

A BIBLIOMETRIC STUDY ON TEACHER MOTIVATION IN EDUCATION (2010-2024)

Tieu Thi My Hong, Hoang Thi Thinh, Dao Thi Ha, Hoang Thi Thuan
and Nguyen Thi Thanh Tung*

Faculty of Politics – Civic Education, Hanoi National University of Education, Hanoi, Vietnam

*Corresponding author: Nguyen Thi Thanh Tung, e-mail: tungntt@hnue.edu.vn

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Abstract. Research on teacher motivation has attracted the attention of researchers from many countries, in many different fields, including education. Teacher motivation has a strong influence on the effectiveness of the teaching and learning process and educational innovation. The study aims to provide an overview of academic research on teacher motivation. The research, conducted using the bibliometric methods on data sourced from the core literature available on the Scopus website, focuses on the keywords “teacher motivation”, “education”, and “2010-2024”. The search field was restricted to literature within the “Social sciences” and “Arts and Humanities”. Data were analyzed using the Vos Viewer software to develop a system of figures and tables as a basis for analysis. Based on an analysis of 183 sources, the finding clarifies the growth, geographical distribution, prominent journals, notable works, research topics, and highly cited articles related to the topic. The research results serve as a basis for improving policies to motivate teachers and for further research on teacher motivation using reputable data sources in the next period.

Keywords: teacher motivation, bibliometrics, 2010-2024.

1. Introduction

Teacher motivation plays a crucial role in the effectiveness of teaching and learning, as well as in the improvement of policies that promote motivation [1]-[2]-[3]. In recent years, researchers have been consistently investigating teacher motivation in different contexts, educational levels, and fields, creating a diverse picture in the study of teacher motivation. Some studies focus on clarifying the role of teacher motivation in knowledge acquisition, satisfaction, the commitment to improve teaching methods [1], [2], [4], student motivation, and behavior adjustment [1], and its relationship with student achievement, emotions, interest, and readiness to live, work, and contribute to the community [5]. Some studies focus on clarifying theoretical approaches to researching teacher motivation, such as Self-Determination theory [6]-[7], Expectancy-Value Theory [1], and Path-Goal Theory [8]. Other studies have focused on identifying influencing factors, including internal and external factors [2], [5], and strategies and measures for motivating teachers, such as supporting teachers’ autonomy, competence, engagement, and beliefs [9]-[10]-[11]. They also emphasize the role of school leadership and organizational conditions [12] and measures to enhance autonomy, confidence, and the ability to

use digital technology for remote teaching during the COVID-19 pandemic [13]. However, there remains a gap in bibliometric research on teacher motivation using reputable data sources.

This study aims to provide an overview of research related to teacher motivation through bibliometric methods on the Scopus database from 2010 to 2024. It also discusses potential applications of the results in promoting teacher motivation in research and policy-making in the subsequent periods.

Base on bibliographic analysis techniques, VOSviewer software, this research will be used to answer the following questions:

RQ1: What is the general pattern of growth in the number of publications on teacher motivation in education from 2010 to 2024?

RQ2: Which journals have highest number of publications on teacher motivation during the period 2010-2024

RQ3: What are the top 10 most cited studies? What manuscripts/documents has been the greatest influence on teacher motivation in education?

RQ4: What are the main trends and the most popular topics investigated on teacher motivation in education?

RQ5: What is the geographic distribution of publications on teacher motivation in education from 2010 to 2024?

2. Content

2.1. Research methodology

The research was conducted using bibliometric analysis on studies related to teacher motivation, utilizing the Scopus database - one of the most influential and reputable academic journal communities worldwide. In the academic community, Scopus is a data source with wide popularity and high academic reputation, alongside other rich data sources such as Google Scholar, Web of Science, Science Direct... The strength of the Scopus data source is the completeness and consistency of the database and the large coverage of data sources in many different fields, providing convenience for accessing resources. Reputable documents for scholars, including sources in the fields of social sciences and educational sciences.

The research process was carried out as follows:

Step 1: Data collection. Based on the research topic, the authors searched for relevant documents on the subject of “Teacher Motivation” in the Scopus database. The search was conducted on May 13, 2024, using the following query: (TITLE-ABS-KEY (“teacher motivation” AND “education”) AND PUBYEAR > 2009 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA, “SOC”) OR LIMIT-TO (SUBJAREA, “PSYC”)) AND (LIMIT-TO (LANGUAGE, “English”)) AND (LIMIT-TO (OA, “all”)) AND (LIMIT-TO (DOCTYPE, “ar”))).

Data files were extracted and downloaded with 191 works.

Step 2: Data filtering and preprocessing. The collected data were filtered and preprocessed to exclude articles irrelevant to the topic or to standardize duplicate keywords. As a result, equivalent phrases such as “teacher/teachers” were standardized to “teachers” and “pre-service teacher/ pre-service teachers” to “pre-service teachers.” Eight articles were excluded because they had been published before 2010. After data preprocessing, 183 relevant articles were identified as suitable for data analysis.

Step 3: Quantitative analysis. Using Vos Viewer and Microsoft Excel software, 183 articles were analyzed using identifiers such as article ID, title, abstract, keywords, journal name, number of citations, authors, institutions, countries, publication year, and document links.

2.2. Research findings

2.2.1. Quantity and growth patterns of publications

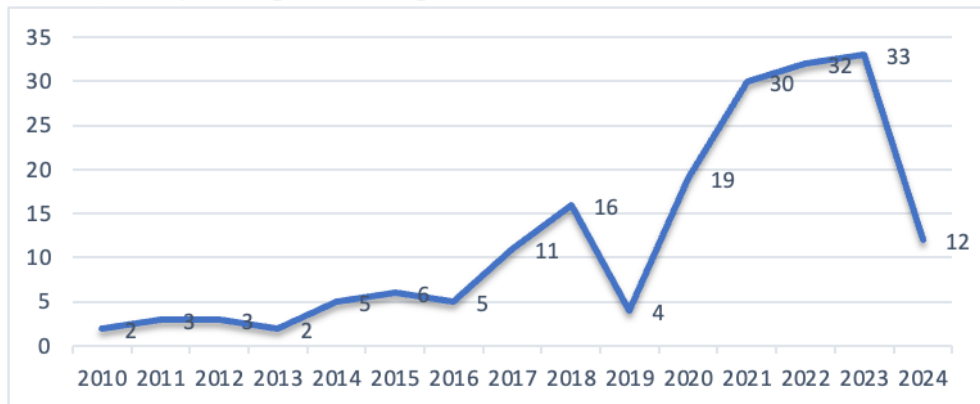


Figure 1. Trends in research on teacher motivation (2010-2024)

Figure 1 illustrates the annual number of publications on teacher motivation indexed in the Scopus database. The lowest number of publications was recorded in 2010 and 2013, with two publications each, while the highest was in 2023, with 33 publications. Research on teacher motivation indexed in Scopus can be divided into three phases:

Phase 1 (2010 - 2016): This phase had 26 publications. During this period, the number of publications on teacher motivation on Scopus data increased but not significantly.

Phase 2 (2016 - 2018): The number of publications increased in this phase to 32, this is the period with a sharp increase in the number of studies on teacher motivation (3 times).

Phase 3 (2019 - May 2024): This period is marked by a serious decline in the number of studies (down to 4 works), then a strong recovery and a spectacular increase (more than 8 times). However, from 2023 to May 2024, the number of studies decreased significantly.

2.2.2. Bibliometric analysis of journals with the highest number of publications on teacher motivation

According to Figure 2, the top 10 Scopus-indexed journals that have published the most research on teacher motivation are as follows: Sustainability Switzerland (11 publications), Frontiers in Education (7 publications), Frontiers in Psychology (6 publications), Teaching and Teacher Education (4 publications), Journal of Educational and Social Research (4 publications), Australian Journal of Teacher Education (4 publications), International Journal of Instruction (3 publications), Eurasia Journal of Mathematics Science and Technology Education (3 publications), Education Sciences (3 publications), Cypriot Journal of Educational Sciences (3 publications).

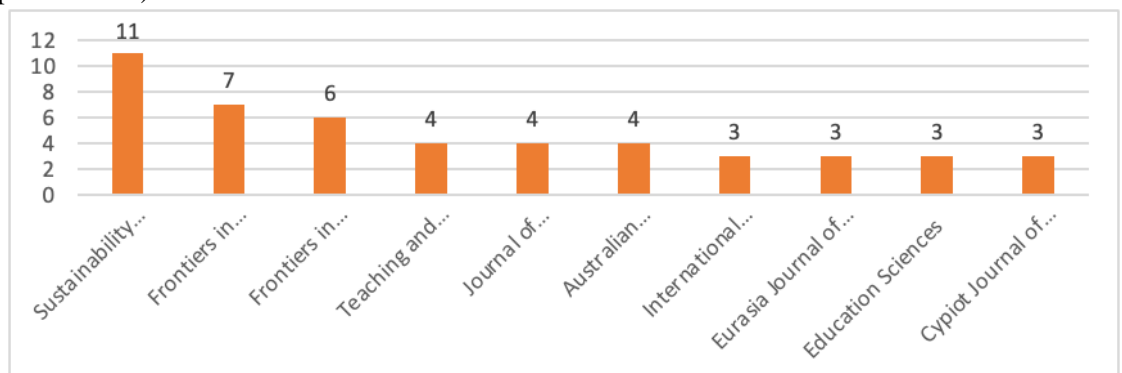


Figure 2. Top 10 Scopus-Indexed journals by number of publications (2010 - 2024)

2.2.3. Most prominent publications

Table 1. Top 10 most cited publications on teacher motivation from Scopus (2010-2024)

Ranking	Author(s)	Title	Year of publication	Journal	No. of citations	Journal ranking
1	Heinz [5]	Why choose to teach? An international review of empirical studies exploring student teachers' career motivations and levels of commitment to teaching	2015	Educational Research and Evaluation, 21 (3), 158-197	164	Q2
2	Keller <i>et al.</i> [2]	The impact of physics teachers' pedagogical content knowledge and motivation on students' achievement and interest	2017	Journal of Research in Science Teaching, 54 (5), 586-614	151	Q1
3	Lam <i>et al.</i> [14]	School support and teacher motivation to implement project-based learning	2010	Learning and Instruction, 20 (6), 487-497	134	Q1
4	Thoonen <i>et al.</i> [15]	Building school-wide capacity for improvement: the role of leadership, school organizational conditions, and teacher factors	2012	School Effectiveness and School Improvement, 23 (4), 441-460	114	Q1
5	Rots <i>et al.</i> [4]	Learning (not) to become a teacher: A qualitative analysis of the job entrance issue	2012	Teaching and Teacher Education, 28 (1), 1-10	84	Q1
6	Kim & Cho [16]	Pre-service teachers' motivation, sense of teaching efficacy, and expectation of reality shock	2014	Asia-Pacific Journal of Teacher Education, 42 (1), 67-81	78	Q1
7	Menon & Sadler [17]	Preservice Elementary Teachers' Science Self-Efficacy Beliefs and Science Content Knowledge	2016	Journal of Science Teacher Education, 27 (6), 649-673	78	Q1
8	Beardsley <i>et al.</i> [18]	Emergency education effects on teacher abilities and motivation to use digital technologies	2021	British Journal of Educational Technology, 52 (4), 1455-1477	70	Q1

9	Vermote <i>et al.</i> [19]	The role of teachers' motivation and mindsets in predicting a (de)motivating teaching style in higher education: a circumplex approach	2020	Motivation and Emotion, 44 (2), 270-294	67	Q1
10	Mirzajani <i>et al.</i> [20]	Teachers' acceptance of ICT and its integration into the classroom	2016	Quality Assurance in Education, 24 (1), 26-40	64	Q2

Table 1 highlights the top 10 most cited studies on teacher motivation. Among these, eight publications were released before the COVID-19 pandemic and two during the global pandemic. All these highly cited works were published in prestigious international journals that ranked Q1 or Q2 on Scimago.

The most cited paper, with a total of 164 citations, is “Why Choose Teaching? An International Review of Empirical Studies Exploring Student Teachers' Career Motivations and Levels of Commitment to Teaching” by Heinz Manuela, published in 2015. This study explores the career motivation and commitment of teacher education students in 23 countries from 5 continents. Various factors that drive teacher education students' motivation to become educators are explored, their relative importance in teacher education students' career decisions is discussed (focusing on 3 reasons including intrinsic, altruistic, and extrinsic) and the differences between different cultural contexts are also addressed in this study.

The second most cited work is by Keller, Neumann & Fischer, titled “The Impact of Physics Teachers' Pedagogical Content Knowledge and Motivation on Students' Achievement and Interest”, published in 2017, with 151 citations. Based on a multi-method approach, a survey was conducted among 77 physics teachers and 1614 students in 77 classes from Germany and Switzerland to explore the pedagogical knowledge and motivation of physics teachers about students' learning interests and academic achievement. This study is part of a larger project on identifying teachers' characteristics (including their motivation), teaching quality, and physics student outcomes in a cross-national context.

The paper with the fewest citations among the top 10, having 64 citations, is by Mirzajani et al., focusing on “Teachers' Acceptance of ICT and its Integration in the Classroom”, published in 2016. This study explores the factors that influence teachers' motivation to use information and communication technology (ICT) in the classroom. The study aims to determine the extent to which selected variables, such as personal experience, school environment, and technological factors, influence teachers' tendency to accept and use ICT in teaching.

2.2.4. Bibliometric analysis of themes and trend topics

To identify trending topics in research on teacher motivation during the period 2010-2024, a co-occurrence analysis of keywords was conducted in bibliometric analysis using VOSviewer software. In this map, only keywords that appeared 4 times were included in the analysis.

Figure 3 shows the diversity of keywords associated with research on teacher motivation. This topic spans multiple research fields such as education, psychology, and humanities and encompasses all educational levels across different countries, political institutions, cultures, and histories. However, in this study, the authors only approached publications on teacher motivation from an educational approach, as a first step to lay the foundation for expanding future research on this topic.

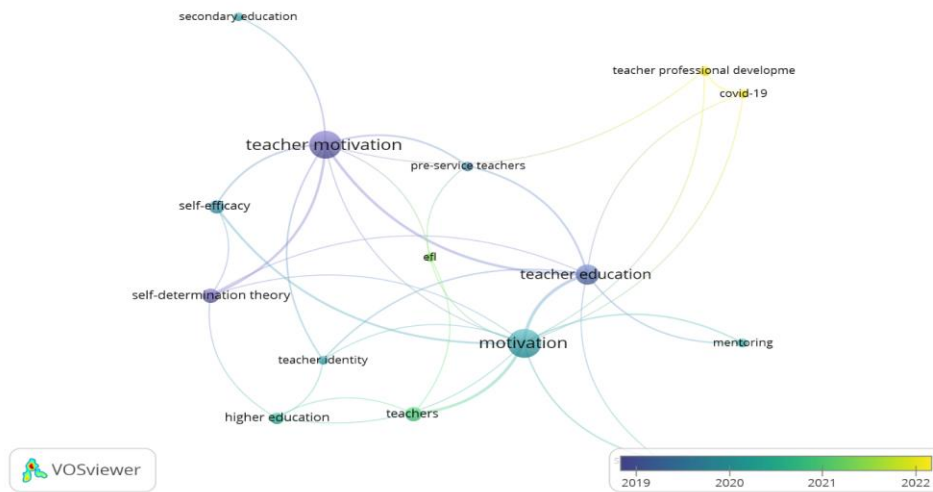


Figure 3. Temporal distribution map of keywords from 2010-2024

The authors used VOSviewer software for co-occurrence analysis to identify the thematic structure of studies on teacher motivation, as shown in Figure 3. The findings demonstrate the thematic diversity from 2010 to 2024, indicated by the variety of colors. The three most represented keyword phrases in this trend map (Figure 3) represent the keywords “teacher motivation”, “motivation”, and “teacher education”. In cluster 1, with the sub-topic “teacher motivation”, the main keywords studied include self-efficacy, self-determination theory, secondary teacher, teacher identify, and pre-service teachers. In cluster 2, with the sub-topic “motivation”, the main keywords studied by the authors include teachers, mentoring, self-efficacy, and higher education. In cluster 3, with the sub-topic “teacher education”, the main keywords studied include pre-service teachers, teacher motivation, and self-determination theory.

In addition, in recent years, yellow represents research keywords on teacher motivation focusing on “teacher professional development”, “mentoring”, “pre-service teachers”, and “Covid-19” have also become trending research topics. These studies are linked to issues of teacher motivation in the context of education adapting to the pandemic on a global scale.

2.2.5. Countries with the most research publications

Table 2. Statistics on the number of publications by geographic distribution on teacher motivation (2010 - 2024) according to Scopus data

Country	Number of publications	Country	Number of publications
United Kingdom	20	Norway	9
Germany	13	China	12
Australia	13	Canada	5
Spain	7	Indonesia	11
Sweden	6	Belgium	5
Turkey	14	Malaysia	5
United States	19	Ukraine	5
Netherlands	17		

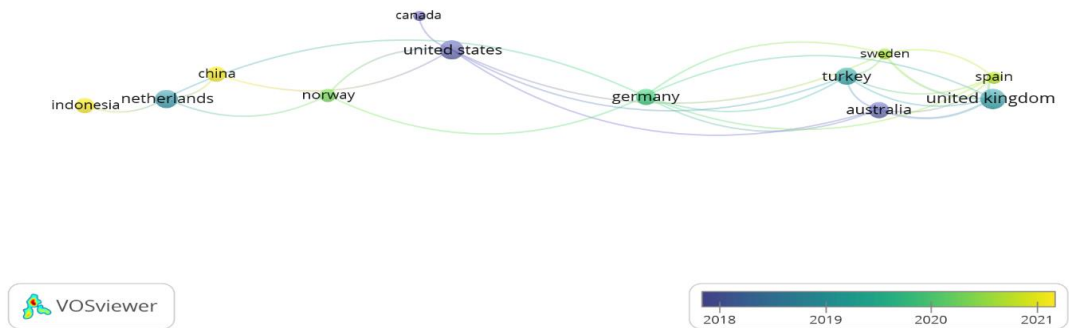


Figure 4. Map of publications by country on teacher motivation

Table 2 and Figure 4 show the geographic distribution of publications on teacher motivation from 2010 to 2023 based on Scopus data. Figure 4 lists the countries with the most publications from 2018 to 2021. Among the 15 countries, the top six in terms of the number of publications in Scopus-indexed journals are the United Kingdom (20 publications), the United States (19 publications), the Netherlands (17 publications), Turkey (14 publications), Germany (13 publications), and Australia (13 publications). The list also includes China from the Northeast Asia region with 12 publications. In Southeast Asia, Indonesia and Malaysia also contributed 11 and 5 research publications, respectively, on teacher motivation in Scopus-indexed journals from 2010 to May 2024.

2.3. Discussion

Teacher motivation is crucial for the advancement of educational reform. First, motivated teachers are more likely to work for educational reforms and progressive legislation. The second - and perhaps more importantly - is the motivated teacher who guarantees the implementation of political reforms [1]. As a result, from 2010 to 2024, research on teacher motivation has attracted the attention of researchers around the world, especially in the period 2019 - 2023, publications indexed in Scopus data account for 118 out of 183 works, representing 64.5%, meaning nearly two-thirds of research on teacher motivation has been published from 2010 to May 2024.

The research results also show the diversity of journals that publish on the topic of teacher motivation from the Scopus data system. Of which, the top 5 journals in terms of the number of publications on this topic include: 1. Sustainability (Switzerland, Q1 Scopus); 2. Frontiers in Education (Q2 Scopus), 3. Frontiers in Psychology (Q2 Scopus); 4. Teaching and Teacher Education (Q1 Scopus); 5. Journal of Educational and Social Research (Q3 Scopus). These are all international multidisciplinary or specialized journals with large publications, such as the journal “Teaching and Teacher Education” which is a journal of the famous publisher Elsevier Ltd, providing researchers, experts, and policymakers with the latest, high-quality research on teachers (including the topic of teacher motivation), teacher training/teaching in an international context and perspective. Providing an overview of the journals of the 183 most prominent publications on teacher motivation in education contributes to providing useful knowledge and reliable, reputable data sources for future researchers. In addition, young researchers will also save time, and effort and avoid manual operations in searching for reputable documents on the

topic of teacher motivation, especially inexperienced researchers from developing and underdeveloped countries.

Regarding works with influence based on citation levels, the study also counted 10 works published in the period 2010-2024 with the number of citations ranging from 64 to 164, of which 2 works were published in the last 5 years, the rest were mostly published in the last 10 years. That partly shows that research on teacher motivation has always been an issue that attracts the attention of researchers and educational policy makers, and it has become more prominent during the Covid-19 pandemic when teachers need many solutions to maintain teaching motivation in the context of distance learning and online teaching. Most of the publications are by authors from developed countries with a significant proportion in Europe and America. Although European authors are widely cited, the United States has also played a key role in developing research on teacher motivation. Only two papers were written by scholars from Asian universities.

The results of the scientific mapping around research keywords also helped the article explore trending topics in teacher motivation research during the period 2010-2024. In addition to the keyword groups analyzed in the research results section, we also discovered that during and after the Covid-19 pandemic, a research trend on teacher motivation was formed focusing on topics such as “teacher professional development”, “mentoring”, “pre-service teachers”, “Covid-19”. The research works related to these keywords reflect various aspects of teacher motivation, for example, the research aspect of the relationship between teacher motivation and the working environment, student motivation, teaching methods, relationship with factors at the personal and school level [21]-[22]; studies on the role of school principals in “teacher professional development” [23]-[24]; research related to the relationship of psychological factors such as will, dedication, belief to teachers' motivation [25]-[26].

According to Scopus data, the United Kingdom and the United States were the two leading countries in publications related to teacher motivation research from 2010 to 2024. This can be attributed to the fact that these two countries have some of the most developed educational systems in the world, and their policies significantly impact teacher motivation in professional development and personal activities. For teachers in the U.S., the issuance of the National Board Certification is considered a motivation for their professional development [27]. Standards have become a detailed tool for measuring teachers' competencies [28]. Federal governments also heavily invest in the professional development of teachers [29], providing a foundation to boost teacher motivation.

A notable point here is the contribution of Vietnamese authors to research on teacher motivation in 2020, 2022, and 2023 from data collected from Scopus. These include studies such as “Enablers and barriers of a cross-cultural geriatric education distance training program: The Singapore-Uganda experience” [30], “Teaching and Student Evaluation Tasks: Cross-Cultural Adaptation, Psychometric Properties and Measurement Invariance of Work Tasks Motivation Scale for Teachers” [31] and “Social Media in General Education: A Bibliometric Analysis of Web of Science from 2005-2021” [32]. These works and other studies by Vietnamese authors published in different international data sources or prestigious domestic journals [3], [33], are significant for the direction of research on teacher motivation in the phase of returning to a new normal in education.

3. Conclusions

Policymakers, managers and teachers are always interested in finding solutions to motivate teachers as part of educational reform policies. Research on teacher motivation serves as a basis for adjusting policies to motivate teachers within schools through organizational conditions. These conditions are the main levers for school change and a prerequisite for linking teacher

motivation with professional development and school development. School organizational conditions, such as participative decision-making, teamwork, collaboration among teachers, an open and trustworthy environment, a culture that values responsibility and common values, and transformative leadership practices, can enhance teacher motivation in educational reform.

In this study, based on data collected from the Scopus database and using data screening and preprocessing methods, 183 research works related to teacher motivation were analyzed. The findings reveal that teacher motivation is a trending research topic in educational science, increasingly attracting academic interest, with the number of publications increasing in recent years. However, these publications tend to focus on countries with developed educational systems. The highly cited publications are primarily found in reputable, high-ranking specialized journals. The study also identified trending aspects in research on teacher motivation.

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