Research on work-integrated learning: Overview of publication trends

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Work-integrated learning (WIL) has gained significant attention in higher education for its impact on employability. This study presents a comprehensive bibliometric analysis of WIL research from 2002 to 2023, using data from 1,392 articles indexed in Scopus. The analysis highlights key trends, influential authors, institutions, and collaboration networks, revealing that WIL research has grown substantially, particularly since 2013. The findings underscore the dominance of Australian institutions and authors in the field and the multidisciplinary nature of WIL, which spans social sciences, business, engineering, and healthcare. Through co-authorship and co-citation analyses, this study identifies the central themes and most cited works that shape WIL research. The study also explores the global distribution of WIL research, noting strong collaborative networks, particularly between Australia, New Zealand, and Canada. By mapping the evolution of WIL research, this study provides a valuable reference for future studies, helping to guide research directions and deepen the understanding of WIL's role in enhancing employability.

Keywords: Bibliometric mapping analysis, bibliographic visualization, Scopus, VOSviewer, work-integrated learning

Higher education faces significant challenges, with one of its most critical roles being to prepare students to learn, work, and thrive in an unpredictable world (Caldicott et al., 2022; Oliver & Jorre de St Jorre, 2018). Education is a deliberate human endeavor aimed at helping individuals realize their potential through learning. It is widely acknowledged that human potential can greatly expand when knowledge is effectively applied in practice (Billet, 2011). It underscores the importance of designing an education system adaptable to society's evolving needs. Learning is crucial in developing various abilities, skills, knowledge, habits, and attitudes throughout the educational process (Bramming, 2007). As a result, many higher education institutions are increasingly focused on enhancing students' employability (Zegwaard et al., 2018). Effective learning involves various components, including interests, talents, positive psychological traits, abilities, motivation, attitudes, maturity, and discipline, all essential for achieving successful outcomes. Students need to develop their soft skills to become capable, qualified, and high-achieving members of society.

Employability and 'work-ready' are two concepts frequently used synonymously (Zegwaard et al., 2019). Employability is typically conceived of as a collection of general and discipline-specific skills (for example, the skills and knowledge relevant to engineering, law, or social work). This concept refers to the skills (Gamble et al., 2010), experiences, and attributes that make an individual attractive to employers. It encompasses a range of factors, including technical skills, soft skills (like communication and teamwork), and personal qualities such as adaptability and problem-solving. Employability is

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about the broader readiness of a person to enter and progress in the labor market. It considers how well someone can fit into various roles and industries.

On the other hand, being 'work-ready' is a more specific and immediate concept. It refers to the readiness of an individual to start a particular job or role. It includes having the necessary technical skills and qualifications, understanding the job requirements, and being able to perform the tasks required. It often focuses on the immediate preparedness for a specific position rather than the broader range of skills and attributes covered by employability. Personal characteristics (for example, self-confidence, resilience, and discipline) are also pertinent to employment and desired by the workplace (McAllister & McKinnon, 2009; Zegwaard & Coll, 2011a; Zegwaard & McCurdy, 2014;). WIL programs are becoming increasingly common at educational institutions throughout the United Kingdom, New Zealand, and Australia (Rowe & Zegwaard, 2017). These programs are designed to improve graduates' chances of finding employment after graduation (Nyström, 2009; Zegwaard & McCurdy, 2014).

There is no single correct approach to the extent to which WIL should be centrally managed. However, several factors influence this decision, including institutional diversity, resource availability, existing practices, stakeholder expectations, the variability of policies and procedures, and the need for regular program review and adaptation. Ensuring consistency in communication, transparent information sharing, policy design, standardized agreement templates, procedures for international placements, interdisciplinary WIL facilitation, and serious complaints handling is crucial. The integration of WIL is expected to continue to expand throughout higher education curricula, driven by the ongoing focus on enhancing employability outcomes (Kay et al., 2019; Zegwaard & Pretti, 2018).

WIL refers to organized learning principles that integrate theory with practical experience in education. In various educational settings, providing evidence of supervision and evaluation is necessary to meet the professional qualification standards set by the education industry. WIL is still widely regarded as an effective method for enhancing the employability of recent graduates (Zegwaard & Rowe, 2019). Through WIL, learning outcomes emphasize the ability to work as a crucial component of the qualifications for potential workers. The overarching goal of the WIL learning process is to merge theoretical knowledge acquired through formal academic studies with practical knowledge gained through classroom instruction and real-world experience. Compared to traditional classroom education, learning through participation in WIL activities can often be higher quality (Van Niekerk, 2018). Broadly, WIL encompasses various educational activities conducted in conjunction with real-world work. All participants in WIL—teachers, students, partner schools, and service providers—benefit from the program. All interactions adhere to the prerequisites for specific credentials (Fleming & Hay, 2021).

Several articles have explored the implementation of WIL. WIL has been extensively utilized in Australia, particularly in rural healthcare settings (Grace & Trede, 2013; Quilliam & Bourke, 2021). It has also been employed to enhance students' awareness of employability skills (Young et al., 2021), leading to increased recognition of its value among students. In New Zealand, for example WIL has been integrated into the curriculum for social work, requiring students to complete a minimum of 120 days of WIL as part of their program (Hay & Mafile'O, 2020). It has contributed to the expansion of WIL in the country, fostering a synergy between students' theoretical knowledge and practical training (Hay, 2020). One notable aspect of WIL is its versatility, including its adaptation through virtual technology (Maietta & Gardner, 2022). The COVID-19 pandemic accelerated the adoption of virtual WIL, resulting in alternative approaches that preserved the core principles of WIL. In South Africa, WIL is a component of the course requirements for Technical and Vocational Education and Training

(TVET) programs, aimed at better preparing students to meet industry human resource needs (Mesuwini & Thaba-Nkadimene, 2022, 2023). This approach addresses the challenge that not all African TVET instructors possess the essential core skills for effective teaching. WIL is anticipated to continue to meet workplace requirements as specified (Zinn et al., 2019).

Since the beginning of the last decade, there has been a significant increase in research efforts devoted to WIL, as described in the previous section. Given that providing an education informed by research is a core principal universities uphold, WIL should also adhere to this approach (Zegwaard, 2015). As a result, WIL has emerged as a growing area of academic inquiry, particularly within education and social sciences. However, there remains a notable gap in bibliometric studies that measure, examine, and describe scientific articles on WIL, which would provide valuable insights into the development, application, and achievements of research in this area. Although WIL has become a prominent research topic over the past decade, there is still a need for an in-depth, comprehensive study that employs bibliometric mapping analysis to analyze the research landscape. This study examines relevant works on WIL from the Scopus database, covering the period from 2003 to 2023, with the following research questions guiding the investigation to address this gap. The questions that this study will answer are as follows.

RQ1. How has WIL been researched between 2002 and 2023?
RQ2. Which authors and nations have done the most work on WIL?
RQ3. What are the top scientific journals that regularly publish studies on WIL?
RQ4. When looking at the WIL literature, what topics have received the most attention?
RQ5. What are the authors' most common terms and keywords in the WIL studies' abstracts?
RQ6. Which WIL authors, references, and journals are most cited?

RESEARCH METHODS

Bibliometric Mapping Analysis

VOSviewer version 1.6.17 was used to conduct a bibliometric analysis (Ariyani et al., 2022; Masduki et al., 2022; Muhammad et al., 2022; Qin et al., 2022; Suprapto et al., 2021). Bibliometric analysis is a research method that utilizes quantitative tools to assess and analyze the academic literature and its impact. It systematically measures indicators such as publication count, citation analysis, authorship patterns, and thematic trends within a scholarly work (Donthu, Kumar, Mukherjee, et al., 2021). Bibliometric analysis provides valuable insights into the evolution of research fields, helping scholars and institutions understand the development of scientific knowledge. Researchers can identify emerging topics, influential authors, and impactful institutions by examining publication trends, citation patterns, and collaboration networks. This analysis also aids in strategic planning for future research directions and collaborations (Donthu, Kumar, Pandey, & Gupta, 2021; Dua et al., 2023). The information collected was used to make charts and tables. The bibliometric indicators determined as most relevant to this study and discussed in this article are co-occurring categories, including (i) document type, (ii) author, (iii) institution, (iv) country, (v) referenced document, (vi) journal source, and (vii) authors' keywords (Christ-Ribeiro et al., 2021; Rodríguez-Rojas et al., 2021; Zyoud & Zyoud, 2021). VOSviewer can generate a network of co-occurrence terms by reading exported Excel data and considering phrases from the index keyword. The simultaneous occurrence of events necessitates the identification of multidisciplinary techniques and the direction of future research (Christ-Ribeiro et al., 2021; Guo et al., 2019; Lulewicz-Sas, 2017; Nassaji, 2015; Zyoud & Zyoud, 2021). VOSviewer, Tableau Public, and Microsoft Excel were used to represent the data visually.

Since early this century, bibliometric analysis has been used to examine the world's published literature (Sakata et al., 2013; J. Zhang et al., 2021; Zhou et al., 2021). Information about books, writers, libraries, academic journals, and other sources can be compiled using bibliometrics, a branch of statistics (de Melo et al., 2022). The proliferation of published works on any given topic necessitates the application of multiple quantitative criteria for evaluating the most critical advances in the field (Marvuglia et al., 2020). Results from this analysis can be trusted because they have been through a review process that can be repeated and is subject to public inspection. The dangers of conducting a subjective literature review are reduced when one uses objective judgments generated by computer programming (Bretas & Alon, 2021). Neither the passage of time nor the number of data samples may limit bibliometric study (Yu et al., 2020). In a recent survey, well-known pieces of bibliometric software such as VOSviewer (Waltman et al., 2010), Bibliometric Analysis (Aria & Cuccurullo, 2017), HistCite (Bornmann & Marx, 2012; Garfield et al., 2006; Lucio-Arias & Leydesdorff, 2008), CiteSpace (Chen, 2006; Chen et al., 2010), CiteNetExplorer (van Eck & Waltman, 2014), SciMAT (Cobo et al., 2012), and others have been utilized.

Bibliometric analysis also has uses in industry, including the food science and technology industry (Christ-Ribeiro et al., 2021; Musa et al., 2021; Yeung et al., 2018), engineering (Hincapie et al., 2021; Huang & Xin, 2020), computer science (Zyoud & Zyoud, 2021), medical (Brimo Alsaman et al., 2021; Santisteban-Espejo et al., 2020), education (Goksu, 2021), economics (Donthu, Kumar, Mukherjee, et al., 2021; Saleem et al., 2021), and social science (Palácios et al., 2021). This study shows how research subjects, difficulties, and new developments have evolved concerning WIL. Therefore, the data provided by this analysis is required to comprehend the current state of publication patterns and their prospective practicality (Flórez-Martínez et al., 2022).

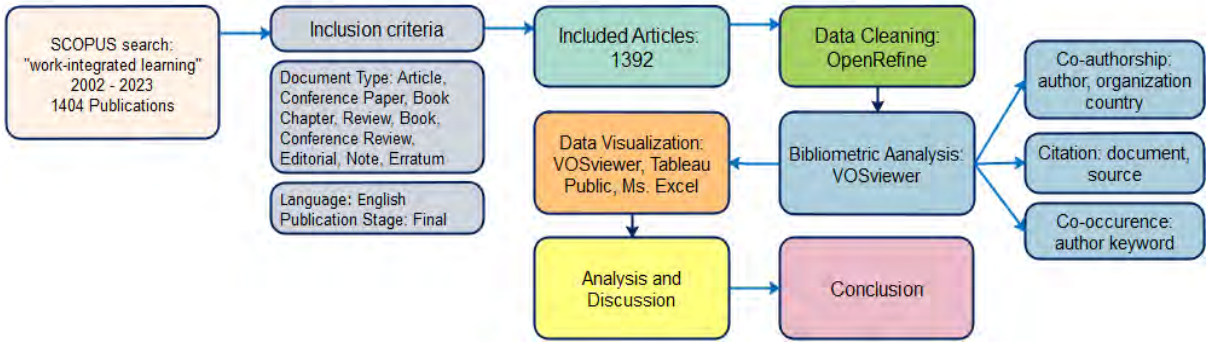
Data Mining

The Scopus database was used exclusively for this investigation. Scopus is the most widely used database for bibliometric information and is generally acknowledged as the most comprehensive citation database and collection of abstracts of scholarly literature, more comprehensive than Web of Science or PubMed (Christ-Ribeiro et al., 2021; Falagas et al., 2008; Mongeon & Paul-Hus, 2016). It includes abstracts and the most significant regional and global citations from various sources, including scientific journals, conference proceedings, and books (Schotten et al., 2017). Scopus employs independent experts' rigorous review and evaluation process to guarantee that only data with the highest quality and index are available for public consumption (Aman, 2018). On top of that, Scopus ensures the accuracy of all data in the database through extensive monitoring and assurances. In addition, as research topics evolve, so does the metadata that describes them. The profiles of authors and institutions are presented in Scopus in a balanced and thorough fashion. This data has been obtained via an algorithm combined with human curation to ensure accuracy. Therefore, Scopus allows massive data mining and analysis (Lerchenmueller & Sorenson, 2018).

A subject search in the Scopus database was performed to obtain the scientific publications published between 2002 and 2023. Bibliographic details, keyword combinations, and cited references were some of the valuable information gleaned. Journal articles and any conference proceedings from Scopus databases were used in this bibliometric analysis. The dataset was retrieved on June 25, 2024. The search was performed in a single day to prevent bias from daily citation updates (Ellegaard & Wallin, 2015; Musa et al., 2021). The search term used was "work-integrated learning or WIL," which yielded 1,404 documents. Only articles authored and published entirely in English were included, resulting in 1,392 papers relevant to the WIL topic.

Figure 1 shows the overall research methodology employed in this bibliometric analysis. The flowchart outlines the bibliometric analysis process for "work-integrated learning" using Scopus data from 2002 to 2023, beginning with a search that identified 1,404 publications. The inclusion criteria were applied to select relevant documents, including articles, conference papers, book chapters, reviews, books, conference reviews, editorials, notes, and errata, all in English, and at the final publication stage, resulting in 1,392 articles for analysis. Data cleaning was conducted using OpenRefine to ensure the dataset's accuracy and consistency. The bibliometric analysis was performed with VOSviewer, focusing on co-authorship (authors, organizations, and countries), citation patterns (documents and sources), and keyword co-occurrence (author keywords) to identify common themes. Data visualization tools, such as VOSviewer, Tableau Public, and Microsoft Excel, were employed to represent the findings visually. The subsequent analysis and discussion phase involved interpreting these results to discern trends and patterns within the field of work-integrated learning, ultimately leading to conclusions that encapsulate the insights derived from the study.

FIGURE 1: Research methodology flowchart.



Using datasets comprising a wide range of publication types for bibliometric analysis provides a comprehensive and nuanced understanding of the research landscape. This approach captures the diversity of scholarly contributions, supports interdisciplinary exploration, and informs strategic decisions in research, policy, and academia. By embracing the full spectrum of scholarly communication, bibliometric analysis can more accurately reflect the complexity and richness of scientific knowledge. Different publication types contribute differently to scholarly impact. For instance, articles and conference papers are typically more cited, while books may influence through widespread readership and academic adoption. Articles and conference papers often represent new research findings, while books and reviews provide broader overviews and theoretical perspectives.

Moreover, editorials, notes, and errata can offer insights into the nuances of research practice and publication dynamics. Additionally, by analyzing different formats, researchers can track the evolution of topics as they move from preliminary results (often presented at conferences) to fully developed studies (published in articles and books). Interdisciplinary research frequently crosses traditional publication boundaries. Bibliometric analysis can better capture interdisciplinary linkages and collaborations by including various publication types.

Data Cleanup

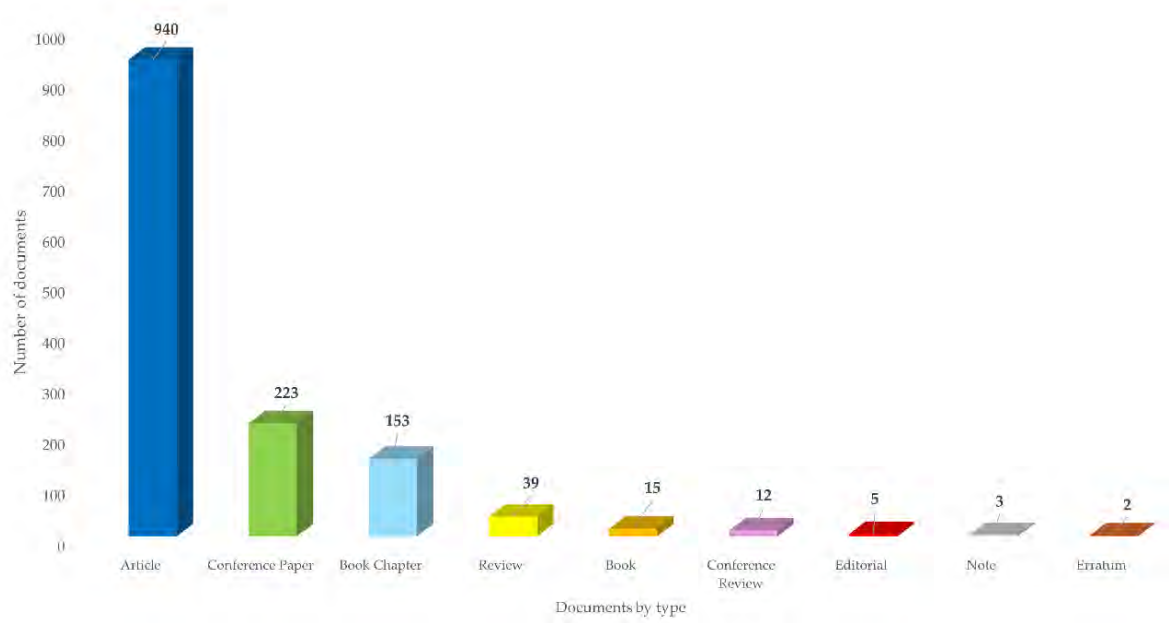
Some data in the primary dataset was duplicated, so duplicates were removed using Open Refine, a free, open-source desktop program for data cleaning and transformation (Groves, 2016; Tillman, 2016).

Nouns were classified as singular or plural to convert them into the correct form. For example, the terms "e-learning" and "E-learning" were standardized to "E-Learning." This process involved merging similar terms and aligning observations with the same meaning (Heikkinen & Jäntti, 2019). This cleaning procedure included several necessary manual checks and assessments. The information was then manually sorted and scrubbed using VOSviewer's thesaurus.

Findings

Searching the Scopus database using a query associated with work-integrated learning between 2002 and 2023 yielded 1,392 papers after being filtered with the language used and publication stage. Figure 2 shows the search results documents by type.

FIGURE 2: Documents by type

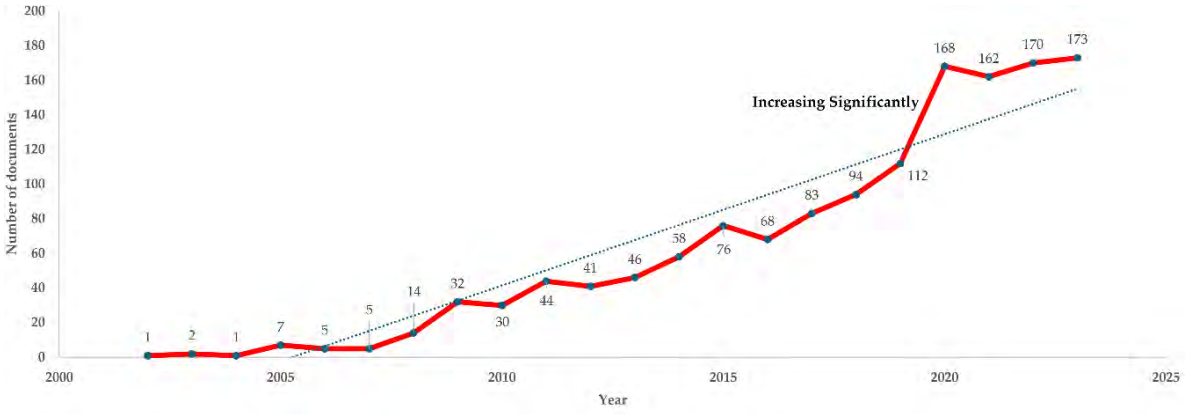


RESULTS AND DISCUSSION

Recent Developments in the Literature on Work-Integrated Learning

Figure 3 shows the growth in the number of publications relating to WIL, which covers 2002 through 2023. Although a rising pattern has been noticed since 2008, the interest growth rate in the field has accelerated significantly since 2013. The early data usage in the first month of 2023 caused a reduction in publication and citation distribution. The trend of a rising number of publications in the field of WIL research may be seen as a general upward slope represented by the dashed line on the graph. Changes in the frequency of publications or mentions can serve as a valuable indicator of the development of a field or subject if they are significant. It is widely believed that the use of citations as indicators of research performance should be justified or grounded in the citation behavior of authors since citations originate from references in the literature (Aksnes et al., 2019; Waltman, 2016).

FIGURE 3: Map of the total number of articles published.



The graph illustrates the annual publication trends from 2002 to 2023, revealing a progressive increase in the yearly documents published. In the initial years, from 2002 to 2005, the publication numbers were relatively low, starting with just one document in 2002 and rising to seven by 2005. It represents a significant increase, albeit from a small base, indicating the developing research interest in the field. As we move from 2005 to 2010, there is a noticeable acceleration in publication activity, with documents increasing from seven to 30, marking a 329% rise. This growth reflects a burgeoning interest and a potential expansion in research funding and academic attention towards this subject area. From 2010 to 2015, it marked a pivotal phase in the graph, where the number of documents surged from 30 to 76, translating to a 153% increase. This sharp rise suggests that the field gained substantial momentum, possibly due to breakthroughs in research, increased collaboration among scholars, or heightened global relevance. Following this period, from 2015 to 2020, the trend continues to ascend significantly, with the number of documents escalating from 76 to 162, representing a 113% increase. This sustained growth indicates a robust and ongoing commitment to research and development within the field, likely fueled by technological advancements and the increasing applicability of research findings. In the final period from 2020 to 2023, the growth rate moderates slightly but remains positive, with publications rising from 162 to 173, a 6.8% increase. It suggests that while the field may have matured, there remains a consistent interest in advancing research, possibly focusing on refining existing knowledge or exploring new subfields. The overall trajectory of the graph underscores a significant and continuous upward trend in document publication, especially from 2010 onward, highlighting an accelerating interest and expansion in research endeavors. This pattern may reflect the field's growing complexity and interdisciplinary nature and the increasing importance of its global contributions to academic and practical applications.

Countries and Authors with the Most Output and Collaboration

A total of 2,984 authors representing 80 countries contributed to the 1,403 articles published. This study topic in WIL has attracted the attention of numerous researchers, as evidenced by the high number of authors (2.13 per paper on average). Table 1 ranks the most prolific and influential authors based on their published works. Denise Jackson was the author with the highest number of documents and citations (28 documents, 1,718 citations). The query setting used was author link strength with at least one publication and a minimum of 350 citations. Jackson was followed by Sonia Ferns (20 articles, 458 citations, Curtin University), Michelle Eady (20 articles, 51 citations, University of Wollongong), Stefanie Lindstaedt (19 articles, 239 citations, Graz University of Technology), Bonnie Amelia Dean (18 articles, 175 citations, University of Wollongong) and Karsten Zegwaard (16 articles, 512 citations,

University of Waikato). Based on that information, WIL has been the subject of numerous academic works written by authors worldwide, specifically in Australia and New Zealand.

TABLE 1: Top 20 most contributors to the study of work-integrated learning.

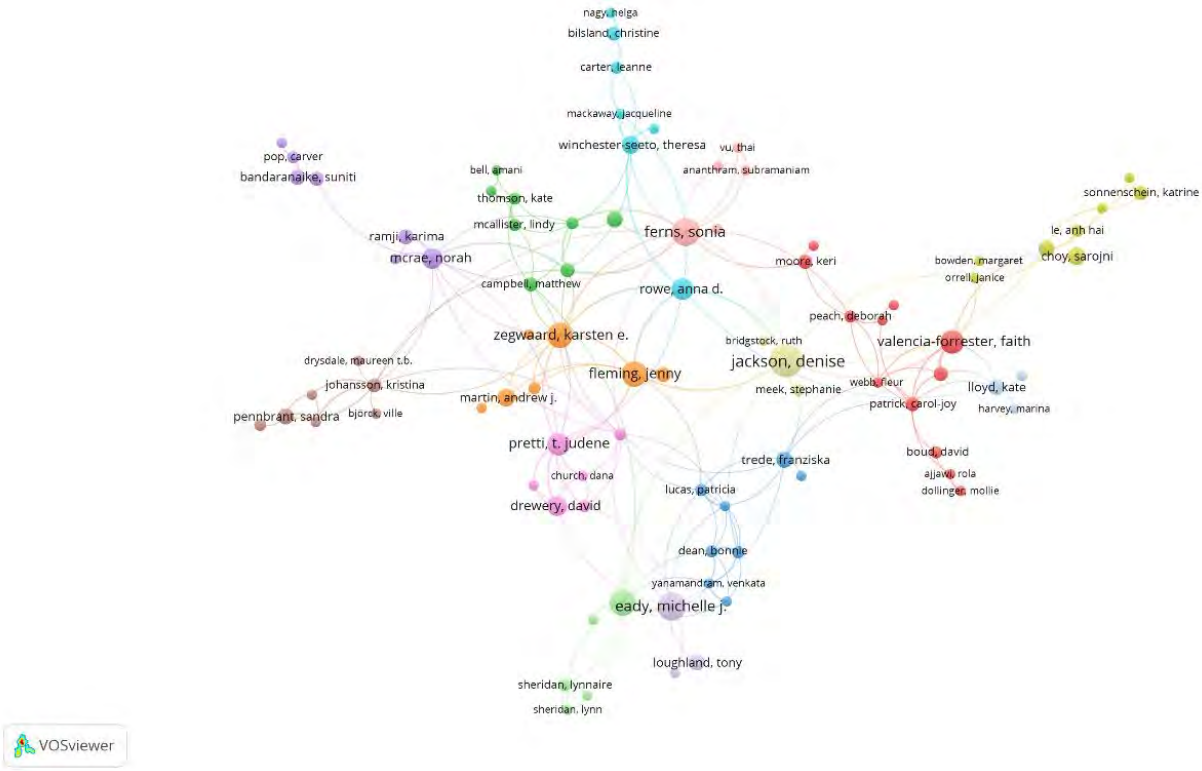
Author	Number of documents	Number of citations	Country	Institutions
Jackson, Denise	28	1,718	Australia	Edith Cowan University
Ferns, Sonia	20	458	Australia	Curtin University
Eady, Michelle J	20	51	Australia	University of Wollongong
Lindstaedt, Stefanie N	19	239	Austria	Graz University of Technology
Dean, Bonnie Amelia	18	175	Australia	University of Wollongong
Zegwaard, Karsten E	16	512	New Zealand	University of Waikato
Fleming, Jenny	16	372	New Zealand	Auckland University of Technology
Valencia-Forrester, Faith	14	99	Australia	Griffith University
Cameron, Craig	13	162	Australia	Griffith University
Pretti, T. Judene	13	186	Canada	University of Waterloo
Kump, Barbara	12	192	Netherland	University of Twente
Rowe, Anna D	12	383	Australia	University of New South Wales
Ley, Tobias	11	214	Estonia	Tallinn University
Freudenberg, Brett	11	117	Australia	Griffith University
McRae, Norah	11	140	Canada	University of Victoria
Drewery, David	10	72	Canada	University of Waterloo
Mather, Carey	9	107	Australia	University of Tasmania
Golab, Lukasz	8	49	Canada	University of Waterloo
Winchester-Seeto, Theresa	8	165	Australia	Winchester-Seeto Consultancy
Martin, Andrew J	8	73	Australia	University of New South Wales

Note. Only authors with at least 350 citations were counted.

Figure 4 provides a visual representation of the authorship-related research collaboration network. The study analyzed the scientific collaboration among authors researching WIL by examining their co-authorship patterns. A total of 2,984 authors have published on the topic of WIL. However, only 198 of these authors have published at least three articles, qualifying them for inclusion in this analysis. Among these 198 authors, 93 have collaborated on scientific papers, indicating that 47% engage in collaborative research within the WIL context. This collaboration occurs not within a large group but across several smaller teams. The largest team consisted of 12 authors, with other groups ranging from three to 18 members.

Total link strength (TLS) measures how strongly a researcher has collaborated with other authors across their publications. In addition, the total link strength property characterizes the force driving inter-item connections (van Eck & Waltman, 2014). Consequently, it is reasonable to infer that the findings corroborate the hypothesis that contributions from highly productive authors also benefit through developing international collaboration networks. Evidence for this can be found in the prolific output of well-known authors and the solid networks those authors have established with other writers.

FIGURE 4: Visualization of researchers collaborating in work-integrated learning research.



Data analysis revealed that authors collaborated to produce publications on WIL, and VOSviewer classified and organized WIL data into nine clusters (Figure 4). When the size of the nodes making up the connections is considered, notable researchers are present in each network cluster. It helps to facilitate connections between the many researchers there. Examples include Sonia Ferns (20 documents, 23 TLS, peach cluster); Michelle Eady (20 documents, 22 TLS, light blue cluster); Denise Jackson (28 documents, 21 TLS, light yellow cluster); Bonnie Amelia Dean (18 documents, 19 TLS, green cluster); Karsten Zegwaard (16 documents, 19 TLS, yellow cluster); Jenny Fleming (16 documents, 16 TLS, yellow cluster); Norah McRae (11 documents, 15 TLS, orange cluster); Judene Pretti (13 documents, 19 TLS, purple cluster) and Faith Valencia-Forrester (14 documents, 12 TLS, red cluster). These nine researchers co-authored most of the research articles. Despite the geographical distance between each cluster, Sonia Ferns seems most connected between researchers in the pink, purple, yellow, red, pink, orange and green groups. Denise Jackson and Karsten Zegwaard are integral in bridging the gap between all the colors and Bonnie Amelia Dean interacts with the blue-blue light-yellow blob. Norah McRae completed the sequence by tying together the purple/yellow/green/brown group. The interdependencies across the various nodes suggest that WIL is receiving increased attention from the academic community.

Table 2 ranks the countries contributing to at least five studies. Researchers from 55 different countries have published articles in the WIL literature. It indicates that WIL studies have been undertaken by researchers worldwide. However, Australia has the most documents (774, or 55 %) and citations (9812) in this research. Other countries with at least 10 publications have significantly contributed to the field.

They are South Africa (158 articles, 662 citations), Canada (98 articles, 829 citations), New Zealand (71 articles, 1,068 citations), the United Kingdom (69 articles, 889 citations), Sweden (63 articles, 450 citations), the United States (34 articles, 156 citations), Austria (30 articles, 321 citations), and Thailand (29 articles, 139 citations).

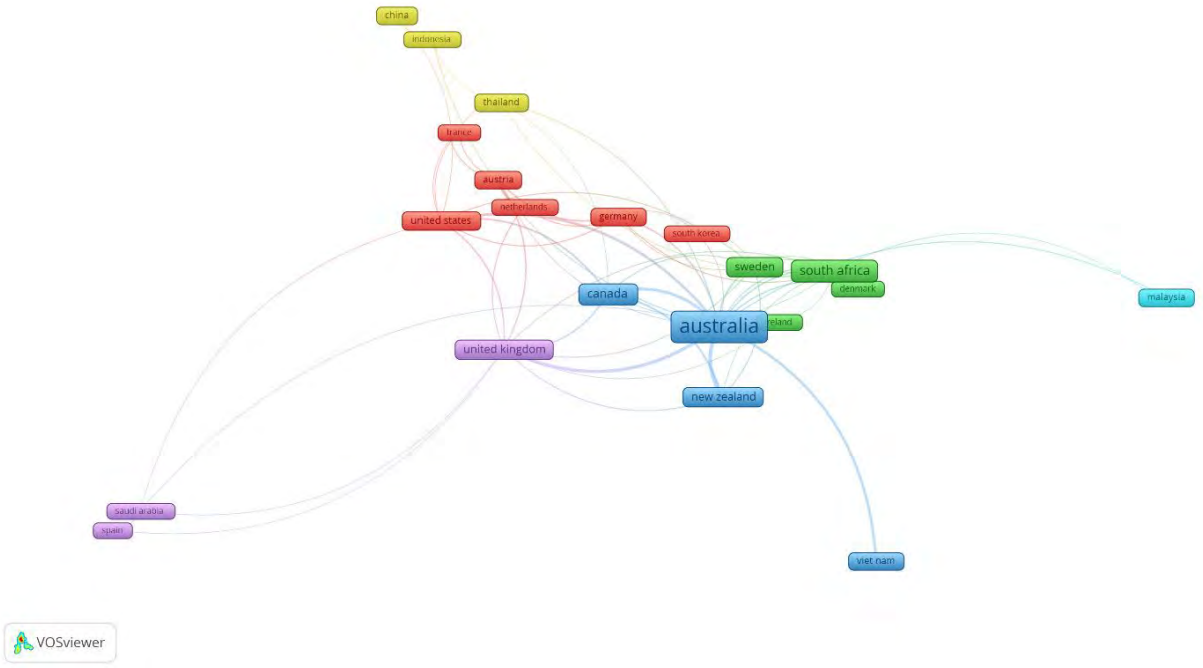
TABLE 2: Countries publishing at least five articles on work-integrated learning.

Countries	∑ Articles	∑ Citations	Total Link Strength
Australia	774	9,812	113
South Africa	158	662	19
Canada	98	829	36
New Zealand	71	1,068	35
United Kingdom	69	889	41
Sweden	63	450	20
United States	34	156	29
Austria	30	321	19
Thailand	29	139	8
Germany	24	217	17
China	24	21	4
Vietnam	15	169	11
Malaysia	14	97	4
France	12	94	6
Spain	12	33	5
Hongkong	10	98	2
India	10	23	2
Norway	9	39	7
Saudi Arabia	9	14	5
Netherlands	7	32	9

After repeating the process of analyzing who wrote what, researchers from different countries were able to create a visual representation of the global research community. In Figure 5, we see the results of the cooperation between 27 of the 80 countries. All of which have contributed to at least two publications and 10 citations each. The network map depicts six clusters of two or three countries. However, only 27 of the 80 countries are shown to have collaborated. Furthermore, two countries, Spain and Portugal, are linked, but Hong Kong and Greece do not collaborate.

Australia has published the most WIL research and is highly collaborative within this field, as shown on the network map, with a total link strength of 102. It is followed by the United Kingdom, New Zealand, and Canada, with total link strengths of 40, 34, and 33, respectively. Australia, New Zealand, Canada, and Vietnam are part of the same cluster (the blue cluster), indicating stronger cooperation among them. The next step is to analyze the collaboration between countries from different clusters (green, yellow, purple, and red), highlighting significant partnerships across various geographical regions. For example, some European and Asian countries collaborate within the red cluster. At the same time, Europe and the Americas form the green cluster, Canada and Southeast Asia are part of the purple cluster, and Europe and Africa are within the yellow cluster. Finally, Europe and the United Kingdom are grouped in the final cluster.

FIGURE 5: Visualization of countries collaborating in work-integrated learning research.



The level of international collaboration among researchers on a specific study might be considered an essential indicator of the study's high quality (Dua et al., 2023; Kim, 2006; D. Zhang et al., 2022). The findings indicate a collaboration in WIL research between 17% of the writers and 55% of the countries that contributed at least two documents. This percentage has the potential to increase because of the rapid pace at which technology and communication are developing, which offers greater opportunities for collaboration to encourage new technological innovations between countries. They, in turn, can potentially have implications for the high level of research collaboration between countries and continents worldwide.

The Most Productive Institutions

Table 3 lists the institutions (universities) that have significantly contributed to advancing WIL research by publishing at least five articles, arranged in descending order of the total number of articles published by each organization. University of Wollongong, Griffith University, and Queensland University of Technology, all in Australia, hold the record for the most significant number of publications related to WIL research among all academic institutions. The University of Waterloo in Canada and Deakin University in Australia are fourth and fifth, respectively.

The table underscores the dominance of Australian institutions in WIL research, reflecting the country's leadership and focus on integrating practical learning with academic study. Institutions like the University of Wollongong and Griffith University emerge as top contributors, with 44 and 39 documents, respectively. Griffith University, in particular, stands out with 455 citations, suggesting a high impact and recognition of its research within the academic community. This dominance may be attributed to national educational policies prioritizing industry collaboration and integrating real-world experiences in education, which are core to the concept of WIL.

TABLE 3: Institutions contributing the most productive research in work-integrated learning.

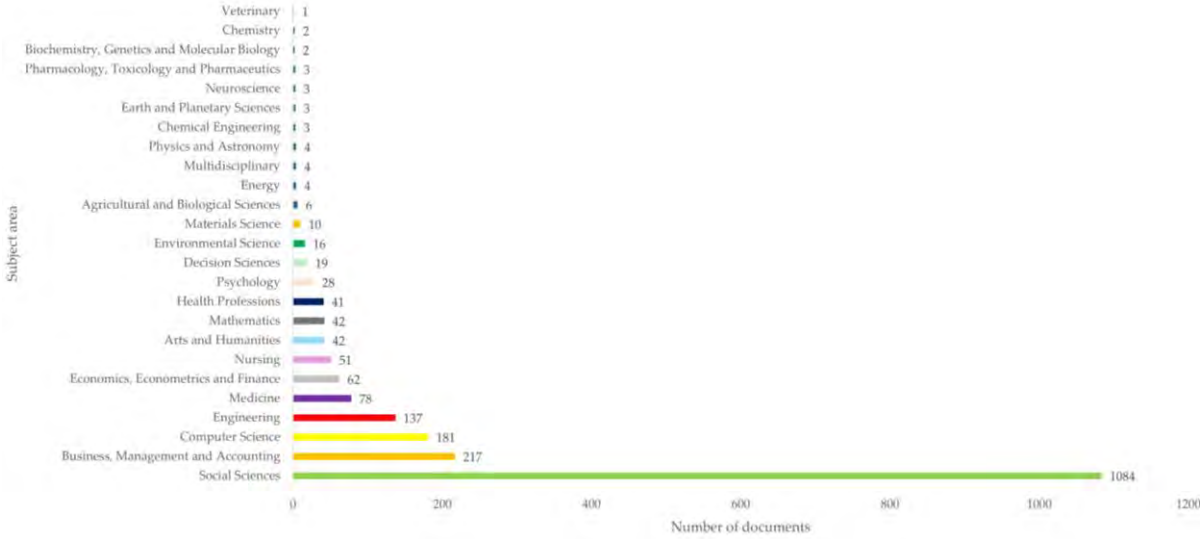
Institutions	Number of Documents	Number of Citations	Country
University of Wollongong	44	276	Australia
Griffith University	39	455	Australia
Queensland University of Technology	20	306	Australia
University of Waterloo	20	206	Canada
Deakin University	20	289	Australia
Auckland University of Technology	18	339	New Zealand
University of Sydney	16	130	Australia
University of Waikato	15	410	New Zealand
Western Sydney University	15	55	Australia
Macquarie University	14	363	Australia
Curtin University	13	217	Australia
James Cook University	13	96	Australia
Massey University	12	213	New Zealand
RMIT University	11	184	Australia
Victoria University	11	115	Australia

The high citation counts for institutions such as Griffith University, Macquarie University (14 documents, 363 citations), and University of Waikato (15 documents, 410 citations) indicate their research is prolific and highly influential. It suggests that these institutions produce work recognized and valued by peers globally. The difference between the number of documents and citations, particularly for universities like Griffith, indicates a successful dissemination strategy or tackling impactful topics within WIL. Conversely, while the University of Wollongong leads in document output, its lower citation count than Griffith may imply a need to enhance the reach of its research outputs or that these are more recent publications. Internationally, institutions from Canada and New Zealand also play significant roles in WIL research, albeit with fewer publications. The University of Waterloo in Canada, with 20 documents and 206 citations, exemplifies the international collaboration and influence in this field. Similarly, New Zealand's University of Waikato and Massey University contribute significantly, with high citation-to-document ratios of 410 citations for 15 documents and 213 citations for 12 papers, respectively. These statistics highlight their research efforts' international acknowledgement and impact, suggesting that their work resonates well with the global academic community.

The data presents opportunities for further growth and collaboration in WIL research, especially for institutions like Western Sydney University, which has 15 documents but only 55 citations. Such institutions may benefit from enhanced international collaborations and strategic partnerships to increase their research impact and dissemination. The potential for cross-border research initiatives is significant, as shared insights and methodologies could further enrich the WIL field, driving innovation and application in diverse educational settings. Institutions with fewer documents but high citation counts, such as Macquarie University and the Auckland University of Technology (18 documents, 339 citations), highlight the benefits of a strategic focus on niche areas within WIL. Their targeted research approaches could serve as models for other universities aiming to enhance their influence in the field.

As WIL continues to gain traction globally, these institutions are well-positioned to lead innovative studies and collaborations that could shape the future of education and industry partnerships.

FIGURE 6: A graphic representation of the literature on work-integrated learning by subject.



The Most Researched Topics

Figure 6 illustrates the distribution of documents across various subject areas, with the Social Sciences leading with 1,084 documents, indicating significant research activity and importance in academia. Business, Management, and Accounting (217 documents) and Computer Science (181 documents) follow, reflecting their relevance in modern academic and professional contexts. Engineering (137 documents) and Medicine (78) show considerable research contributions, emphasizing their critical roles in innovation and healthcare. There is a growing interest in the topic. Moderate activity is observed in Nursing (51 documents), Arts and Humanities (42 documents), Health Professions (42 documents), and Mathematics (41 documents), highlighting steady interest in these fields. Psychology (28 documents) and Decision Sciences (19) demonstrate focused research efforts. Less represented areas include Environmental Science (16 documents), Materials Science (10 documents), and Agricultural and Biological Sciences (6 documents), indicating niche but essential contributions. Fields like Energy (4 documents), Multidisciplinary studies (4 documents), and Chemical Engineering (3 documents) have limited representation, suggesting growth potential. Neuroscience, Pharmacology, Toxicology and Pharmaceutics, Biochemistry, Genetics and Molecular Biology, and Chemistry show specialized research efforts with two to three documents each, while Veterinary has only one document, indicating a very specialized niche. The breadth of WIL's coverage across various scientific disciplines makes it a compelling topic of study. Accordingly, it is safe to say that researchers from any field can contribute to furthering the WIL field. Overall, the chart highlights where academic contributions are concentrated and identifies areas with potential for further exploration.

Journals With the Highest Number of Co-Citations

Table 4 lists journals with the highest number of co-citations in WIL and related educational research. Co-citation is a term used in bibliometrics and refers to the frequency with which other documents cite together two papers (or sources, such as journals). When two articles or sources are cited by the same

subsequent paper or research work, they are considered co-cited. This concept is used to identify the relationship between different publications and to analyze the intellectual structure of a particular field of study. The table is organized with three columns: sources, citations, and TLS (total link strength), which indicate the frequency and strength of citations these journals receive in conjunction with each other within the scholarly literature.

TABLE 4: The most co-cited journals.

Sources	Citations	TLS
International Journal of Work-Integrating Learning*	2,104	32,152
Studies in Higher Education	1,008	20,449
Higher Education Research and Development	920	17,608
Education and Training	510	10,885
Higher Education	401	8,939
Journal of Cooperative Education and Internships*	297	4,909
Assessment and Evaluation in Higher Education	296	5,590
Journal of Education and Work	213	4,497
Higher Education, Skills and Work-Based Learning	208	4,197
Nurse Education Today	202	3,096
Teaching in Higher Education	201	4,106
Studies in Continuing Education	174	3,252
Journal of Teaching and Learning for Graduate Employability	172	3,702
Journal of Workplace Learning	172	2.586
Journal of Vocational Behaviour	169	4,345
Medical Education	143	2,705
Accounting Education	125	2,939
Journal of Applied Psychology	121	2,610
Teaching and Teacher Education	115	1,630
Vocations and Learning	97	2,208

Note. *Journals previously known by another name (Asia-Pacific Journal of Cooperative Education and Journal of Cooperative Education, respectively), data related the older name is combined with the new name.

The *International Journal of Work-Integrated Learning* (previously known as *Asia-Pacific Journal of Cooperative Education)* leads with 2,104 citations and an impressive TLS of 32,152, indicating its central role and high impact within the academic community. It is followed by *Studies in Higher Education*, which has 1,008 citations and a TLS of 20,449, showcasing its significance in higher education research. *Higher Education Research and Development* is next, with 920 citations and a TLS of 17,608, reflecting its influence in developing and applying educational theories. *Education + Training* also shows considerable presence with 510 citations and a TLS of 10,885, suggesting its importance in vocational and professional education discourse. Other notable journals include *Higher Education*, with 401 citations and a TLS of 8,939, focusing on the broad aspects of higher education.

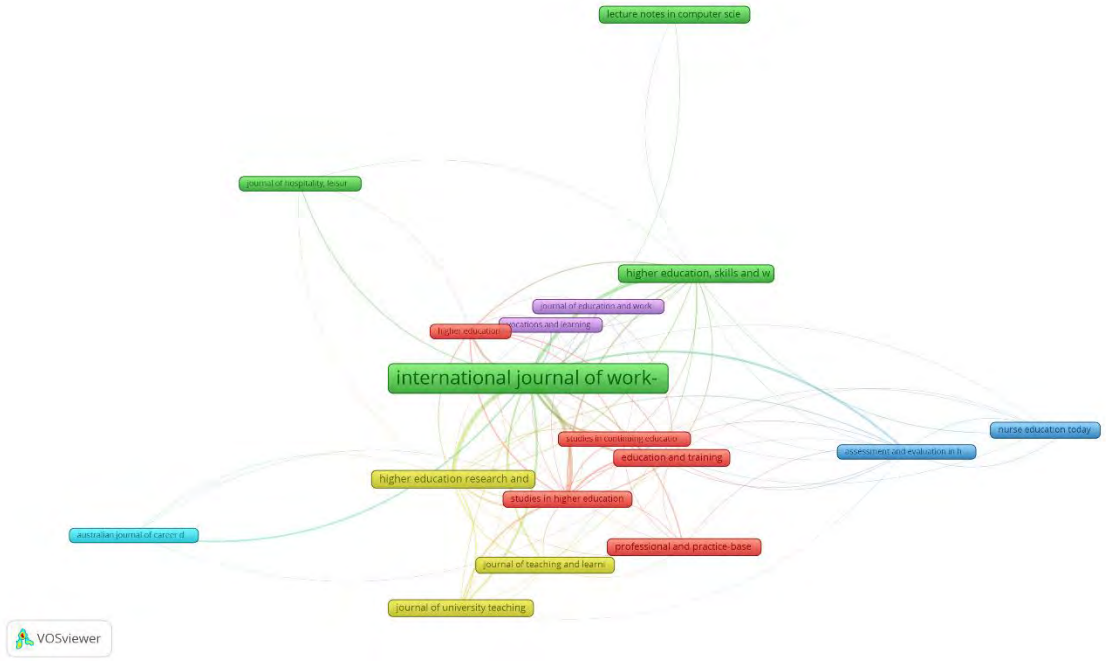
The next journal is the *Journal of Cooperative Education and Internships* (previously known as *Journal of Cooperative Education*), which has received 297 citations and has a total of 4909 TLS, however, this journal has now been retired.

Furthermore, *Assessment and Evaluation in Higher Education*, with 296 citations and a TLS of 5,590, highlighting its focus on educational assessment practices; and *Journal of Education and Work*, with 213 citations and a TLS of 4,497, which bridges the gap between education and the workplace. *The Higher Education, Skills and Work-Based Learning* journal, with 208 citations and a TLS of 4,197, emphasizes the integration of skills within higher education. *Nurse Education Today* is particularly significant in healthcare, with 202 citations and a TLS of 3,096. *Teaching in Higher Education* and *Studies in Continuing Education* contributes meaningfully to pedagogy and lifelong learning discussions, with 201 citations (TLS 4,106) and 174 (TLS 3,252). Additional journals like the *Journal of Teaching and Learning for Graduate Employability* and the *Journal of Workplace Learning* illustrate the focus on employability and workplace learning with citations and TLS values indicative of their niche influence. The presence of journals such as *Journal of Vocational Behaviour*, *Journal of Cooperative Education*, and *Medical Education* further underscores the diversity of WIL research across various professional and educational settings.

Figure 7 presents a visualization in which the distance between two journals represents the degree to which the journals are related regarding their co-citation relationships. The greater the physical proximity between two journals, the more closely they are associated. The image represents a visualization of the top co-cited journals generated using VOSviewer. The *International Journal of Work-Integrated Learning* is prominently featured at the center, indicating its high citation frequency. It is connected to other journals in different fields and represented by different colours. Some notable connections include *Higher Education Skills and Work-Based Learning, Lecture Notes in Computer Science, Nurse Education Today*, and *Journal of Education and Work*. The network shows the interdisciplinary nature of citations, with clusters indicating related fields such as higher education, vocational training, and professional practices. The visualization effectively highlights the interconnectedness of research across various domains. The visualization also reveals distinct clusters representing thematic groupings within the cited journals. For example, journals related to higher education and vocational training, such as *Higher Education Research and Development* and *Studies in Continuing Education*, are closely linked, suggesting a solid citation relationship.

Similarly, the *Nurse Education Today* cluster and *Assessment and Evaluation in Higher Education* indicate a focused area of research within health education and evaluation. The *Lecture Notes in Computer Science* suggest an intersection of educational research with technological advancements. This network map highlights the influential journals within these interconnected fields and provides insight into how different research areas are interrelated, underscoring the multidisciplinary nature of contemporary academic scholarship.

FIGURE 7: Visualization of the top-cited journals.



The Most Impactful Publications

According to the findings of this analysis, 1,392 publications about WIL research have been produced and published in 543 publishers. Table 6 lists the top 20 journals based on each publication's total number of papers. This ranking was arrived at by applying the statistics found in Table 1 to the available information. In general, articles based on research done on WIL have been published in a wide variety of publications worldwide. It covers various subject areas: education, higher education, nurse education, teaching and learning, vocational education and training, engineering, tourism, sport, leisure, hospitality, medical, health science, and the workplace. Because of this, it is accurate to assert that WIL is a subject of investigation in various academic domains. It has to be noted that most articles published in journals primarily concerned with educational research and higher education. The leading 20 most influential journals in connection with the WIL article are presented in Table 5 ranked by the number of documents, citations, and total link strength (TLS). The *International Journal of Work-Integrating Learning* leads with 274 papers, 3209 citations, and a TLS of 604, indicating its prominence in the field. Following it, *Higher Education, Skills and Work-Based Learning* and *Higher Education Research and Development* also show significant impact, with 38 and 36 documents, respectively, and high citation counts of 453 and 880. Other notable journals include *Journal of University Teaching and Learning Process, Professional and Practice-Based Learning*, and *Education + Training*. These journals cover various topics, from computer science applications to nursing education, demonstrating work-integrated learning research's diverse applications and interdisciplinary nature. The high citation counts and TLS values reflect the journals' influence and the interconnectedness of research within this domain.

TABLE 5: Top 20 impactful journals focused on work-integrated learning.

Sources	∑ Documents	∑ Citations	∑ TLS
International Journal of Work-Integrating Learning	274	3,209	604
Higher Education, Skills and Work-Based Learning	38	453	126
Higher Education Research & Development	36	880	221
Journal of University Teaching and Learning Process	27	329	73
Professional and Practice-Based Learning	24	154	26
Education + Training	23	421	102
Lecture Notes in Computer Science (including subseries Lectures in Artificial Intelligence)	21	167	3
Studies in Higher Education	16	892	202
Journal of Teaching and Learning for Graduate Employability	12	146	44
Nurse Education Today	11	471	10
Nurse Education in Practice	10	155	7
International Journal of Learning	10	53	0
Higher Education	9	514	77
Asia Pacific Media Educator	9	48	15
ASEE Annual Conference and Exposition, Conference Proceedings	9	9	9
Vocations and Learning	8	195	39
Studies in Health Technology and Informatics	8	82	3
Studies in Continuing Education	8	190	63
African Journal of Hospitality, Tourism and Leisure	8	13	18
Education Sciences	8	42	9

Note. The bold text in the ∑ citation column shows the four journals with the most citations.

The top three most-cited journals, detailed in Table 5, are the *International Journal of Work-Integrated Learning*, which is the most prominent with 274 articles, 3,209 citations, and a total link strength (TLS) of 604, indicating its significant influence in the field. *Studies in Higher Education* follows with 16 articles, 892 citations, and a TLS of 179, reflecting its substantial impact on higher education studies related to WIL. *Higher Education Research & Development*, with 36 articles, 880 citations, and a TLS of 187, is crucial in disseminating research on higher education practices.

The table further highlights the diversity within WIL research, encompassing various specialized fields. For instance, *Lecture Notes in Computer Science* focuses on artificial intelligence, and *Nurse Education Today* indicates the application of work-integrated learning across different professional domains. Journals like *Studies in Higher Education* and *Education + Training* emphasize pedagogical research, while *Journal of Teaching and Learning for Graduate Employability* specifically targets post-graduate outcomes. Including niche publications such as *Asia Pacific Media Educator* and *Studies in Health Technology and Informatics*, showcases the geographical and technological breadth of the research The total link strength (TLS) values further underscore the collaborative and interconnected nature of research across these journals, reflecting a vibrant and dynamic academic community dedicated to advancing work-integrated learning practices.

Trends in Most Frequently Used Author Keywords

Using the chosen keywords, the relationship between several different areas of study was discovered. In addition, the frequency of keywords is a valuable tool for determining the primary research focuses of publications about this subject area. Co-occurrence analyses were chosen from the VOSviewer's menu to create a network map with the maximum density of the author's most frequently used keywords. It was done to uncover common topics covered by WIL research. The option to search for an author's name using a keyword was chosen, and the minimum required number of times the term appeared was set to five. In addition, the phrase "WIL" was from the list to make the map simpler to understand. The map generated by these criteria can be found in Figure 8. It shows the distribution of 107 keywords out of 1,867 that meet this condition. The nodes' size on the map represents how densely the keywords are distributed throughout the map. The sphericity of the network's nodes represents the frequency with which each pair of keywords appears in the same document. When there is less space between two keywords, there will be a higher likelihood of appearing together in the text.

Figure 8 provides insights into a keyword analysis of WIL research. The keywords "work-integrated learning" (861 occurrences), "students" (160), "human" (128), "learning" (123), "employability" (121), and "education" (117) are highlighted as the most common. A deep analysis reveals that "work-integrated learning" is the predominant term, indicating its central importance in the research literature, evidenced by its high occurrence and significant total link strength of 2,391. It implies that "work-integrated learning" is frequently mentioned and heavily interconnected with other terms, showcasing its foundational role in the discourse. The term "human," ranking second, suggests a focus on the human element within work-integrated learning, possibly emphasizing the impact of these educational practices on individuals.

The strong connection between "work-integrated learning" and "human" suggests that studies often explore how WIL affects human factors such as skills development, employability, and personal growth. Their proximity in keyword analyses implies that research frequently examines the intersection of these concepts, potentially focusing on how integrating work experiences within educational programs benefits students and enhances their employability. Furthermore, the presence of keywords like "students," "learning," "employability," and "education" indicates a comprehensive research agenda that covers the various facets of work-integrated learning. "Students" and "learning" highlight the target group and the process involved, while "employability" underscores the ultimate goal of these programs—to improve job readiness and career outcomes for learners. "Education" as a frequent keyword reinforces the broad academic and practical context in which work-integrated learning is situated.

FIGURE 8: Visualization of the top-used author keywords on work-integrated learning.

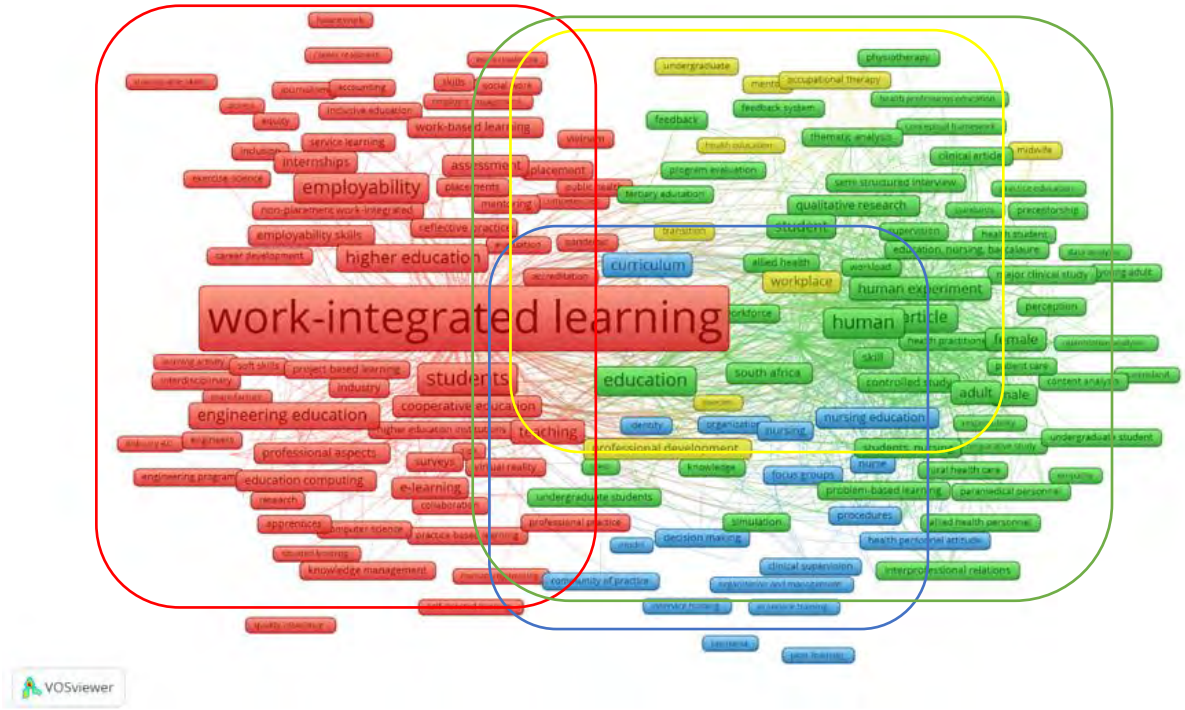


Figure 8 displays the primary research areas within WIL organized into four clusters. Due to the prominent role of "work-integrated learning" keywords, this area is the most popular in WIL studies, reflected in the diverse topics covered in these clusters. The red cluster, which includes keywords such as "student," "employability," "higher education," "engineering education," "work-based learning," "cooperative education," "internship," and "work experience," highlights a focus on integrating practical work experiences into educational curricula. This cluster emphasizes the connection between academic programs and real-world work environments, aiming to enhance students' employability and practical skills through hands-on learning opportunities.

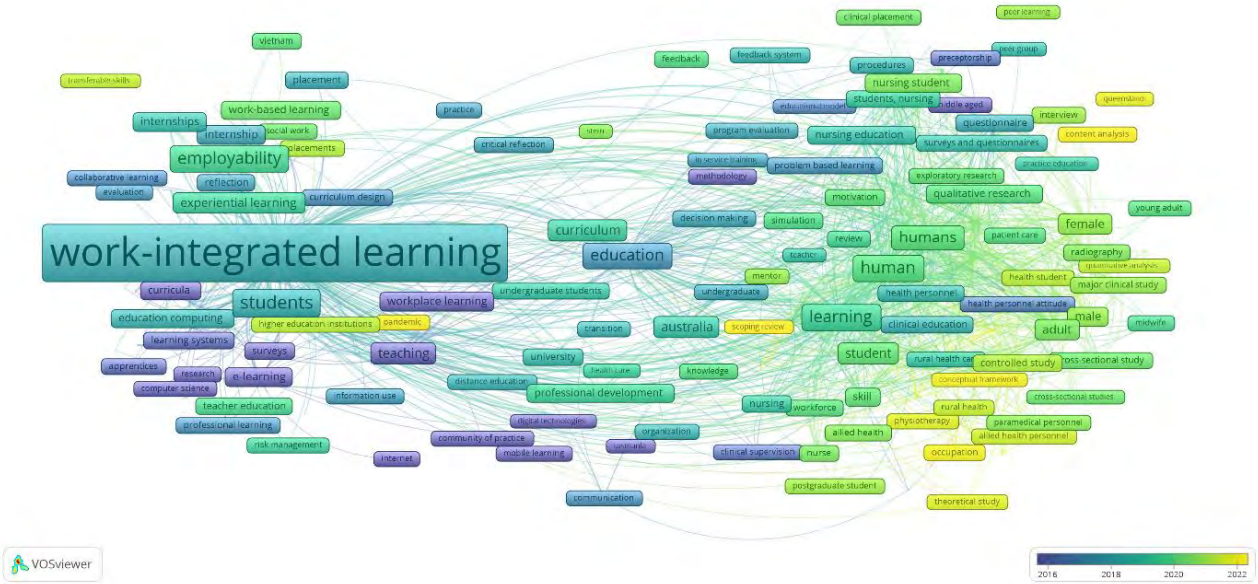
Moreover, the green cluster encompasses keywords like "education," "human," "learning," "skill," "Australia," "clinical competence," and "practice education." It focuses on the broader educational context, including developing human skills and competencies. Including "Australia" suggests a significant body of research originating from or focusing on this region, particularly in clinical and practical education settings where skill development and human factors are critical. The blue cluster is primarily related to "curriculum," "nursing education," "procedures," "health personal attitude," and "clinical supervision." This cluster signifies a concentration on the healthcare sector, particularly nursing education. It explores how curricula and educational procedures impact healthcare professionals' attitudes and competencies, emphasizing clinical supervision and hands-on training to ensure high standards of care and professional preparedness.

Finally, the yellow cluster is associated with keywords such as "professional development," "workplace," "occupational therapy," "transition," "mentor," and "undergraduate." This cluster focuses on transitioning from education to professional practice, highlighting the importance of mentoring and professional development in occupational therapy and other fields. It underscores the role of the

workplace in continuing education and professional skills development, especially for undergraduates transitioning into their careers.

Figure 9 illustrates a global perspective on WIL research by analyzing the most frequently occurring keywords in the papers. This analysis reveals that WIL is predominantly applied in educational contexts, with a strong presence in clinical, engineering, and higher education. Furthermore, WIL is closely associated with work-based learning, case studies, simulations, work placements, and professional development. It also plays a significant role in curriculum development, learning outcomes, competencies, graduate attributes, skills development, internships, and assessments. At its core, WIL aims to equip students with practical skills that enhance their employability. Integrating WIL into such a comprehensive framework has garnered substantial recognition from academics and educators, significantly contributing to the field's advancement and research progression.

FIGURE 9: The overlay visualization.



The overlay visualization in Figure 9 represents the complex relationships and trends associated with WIL over time, as shown by a network of interconnected concepts. At the center of this visualization, WIL is prominently displayed in a large teal node, signifying its centrality and importance. Surrounding it are numerous interconnected nodes, varying in color and size, which indicate their relationship strength and relevance over time. The color gradient from yellow to blue represents the timeline from 2018 to 2023, with yellow nodes indicating older concepts and blue nodes representing more recent developments. Key themes such as "employability," "education," "students," "nursing education," and "learning" are prominently linked to WIL, each connected to various sub-themes like "experiential learning," "curriculum," "teaching," and "human." The presence of terms like "nursing student," "clinical education," and "health personnel" indicates a strong connection between WIL and healthcare education, highlighting its application in professional fields. Additionally, concepts such as "pandemic" and "problem-based learning" illustrate the impact of contemporary challenges and pedagogical approaches on WIL. This overlay visualization effectively captures the evolving landscape

of work-integrated learning, emphasizing its dynamic interaction with various educational, professional, and societal factors.

The Most Cited Authors

Tracking the number of times an author's work has been referenced in other articles (also known as citations), citation analysis is a beneficial instrument for determining an author's level of impact within a specific subject. The following criteria are used in the citation analysis that is carried out to construct the authors' network graph for those with the highest citations. When conducting the analysis using VOSviewer, the minimum number of documents an author must have was adjusted to 1, allowing for broader inclusion of authors with fewer publications. In contrast, the minimum number of author citations was changed to 100 to ensure the analysis focuses on authors with a significant impact in terms of citation count, highlighting those who have made substantial contributions to the field. Then, adjusting the minimum number of papers required for an author was one way to accommodate Denise Jackson, a researcher who substantially affected this area's development. The network map of the 15 writers who match these requirements is provided in Figure 10 while Table 6 displays the top 15 most-cited authors regarding total citation counts. Both are shown below. According to the findings, the authors who received the most citations were Denise Jackson (28 articles, 1,718 citations), Karsten Zegwaard (15 articles, 512 citations), Sonia Ferns (20 articles, 458 citations), Jenny Fleming (16 articles, 372 citations), and Calvin Smith (7 articles, 353 citations).

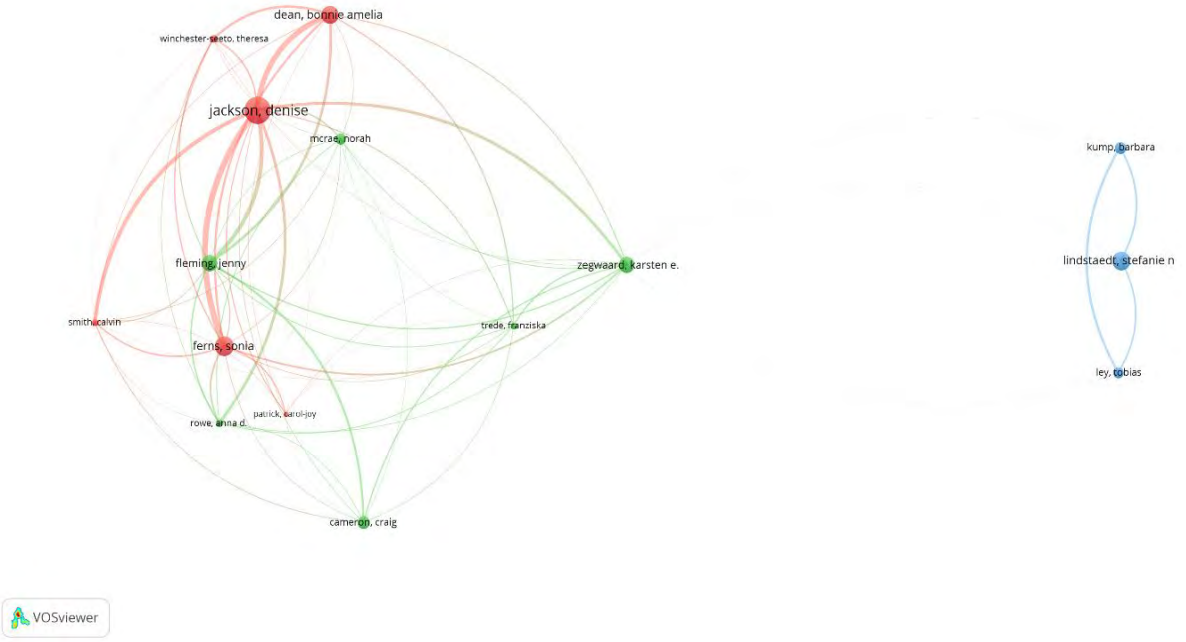
TABLE 6: The rank of the most-cited authors.

Author	Documents	Citations	Citations per Articles	Total Link Strength
Jackson, Denise	28	1,718	61.35	140
Zegwaard, Karsten E	15	512	34.13	60
Ferns, Sonia	20	458	22.90	86
Fleming, Jenny	16	372	23.25	74
Smith, Calvin	7	353	50.43	45
Rowe, Anna D	8	254	31.75	49
Trede, Franziska	7	240	34.28	35
Lindstaedt, Stefanie N	19	239	12.57	18
Ley Tobias	11	214	19.45	20
Kump, Barbara	12	192	16.00	21
Patrick, Carol-Joy	5	182	36.40	21
Dean, Bonnie Amelia	18	175	9.72	77
Winchester-Seeto, Theresa	8	165	20.65	38
Cameron, Craig	13	162	12.46	35
McRae, Norah	11	140	12.72	33

The network map in Figure 10 illustrates that 15 authors received 2,983 citations in WIL research. The nodes' relatedness and size correlate with the author's citation frequency. Furthermore, the sizes of the nodes reflect the connected author's quantity of references. The map displays three unique clusters produced by multiple authors' collaborative efforts. For example, the analysis of the red cluster reveals that at one of its nodes, Denise Jackson, Sonia Ferns, Bonnie Amelia Dean, Theresa Winchester-Seeto, Calvin Smith, and Carol-joy Patrick all collaboratively contributed to the writing of an article about WIL. As the Green Cluster authors' work increasingly focuses on a wide variety of WIL models and

contexts, research is needed to establish a robust evidence base, deepen comprehension, and facilitate well-informed decision-making to propel practice forward. Zegwaard and Fleming have written the most-cited papers in this group (Fleming & Zegwaard, 2018). Within the red cluster, its authors dispersed into several loose collectives. The most-cited author in one cluster, Denise Jackson has networks in another.

FIGURE 10: Visualization of the top-cited authors in work-integrated learning publications.



Expanding Research Horizons in Work-Integrated Learning Across Various Domains

WIL, however, is an umbrella term for various models using different terms. Some terms related to WIL include cooperative education, work placements, internships, field placements, and practicums. The terms associated with WIL will be discussed in this section to strengthen this bibliometric analysis. These are different WIL models, but not all published articles about these models use the term WIL in the article.

The literature on WIL consistently explores various models, such as cooperative education (Campbell & Zegwaard, 2011; Zegwaard & Coll, 2011b; Zegwaard & Hoskyn, 2015), work placements (Gribble, 2014; Martin et al., 2019; Wilton, 2012), internships, field placements, and practicums. These models share a common goal: integrating learning with practical experience in a professional setting. A significant body of research, indexed in Scopus, examines these models and highlights their roles in enhancing student employability, professional development, and skill acquisition. Regarding prevalence, cooperative education is explored in 46 papers, work placements in 74, internships in 143, field placements in five, and practicums in 38. While each model has nuances in implementation, the overarching benefits and challenges remain consistent across all forms of WIL. These include providing students with practical insights and experiences essential for their professional development, fostering a professional mindset, and enhancing employability by bridging the gap between theoretical knowledge and real-world application.

Key authors such as Denise Jackson and Karsten Zegwaard contribute significantly to the discourse on WIL, particularly in cooperative education and work placements, emphasizing the importance of aligning these experiences with students' career aspirations. The literature also discusses the challenges of assessing workplace learning (Zegwaard et al., 2003), particularly ensuring that WIL experiences are meaningful and contribute to students' long-term career success. In addition to traditional models, the literature acknowledges the evolving nature of WIL, especially in response to challenges like the COVID-19 pandemic. It has led to the adaptation of virtual internships (Theelen et al., 2020) and online WIL activities, which maintain the core objectives of WIL while accommodating new modes of learning and working (Dean & Campbell, 2020; Rook & Dean, 2023; Zegwaard et al., 2020).

In summary, while different terms and models of WIL are discussed, the analysis reveals that they serve the same fundamental purpose: integrating academic learning with practical experience. The research underscores the value of WIL in preparing students for the professional world, enhancing their employability, and contributing to their personal and professional growth.

The five interconnected principles related to WIL can offer academics valuable insights for exploring new research areas they want to pursue. Multiple perspectives can be derived from the terms provided here when researching the WIL issue. While some individuals have examined different facets of WIL, numerous components of WIL remain that have yet to be thoroughly investigated (Table 7).

TABLE 7: WIL with other related terms in Scopus article journals.

Terms related to WIL	∑ Articles Journal in Scopus	Article with the most citations	
		Title	∑ citations
Cooperative education	46	Role of work-integrated learning in developing professionalism and professional identity (Trede, 2012)	146
Work placements	72	Employability skill development in work-integrated learning: Barriers and best practice (Jackson, 2015)	443
Internships	143	The importance of teaching and learning resilience in the health disciplines: A critical review of the literature (McAllister & McKinnon, 2009)	325
Field placements	5	Counselling placements caught up in the mismatch of standards and realities: Lessons from COVID-19 (Pelden & Banham, 2020)	3
Practicums	38	Towards a theory of the ecology of reflection: Reflective practice for experiential learning in higher education (Harvey et al., 2016)	69

LIMITATION

Conducting a bibliometric study involves several challenges, particularly in the selection and assessment of data. One of the critical difficulties lies in determining the appropriate level of maturity and growth within a given field. In this context, the limitations of this bibliometric approach become evident. The primary limitation of this study is its exclusive reliance on papers sourced from the Scopus database. Scopus provides a robust collection of peer-reviewed articles in education and social sciences (Hallinger & Kovačević, 2019). However, it does not comprehensively compile all relevant literature

(Mongeon & Paul-Hus, 2016). The nature of the findings could vary significantly if other databases were included in the analysis, affecting the study's conclusions.

Furthermore, its effectiveness depends on the researchers' ability to formulate precise research questions. Access to comprehensive and raw data from Scopus is crucial for advancing bibliometric research, enabling more accurate and practical findings while reducing the risk of erroneous results. Future studies will benefit from the ability to select high-quality, vetted articles that best suit the specific research objectives. Additionally, a direct search on Scopus using the same keywords yielded no results related to WIL, highlighting discrepancies in the data monitoring process and the need for more refined analysis in future research.

CONCLUSION

In this study, 1,392 papers were found using the Scopus database by employing keywords associated with WIL between 2002 and 2023. An examination of bibliometric mapping was utilized in this work to shed light on the existing research situations, trends, and difficulties associated with expanding research in WIL. Citation, co-citation, and co-occurrence approaches were utilized to carry out this investigation. This study aimed to analyze certain general tendencies pertaining to expanding collaborative networks. Throughout the last few years, there has been a substantial growth in the number of publications that pertain to WIL. It has increased the overall quantity of high-quality research results used as references in later studies. Notably, this expansion has occurred throughout the past few years.

Since 2013, there has been a discernible rise in the quantity and quality of research conducted on WIL. This may be seen in the expanding number of authors and references, the growing collaboration of authors, and the increased collaboration across institutions and countries. The 774 articles produced in Australasia and identified as part of the study significantly contribute to this. Denise Jackson, Edith Cowan University, is the most prolific writer regarding the number of publications produced (28) and the number of citations received (1,718). The *International Journal of Work-Integrated Learning* publishes the most WIL articles (274), and it has the highest number of citations (3,209).

This study also describes WIL as having links that may apply to many areas of the research community. The outcomes of this study can provide researchers with an overview and some guidance, allowing them to assess whether or not specific issues are significant enough to justify future research. It is also possible to use it to identify networking teams to organize collaborations and comparisons with researchers from around the world.

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