

## Unlocking the Potential Research Directions in Effective Teaching: Insights from Bibliometric Analysis

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**Abstract:** Effective teaching is considered one of the dominant and emerging topics in education. Hence, there are two objectives of the study. The first objective is to bibliometrically analyze the performance in terms of citations and publications of Effective Teaching studies. The second objective is to analyze the research themes of Effective Teaching studies. The motivation to conduct this study is based on the gaps in previous studies on effective teaching. This study mainly uses bibliometric analysis, whereby 986 documents were analyzed through two stages – descriptive analysis and keyword network analysis. Selected findings indicated that since 1941, effective teaching studies displayed a growing trend in publications and citation performances. In addition, five research themes dominate effective teaching - 1) effective teaching in higher education, 2) enhancing curriculum with blended teaching, 3) pedagogical professional development, 4) medical education effectiveness, and 5) teacher training for classroom effectiveness. The authors also suggested six potential future research questions in terms of mixed theories, practical and methodology aspects. Hence, the significance of the study is to inspire potential scholars to explore potential holes available in effective teaching.

**Keywords:** *Effective teaching, bibliometric analysis, network analysis, future research*

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### 1. Introduction and Background

The field of effective teaching studies investigates the qualities, practices, and strategies that contribute to the highest possible student learning outcomes in various educational contexts. These research studies explore the intricate relationship between pedagogy, curriculum development, instructional methods, and classroom management techniques teachers implement. At the core of this investigation lies the acknowledgment that effective pedagogy encompasses not only the transmission of information but also the development of a nurturing educational atmosphere, the application of inventive pedagogical methods, and the ongoing assessment and improvement of pedagogical procedures. Academic research on effective teaching considers students' varied backgrounds and requirements while recognizing the significance of individualized instruction, student involvement, and motivation.

All professionals must comprehend the prerequisites for effective teaching, irrespective of their job title or experience level. However, staying updated on best practices can be challenging when managing the daily pressures and demands of the role. Understanding the significance of excellent teaching should not be challenging. Experimenting with new and flashy strategies may distract from the fundamental aspects of effective teaching, which are typically straightforward to implement and utilize in the classroom. **Effective teaching** involves the knowledge, techniques, methods, and actions that lead to exceptional student results. Proficient educators positively influence pupils and utilize their skills to enhance learning. Positive results may be accurately measured, often through a comprehensive evaluation process. It is important to recognize that not all qualities of effective teaching are readily apparent or quantifiable. Competent educators establish constructive relationships with pupils in secure and courteous environments. **Effective education** transcends beyond annual data; it is ongoing. Effective teaching helps students achieve their personal and academic goals. Furthermore, proficient teachers will profoundly impact numerous adolescents by providing them with clarity and assurance. Children who have a sense of security, recognition, and involvement in the school environment do better academically and help foster a healthy culture by promoting constructive attitudes and actions. This reflective practice needs to be adapted and tailored to suit the needs of the students.

The term 'effectiveness' is a topic of discussion that can provoke intense emotions since it is linked to concepts of professional competence and high-stakes accountability in some organizations. It may challenge individual teachers' assumptions regarding their professional independence. This research aims to conduct a bibliometric analysis of effective teaching as it is expected to yield numerous advantages. Effective teaching enhances

students' academic, physical, social, socioemotional, and behavioral welfare. Effective teaching flourishes when all education stakeholders, such as parents, policymakers, community members, and educators, together assume responsibility for ongoing enhancement and student success.

Hence, there are two objectives of this study. The first objective is to bibliometrically analyze the performance in terms of citations and publications of Effective Teaching studies. The second objective is to analyze the research themes of Effective Teaching studies. The need for this study is motivated by the opportunity to conduct this study based on the gaps from previous research conducted on review on Chinese context' effective teaching research (Liu et al., 2022), a systematic review on empathy toward effective teaching (Aldrup et al., 2022), empirical studies related to online teaching and learning (Ithnin et al., 2023), a scoping review of effective teaching on surface anatomy (Abu Bakar et al., 2022) and Malaysian-Australian education system (Dinham et al., 2021), and scoping review of effective teaching on sustainable development and global citizenship (Chiba et al., 2021). Hence, the authors fill the gaps by focusing on the bibliometric analysis of effective teaching studies in general.

The bibliometric findings on effective teaching benefit researchers, educators, and policymakers by providing insights into descriptive findings and research themes. These analyses help to identify the gaps and potential future research directions. In addition, the analysis can enhance the understanding of the impact of various determinants on educational outcomes. Readers can gain valuable information on the research themes, and publication and citation performances in the field of education. Hence, effective teaching studies significantly contribute to education studies.

The paper is structured as follows. Section 2 explains the method conducted by the authors and its protocol. Then section 3 describes the bibliometric findings in terms of performance. Section 4 describes the research themes of effective teaching studies. Section 5 provides suggestions for future research directions. Finally, the final section concludes the entire paper.

### **3. Method**

The primary method approach of this study is a mix of quantitative and qualitative. For the quantitative aspects, this study measures descriptive bibliometric studies through publications and citation performances, top author contributions, top productive countries, top productive affiliations, top productive journals, and top cited articles. On the other hand, the qualitative aspects explore the research trends associated with effective teaching. In addition, content analysis will be added to propose the potential future research questions in effective teaching studies.

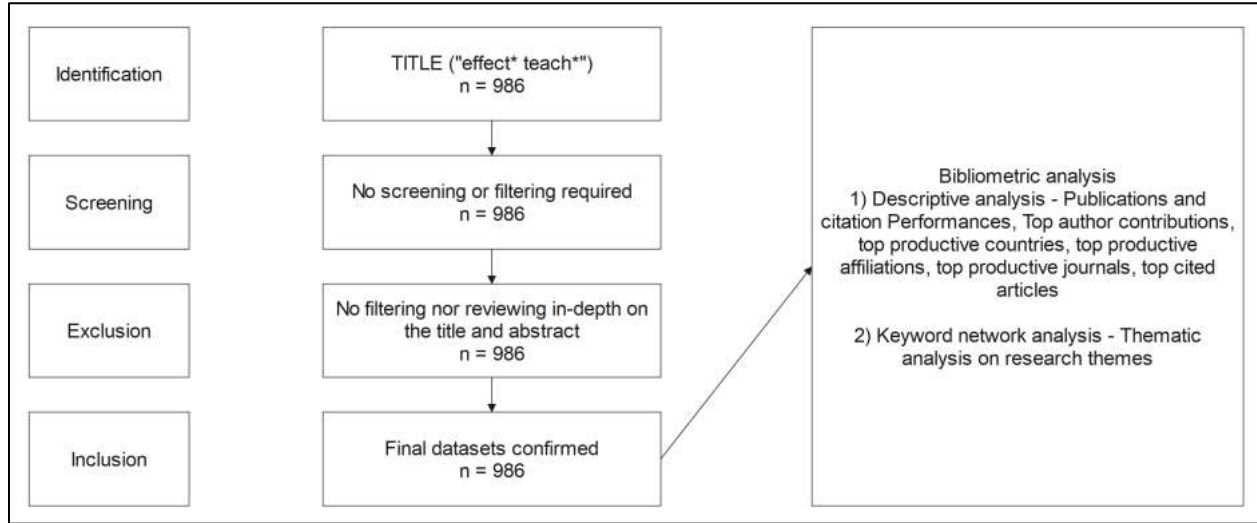
#### **Methodology and Protocol**

Bibliometric analysis is applied as the main analysis tool in this study. This analysis procedure was guided through partial Preferred Reporting Items in Systematic Review and Meta-Analysis (PRISMA) protocol. The original PRISMA protocol contains four main phases: identification, screening, exclusion, and inclusion. However, the author only applied the identification stage since it produces larger datasets that suit bibliometric analysis. It is noted by other scholars that the screening, exclusion, and inclusion stage best suits either systematic literature review or meta-analysis studies.

#### **Data Collection**

The bibliometric metadata sets are obtained and collected mainly from the Scopus database. This data collection only involves the identification phase in the PRISMA protocol. To conduct the identification phase, the author only uses a search string from the field code "TITLE" instead of "TITLE-ABS-KEY. The author performs a command search using the Boolean Operator of "Effect\* Teach\*". The symbol "\*" is applied because of the wildcard function that asks the search string to come out with possible different terms due to different spelling, such as effective teaching, effect teacher, effective teacher, etc. In addition, the author searches through field code titles instead of titles, abstracts, and keywords because the title is more centric and concentrated on studies. As a result, 986 documents were retrieved through the identification stage, as per Figure 1.

**Figure 1: Bibliometric analysis protocol guided by PRISMA flow**



#### 4. Results and Findings

This section presents and describes the bibliometric findings in Effective Teaching studies regarding publication and citation performances, top author contributions, top productive countries, top productive affiliation, top productive journals, and top cited articles.

##### Publication and Citation Performances

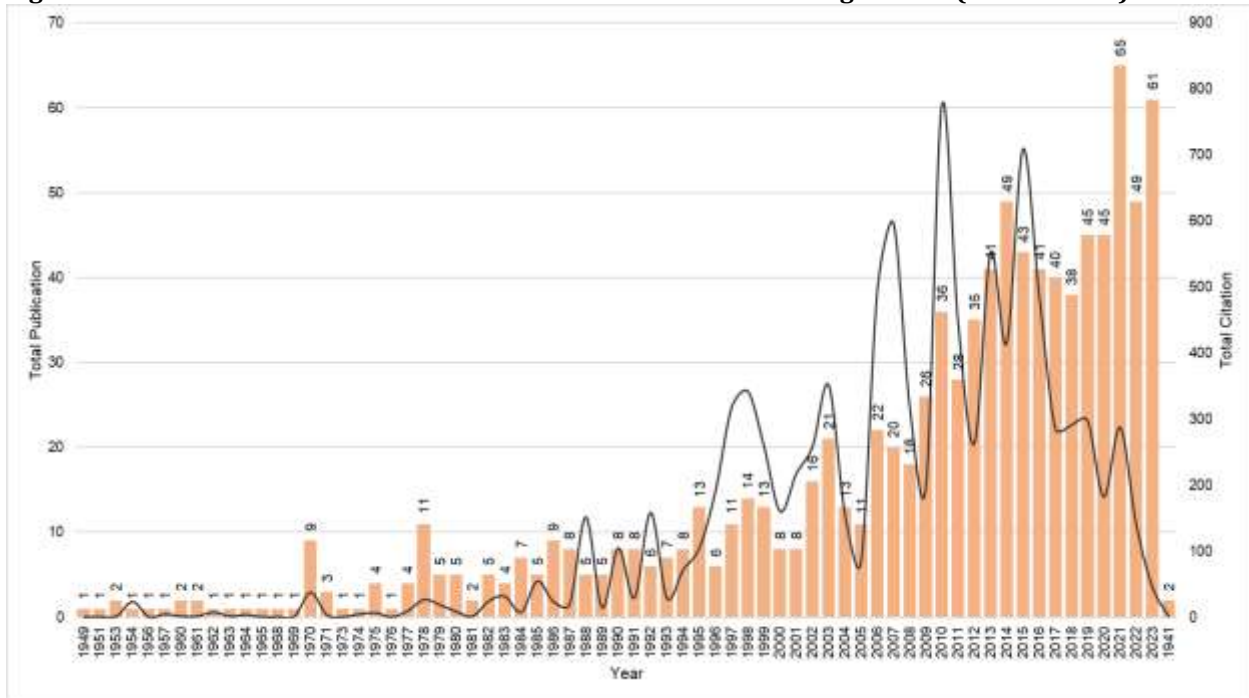
Effective teaching studies began in 1941 when two documents were published. Those two published documents were Doyle’s (1941) article “A Program for More Effective Teaching of Modern Foreign Languages in the United States” and another published document were Melrose’s (1941) article on “Effective Teaching of Science in the Elementary School.” Since then, Effective Teaching studies have shown a growing trend in publications and citation performances, as shown in Figure 2. It is expected to continue increasing publication and citation performances in Effective Teaching studies for many years to come.

Table 1 summarizes overall publications and citation performances in effective teaching studies for 83 years from 1941 to 2023. Overall, 986 documents were published, and 10,089 citations were received about effective teaching studies. The average statistic shows an impressive record, with 121.55 citations per year, 10.23 average citations per document, and 5114.42 citations per author. The h-index and g-index also performed well, with 45 and 72, respectively.

**Table 1: Summary of Overall Publications and Citation Performances in Effective Teaching Studies**

Papers	986
Citations	10089
Years	83
Average citations per year	121.55
Average citations per document	10.23
Average citations per author	5114.42
Number of papers per author	574.94
Number of authors per paper	2.42
h_index	45
g_index	72

Figure 2: Publication and Citation Performances in Effective Teaching Studies (1949 – 2023)



Source: Visualization by authors from Scopus database

**Top Author Contributions**

Based on Table 2, Helms-Lorenz and Maulana shared the most publications in Effective Teaching studies by publishing 9 documents, equivalent to 0.91%. Then, it follows by Jordan with 6 publications or 0.61% and Kyriakides with 5 or 0.51%. The other 5 authors shared the rank with 4 publications or 0.41%.

Table 2: Top 9 author contributions with more than 4 publications in Effective Teaching studies

Author Name	TP	%
Helms-Lorenz, M.	9	0.91%
Maulana, R.	9	0.91%
Jordan, A.	6	0.61%
Kyriakides, L.	5	0.51%
Brent, R.	4	0.41%
Chittawadigi, R.G.	4	0.41%
Felder, R.M.	4	0.41%
Meng, L.	4	0.41%
Schuck, R.F.	4	0.41%

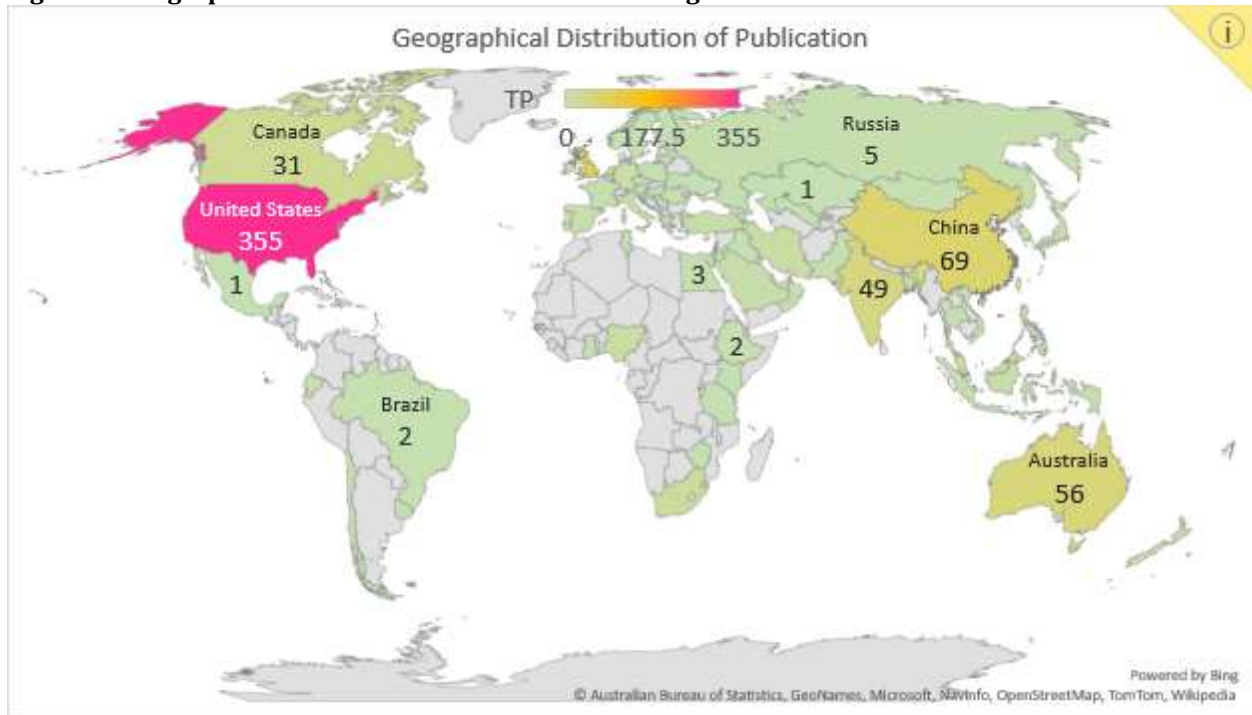
**Top Productive Countries**

Concerning the top productive countries with more than 10 publications in Effective Teaching studies, as per Table 3, the United States is the most productive country with a total of 355 publications, equal to 36%. Then, the United Kingdom, with 88 published documents or 8.92%, and China, with 69 published documents or 7%, completed the top three. Notable productive countries within the top 10 ranks are honored in significant publications in Effective Teaching studies, such as Australia, India, Canada, Malaysia, South Africa, Netherlands, New Zealand, etc. On the other hand, Figure 3 illustrates the geographical distributions of publications in Effective Teaching studies. As a result, most countries in Africa and South America are the least productive in publications regarding effective teaching studies.

**Table 3: Top 17 Productive Countries with more than 10 publications in Effective Teaching Studies**

Country	TP	%
United States	355	36.00%
United Kingdom	88	8.92%
China	69	7.00%
Australia	56	5.68%
India	49	4.97%
Canada	31	3.14%
Malaysia	28	2.84%
South Africa	24	2.43%
Netherlands	19	1.93%
New Zealand	18	1.83%
Iran	16	1.62%
Nigeria	16	1.62%
Germany	12	1.22%
Hong Kong	12	1.22%
Italy	10	1.01%
Saudi Arabia	10	1.01%
Turkey	10	1.01%

**Figure 3: Geographical Distribution of Effective Teaching Studies around the World**



**Top Productive Affiliation**

There are top 10 productive affiliations in Effective Teaching studies with more than 6 publications per Table 4. As a result, Rijksuniversiteit Groningen from the Netherlands is the most productive affiliation with 14 publications (1.42%). Then it was followed by North Carolina (NC) State University with 10 publications

(1.01%), and The University of Auckland with 9 publications (0.91%), which completes the top 3. Notable institutions that complete the top 10 are also mentioned in Table 4.

**Table 4: Top 10 Productive Affiliation in Effective Teaching studies with more than 6 publications**

Institution	TP	%
Rijksuniversiteit Groningen	14	1.42%
NC State University	10	1.01%
The University of Auckland	9	0.91%
The University of Texas at Austin	7	0.71%
University of Michigan, Ann Arbor	7	0.71%
University of Cyprus	7	0.71%
Purdue University	6	0.61%
Universiti Teknologi Malaysia	6	0.61%
University of California, Los Angeles	6	0.61%
University of Minnesota Twin Cities	6	0.61%

### Top Productive Journals

The top productive journal exhibits the most documents published in a particular home journal or conference proceedings. Based on Table 5, ASEE Annual Conference and Exposition Conference Proceedings are the most productive journals with 20 publications (2.03%). Then, it was followed by the ACM International Conference Proceedings Series, which had 13 publications (1.32%). ASEE Annual Conference Proceedings and Journal of Engineering Education Transformations share the third place among productive journals with 12 publications (1.22%). It shows that most documents were published in conference proceedings, rather than individual journal articles.

**Table 5: Top journal contributions on Effective Teaching studies with more than 9 documents**

Source Title	TP	%
ASEE Annual Conference and Exposition Conference Proceedings	20	2.03%
ACM International Conference Proceeding Series	13	1.32%
ASEE Annual Conference Proceedings	12	1.22%
Journal of Engineering Education Transformations	12	1.22%
Teaching and Teacher Education	10	1.01%
Effective Teaching Around the World Theoretical Empirical Methodological and Practical Insights	9	0.91%
Journal of Economic Education	9	0.91%
Nln Publications	9	0.91%
Proceedings Frontiers in Education Conference Fie	9	0.91%

### Top cited articles

Top cited articles explain the article that receives the highest citations. The top 20 cited articles performed well, between 81 and 199 citations. Based on Table 6, the top cited article belongs to Devlin & Samarawickrema's (2010) article on "The criteria of effective teaching in a changing higher education context". This article received 199 citations, an average of 14.21 per year. The second most cited article belongs to Goldhaber & Anthony's (2007) article on "Can teacher quality be effectively assessed? National board certification as a signal of effective teaching". This article received 197 citations with an average of 11.59 citations per year. The third most cited article belongs to Friedman et al. (2011) article on "Effective Teaching Strategies and Methods of Delivery for patient education: A systematic review and practice guideline recommendations". This article received 195 citations, an average of 15 per year. Even though Xu et al. (2015) article on "An effective teaching-learning-based optimization algorithm for the flexible job-shop scheduling problem with fuzzy processing

time” is in sixth place in terms of most cited article, this article produced the highest average citation per year with 18.22.

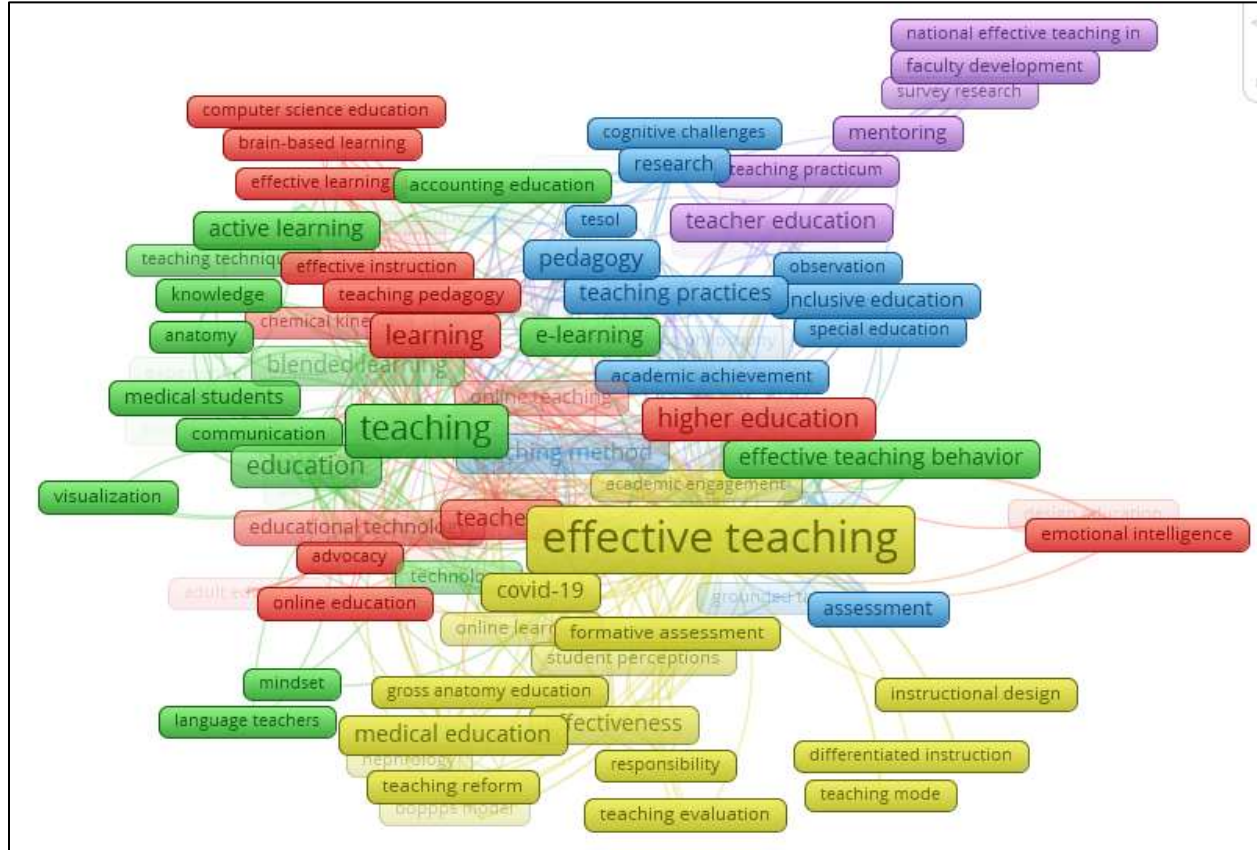
**Table 6: Top 20 cited articles in Green Human Resource Management studies**

No.	Author(s)	Title	TC	C/Y
1	Devlin & Samarawickrema (2010)	The criteria of effective teaching in a changing higher education context	199	14.21
2	Goldhaber & Anthony (2007)	Can teacher quality be effectively assessed? national board certification as a signal of effective teaching	197	11.59
3	Friedman et al. (2011)	Effective teaching strategies and methods of delivery for patient education: A systematic review and practice guideline recommendations	195	15
4	Khan & Coomasamy (2006)	A Hierarchy of Effective Teaching and Learning to Acquire Competence in evidenced-based Medicine	168	9.33
5	Ng et al. (2010)	School experience influences pre-service teachers’ evolving beliefs about effective teaching	167	11.93
6	Xu et al. (2015)	An effective teaching-learning-based optimization algorithm for the flexible job-shop scheduling problem with fuzzy processing time	164	18.22
7	Kyriakides et al. (2013)	What matters for student learning outcomes: A meta-analysis of studies exploring factors of effective teaching	142	12.91
8	Stanovich & Jordan (1998)	Canadian Teachers’ and Principals’ Beliefs About Inclusive Education as Predictors of Effective Teaching in Heterogeneous Classrooms	137	5.27
9	Ferenchick et al. (1997)	Strategies for efficient and effective teaching in the ambulatory care setting	137	5.07
10	Pratt et al. (1999)	Chinese Conceptions of ‘effective teaching’ in Hong Kong: Towards the culturally sensitive evaluation of Teaching	135	5.4
11	Hoyt et al. (1988)	Video recording trauma resuscitations: An effective teaching technique	129	3.58
12	Jordan et al. (2010)	The Supporting Effective Teaching (SET) project: The relationship of inclusive teaching practices to teachers’ beliefs about disability and ability, and their roles as teachers	128	9.14
13	Bliss et al. (1996)	Effective teaching and learning: Scaffolding revisited	116	4.14
14	Hativa et al. (2001)	Exemplary university teachers: Knowledge and beliefs regarding effective teaching dimensions and strategies	107	4.65
15	Howes et al. (1992)	Teacher characteristics and effective teaching in child care: Findings from the national child care staffing study	105	3.28
16	Huang et al. (2015)	An effective teaching-learning-based cuckoo search algorithm for parameter optimization problems in structure designing and machining processes	100	11.11
17	Harbour et al. (2015)	A brief review of effective teaching practices that maximize student engagement	86	9.56
18	Kuyini & Desai (2007)	Principals’ and teachers’ attitudes and knowledge of inclusive education as predictors of effective teaching practices in Ghana	86	5.06
19	Howes et al. (2003)	Pathways to Effective Teaching	83	3.95
20	Ditcher (2001)	Effective Teaching and Learning in Higher Education, with Particular Reference to the Undergraduate Education of Professional Engineers	81	3.52

### Research Themes on Effective Teaching Studies

This section explains research themes about Effective Teaching studies. Figure 4 displays research mapping on Effective Teaching studies. The research themes of effective teaching encompass various key aspects that contribute to the successful teaching approach or practices. Five different colors indicate five research themes on Effective Teaching studies, which will be discussed later. Table 7 below exhibits five research themes on Effective Teaching studies. The research themes were analyzed through network analysis using VosViewer software, and each theme was based on the top five keywords associated with each theme.

**Figure 4: Research Mapping on Effective Teaching Studies**



**Table 7: Summary of Research Mapping**

No	Theme	Top 5 keywords
1	Effective teaching in higher education	Learning, Higher Education, Teachers, Teaching Strategies, Students
2	Enhancing Curriculum with Blended Teaching	Teaching, Education, Curriculum Development, Blended Learning, Perception
3	Pedagogical Professional Development	Professional Development, Teaching Method, Pedagogy, Teaching Practices, Motivation
4	Medical Education Effectiveness	Effective Teaching, Medical Education, Teaching Quality, COVID-19, effectiveness
5	Teacher Training for Classroom Effectiveness	Training, classroom management, teacher education, teacher evaluation, teacher quality

### Theme 1 - Effective teaching in higher education

The first theme is called “Effective teaching in higher Education”. This theme is represented by red color. This theme contains the top 5 keywords: learning, higher education, teachers, teaching strategies, and students. Some topics discussed under this theme are effective teaching strategies and methods of delivery for patient



education (Friedman et al., 2011; Valiee et al., 2016), effective teaching for sustainable development (Lai & Peng, 2020), effective learning and improvement (Patlins, 2018), and challenges in teaching chemistry (Edomwonyi-Otu & Aava, 2011).

### **Theme 2 - Enhancing Curriculum with Blended Teaching**

The second theme is named “Enhancing Curriculum with blended teaching.” This theme is represented by the green color. This theme contains the top 5 keywords – teaching, education, curriculum development, blended learning, and perceptions. Some research work that has been done under this theme is on multimedia tools for effective teaching and learning (Kapi et al., 2017), promoting effective teaching and learning for hospital needs (Gibson & Campbell, 2000), computer networking laboratory for efficient manageability and effective teaching (Caicedo & Cerroni, 2009), blended learning in clinical medicine (Makhdoom et al., 2013), interactive lectures (Wessels et al., 2007), Phygital Learning (Chaturvedi et al., 2021), and student views on the effective teaching of physical examination skills (Martens et al., 2009).

### **Theme 3 - Pedagogical Professional Development**

The third theme is named “pedagogical professional development”, represented by blue. The top five keywords associated with this theme are professional development, teaching method, pedagogy, teaching practices, and motivation. This theme discussed several related issues, such as intensive training programs for effective teaching (Dragisich et al., 2016; Kuijpers et al., 2010), the impact of effective teaching characteristics (Azigwe et al., 2016), pedagogy in teaching (Crabtree & Sapp, 2004), cognitive challenges in effective teaching (Chew & Cerbin, 2021), and effective teaching through self-directed professional development (Lopes & Cunha, 2017). Those elements are requirements for professional development in pedagogy teaching.

### **Theme 4 - Medical Education Effectiveness**

The fourth theme is called “medical education effectiveness.” Represented by a yellow color, the top five keywords associated with this theme are effective teaching, medical education, teaching quality, COVID-19, and effectiveness. This theme discussed several related issues, such as pathways to effective teaching (Howes et al., 2003), model of effective teaching behavior (Inda-Caro et al., 2019), micro-teaching as an effective technique (Remesh, 2013), simulation models to teach the young junior doctor (Hutton et al., 2008), criteria of effective teaching (Devlin & Samarawickrema, 2010), and developing instruments for teacher feedback via the Rasch Model (der Lans et al., 2018).

### **Theme 5 - Teacher Training for Classroom Effectiveness**

The fifth theme is named “Teacher Training for Classroom Effectiveness.” Represented by purple color, the top five keywords associated with this theme are training, classroom management, teacher education, teacher evaluation, and teacher quality. Several related discussions under this theme were highlighted, such as teachers’ perceptions and student achievement (Muñoz et al., 2013), video-based assessment in effective teaching (Wiens et al., 2013), effective teaching dispositions (Altan et al., 2019), clinical practice and mentor teacher perspective in effective teaching (Goodwin et al., 2016; Meng & Muñoz, 2016), classroom practices that support student achievement (Blazar, 2015), and effective teaching and the TALIS method (Berkovich & Benoliel, 2020).

## **5. Future Research Directions**

Even though 986 documents about Effective Teaching studies were published and deemed mature, there is still room for future research directions. After the content analysis by the authors based on top cited 2023 articles on Effective Teaching, the authors divided future research directions based on three criteria – theory, practical and methodology. In terms of theory, two future research questions recommended by the authors are theories related to additional factors beyond teaching strategies that influence effective teaching (Margallo et al., 2023), and the exploration of teaching and learning theories in inclusive settings that contribute to Effective teaching (Sabayleh & Sakarneh, 2023). In addition, practical aspects of future research directions focus on two items – effective training programs in embarking on effective teaching (Namaziandost et al., 2023), and mandatory inclusion of Mentoring for Effective Teaching Practice Instrument (METPI) in resolving mentor-mentee relationships (Ploj Vrtič et al., 2023). The third and final aspect of the future research question is on methodology, whereby two directions are recommended – mixed method studies in effective teaching

(Namaziandost et al., 2023), and analysis of qualitative studies through students' comments on teachers' effective teaching (Tharapos et al., 2023). Hence, this list of future research questions can help other scholars in conducting further studies on effective teaching.

**Table 8: Future Research Questions about Effective Teaching**

	Future Research Questions	Source
Theory	1) What additional factors beyond teaching strategies could influence the effectiveness and engagement of nursing pharmacology YouTube videos, and how can these criteria be identified and studied in future research?	Margallo et al. (2023)
	2) How does the exploration of teaching and learning theories in inclusive settings, with a specific focus on constructivism-based strategies, contribute to understanding effective instructional practices for students with learning disabilities in inclusive classrooms?	Sabayleh & Sakarneh (2023)
Practical	1) How effective are training programs focused on reflective teaching and emotion regulation in pre-service and in-service teacher training programs for enhancing teaching effectiveness and well-being?	Namaziandost et al. (2023)
	2) How does the mandatory inclusion of the Mentoring for Effective Teaching Practice Instrument (METPI), including conversations with both students and mentors, impact the identification and resolution of issues that may arise during mentorship programs in teacher education?	Ploj Virtič et al. (2023)
Methodology	1) How do mixed-methods studies provide a comprehensive understanding of the causal links among reflective teaching, emotion regulation, and work engagement in higher education contexts?	Namaziandost et al. (2023)
	2) How do qualitative comments from students in undergraduate programs in prior and subsequent semesters, as well as in other disciplines, compare in terms of perceptions of teaching effectiveness, engagement, and satisfaction?	Tharapos et al. (2023)

### Conclusion

Effective teaching is considered one of the dominant and emerging topics in education. Hence, there are two objectives of the study. The first objective is to bibliometrically analyze the performance in terms of citations and publications of Effective Teaching studies. The second objective is to analyze the research themes of Effective Teaching studies. The motivation to conduct this study is based on the gaps in previous studies on effective teaching. This study mainly uses bibliometric analysis, whereby 986 documents from 1941 to 2023 were analyzed through two stages – descriptive analysis and keyword network analysis.

Selective findings indicated that in terms of citations and publications shows an increasing trend between 1941 and 2023. In addition, Helms-Lorenz and Maulana are the top 2 productive authors with 9 publications. Then, the United States, the United Kingdom, and China are the top 3 productive countries in effective teaching studies. In terms of affiliation, Rijksuniversiteit Groningen from the Netherlands is the most productive affiliation with 14 publications. There are five research themes associated with effective teaching – 1) effective teaching in higher education, 2) enhancing curriculum with blended teaching, 3) pedagogical professional development, 4) medical education effectiveness, and 5) teacher training for classroom effectiveness.

The authors also suggested 6 future research questions, divided into three categories – theory, practical and methodology. Those research questions provide significant contributions by helping and inspiring scholars to pursue and embark on future exploration in effective teaching.

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