
Figure 5. Research Community Over Time Based on Co-Author Analysis (884 authors, each has at least a publication)

Figure 6 highlights the authors who have been highly active in terms of the number of publications and their impact as measured by the citations received from other papers. Additionally, it provides insights into the significant clusters that have emerged over time within the research community based on co-author analysis.
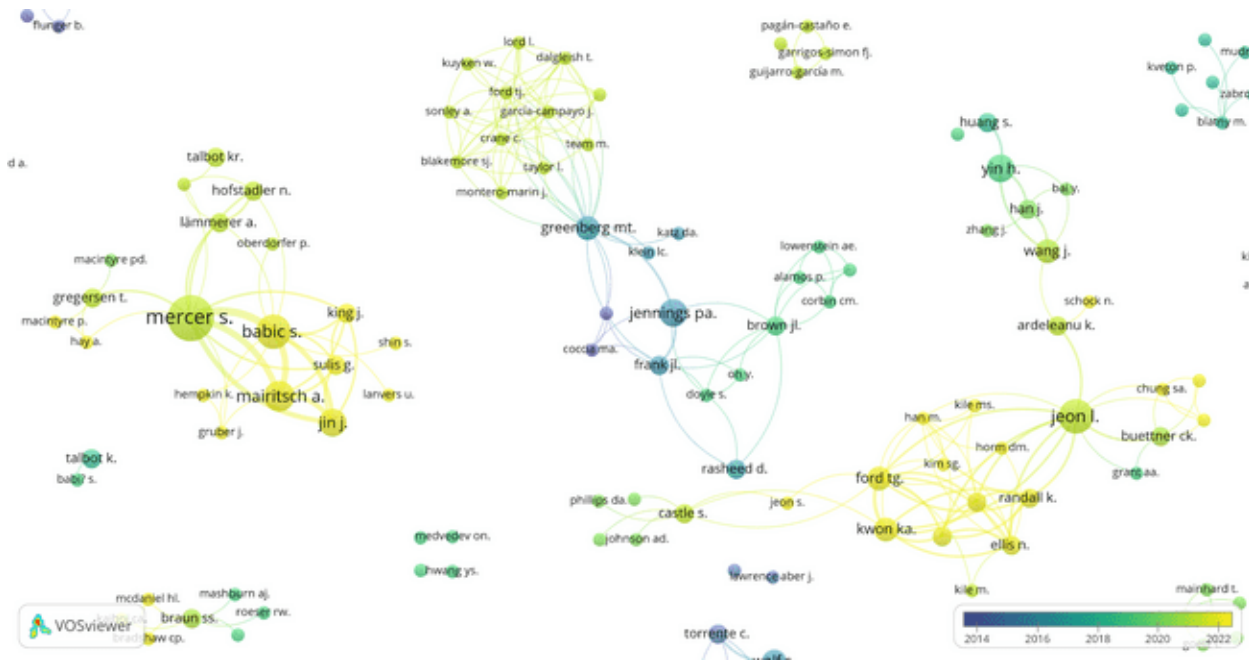
Figure 6. Most Significant Clusters Within the Research Community Based on Co-author Analysis

Number of Publications Over Time

Table 2 provides a comprehensive list of the top 20 sources, ranked by the number of publications. Among these sources, the five highest-ranking ones are "Teaching and Teacher Education," "Journal of School Psychology," "Educational Psychology," "Early Education and Development," and "Teachers and Teaching: Theory and Practice." These sources primarily belong to the social sciences (education) and psychology. Furthermore, these sources also have the highest citation index, with "Teaching and Teacher Education" being the top-ranked source. However, it is worth noting that the top-ranked source, "Review of Education Research," which has two publications, does not appear in Table 2.

Table 2. Top 20 Sources by the Number of Publications

ID	Element	Subject area	H_index	TC (Ranking)	NP	PY
1	Teaching and Teacher Education	Social Sciences (Education)	13	517 (2)	30	2014-2022
2	Journal of School Psychology	Psychology (Developmental and Educational Psychology); Social Sciences (Education)	8	254 (6)	10	2012-2022
3	Educational Psychology	Psychology (Developmental and Educational Psychology, Experimental and Cognitive Psychology); Social Sciences (Education)	6	387 (3)	9	2011-2022
4	Early Education and Development	Psychology (Developmental and Educational Psychology); Social Sciences (Education)	7	128 (13)	9	2013-2022
5	Teachers and Teaching: Theory and Practice	Arts and Humanities (Arts and Humanities (miscellaneous)); Social Sciences (Education)	7	109 (16)	9	2009-2022
6	Social Psychology of Education	Psychology (Developmental and Educational Psychology, Social Psychology); Social Sciences (Education, Sociology and Political Science)	6	275 (5)	7	2013-2019
7	Mindfulness	Psychology (Applied Psychology, Developmental and Educational Psychology, Experimental and Cognitive Psychology, Social Psychology); Social Sciences (Health (social science))	5	216 (8)	7	2015-2022
8	Early Childhood education journal	Psychology (Developmental and Educational Psychology); Social Sciences (Education)	4	67 (18)	6	2012-2022

Table 2. Continued

ID	Element	Subject area	H_index	TC (Ranking)	NP	PY
9	Psychology in the Schools	Psychology (Developmental and Educational Psychology); Social Sciences (Education)	4	114 (15)	5	2009-2022
10	Australian Journal of Teacher Education	Social Sciences (Education)	3	39 (28)	5	2012-2021
11	Sustainability (Switzerland)	Energy (Energy Engineering and Power Technology, Renewable Energy, Sustainability and the Environment); Environmental Science (Environmental Science (miscellaneous), Management, Monitoring, Policy and Law); Social Sciences (Geography, Planning and Development)	3	9 (74)	5	2019-2022
12	Issues in Educational Research	Social Sciences (Education)	2	25 (41)	4	2019-2021
13	International Journal of Educational Research Open	N/A	2	8 (77)	4	2022-2022
14	System	Social Sciences (Education)	2	214 (9)	3	2020-2022
15	Journal of Educational Administration	Social Sciences (Education, Public Administration)	3	207 (10)	3	2003-2017
16	Journal of Educational Psychology	Psychology (Developmental and Educational Psychology); Social Sciences (Education)	3	141 (12)	3	2016-2022
17	Journal of Psychoeducational Assessment	Psychology (Clinical Psychology, Psychology (miscellaneous)); Social Sciences (Education)	2	54 (21)	3	2015-2018
18	Educational Research	Social Sciences (Education)	2	24 (42)	3	2016-2022
19	International journal of Mentoring and Coaching in Education	Social Sciences (Education, Life-span and Life-course Studies)	2	19 (49)	3	2019-2020
20	Education Sciences	Computer Science (Computer Science Applications, Computer Science (miscellaneous)); Health Professions (Physical Therapy, Sports Therapy and Rehabilitation); Psychology (Developmental and Educational Psychology); Social Sciences (Education, Public Administration)	2	17 (52)	3	2019-2022

Notes: Subject area was extracted from ScimagoJR at 16h, 6th of November, 2022

Table 3 and Figure 7 provide valuable insights into the research field's number of publications and citation rates. Figure 7 presents a scientific map consisting of 52 sources in the field, based on co-citation analysis spanning the years 1995 to 2022. It should be noted that each source included in the map has received at least 40 citations.

Figure 7. Scopes of 53 Sources Based on Co-citation Analysis (Each has at least 40 citations)

The Most Influential Papers in the Teacher Wellbeing Literature From 1995 - 2022

Publications in Teacher Well-being from 1995 - 2022

Table 3 presents the top 20 documents ranked by citation index. Notably, there are slight variations in the number of citations received by each publication throughout the entire period. The top five most-cited documents have approximately 50% more citations than the ones in the middle and around 220% more citations than the least-cited document. This trend aligns with the overall citation patterns observed across various articles.

Table 3. Top 20 Documents by Citation Index

ID	Author(s) published year	Title	Keywords	Source	Citations
1	Zee and Koomen (2016)	Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: a synthesis of 40 years of research	classroom processes; student achievement; teacher self-efficacy; teacher wellbeing	Review of Educational Research	496
2	Jennings et al. (2013)	Improving classroom learning environments by cultivating awareness and resilience in education (care): results of a randomized controlled trial	burnout; classroom climate; mindfulness; teacher efficacy; teacher stress	School Psychology Quarterly	224
3	Hastings and Bham (2003)	The relationship between student behaviour patterns and teacher burnout		School Psychology International	210

Table 3. Continued

ID	Author(s) published year	Title	Keywords	Source	Citations
4	MacIntyre et al. (2020)	Language teachers' coping strategies during the covid-19 conversion to online teaching: correlations with stress, wellbeing and negative emotions	coping; online survey; online teaching; stress; teacher emotion; teacher wellbeing	System	205
5	Kinman et al. (2011)	Emotional labour, burnout and job satisfaction in uk teachers: the role of workplace social support	burnout; emotional labor; social support; teacher wellbeing	Educational Psychology	181
6	Hagenauer et al. (2015)	Teacher emotions in the classroom: associations with students' engagement, classroom discipline and the interpersonal teacher-student relationship	classroom management; teacher emotion; teacher wellbeing; teacher-student relationship	European Journal of Psychology of Education	151
7	Eyal and Roth (2011)	Principals' leadership and teachers' motivation: self-determination theory analysis	Israel; leadership; motivation; teacher; transformational leadership	Journal of Educational Administration	144
8	Taxer and Frenzel (2015)	Facets of teachers' emotional lives: A quantitative investigation of teachers' genuine, faked, and hidden emotions	emotion regulation; relatedness with students; teacher emotion; teacher wellbeing; teaching self-efficacy	Teaching and Teacher Education	136
9	Klusmann et al. (2016)	Teachers' emotional exhaustion is negatively related to students' achievement: evidence from a large-scale assessment study	elementary school; emotional exhaustion; mathematics; students' achievement; teacher	Journal of Educational Psychology	133
10	Evers et al. (2004)	Burnout among teachers: students' and teachers' perceptions compared		School Psychology International	133
11	Jennings (2015)	Early childhood teachers' well-being, mindfulness, and self-compassion in relation to classroom quality and attitudes towards challenging students	burnout; classroom quality; depression; mindfulness; self-compassion; teacher social and emotional competence; teacher-student relationship	Mindfulness	129
12	Aldrup et al. (2018)	Student misbehavior and teacher well-being: testing the mediating role of the teacher-student relationship	emotional exhaustion; student and teacher ratings; student misbehavior; teacher-student relationship; work enthusiasm	Learning and Instruction	112
13	Skaalvik and Skaalvik (2018)	Job demands and job resources as predictors of teacher motivation and well-being	engagement; job demands; job resource; motivation; teacher wellbeing	Social Psychology of Education	98
14	Skaalvik and Skaalvik (2017)	Still motivated to teach? a study of school context variables, stress and job satisfaction among teachers in senior high school	teacher burnout; teacher job satisfaction; teacher motivation; teacher stress; teaching self-concept	Social Psychology of Education	95

Table 3. Continued

ID	Author(s) published year	Title	Keywords	Source	Citations
15	Mudrak et al. (2018)	Occupational well-being among university faculty: a job demands-resources model	academic staff; Czech Republic; job satisfaction; job stress; work engagement; work environment	Research in Higher Education	80
16	Bermejo-Toro et al. (2016)	Towards a model of teacher well-being: personal and job resources involved in teacher burnout and engagement	burnout; coping; engagement; personal resources; self-efficacy; teacher	Educational Psychology	64
17	Hagenauer and Volet (2014)	'I don't think I could, you know, just teach without any emotion': Exploring the nature and origin of university teachers' emotions	emotion; higher education; student-teacher relationship; teacher emotion	Research Papers in Education	62
18	Lambert et al. (2009)	Measuring elementary teacher stress and coping in the classroom: validity evidence for the classroom appraisal of resources and demands		Psychology in The Schools	60
19	Lee (2019)	Emotional labor, teacher burnout, and turnover intention in high-school physical education teaching	coping strategy; emotional demands; emotional regulation; surface acting; teacher retention	European Physical Education Review	58
20	Zinsser et al. (2016)	She's supporting them; who's supporting her? preschool center-level social-emotional supports and teacher well-being	early childhood education; social emotional learning; teacher	Journal of School Psychology	54

Research Themes in Teacher Well-Being From 1995 - 2022

In order to gain insights into the research themes surrounding teacher well-being from 1995 to 2022, we conducted a co-citation analysis of 99 documents, each of which had received at least five citations. The analysis revealed five distinct clusters, each represented by a different colour, corresponding to the major themes in the research field during the study period.
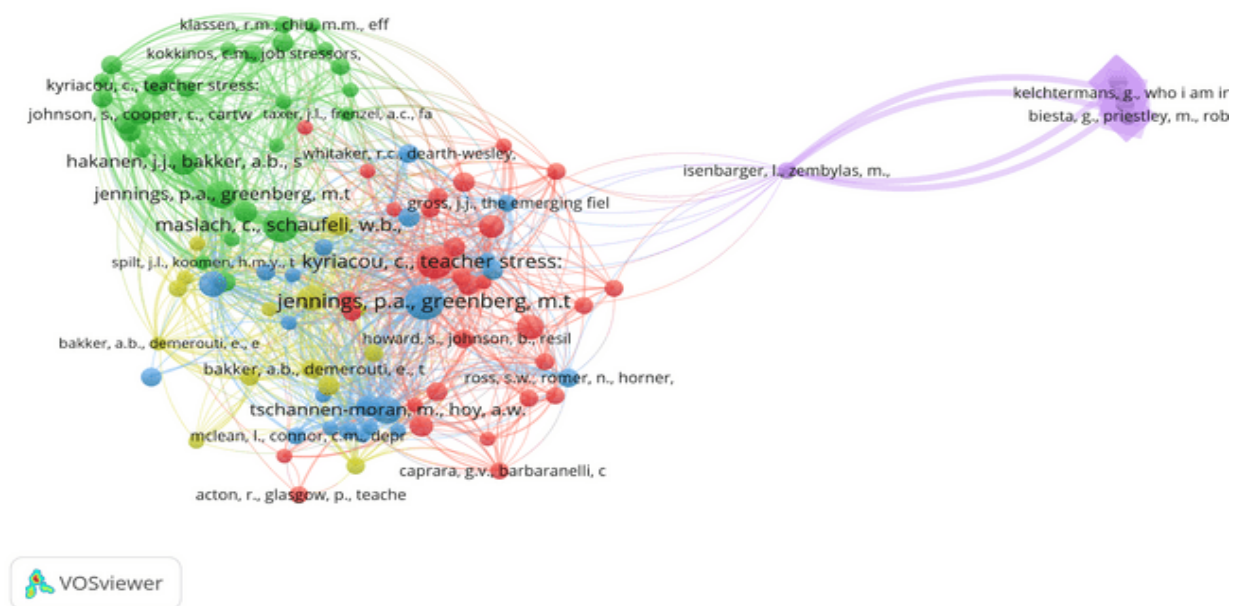

Figure 8. Research Themes Based on Co-citation 99 Documents (Each has at least five citations)

The Most Frequently Researched Topics Throughout 1995 - 2022

This study employed the authors' keywords and frequency per year to map the trending topics. Additionally, the information regarding current trends serves as a guide for further research in this field. Figure 9 illustrates the scientific map of keywords in the research field, generated through a co-word analysis involving 153 keywords and their occurrences.

Figure 9. Research Topics Over Time Based on Co-word Analysis (154 keywords, two occurrences each)

Discussion

This section presents our study's findings in response to four key research questions. These questions were crafted to understand teacher well-being research dynamics comprehensively. We commence with Research Question 1, addressing Changes in Literature on Teacher Well-being. We navigate the trajectory of publications from 1995 to 2022, revealing a field marked by diverse theoretical frameworks and methodologies, leading to fragmented research outcomes. Additionally, we explore how global events, such as the COVID-19 pandemic, have significantly impacted teacher well-being literature. Transitioning to Research Question 2, we delve into Co-authorship Patterns in Teacher Well-being Literature. Here, we uncover the vibrancy and interconnectedness of the research community, highlighting how newcomers, like Dutch authors who gained prominence in 2016, can reshape the field. We also scrutinize the interplay between productivity and impact within research groups, offering critical insights into scholarly influence. Next, Research Question 3 identifies the Most Influential Papers in Teacher Well-being Literature. By analyzing citation patterns and publication channels, we uncover the foundations of the field. The preference for psychology journal articles and the recognition of theoretical and applied studies underscores the field's interdisciplinary nature and commitment to real-world impact. Finally, in Research Question 4, we explore the Most Frequently Studied Research Topics, showcasing traditional themes like stress and burnout and emerging concerns such as mental health and the pandemic's impact on teacher well-being. These findings provide critical insights contributing to teacher well-being research's ongoing evolution and growth.

Research Question 1 (RQ1): Changes in Literature on Teacher Well-being

The trajectory of publication growth and geographical distribution in teacher well-being literature from 1995 to 2022 is an intriguing lens to gauge the field's evolution. As Cumming and Allen (2017) astutely noted, this research arena has always been marked by its rich diversity, stemming from a wide array of theoretical frameworks and research

methodologies, as well as the influence of different cultural contexts. Our study reaffirms that this diversity has persisted, making the landscape remarkably variegated.

While these findings resonate with Cumming and Allen's insights, there is a new dimension that warrants attention. The seismic publication surge 2013, linked to the global economic downturn, and the even more dramatic spike in 2020 driven by the COVID-19 pandemic underscore the field's remarkable responsiveness to external shocks (Bozkurt et al., 2022). These extraordinary events have not merely reshaped educational landscapes but have profoundly impacted the morale and well-being of educators and researchers themselves. Thus, the teacher well-being literature does not just mirror educational realities and emerges as a repository of potential solutions to address these challenges. This newfound perspective on how external crises influence the field is novel and critical for understanding its evolution.

Despite the continued dominance of traditional research powerhouses like the United States, Australia, Britain, and Germany regarding publication volume, the emergence of countries like Iran, Ireland, China, and Austria signals a significant global shift (Cumming & Allen, 2017). This global diversification of voices in the discourse can be a double-edged sword. On the one hand, it enriches the field with fresh perspectives and potentially innovative solutions. On the other hand, it raises legitimate questions about whether the dominance of Western voices in shaping the research agenda is giving way to a more equitable global influence. This shift challenges the established order and is critical in redefining the field's future direction.

Research Question 2 (RQ2): Co-authorship Patterns in Teacher Well-being Literature

The co-authorship patterns observed in teacher well-being literature from 1995 to 2022 illuminate a dynamic and tightly-knit research community. Notably, the late entry of Dutch authors in 2016, followed by their rapid accumulation of citations, is a testament to the transformative potential of new entrants (Spiekermann et al., 2022). This observation adds a refreshing dimension, underscoring the dynamism of the field, where innovative approaches or timely research addressing pressing issues can swiftly propel newcomers to prominence.

Delving deeper, our study reveals the nuanced interplay between productivity and impact within research groups. The notion that larger research clusters do not necessarily translate into the most impactful work is intriguing and challenges conventional wisdom. It raises pertinent questions about the dynamics of research collaborations and the timing of publications. It emphasizes that the impact of teacher well-being research is a complex amalgamation of factors, including publication output, research collaboration, and the strategic timing of research contributions (Spiekermann et al., 2022). This nuanced perspective is critical to understanding the subtleties of co-authorship dynamics.

Figure 6 in our study, which spotlights authors who have demonstrated high productivity and substantial impact, introduces an illuminating paradox. While authors like Koomen and Zee have garnered more citations, authors like Mercer and Jeon, despite fewer citations, have made significant contributions. This discrepancy is linked to factors such as the size of their research groups and the duration of their research endeavours. It compels scholars to consider that quantity alone does not guarantee quality and impact, adding depth to the discourse on scholarly productivity (Spiekermann et al., 2022).

Research Question 3 (RQ3): Most Influential Papers in Teacher Well-being Literature

Identifying the most influential papers in teacher well-being literature is akin to uncovering the field's intellectual bedrock. The clear preference for citing articles published in psychology journals, which aligns with the fact that around 65% of the top 20 most-cited documents originate from these journals, underscores the pivotal role of publication selection (Petersen et al., 2014). This insight reinforces the interdisciplinary nature of the field, as well as the significance of strategically choosing publication outlets to maximize visibility and impact (Petersen et al., 2014).

Moreover, our study demonstrates that influence isn't confined to theoretical or methodological contributions alone. It extends to applied studies that offer practical insights capable of bridging the academia-practice gap. These papers can potentially inform teacher practices and policies, making them highly influential. This recognition of the value of practical research represents a paradigm shift within the field, challenging the historical emphasis on theoretical contributions (Petersen et al., 2014). This evolution is critical for acknowledging the field's real-world impact.

Research Question 4 (RQ4): Most Frequently Studied Research Topics

Our exploration of the most frequently studied research topics in teacher well-being literature from 1995 to 2022 offers a captivating glimpse into the field's transformation. While perennial themes such as stress, mindfulness, and burnout remain steadfast, the inclusion of newer topics like mental health, student engagement, and the reverberations of the COVID-19 pandemic signifies the field's adaptability to evolving educational terrains (Hakanen et al., 2006).

These findings align with previous research that has underscored the persistent significance of stress, mindfulness, and burnout in teacher well-being (Hakanen et al., 2006). However, the inclusion of contemporary issues reflects the field's responsiveness to the rapidly changing educational landscape and underscores its commitment to addressing emerging

challenges. This evolution is critical for ensuring that research in teacher well-being remains relevant and impactful (Hakanen et al., 2006).

In sum, our study enriches our understanding of teacher well-being research by providing a critical lens on how external factors, co-authorship dynamics, publication choices, and evolving research themes collectively shape the field. While some findings align with previous studies, such as the diversity of the field, others introduce new dimensions, challenging established norms and broadening the horizons of teacher well-being research. These nuanced perspectives are critical for advancing the field in a rapidly changing educational landscape.

Conclusions

In conclusion, our extensive examination of teacher well-being research spanning from 1995 to 2022 has unveiled a tapestry of profound insights and trends that hold significant implications for the field of education. These findings underscore the enduring importance of teacher well-being and highlight the potential of bibliometric analysis as a robust tool for comprehending and advancing academic discourse in this domain.

Our expedition through the landscape of teacher well-being literature, as addressed by Research Question 1, has uncovered a nuanced narrative of growth and transformation. This narrative aligns with Cumming and Allen's (2017) observation regarding the multifaceted nature of the field and accentuates the field's adaptability in response to external pressures. This adaptability is exemplified by the substantial increase in publications during the global economic downturn in 2013 and the seismic influence of the COVID-19 pandemic in 2020.

Turning our attention to Research Question 2, our exploration of co-authorship patterns has illuminated the intricate web of scholarly collaboration that characterizes the academic community. Despite their relatively recent entry in 2016, the ascent of authors from the Netherlands is a compelling testament to the potential for swift recognition through innovative research approaches. Moreover, our study has cast light on the interplay between productivity and impact within research groups, emphasizing that influence in teacher well-being research transcends mere publication output. This nuanced perspective adds depth to our understanding of academic collaboration.

Research Question 3, delving into identifying the most influential papers, has spotlighted the diverse foundations that underlie the discourse. The preference for citing articles from psychology journals aligns with established citation patterns, underscoring the importance of selecting relevant publication outlets. Furthermore, including theoretical and applied studies among the most influential papers accentuates the field's commitment to producing research with tangible implications—a departure from potential biases toward purely theoretical contributions.

Lastly, Research Question 4, which explored the most frequently studied research topics, exemplifies the dynamic nature of teacher well-being research. While traditional themes persist, the emergence of newer topics such as mental health, student engagement, and the repercussions of the COVID-19 pandemic signifies the field's adaptability to evolving educational landscapes.

Regarding our research methodology, our deliberate choice to focus on English-language publications and employ the Scopus database has bolstered the content validity of our findings. The rigorous adherence to standardized search protocols, inter-rater reliability, and transparent categorization criteria have fortified the reliability and validity of our research, ensuring a solid foundation for our contributions.

This study underscores teacher well-being research's enduring interest and resilience, emphasizing its collaborative and global nature. Equipped with a deeper understanding of the past, we stand ready to shape the future of this field, ultimately enriching the lives of educators and students alike. It is a testament to the unwavering pursuit of knowledge and the steadfast commitment to enhancing the well-being of those who shape our world through education.

Recommendations

In light of the substantial scholarly attention devoted to teacher well-being and the burgeoning body of literature in this field, future research must be purposeful in its pursuit of key domains. To this end, researchers are strongly encouraged to harness insights gleaned from related disciplines as a foundational step towards shaping intervention programs that can effectively fortify strategies for enhancing teacher well-being. Drawing upon the rich tapestry of knowledge from diverse academic fields promises to yield fresh perspectives on the nuanced facets of the teaching profession that currently lie under the research microscope. Embracing this interdisciplinary approach holds significant promise for the development of highly effective interventions and support systems, tailored to address the unique challenges faced by educators.

Furthermore, there exists an urgent imperative to delve deeper into the intricate relationship between teacher and student well-being, a facet that has thus far received inadequate attention in existing studies. Unpacking the complex interplay between the well-being of teachers and their students not only opens up a fascinating avenue for exploration but also underscores the pivotal role played by social connections within the classroom environment. An in-depth inquiry into the co-construction of well-being experiences between teachers and students may unveil the presence of reciprocal

processes. This insight draws upon previous research conducted in domains such as mindfulness training and the impacts of social interactions, as exemplified by studies like those by N. N. Singh et al. (2014), and Hascher and Waber (2021).

Moreover, it is imperative to subject the consequences of teacher well-being to rigorous scrutiny, as this remains an area ripe for further exploration. A plethora of publications have consistently underscored the paramount importance of teacher well-being, given its far-reaching effects on teacher health, instructional quality, and overall effectiveness. Hence, a comprehensive exploration of the long-term ramifications and influences stemming from teacher well-being possesses the potential to illuminate invaluable insights into its implications for educational outcomes and the broader climate within educational institutions.

In conclusion, while the present study unquestionably contributes valuable insights to the discourse on teacher well-being, it is imperative to steadfastly acknowledge its inherent limitations. Subsequent research endeavors should, without reservation, confront these limitations head-on. Moreover, they should extend their investigative scope into adjacent domains, rigorously probe the intricate relationship between teacher and student well-being, and systematically unravel the multifaceted consequences of teacher well-being. By actively embracing these focal areas, the academic community can genuinely advance its comprehension of teacher well-being and make a substantial contribution to the development of robust strategies and support systems aimed at nurturing the well-being of educators within the complex landscape of the education system.

Limitations

The present study, while offering valuable insights into the landscape of teacher well-being research, is not without its limitations, which warrant careful consideration. First and foremost, the comprehensiveness of this study necessitates critical reevaluation. The study exclusively scrutinized the trajectory of teacher well-being literature by delving into 326 pertinent documents extracted from Scopus data spanning the period from 1995 to 2022. However, the decision to restrict the analysis to publications solely from Scopus may have inadvertently curtailed the overall comprehension of research trends in this domain. The omission of analogous publications from alternative sources potentially limited the scope and breadth of insights available. Moreover, it is imperative to acknowledge the potential biases inherent in the selection of databases and the requirement for publications to be in the English language. This methodological choice could have introduced a bias towards studies that are more likely to be cited and subsequently included in the analysis. This may have inadvertently marginalized the contributions of research conducted in languages other than English, potentially excluding pivotal insights from non-English publications. Furthermore, the exclusion of grey literature from this review must be recognized as another limitation. Grey literature, encompassing unpublished studies, reports, and other non-conventional sources, possesses the potential to provide unique perspectives and shed light on obscure or non-significant findings. Integrating grey literature into the analysis could have enriched the field's understanding of teacher well-being research by offering a more diverse array of insights and perspectives. In conclusion, while the current study undeniably furnishes a valuable overview of the teacher well-being literature, it is imperative to emphasize these inherent limitations. To advance the field and achieve a more comprehensive understanding of research trends and findings related to teacher well-being, future research endeavors must take heed of these limitations. They should endeavor to broaden the spectrum of included sources, accommodate publications in multiple languages, and consider the integration of grey literature to obtain a more holistic and nuanced comprehension of the evolving landscape in the realm of teacher well-being.

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Conflict of Interest

We have no known conflict of interest to disclose.

Authorship Contribution Statement

Tran: Conceptualization, design, writing. Luong: Design, data analysis. Nguyen: Reviewing/editing

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