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EXPERIENTIAL LEARNING IN HIGHER EDUCATION: A BIBLIOMETRIC ANALYSIS FROM 1991 TO 2024

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Abstract. Aiming to prepare students to adapt to the rapid changes of a new era, experiential learning activities have been studied extensively. However, previous academic work has primarily focused on specific topics rather than the broader picture. There remains a paucity of studies that systematically synthesise and critically map the development of experiential learning literature. The paper addresses a research gap by conducting a bibliometric analysis of 584 Scopus-indexed articles (1991-2024), using descriptive and science mapping techniques to benefit researchers, lecturers and policymakers by examining the development, trends, and future directions of experiential learning research. The analysis revealed three phases of experiential learning studies in the literature: the budding phase, the fluctuation phase, and the rapid development phase. Among the 20 most-published journals, Q1- and Q2-ranked journals, including the International Journal of Sustainability in Higher Education and the Journal of Experiential Education, primarily contribute to the development of academic knowledge on experiential learning. Furthermore, three thematic clusters, covering technology-based experiential learning, student-centred teaching and learning, and initiatives in engineering education, were identified through keyword analysis regarding the experiential learning research structure. Future research on experiential learning is recommended to focus on educational innovations and sustainable development in the execution of experiential learning activities.

Keywords: experiential learning, higher education, bibliometric analysis, Scopus database.

1. Introduction

The approach to experiential learning dates back to the statement: "Learning takes place through the active behaviour of the student: it is what he does that he learns, not what the teacher does" [1; 63]. Tyler (1949) was regarded as the author who led the experiential learning approach [2]. In the area of education and training, experiential learning has been introduced for over 40 years [3]. It is seen as "the process whereby knowledge is created through the transformation of experience" [3, p.20]. Experiential learning emphasises "experience" and "learning", with learning as the process of producing knowledge and experience playing a vital role in the cognitive process [3] and in nurturing learners' competencies by integrating and broadening their body of knowledge [4]. Experiential learning, as a promise to prepare students to adapt to rapid changes in a new era, has a profound impact on "constructivist ideas in pedagogy and andragogy"

[2, p.1204]. University students are encouraged to become "active learners and global citizens" [5, p.701] through activities outside the classroom.

In the field of experiential learning, different study methods were adopted. Firstly, qualitative methods were widely used [6-8]. Secondly, studies on experiential learning employed quantitative methods [9-11]. Thirdly, mixed methods were used to study experiential learning [12-14].

Prior research has sought to deepen the understanding of experiential learning. However, these articles have contributed to the field of experiential learning by focusing on specific topics. They captured a limited picture of the whole field of experiential learning. While prior studies on experiential learning have been conducted by using different methods, applying bibliometric analysis, a quantitative method used to evaluate "patterns, trends, and the impact of scholarly publications" [15, p.2], remains under-researched. The bibliometric analysis has been widely used in management and organisation [16] and in medical education research [17], but appears new to educational sciences [18]. The current study aims to employ a bibliometric approach to map a large number of publications, providing a comprehensive and trend-based review of the development of educational science at the university level.

The study aims to answer the following three research questions (RQ): RQ1- What are the publication trends in the experiential learning field? RQ2- Which journals and documents are the most influential in the experiential learning field? RQ3- What are the most frequently investigated topics in the experiential learning field? The first and second research questions are to identify the evolution of experiential learning studies over the years. The third is to provide feasible trends for future research in the field of experiential learning publications.

2. Content

2.1. Methodology

Bibliometrics is the study whose primary aim is to underline the links between published works [19]. Bibliometric analysis is recognised as a superior approach to traditional systematic literature reviews due to its ability to handle large datasets, analyse citation networks, extract publications by year [15], and navigate emerging scientific landscapes [20]. Bibliometric analysis, comprising research performance analysis and science mapping, is employed in this study.

2.1.1. Selection of databases

The first step of this study was to identify the database used. The database chosen for this study was Scopus, which was inaugurated in 2004 with 12,850 journals [21] and was "the most frequently adopted global citation data source" [22]. The Scopus index provides superior coverage of relevant education journals compared with the Web of Science [18], [23]. Its bibliographic data are more thorough than those of Google Scholar [16], making it "the most satisfactory repository" [18; 4] for use in research employing systematic reviews.

2.1.2. Search criteria

Scopus filters were applied to identify inappropriate documents using four criteria (Table 1). Firstly, three types of documents were selected, including articles, book chapters, and conference papers. Secondly, the subject areas were Social Sciences. Thirdly, the documents were published in English. Fourth, the search was not limited to a given timeframe. However, the search was conducted in February 2025, which means the 2025 databases were insufficient. Thus, 2025 was an exceptional year for the search for published years.

2.1.3. Identification of sources

The terms "experiential learning" and "higher education" were the keywords entered into the Scopus search form at 16:00 on February 20, 2025. The primary search finding showed 1,709 documents. The guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses [24] or PRISMA were followed for selecting and summarising the initial search results

(Figure 1). The dataset was filtered to include 1168 documents during the screening step. The next step is to manually review the titles, abstracts, and keywords to assess relevance, yielding a final dataset of 584 eligible documents, comprising 73 conference papers, 34 book chapters, and 477 articles.

2.1.4. Data analysis

This study employed descriptive analysis and bibliometric visualisation. First, Microsoft Excel was used to calculate the number of documents published annually and to identify the top journals by publication count. Secondly, the VOSviewer (version 1.6.20), released on October 31, 2023, was used to construct and visualise bibliometric maps of science [25] and to explore bibliometric networks for experiential learning.

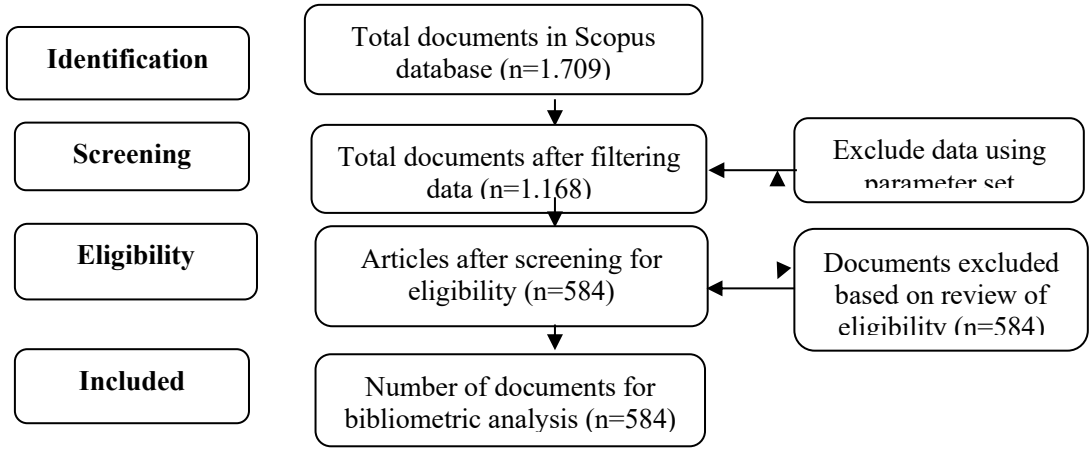

Figure 1. The PRISMA diagram for selecting documents for bibliometric analysis

2.2. Results

2.2.1. Trends of experiential learning publications

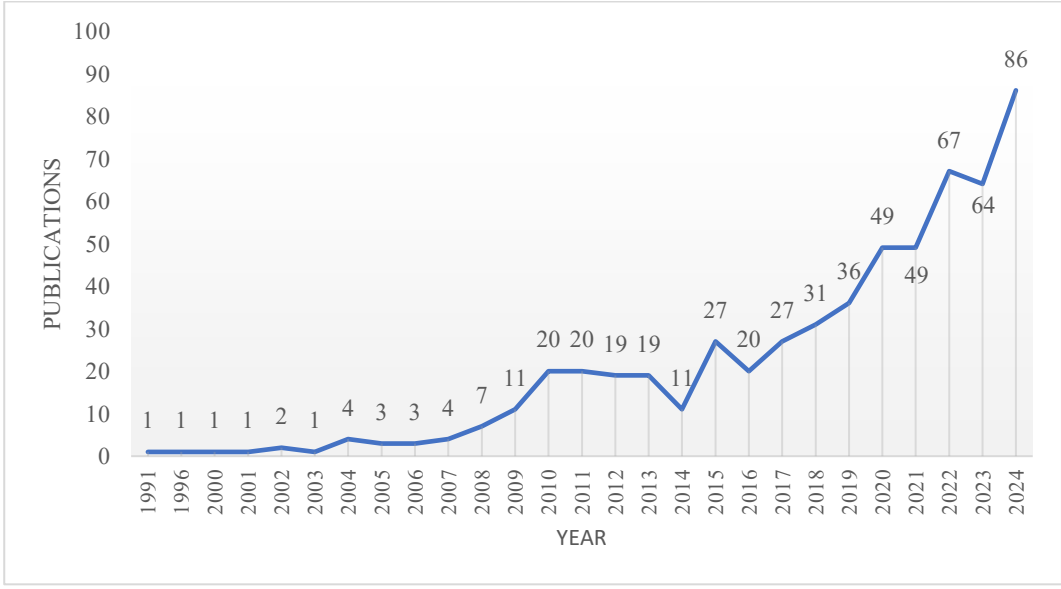

Figure 2. Publications on experiential learning from 1991 to 2024

The number of published articles can indicate the discipline's publication tendency. Therefore, the publication output was analysed by counting the number of publications related to experiential learning each year. As illustrated in Figure 2, the total number of publications in

experiential learning has increased significantly over the past three decades, indicating rapid progress in the field. A total of 584 articles were published from 1991 to 2024, with an average of 17 papers per year. As illustrated in Figure 2, three phases of experiential learning studies can be grouped as follows: the initial phase (from 1991 to 2011), the fluctuation phase (from 2012 to 2015), and the rapid development phase (from 2016 to 2024). In the early phase, experiential learning research evolved steadily, with 20–30 publications, followed by fluctuations, with the number dropping to 11 before rising again. From 2016 onward, the field grew rapidly, tripling to 67 and peaking at 86 publications in 2024 despite a slight dip in 2023.

2.2.2. Key journals of experiential learning

The most relevant sources for experiential learning publications are presented in Figure 3. Among the 20 most published journals, 50%, 40%, and 10% were indexed in the first, second, and fourth quartiles of Scopus, respectively. The most popular journal was the Journal of Experiential Education. Of the 175 papers, 19 were sourced from the journal (10.9%). This was closely followed by the International Journal of Sustainability in Higher Education, with 18 papers (10.3%). These two journals were listed in the first and second quartiles of the Scopus database.

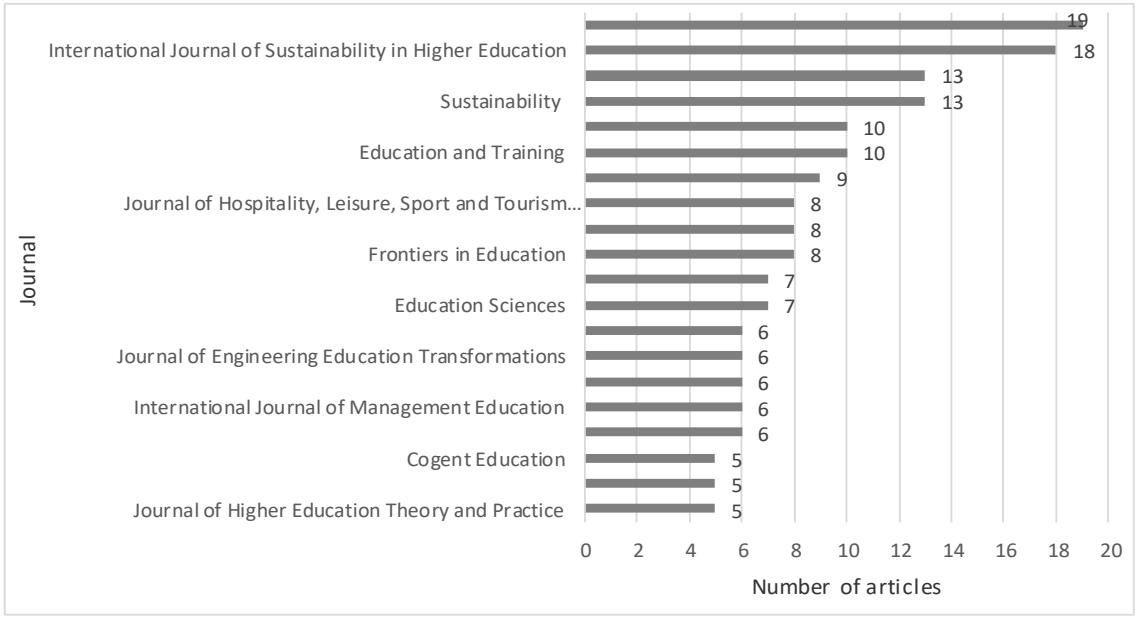

Figure 3. Most relevant journal sources for experiential learning papers from 1991 to 2024

2.2.3. Impactful documents in the experiential learning field

To identify influential publications in the experiential learning research, this study applied bibliographic coupling analysis with 584 articles, using VOSviewer, setting a threshold of 10 citations per article and presenting the paper's total link strength, which represents "the number of links of an item with other items" [26; 6]. Figure 4 highlights Sipos et al. (2008) [27] as the central node with 544 citations and a link strength of 67, underscoring its foundational role. In their paper published in the Q1 journal, Sipos et al. (2008) stated that learning objectives were organised into the cognitive, psychomotor, and affective domains. Brundiers et al. (2010) [28] and Healey (2000) [29] are key nodes, cited 412 and 336 times, with link strengths of 16 and 62, respectively. Healey (2000) illustrated Kolb's theory in geography education, while Brundiers et al. (2010) examined competencies for real-world learning based on Kolb's framework.

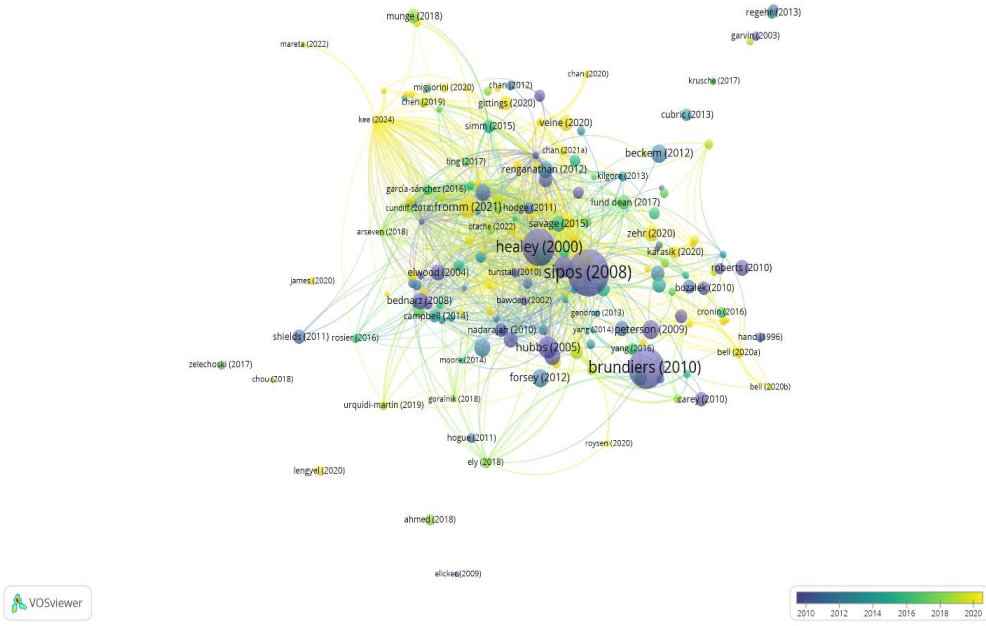

Figure 4. Visualisation diagram of bibliographic coupling by documents

2.2.4. Core areas of focus in experiential learning publications

The co-occurrence of all keywords was analysed using a threshold of at least 10 occurrences each. Out of 2,341 keywords, 36 meet the threshold. Through co-occurrence analysis, three thematic clusters that illustrate the structure of experiential learning research were identified (Figure 5).

Cluster 1 (red): technology-based experiential learning. This cluster included the keywords concerning e-learning (26 times with link strength of 122), reflection (22; 48), active learning (20; 58), entrepreneurship education (16; 30), online learning (15; 48), collaborative learning (15; 54), virtual reality (15; 67), employability (14; 18), collaboration (14; 33), blended learning (13; 50), and assessment (11; 23). Articles [30-32] can be taken as examples. In contrast to traditional classroom-based learning, experiential learning was implemented via e-learning simulations [30] at a business-teaching university in the United Kingdom. Additionally, collaborative experiential learning was implemented at Glasgow Caledonian University by pairing novices to reflect on their computer programming experiences, thereby creating interactive, active learning environments [31]. Online experiential learning activities were implemented at the University of Missouri through online laboratory courses to improve second-year students' perceptions of the green building industry [32].

Cluster 2 (green): *student-centred teaching and learning*. The second cluster involves the keywords for learning (occurred 44 times, link strength of 194), teaching (43; 209), education (32; 178), student (23; 121), sustainability (22; 72), human (17; 106), problem-based learning (16; 67), curriculum (14; 74), study abroad (12; 23). Typical papers were published by Conner (2022) [33], Chen et al. (2023) [34], and Zarestky et al. (2024) [35]. According to Conner (2022) [33], Student activism on university campuses can serve as a vehicle for student-led teaching and learning, where student activists are likely to enhance experiential learning opportunities for their peers. Additionally, Chen et al. (2023) [34] investigated the teaching of data science by integrating Artificial Intelligence into an experiential learning platform. Zarestky et al. (2024) [35] asserted that students' study abroad opportunities should not be rated merely as travel experiences, but as contributions to local conservation issues.

Cluster 3 (blue): initiatives in engineering education. This cluster encompassed keywords related to students (occurring 78 times, with a link strength of 353), engineering education (49; 238), educational innovations (26; 129), learning systems (24; 131), education computing (23; 129), and sustainable development (12; 44). Several publications were reported [36-38]. Salinas-Navarro et al. (2023) suggested implementing "digitally enabled experiential learning spaces" [36, p.5] in engineering courses to develop the digital competencies students need and to help them approach digital technologies as required by Education 4.0. Similarly, Montesinos et al. (2023) [37] broadened transdisciplinary knowledge and skills among final-year biomedical engineering students by implementing a course that included industrial fieldwork activities at two large hospitals and a tertiary education institution in medical service in Mexico. Educational innovations in engineering education were applied to biotechnology engineering [38]. Immersive virtual reality has been shown to foster learning and engagement among fourth-year students in the analytical biotechnology engineering course.

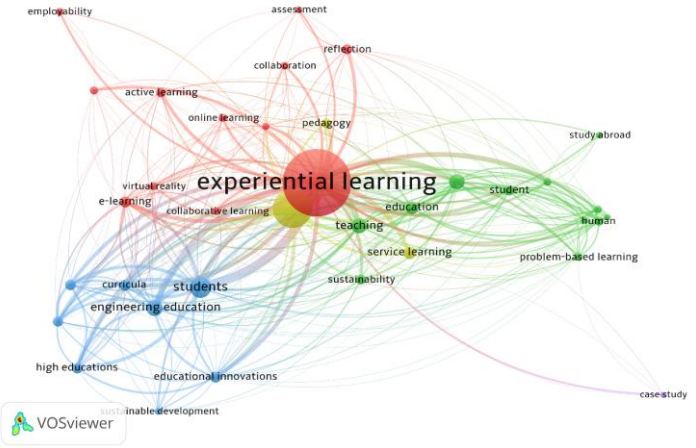

Figure 5. Keywords with at least 10 occurrences in 3 clusters

2.3. Discussions

This study conducted a quantitative analysis of the experiential learning sector, examining research productivity and future trends in this field. Analysis of Scopus data showed the field's initial publication in 1991 and an impressive increase to 68 publications by 2024. This finding correlates with trends in sustainable growth in tertiary education from 1998 to 2018 [39], which also encompassed three growth stages. The first stage began in 1998, followed by an accelerating increase in the third stage, culminating in 173 documents in 2018. The observed trend in this study was similar to that of blended learning [40] but contrary to game-based learning [41], suggesting that the development of experiential learning publications was closely associated with the increase in papers on blended learning, yet in contrast to the growth of publications on game-based learning.

The Q1-ranked journals make significant contributions to advancing academic knowledge [42]. The International Journal of Sustainability in Higher Education (Q1) and the Journal of Experiential Education (Q2) are the two highest-impact journals in the experiential learning theme. As its name suggests, the Journal of Experiential Education attracts the most publications in the experiential learning field, particularly in the subtopics of outdoor learning and service learning. The International Journal of Sustainability in Higher Education is likely a leading journal on sustainable development and environment-related cognitive education in higher education contexts. In the field of experiential learning, popular subtopics include sustainable community development, green ecovillages, sustainability education, and sustainable leadership. It is indicated that notable journals tend to attract scholars in both quantity and quality.

Finding highly cited papers is pivotal to identifying the most interesting areas [43]. The papers with very high citations were very powerful in the academic areas because they could "guide and shape the trajectory" [44, p.13] of scholarly development for future studies. The study by Sipos et al. (2008), which was cited 544 times, was the most influential reference in the experiential learning field and was recommended for further reference in subsequent papers.

Regarding research progress, the relationship between technology use and experiential learning has attracted extensive critical attention over the last fifteen years. The impact of technology leads to other forms of experiential learning that differ from traditional classroom-based learning. Novel forms of experiential learning include e-learning through game simulations [30] and online experiential learning activities [32]. This trend was similar to Phan et al. (2022) [45]. Phan et al. (2022) discovered that technology facilitated the widespread adoption of many blended and online courses in Language Management Systems, which grew quickly, especially during 2015-2020. Furthermore, Technology has played an essential role in developing job skills due to the implementation of experiential teaching and learning activities. Therefore, the recent increase in research works on experiential learning in higher education can be explained.

Furthermore, strong keywords suggest that experiential learning studies have shifted from direct experiential environments, such as visits to enterprises and short-term study abroad, to utilising technology to create online experiential learning environments. Another trend was observed in the application of experiential learning in engineering education [37-38].

3. Conclusions

In conclusion, several key findings were identified through a bibliometric analysis of knowledge mapping on experiential learning in higher education research from 1991 to 2024, along with related prior studies. Firstly, experiential learning has attracted significant scholarly attention, with 584 articles on tertiary education published from 1991 to 2024. Secondly, the two most notable journals were the Journal of Experiential Education and the International Journal of Sustainability in Higher Education, which together published 37 Scopus-indexed papers on experiential learning. Thirdly, Sipos (2008), Healey (2000), and Chupp (2010) played central positions in the citation network of influential publications in this field. Furthermore, the heated spots in the literature on experiential learning from 1991 to 2024 can be classified into three dimensions: technology-based experiential learning, student-centred experiential teaching and learning, and experiential learning initiatives in engineering education. Last but not least, future research on experiential learning is likely to focus on educational innovations and sustainable development in the implementation of experiential learning activities.

Two primary limitations arise from the methods of data collection and analysis employed in this study. Firstly, bibliometric research has a content limitation relating to data sources. The data sources included in the current research were English publications; therefore, future studies on experiential learning may benefit from including publications in French, Chinese, Russian, or other languages. Furthermore, since the data were sourced only from the Scopus database, published works in the experiential learning field from other indexes, such as Web of Science or PubMed, were not included. Subjects in mathematics, Health Professions, or other fields were also excluded from this study.

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