HEGP
Higher Education Governance & Policy

ISSN: 2717-8676 **Volume:** 4 **Issue:** 1

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Article Type: Research Article

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Cite as: Ertem, H. Y., & Aypay, A. (2023). Bibliometric analysis of research on scholarship of teaching and learning in higher education. *Higher Education Governance & Policy*, *4*(1), 49-62. doi:10.55993/hegp.1315869

Access: https://doi.org/10.55993/hegp.1315869

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Abstract

The scholarship of teaching and learning (SoTL) forms a significant base for higher education. SoTL has the potential to lead higher education institutions in terms of teaching, research, and service. The purpose of the current study is to perform a bibliometric analysis on the scholarship of teaching and learning in higher education. A bibliometric review was conducted in both Scopus and Web of Science databases including 1491 and 1002 studies published in the sources indexed respectively in Scopus and Web of Science from the past to 2020. PRISMA was used to identify and select the documents in the sample. Data were analyzed using Scopus Analytic Tools, Excel functions, and VOSviewer. A considerable upward trend was observed in the number of documents from the past to 2020. "ASEE Annual Conference" was found the most influential source in Scopus while "Teaching Sociology" was found the most influential source in Web of Science. Kreber, C., Healey, M., and Marquis, E. were the authors most drawing attention to both Scopus and Web of Science. The intellectual structure of the knowledge base was based mainly on student voice, scholarship or teaching, and learning tips for both databases. Temporal analyses showed that the topical foci of SoTL were identity and critical pedagogy for Scopus and leadership and sustainability for Web of Science.

Keywords: Bibliometric analysis, Higher education, Scopus, SoTL, Web of Science

Introduction

Although teaching is one of the principal academic activities, the quality of teaching is one of the most persistent issues in academia. Administrators, academics, professional groups, and policymakers create policies to improve teaching and learning with little success (Mårtensson et al., 2011). The scholarship of teaching and learning (SoTL) recently emerged as an important concept and has gained recognition in the field of higher education. It is at the core of higher education since it includes the three central missions of higher education, which are teaching, research, and service. The historical roots of SoTL are based on Boyer's (1990, p. 25) conceptualization. The author pointed out that the division of intellectual functions that are inextricably linked to one another by the scholarship of discovery, integration, application, and teaching. It was also underlined that these four different subcategories of scholarship interact with one another in a dynamic way to build a cohesive whole.

Boyer (1990) reconceptualized the research, teaching, and service activities of faculty as the four domains of scholarship: "scholarship of discovery, scholarship of integration, scholarship of application, and scholarship of teaching." Scholars in higher education have followed Boyer and renamed the ultimate goal of teaching as "scholarship of teaching and learning" (Chick et al., 2019).

Researchers have examined SoTL in explicit theoretical frameworks and systematic observations of student learning (Mårtensson et al., 2011), and it is clear that it represents the need for a transformation

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(Review Article) **Cite as:** Ertem, H. Y., & Aypay, A. (2023). Bibliometric analysis of research on scholarship of teaching and learning in higher education. *Higher Education Governance & Policy*, *4*(1), 49-62. doi:10.55993/hegp.1315869

Received: June 16, 2023; ***Revised:*** July 2, 2023; ***Accepted:*** July 3, 2023; ***(e-)Published:*** July 5, 2023

in higher education since the 1990s (Hutchings et al., 2011). SoTL is expected to make the largest influence on faculty teaching, professional development, assessment of teaching and learning institutionally, and how teaching is evaluated. SoTL is defined as a kind of intellectual work that faculty members do when they use their disciplinary knowledge to investigate a question about their student's learning (and their teaching), gather evidence in a systematic way, submit their findings to peer review, and make them public for others to build upon (Dewar et al., 2018, p. 7).

Higher education studies place a strong emphasis on topics that are either directly or indirectly relevant to teaching and learning. Cranton (2011), for instance, included SoTL within both critical theory and transformational learning theory. The author advised that a thorough evaluation of SoTL might result from taking into account the discipline, institution, community, and country/state. According to Shulman (1999) (quoted in McKinney, 2007, p. 8), SoTL must have at least three characteristics: it must be a public activity; it must be subject to critical evaluation by the scholarly community; and it must allow other academics to use, enhance, and develop the outcomes of scholarly output.

Leibowitz and Bozalek (2020) examined SoTL through the lens of social justice theory and concluded that SoTL and social justice are interrelated. Aypay and Ertem (2022) found that the quality of student learning was one of the components of the intellectual structure of student outcomes in higher education and that teaching and learning is one of the significant components of faculty development. Phuong et al. (2020) examined faculty development by reviewing systematic reviews and emphasized that teaching and learning activities have a considerable role in the effectiveness of faculty development. All the studies in higher education literature are related to teaching and learning in some way.

Hallinger and Chatpinyakoop (2019) used bibliometric analysis to evaluate sustainability in higher education between 1998 and 2018 and came to the conclusion that management, competency, and implementation made up the intellectual structure of sustainability. In a bibliometric study on online formative assessment in higher education, Sudakova et al. (2022) discovered that accessibility, distance learning, and assessment design are the three most crucial elements of formative assessment. Academic integration, student engagement, academic accomplishment, academic performance, problem-based learning, academic competency, academic performance, student learning, and evaluation are other aspects that positively affect first-year students' experiences. These elements have a close connection to the SoTL.

Literature reviews were used to explore SoTL. Fanghanel et al. (2015) conducted a study of the literature about the definitions, traits, and goals of SoTL in the UK. Tight (2017) carried out a methodical review by compiling articles from Scopus and Google Scholar. In three SoTL-focused publications, Divan et al. (2017) focused on the research methodologies employed in the studies. Additionally, Booth and Woollacott (2018) mapped SoTL-focused research to look at how those between 2010 and 2016 described SoTL. These reviews focused on the concepts and methodologies of SoTL.

In 2002 and 2018, Braxton and colleagues conducted in-depth analyses of Boyer's four scholarly fields. They discovered that papers on teaching methods predominated in the literature on pedagogical scholarship and that this resulted from studies using "established research protocols" rather than from the practitioners' firsthand accounts. Additionally, papers on teaching strategies frequently draw on empirical data. They discovered that compared to undergraduate and master's colleges, doctorate universities provide a bigger proportion of suggested practice and recommended content reports. A bibliometric review that examines the SoTL research impact on scholarly literature based on citations may be needed. This study may identify trends and patterns in research while measuring the impact of individual and scholarly journals.

Purpose and Research Questions

Even though the literature addressed scholarship of teaching and learning in higher education in different ways, comprehensive and holistic perspectives uncovering research trends and patterns are needed. Thus, the current study aims to examine the research on the scholarship of teaching and learning in higher education. In this respect, the research questions are:

Research Question 1: What is the intellectual structure of the knowledge base on the scholarship of teaching and learning in higher education from the past to 2020?
Research Question 2: What topical foci pertinent to the scholarship of teaching and learning in higher education attracted the greatest attention from higher education scholars from the past to 2020?

Methods

The current study was performed through bibliometric analysis, which can be defined as a technique to investigate the process and structure of the knowledge base in an academic field. Bibliometric analyses provide some advantages over traditional literature reviews (Aparicio, Iturralde, & Maseda, 2020; Hallinger & Kovacevic, 2019; Serenko & Bontis, 2013). Since traditional literature reviews do not include a holistic perspective, bibliometric analysis is stronger in terms of conceptualization. Thus, bibliometric methods may be more beneficial to explore the foundations, intellectual core, and directions for future research of a typical research field.

Determination

In the determination of the studies, two databases were selected. Scopus was preferred first since it provides a great opportunity to generate databases for systematic reviews, as indicated by scholars in the literature (Hallinger & Kovacevic, 2019, Kwiek, 2021; Mongenon & Paul-Hus, 2016). Secondly, Web of Science (WoS) was also reviewed for both the increasing diversity of the studies and providing an opportunity to compare the two different databases. All documents published from the past to 2020 were included in the review. Scopus provides the opportunity to document studies starting from 1960 while Web of Science gives the opportunity to document studies starting from 1975. The reason for the selection of 2020 as an endpoint is the Covid-19 pandemic. Due to online education during Covid-19, teaching and learning activities in higher education institutions were interrupted. Thus, the researchers of the current study put 2020 as a time threshold to detect the intellectual structure and topical foci of the scholarship of teaching and learning.

Identification

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses), developed by Moher, Liberati, Tetzlaff, Altman, and the PRISMA Group (2009), was followed to identify documents. The steps of identification, screening, eligibility, and inclusion were considered to decide the studies to be analyzed. For the identification step, keyword combinations of "scholarship of teaching and learning" and "improvement of pedagogical practice" were searched. In the screening step, limitation to the higher education context, in addition to keywords, was conducted to screen documents. As a result, 1556 studies from Scopus and 1002 studies from WoS were screened. An eligibility check was performed in the third step by considering the scope and relevance of the documents. Thus, some of the documents which were unrelated to the higher education focus and purpose of the study were excluded. Finally, 1491 Scopus documents and 1002 WoS documents were included for bibliometric synthesis in the last step. Figure 1 demonstrated the PRISMA flow diagram.

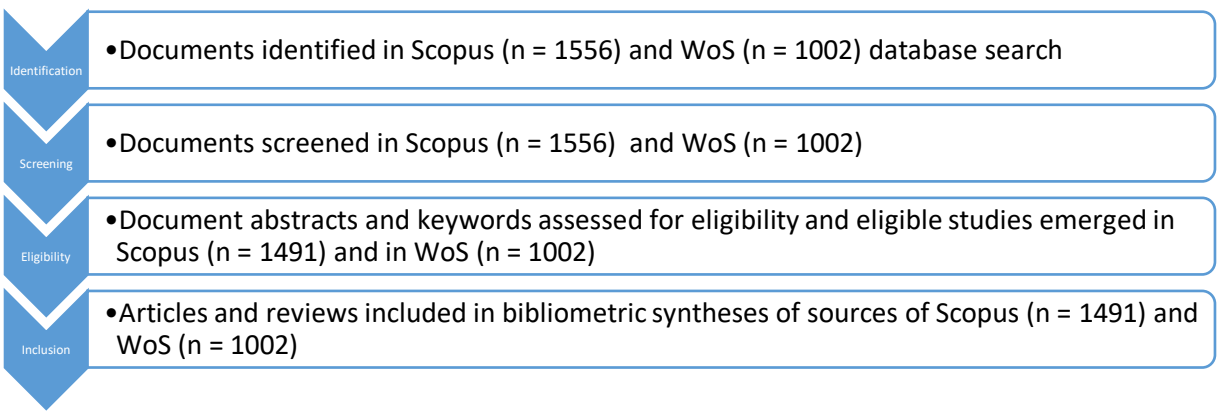

Figure 1. PRISMA flow diagram

Data Extraction and Analysis

For the bibliometric review, all documents were recorded to be synthesized and analyzed. Meta-data of each document from the Scopus database were stored in a CSV Excel file while the meta-data of documents from Web of Science were stored in TXT format. For both, metadata included authors with their affiliations, source, document type, document title, abstract, keywords, references, and values related to citation, in addition to descriptive statistics such as frequency of years, territory, and sources. The current study performed descriptive analysis, citation analysis, co-citation analysis, and co-occurrence analysis to disseminate the results of the review. In order to conduct these analyses, Scopus Analytic Tools, Web of Science Analytic Tools, and VOSviewer were used. Scopus Analytical Tools together with those in Web of Science functioned to present descriptive analysis results. On the other hand, to respond to the research questions of the current study we used VOSviewer both for the intellectual structure of the knowledge base to emerge and to represent topical foci. VOSviewer is a software program that creates visual representations of network maps showing the relationship of variables.

Results

This section offers the findings of the analyses mentioned above. Each sub-section presents the results of descriptive analysis and responses to the relevant research questions.

Results of Descriptive Statistics

The current study reached a total of 1491 documents gathered from Scopus and 1002 documents from Web of Science. In both databases, there was a yearly upward trend in the number of documents. To illustrate, the years 2000, 2005, 2010, 2015, and 2020 received 18, 49, 84, 85, and 113 documents in Scopus, respectively. Considering WoS; the same years produced, respectively, 4, 24, 37, 93, and 131 documents. Differentiation between databases in terms of volume is caused simply by their number of sources. The number of sources in Scopus is greater than the number of sources in Web of Science.

Table 1. Countries in terms of the number of publications

Scopus		Web of Science	
Country	Number of Studies	Country	Number of Studies
United States	843	United States	496
United Kingdom	173	Canada	129
Australia	131	Australia	106
Canada	85	England	85
South Africa	52	South Africa	56
Hong Kong	20	China	26
Ireland	19	Malaysia	20
China	18	Scotland	18
New Zealand	16	Spain	18
Malaysia	14	Sweden	16
Sweden	14	New Zealand	14
Brazil	13	Germany	13
Spain	12	Republic of Ireland	10
Germany	10	Brazil	9
Denmark	9	Portugal	9
Italy	9	Singapore	9
Chile	8	Switzerland	8
France	8	Netherlands	6
Japan	8	Turkey	6
Portugal	8	Italy	5
Turkey	8	Columbia	4
Belgium	7	Finland	4
India	7	Israel	4
South Korea	6	Norway	4
Switzerland	6	Pakistan	4

The geographical distribution of the documents showed the dominance of Anglo-American communities for both databases, such as the United States, United Kingdom, Canada, and Australia. Distribution of these studies on behalf of some communities underlined the importance of countries' development

levels. It can be stated that developed countries emphasize higher education more than developing or undeveloped countries. Table 1 depicts the geographical distribution of documents for Scopus and WoS.

The authors of the articles were investigated by the researchers of the current study. Kreber, C., Healey, M., and Marquis, E. are the authors most drawing attention in both Scopus and Web of Science. The most productive HE scholars publishing articles are listed in Table 2.

Table 2. Authors and the number of publications in Scopus and WoS

Scopus		Web of Science	
Authors	Number of Studies	Authors	Number of Studies
Kreber, C	8	Marquis, E.	10
Healey, M.	6	Healey, M.	9
Marquis, E.	6	Kreber, C	7
Charbonneau-Gowdy, P.	5	Matthews, K. E.	7
Dawson, S.	5	Chin, J.	5
Huber, M. T.	5	Martensson, K.	5
Kong, S. C.	5	McKinney, K.	5
Hutchings, P.	4	O'Loughhlin, V. D.	5
Macfarlane, B.	4	Simmons, N.	5
Matthews, K. E.	4	Hutchings, P.	4

In the current section, the top sources in terms of the number of articles published are presented. Trends in HE literature based on teaching and learning showed great variety. To begin with, the sources publishing most articles in Scopus were the ASEE Annual Conference, Academic Medicine, and Higher Education Research and Development. On the other side were Teaching Sociology, Teaching and Learning Inquiry, and the Canadian Journal for the Scholarship of Teaching and Learning. In spite of the variation in the top three sources, some journals like Higher Education Research and Development, Studies in Higher Education, and Teaching Sociology were available in both databases. The sources that published most of the articles are depicted in Table 3.

Table 3. Conferences/Journals that publish a high number of SoTL articles

Scopus		Web of Science	
Sources	Number of Studies	Sources	Number of Studies
ASEE Annual Conference	82	Teaching Sociology	53
Academic Medicine	31	Teaching and Learning Inquiry	42
Higher Education Research and Development	25	Canadian Journal for the Scholarship of Teaching and Learning	35
Teaching and Learning Inquiry	23	Higher Education Research and Development	32
Teaching Sociology	20	Teaching in Higher Education	21
Higher Education	19	Teaching of Psychology	17
American Journal of Pharmaceutical Education	18	Edulearn Proceedings	16
Studies in Higher Education	16	International Journal for Academic Development	16
Arts and Humanities in Higher Education	15	Inted Proceedings	15
Community College Journal of Research and Practice	13	Studies in Higher Education	14

Finally, relevant articles having the most citations were examined. "Culturally relevant pedagogy 2.0: A.k.a. The remix" was the most cited document in Scopus while "The impact of e-learning in medical education" was the most cited document in Web of Science. Additionally, the top ten documents of Web of Science were cited more than the top ten documents of Scopus. The most influential documents were related to technology and medical education. The most influential documents are presented in Table 4.

Table 4. Highly cited SoTL publications

Documents	Citations
Scopus	
Culturally relevant pedagogy 2.0: A.k.a. The remix	467
Facilitating change in undergraduate STEM instructional practices: An analytic review of the literature	452
Teaching and research: New relationships and their implications for inquiry-based teaching and learning in higher education	260
Boyer's expanded definitions of scholarship, the standards for assessing scholarship, and the elusiveness of the scholarship of teaching	200
Going the distance with online education	192
Teacher learning: The key to educational reform	187
Intrinsic motivation: Relationships with collegiate athletes' gender, scholarship status, and perceptions of their coaches' behavior	172
Professionalizing teaching practice in higher education: A study of disciplinary variation and 'teaching-scholarship'	150
Professionally Developing as a Teacher Educator	145
"Teaching as a competency": Competencies for medical educators	139
Web of Science	
The impact of e-learning in medical education	934
Learning, teaching, and scholarship in a digital age Web 2.0 and classroom research: what path should we take now?	499
Strategies for improving teaching practices: a comprehensive approach to faculty development	350
Linking research and teaching to benefit student learning	224
Teacher learning: the key to educational reform	168
Going the distance with online education	166
Blended learning: a dangerous idea?	150
Current realities and future possibilities: language and science literacy-empowering research and informing instruction	145
Professionalizing teaching practice in higher education: a study of disciplinary variation and 'teaching-scholarship'	139
"Teaching as a competency": competencies for medical educators	132

Results of Intellectual Structure

The intellectual structure of the higher education knowledge base in terms of teaching and learning was examined within "author co-citation analysis". For this purpose, VOSviewer was performed in order to generate a co-citation map visualizing the similarities of research by HE scholars. The density of links connecting scholars was proportional to the number of times a scholar was co-cited with another scholar. Further, clusters imply communities of scholars on the same topic that build each other's work, as it was underlined in Invisible Colleges (Crane, 1972). A social structure within disciplines influences the content and the development of the publications, hence they create norms in specialized fields. In naming clusters, both coding and categorization procedures in content analysis and common perspectives in the literature were followed.

Figure 2 depicts the intellectual structure of the knowledge base in Scopus; the maps classify authors into seven clusters colored green, turquoise, red, yellow, purple, blue, and orange. These clusters were named by the researchers of the current study as follows: teaching tips (turquoise), teaching expertise (green), scholarship of teaching (red), learning context (yellow), practice (orange), student voice (purple), and learning skills (blue). Thus, the intellectual structure of the higher education knowledge base in terms of teaching and learning is based on teaching tips (teaching styles and materials), teaching expertise (quality in teaching), scholarship of teaching (investigation of teaching), learning context (learning approaches and environment), practice (student involvement in learning), student voice (expectations of students), and learning skills (skills and outcomes).

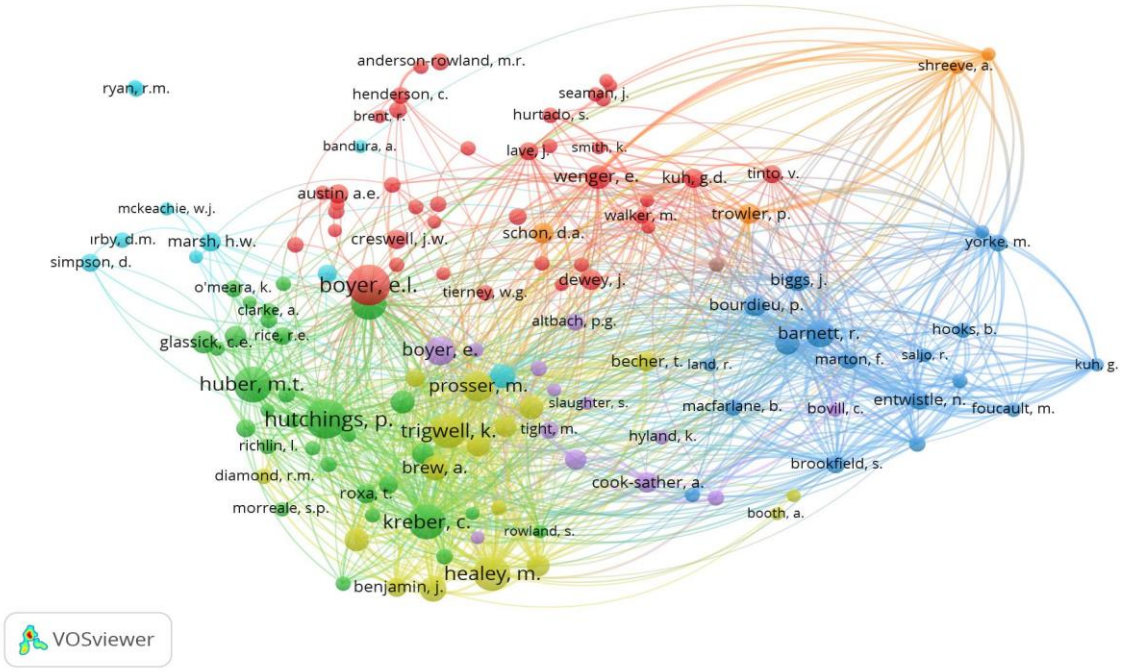

Figure 2. Intellectual structure of knowledge base in Scopus

As Figure 3 depicts in the intellectual structure of the knowledge base in the Web of Science, the maps classify authors into clusters so that there are six clusters colored in green, red, yellow, purple, blue, and turquoise. These clusters were named by the researchers as follows: student voice (green), scholarship of teaching (red), the experience of learning and teaching (yellow), integration of teaching with research (purple), engagement (blue), and learning tips (turquoise). In this way, the intellectual structure of the higher education knowledge base in terms of teaching and learning was based on student voice (expectations of students), scholarship of teaching (investigation of teaching and assessment), the experience of learning and teaching (opinions of teachers and students), integration of teaching with research (the link between teaching and research), engagement (inclusion of disadvantaged social groups) and learning tips (teaching methods such as online teaching).

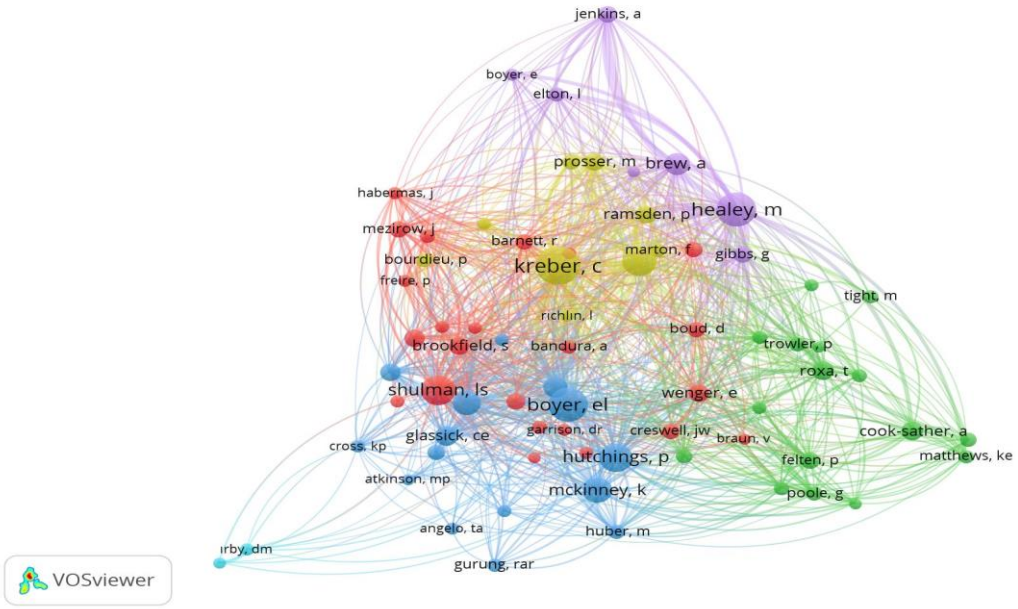

Figure 3. Intellectual structure of knowledge base in Web of Science

For both Scopus and WoS, the common structures were student voice, scholarship of teaching, and learning tips. The intellectual structure appeared in Scopus to be differentiated in terms of learning skills, learning context, practice, and teaching expertise. On the other hand, the intellectual structure of the WoS is differentiated in terms of the integration of teaching with research, the experience of teaching and learning, and engagement.

Results of Topical Foci

In order to investigate the topical foci of the studies on teaching and learning in higher education, co-occurrence analysis was conducted for both Scopus and WoS. Furthermore, changes in the trends of keywords were analyzed via the temporal analysis of topical foci. Temporal analysis indicated the most frequently-used keywords in earlier and recent years.

The analysis on Scopus showed that the most frequently-used keywords were teaching, and pedagogy in higher education. Considering the temporal analysis, recent years utilized keywords like professional identity, reflection, instructional strategies, and critical pedagogy. However, keywords such as faculty, training, and universities appeared more frequently in preceding years. Figure 4 demonstrated a co-occurrence analysis map.

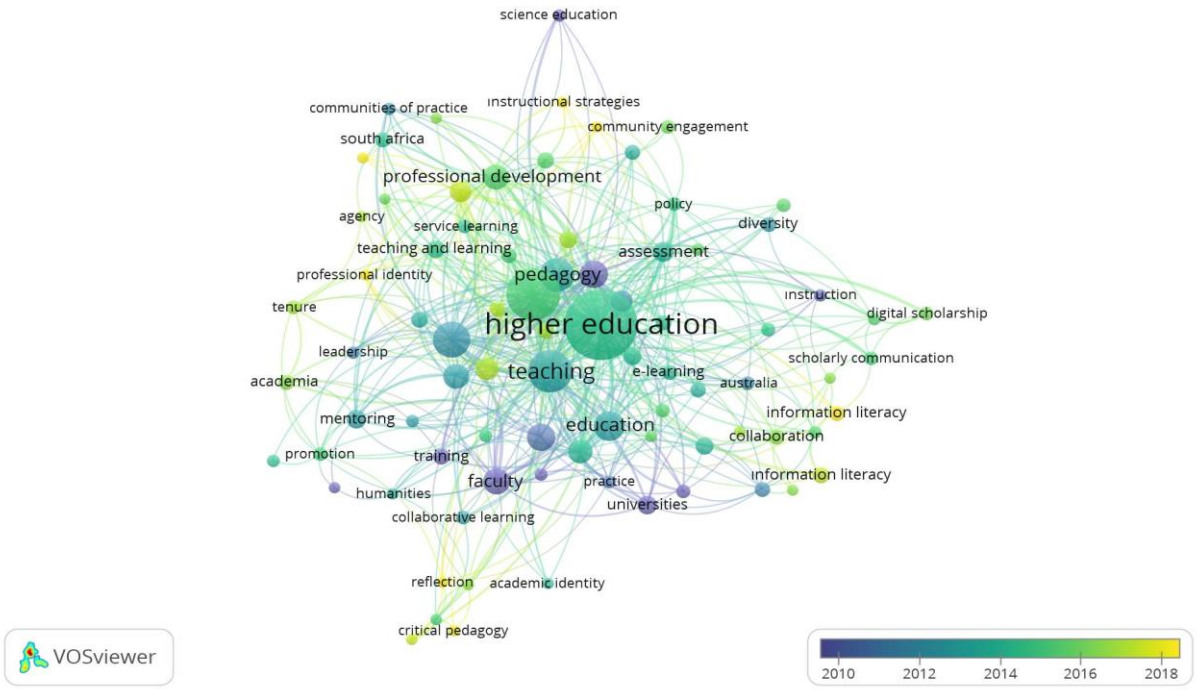

Figure 4. Temporal analysis of topical foci in Scopus

The analysis on the WoS showed that the most frequently used keyword was scholarship or teaching and learning. Considering the temporal analysis, keywords like leadership, sustainability, academic development, and interdisciplinarity have appeared in recent years; while keywords like inquiry-based learning, blended learning, and experiential learning were more frequently encountered in the previous years. Figure 5 demonstrated a co-occurrence analysis map.

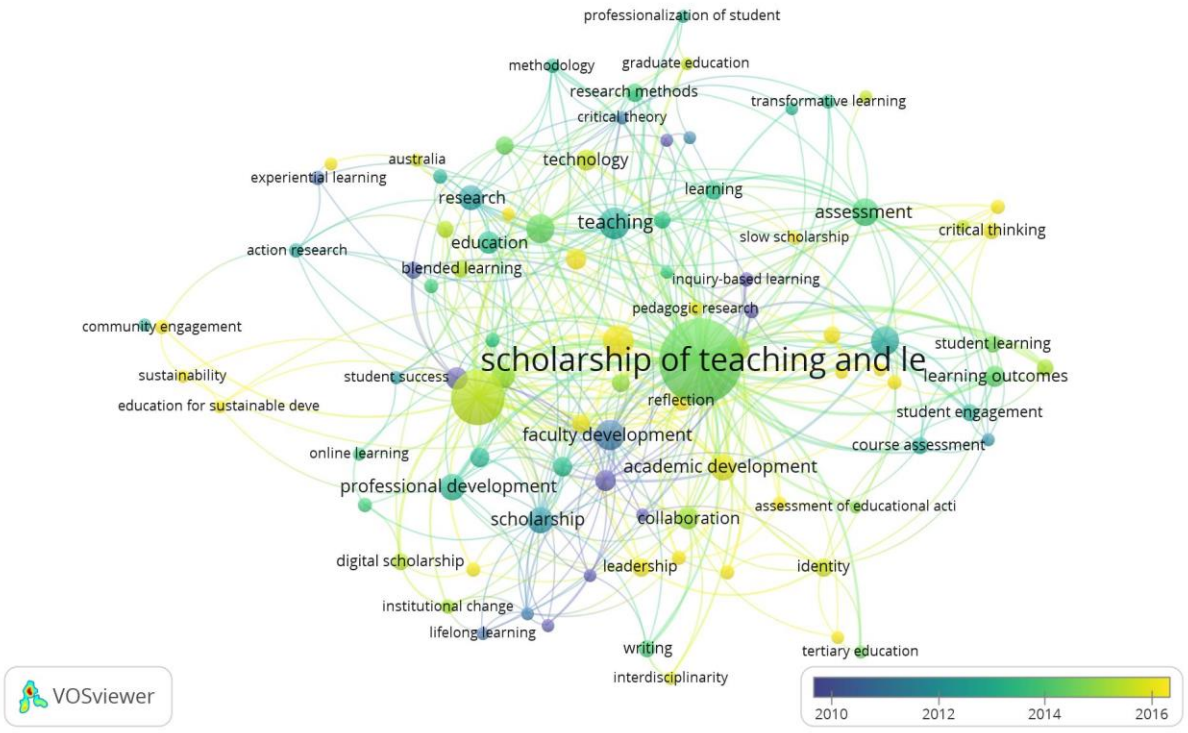

Figure 5. Temporal analysis of topical foci in WoS

Discussion

The corpus of higher education studies on Teaching and Learning included about 2500 documents. Over the years, the literature demonstrated an upward trend for both Scopus and WoS. The reason for this dramatic increase in the trend of studies in recent years may be related to the emphasis on the SoTL. This value is visible not only in the politics of countries but also in the tendencies of the researchers. To name a few, higher education was linked to many topics like leadership (Esen et al., 2020), organizational and administrative dynamics (Ertem & Aypay, 2021), and online learning (Zhang et al., 2022). To summarize, the volume and growth trajectory of the corpus of studies indicates the growing interest in SoTL.

The geographical distribution of the documents showed the dominance of Anglo-American output in both databases such that the majority of studies came from the United States, United Kingdom, Canada, and Australia. In spite of the pre-eminence of Anglo-American research and publishing, many studies from other countries in the world appeared, striking a positive note. To illustrate, Latin American countries like Chile and African countries like South Africa performed well. Nonetheless, there are many countries having few studies. This may be related to the amount of investment in higher education. Similar conclusions were indicated by other studies (Dehdarirad, Villaroya, & Barrios, 2015; Hallinger & Kovacevic, 2019; Sönmez, 2020). In conclusion, the development level of a country is related to the frequency of its documents that are published by influential journals.

The current study demonstrated evidence for the contribution of pioneer HE scholars such as Kreber, Marquis, and Kealey. They were at the top of the list in both Scopus and WoS. To illustrate, Boshier (2009) examined the SoTL and emphasized the studies of Kreber and Healey on teaching and learning. In addition to pioneer authors, the number of publications pointed out that the specific journals that publish a high number of papers (i.e., Higher Education Research and Development), teaching-oriented (i.e., Teaching Sociology), and field-oriented (Academic Medicine) were dominant. Most of these journals are highly reputable and included by SSCI or SCI indexes, have higher impact factors, and have

higher quartiles. Kwiek (2021) emphasized that "Higher Education Research and Development" was one of the most elite global journals in the higher education field.

Finally, the most frequently-cited documents in the scholarship of teaching and learning were technology integration, teaching methods, and professional development. The point drawing special attention was the studies that examined the link between research and teaching to achieve student learning. This can be evaluated as the intersection of the three missions of higher education, which are teaching, research, and service to the community. In addition, it is possible to follow these trends in other studies. Vithal (2008) investigated the scholarship of teaching and learning and underlined the importance of research and innovation, academic promotions, professional development, and policy development for teaching and learning.

Hallinger and Kovacevic (2019) stated that readers or other scholars may synthesize current and future ideas via review and analysis of the literature. This bibliometric review identified "canonical texts" (White & McCain, 1998), such that these documents made a contribution to interdisciplinary approaches (e.g., Gurin et al., 2002) by focusing on HE and other related fields (Antonio, 2001). Thus, the intellectual structure of the knowledge base of SoTL may appear. We examined the intellectual structure of the knowledge base with author co-citation analysis in both Scopus and WoS. Student voice, scholarship of teaching, and learning tips were common structures. Furthermore, learning skills, learning context, practice, teaching expertise, integration of teaching with research, the experience of teaching and learning, and engagement in other structures emerged as the topics. It is possible to see similar structures in the other studies. Khodabandelou et al. (2022) conducted research on the SoTL through a bibliometric analysis and found six themes, namely, professional development, pedagogy and diversity, learning improvement, student assessment, teaching improvement, and SoTL research. Similarly, Booth and Woollacott (2018) examined domains and contexts of the scholarship of teaching and learning and they indicated disciplinary, professional, cultural, and political contexts, all of which are compatible with the intellectual structures of the current study.

Similar patterns observed in the intellectual structure of SoTL also appeared as topical foci of the studies. Co-occurrence analysis showed that SoTL was the most frequent keyword respectively in Scopus and WoS. Temporal analyses indicated that frequent keywords of recent and former years differentiated. Keywords like faculty, training, universities, blended learning, and inquiry-based learning appeared more in the previous years, while keywords like professional identity, reflection, instructional strategies, critical pedagogy, leadership, sustainability, academic development, and interdisciplinary appeared more often recently. These analyses presented an opportunity to examine the change in the trends of topical foci. These findings are consistent with the ideas expressed in the literature. How (2020) reviewed the literature of 2014 and 2019 systematically and concluded that multi-discipline was more extensive than only one specific discipline in SoTL. Moreover, the author emphasized that there was a transition from outcomes of learning to quality of learning.

The findings of the current study were consistent with the literature. The usage of both databases brought important advantages for observing trends and patterns in the research as Mongenon and Paul-Hus (2016) stated. Therefore, the two databases increased the consistency of the results. On the other hand, two databases put forward different results. There are studies that compare the two databases. For example, Chadehani et al. (2013) compared the Web of Science and Scopus and concluded that journals of Scopus had a lower impact and include more articles than the Web of Science.

Both considering research questions and comparing two databases, the researchers of the current study implied that there are two distinct discrepancies. First of all, the intellectual structure of the knowledge base on the scholarship of teaching and learning in higher education emerging in the database of Web of Science was more integrated than that emerging in the database of Scopus. Secondly, topical foci of the studies from Web of Science were more specific or focused on SoTL whereas topical foci of the studies coming from Scopus were more general in higher education.

The current study has also implications for student learning based on the findings. Especially, the intellectual structure of the knowledge base on SoTL highlighted issues related to learning. Learning skills, learning tips, and learning contexts were structures to improve student learning. Similar patterns were also observed in the topical foci pertinent to the scholarship of teaching and learning in higher education such as instructional strategies, critical pedagogy, and blended learning. Practitioners could enhance learning dynamics while policymakers could take caution in increasing the quality of student learning.

Limitations and Recommendations

Even though the current study presented a significant base to understand the literature, it still lacks the advantages of research synthesis and meta-analysis. Thus, studies of research synthesis and meta-analysis are recommended to researchers in the future. Another limitation was that this review did not include the entire HE literature all over the world; the current study presented valuable findings from only developed countries. Further, question marks on whether the generalizability is applicable to the whole knowledge base have not been eliminated yet. Given these limitations, the researchers of the current study recommend conducting bibliometric analyses in different contexts based on the diversity of documents. Thus, there may be an opportunity to locate studies from developing countries. In addition, this diversity provides an opportunity both to perform cross-cultural comparisons and to draw a more realistic global picture of HE. Finally, the current study was limited to choices of the method of analysis. To illustrate, information about the demographics of the authors, such as gender, ethnicity, or age, was not taken into account.

The researchers of the current study make the following recommendations for practitioners and policy-makers: Practitioners could consider what highly-cited documents tell us about the SoTL and how issues related to teaching and learning are managed effectively. In this respect, practitioners may be supported from multi-dimensional perspectives to enhance teaching and learning. On the other hand, policymakers could develop policies to improve teaching and learning in higher education. All higher education stakeholders from scholars to administrators should be considered in the policy-making process such that they could consider student expectations and the professional development of faculty. For this reason, scholars and practitioners should be encouraged to conduct studies and be supported with large-scale projects. Further, policymakers could coordinate wide-ranging data projects which may enhance both conducting research synthesis studies and achieving sustainability in higher education policies.

Conclusion

Considering Scopus and WoS together, the study presented satisfactory results to achieve the purpose of the study. The inclusion of two databases eliminated important limitations of the bibliometric reviews and contributed to the validity of the results. The current study showed that the intellectual structure of the SoTL was based mostly on student expectations, the scholarship of teaching, and learning tips. Further, topical foci that depicted variety were parallel to this intellectual structure.

Our study also demonstrated some “blind spots”, which refer to countries having no documents in the SoTL. Those could be filled by efforts of scholars from different countries and the prioritization of journal editors on editorial boards for the inclusion of studies from disadvantaged countries. It can be implied that since documents and their authors have received the highest levels of citation, novice scholars may be trained by synthesizing these documents through an integrative review of the literature. They may try to understand the perspectives of influential authors and match their manuscripts with the aim and scope of the relevant journal. In addition, they may identify a gap or historical trend on topical foci that extends the literature.

References

Antonio, A. L. (2001). The role of interracial interaction in the development of leadership skills and cultural knowledge and understanding. *Research in Higher Education*, *42*(5), 593.

Aparicio, G., Iturralde, T., & Maseda, A. (2021). A holistic bibliometric overview of the student engagement research field. *Journal of Further and Higher Education*, *45*(4), 540. https://doi.org/10.1080/0309877X.2020.1795092

Aypay, A., & Ertem, H. Y. (2022). A bibliometric review of research on student outcomes in higher education 1960-2020. *Tuning Journal for Higher Education*, *10*(1), 27.

Booth, S., & Woollacott, L. C. (2018). On the constitution of SoTL: Its domains and contexts. *Higher Education*, *75*, 537.

Boshier, R. (2009). Why is the scholarship of teaching and learning such a hard sell? *Higher Education Research & Development*, *28*(1), 1.

Braxton, J. M., Luckey, W., & Helland, P. (2002). Institutionalizing a broader view of scholarship through Boyer's four domains. *ASHE-ERIC Higher Education Report*. Jossey Bass.

Braxton, J. M., Francis, C. H., Kramer, J. W., & Marsicano, C. R. (2018). Inventorying the scholarship of teaching and learning literature. In M. B. Paulsen (Ed.), *Higher education: Handbook of theory and research* (vol. 33; pp. 81-125). https://doi.org/10.1007/978-3-319-72490-4_3

Boyer, E. (1990). *Scholarship reconsidered*. Carnegie Foundation.

Chadegani, A. A., Salehi, H., Yunus, M. M., Farhadi, H., Fooladi, M., Farhadi, M., & Ebrahim, N. A. (2013). A comparison between two main academic literature collections: Web of Science and Scopus databases. *arXiv preprint arXiv:1305.0377*.

Chick, N., Nowell, L., & Lenart, B. (2019). The scholarship of teaching and learning: A scoping review protocol. *Teaching and Learning Inquiry*, *7*(2), 186.

Cranton, P. (2011). A transformative perspective on the scholarship of teaching and learning. *Higher Education Research & Development*, *30*(1), 75.

Dewar, J. Q., Bennet, C. D., & Fisher, M. A. (2018). *The scholarship of teaching and Learning: A guide for scientists, engineers, and mathematicians*. Oxford University Press.

Divan, A., Ludwig, L. O., Matthews, K. E., Motley, P. M., & Tomljenovic-Berube, A. M. (2017). Survey of research approaches utilised in the scholarship of teaching and learning publications. *Teaching and Learning Inquiry*, *5*(2), 16.

Ertem, H. Y., & Aypay, A. (2021). Bibliometric review of studies on organizational and administrative dynamics in higher education. *Journal of Higher Education Policy and Leadership Studies*, *2*(3), 77.

Ertem, H. Y., & Aypay, A. (2023). Bibliometric analysis of research on the first-year experiences of university students. *Yükseköğretim Dergisi*, *13*(1), 107.

Esen, M., Bellibas, M. S., & Gumus, S. (2020). The evolution of leadership research in higher education for two decades (1995-2014): A bibliometric and content analysis. *International Journal of Leadership in Education*, *23*(3), 259.

Fanghanel, J., Pritchard, J., Potter, J., & Wisker, G. (2015). *Defining and supporting the Scholarship of Teaching and Learning (SoTL): A sector-wide study* (Literature review).

Gurin, P., Dey, E., Hurtado, S., & Gurin, G. (2002). Diversity and higher education: Theory and impact on educational outcomes. *Harvard Educational Review*, *72*(3), 330.

Hallinger, P., & Kovačević, J. (2019). A bibliometric review of research on educational administration: Science mapping the literature, 1960 to 2018. *Review of Educational Research*, *89*(3), 335. https://doi.org/10.3102/0034654319830380

Hallinger, P., & Chatpinyakoop, C. (2019). A bibliometric review of research on higher education for sustainable development, 1998–2018. *Sustainability*, *11*(8), 2401.

How, Z. J. (2020). A systematic review of scholarship of teaching and learning research in higher education institutes from 2014–2019. In S. C. Tan & S.-H. A. Chen (Eds.), *Transforming Teaching and Learning in Higher Education: A Chronicle of Research and Development in a Singaporean Context* (pp. 11-43). Springer.

Hutchings, P., Huber, M. T., Ciccione, A. (2011). *The scholarship of teaching and learning reconsidered: Institutional integration and impact*. Jossey-Bass.

Khodabandelou, R., Al Saddi, K., Hussein, R. M. R., Mohammed, W. F. W., Osman, M. E., & Al-Aghbari, M. (2022). Research trends in scholarship of teaching and learning in higher education: A combination of thematic and bibliometric analysis. *Resmilitaris*, *12*(6), 1430.

Kwiek, M. (2021). The prestige economy of higher education journals: A quantitative approach. *Higher Education*, *81*(3), 493. https://doi.org/10.1007/s10734-020-00553-y

Leibowitz, B., & Bozalek, V. (2020). The scholarship of teaching and learning from a social justice perspective. In N. Fraser (Ed.), *Social Justice and* Education (pp. 57-70). Routledge.

McKinney, K. (2007). *Enhancing learning through the scholarship of teaching and learning: The challenges and joys of juggling.* Anker Publishing.

Mårtensson, K., Roxå, T., & Olsson, T. (2011). Developing a quality culture through the Scholarship of Teaching and Learning. *Higher Education Research & Development*, *30*(1), 51. https://doi.org/10.1080/07294360.2011.536972

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., Altman, D., Antes, G., ... & Clark, J. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement (Chinese edition). *Journal of Chinese Integrative Medicine*, *7*(9), 889.

Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of Web of Science and Scopus: A comparative analysis. *Scientometrics*, *106*(1), 213.

Perry, R. P., & Smart, J. C (2007). *The scholarship of teaching and learning in higher education: An evidence-based perspective.* Springer.

Phuong, T. T., Foster, M. J., & Reio Jr, T. G. (2020). Faculty development: A systematic review of review studies. *New Horizons in Adult Education and Human Resource Development*, *32*(4), 17.

Serenko, A., & Bontis, N. (2013). Global ranking of knowledge management and intellectual capital academic journals: 2013 update. *Journal of Knowledge Management, 17*(2), 307.

Sudakova, N. E., Savina, T. N., Masalimova, A. R., Mikhaylovsky, M. N., Karandeeva, L. G., & Zhdanov, S. P. (2022). Online formative assessment in higher education: Bibliometric analysis. *Education Sciences, 12*(3), 209.

Tight, M. (2018). Tracking the scholarship of teaching and learning. *Policy Reviews in Higher Education*, *2*(1), 61.

Vithal, R. (2018). Growing a scholarship of teaching and learning institutionally. *Studies in Higher Education*, *43*(3), 468.

White, H. D., & McCain, K. W. (1998). Visualizing a discipline: An author co-citation analysis of information science, 1972–1995. *Journal of the American Society for Information Science*, *49*(4), 327.

Zhang, L., Carter Jr, R. A., Qian, X., Yang, S., Rujimora, J., & Wen, S. (2022). Academia's responses to crisis: A bibliometric analysis of literature on online learning in higher education during COVID-19. *British Journal of Educational Technology*, *53*(3), 620.

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The authors of the study declared the following points within the framework of the "COPE-Code of Conduct and Best Practices Guidelines for Journal Editors":

Funding: No funding was received from any institution or organisation for this study.

Acknowledgement: …

Ethical Clearance: This study is a review article; thereby, no requirement for ethical approval process.

Author Contributions: The authors contributed to this research equally.

Declaration of Conflicting Interests: The authors have no potential conflict of interest regarding research, authorship, or publication of this article.