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SYSTEMATIC LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS OF EXPERIENTIAL LEARNING: AN ANALYSIS BASED ON THE SCOPUS DATABASE

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Abstract. Experiential Learning (EL) is a learner-centered learning pedagogical approach that emphasizes learning through hands-on experience and direct action, rather than the passive acquisition of knowledge from instructors or textbooks. Learners engage in hands-on activities, subsequently reflecting on, analyzing, and deriving lessons from those experiences to build knowledge and skills. This study adopts a bibliometric approach to analyze 1,632 documents retrieved from the Scopus database, utilizing VOSviewer and the R package Bibliometrix to systematically examine research trends in experiential learning within the field of education from 1980 to 2024. The analysis identifies key research themes, leading authors, influential sources, and highly cited publications, while also examining publication output, growth trajectories, and the global geographical distribution of scholarly works on experiential learning in the field of education. The results indicate that the number of studies on this topic has increased significantly, especially between 2014 and 2024, and originating primarily from the United States and other developed countries, with scientific articles serving as the predominant format. Key research trends include technology integration, the application of virtual reality (AR), and digital simulations in education, particularly in STEM education.

Keywords: Experiential Learning (EL), bibliometric, Scopus, STEM, biblioshiny, VOSviewer, scientometrics.

1. Introduction

Against the backdrop of educational innovation in the 21st century, pedagogy has transcended the traditional model that focused exclusively on knowledge transfer, evolving into an active, learner-centered approach, whereby learners are encouraged to participate actively instead of passively receiving information. This shift is aimed to meet the developmental needs of society, emphasizing the importance of leveraging diverse sources of knowledge, promoting collaboration, and developing essential skills - key factors for future success [1], [2]. Experiential Learning (EL) is considered an advanced approach to achieve this goal. EL, rooted in Kolb's philosophy, asserts that knowledge is not merely acquired but is constructed through a cyclical process of experiencing, reflecting, conceptualizing, and experimenting. This model enables learners to engage directly in practical activities, thereby cultivating a deep

understanding and developing problem-solving skills in specific contexts [3]. EL establishes a bridge between theory and practice, facilitating "learn by doing", to develop profound understanding and problem-solving skills in real-life situations [4]. This approach not only fosters creative thinking and adaptability but also contributes to the formation of a generation of dynamic, responsible, and future-ready global citizens [5]. Consequently, experiential learning has been increasingly adopted across educational levels and disciplinary domains, ranging from general education and vocational training to higher education, professional development, and interdisciplinary learning environments.

This growing recognition of the pedagogical value and experiential learninghas been accompanied by a surge in scholarly attention, reflected in the expanding body of academic literature on the topic. To provide a systematic overview of experiential learning in education, this study employs bibliometric analysis to examine data obtained from the Scopus database. Bibliometric analysis a powerful methodology for quantitatively assessing research contributions and advances within a given field [6]. By evaluating various bibliometric indicators - such as annual publication volume, geographical distribution of prominent authors, and keywords - this study aims to construct a comprehensive and up-to-date map of the experiential learning research landscape. This map identifies current global EL research trends, influential countries, authors, and sources, while highlighting potential research directions. Although several bibliometric and review studies on experiential learning have been conducted, existing research remains fragmented and often limited to specific timeframes, educational levels, or regional contexts [3], [7], [8]. To date, no comprehensive bibliometric assessment has systematically examined the evolution of experiential learning research over the extended period from 1980 to 2024. This study seeks to address this gap by providing a longitudinal and comprehensive analysis of the global experiential learning research landscape. To achieve this goal, the study addresses three research questions: (1) What is the volume, growth pattern, and geographical distribution of publications on experiential learning worldwide?; (2) What are the main research directions in experiential learning and their development trends? (3) Who are the leading authors and research groups researching experiential learning in terms of publications and citations?

2. Content

2.1. Methodology

The Scopus database, provided by Elsevier, was utilized as the primary source of data for this study. Scopus is widely recognized as one of the most reputable academic databases, indexing exclusively high-quality journals that adhere to international standards and are subject to rigorous peer review within the scientific community. Its multidisciplinary coverage ensures a comprehensive perspective on the literature related to experiential learning in education [9]. Furthermore, the selection of Scopus was further justified by the criteria outlined by Falagas et al [10]. Specifically, Scopus offers established quality indicators such as the SCImago Journal Rank (SJR); it provides approximately 20% broader coverage than Web of Science, Google Scholar [11], [12]; and it facilitates the simultaneous downloading of large bibliographic datasets. These features render Scopus a particularly suitable database for this research.

The study was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement [13]. Within the field of education, numerous previous works have employed PRISMA to conduct systematic reviews, including Ledford and Gast [14], Hallinger [15], Cao & et al. [16], and Do & et al. [17]. In recent years, the PRISMA framework has been increasingly adopted by scholars across various fields to conduct systematic reviews,

including tourism and hospitality [18], management science and operations research [19], culture [20], economics [21], and computer and industrial engineering [22].

The initial raw dataset consisted of 25,832 documents retrieved through a search query on the Scopus database on October 3, 2025. To ensure comprehensive coverage of publications on experiential learning in education, a subsequent screening stage was conducted whereby the documents were limited to the subject areas of business, medicine, and economics; restricted to document types such as journal articles, conference papers, book chapters, and proceedings, news items, and editorials; and the search language was set to English. Consequently, 21,078 documents were excluded, resulting in a final dataset of 4,325 documents. These data were obtained via the search query applied on the Scopus platform on October 3, 2025, as follows:

TITLE-ABS-KEY (("experiential learning" OR "experiential activities" OR "experiential education" OR "experiential learning pedagogy" OR " educational students" OR " Educational Institutions" OR "outdoor education activities" OR "outdoor experiences in education" OR "class activities" OR "learning by doing" AND NOT "Business" or "Medical")) AND (LIMIT-TO (SUBJAREA, "SOCI")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (EXACTKEYWORD, "Experiential Learning")) AND (LIMIT-TO (LANGUAGE, "English")).

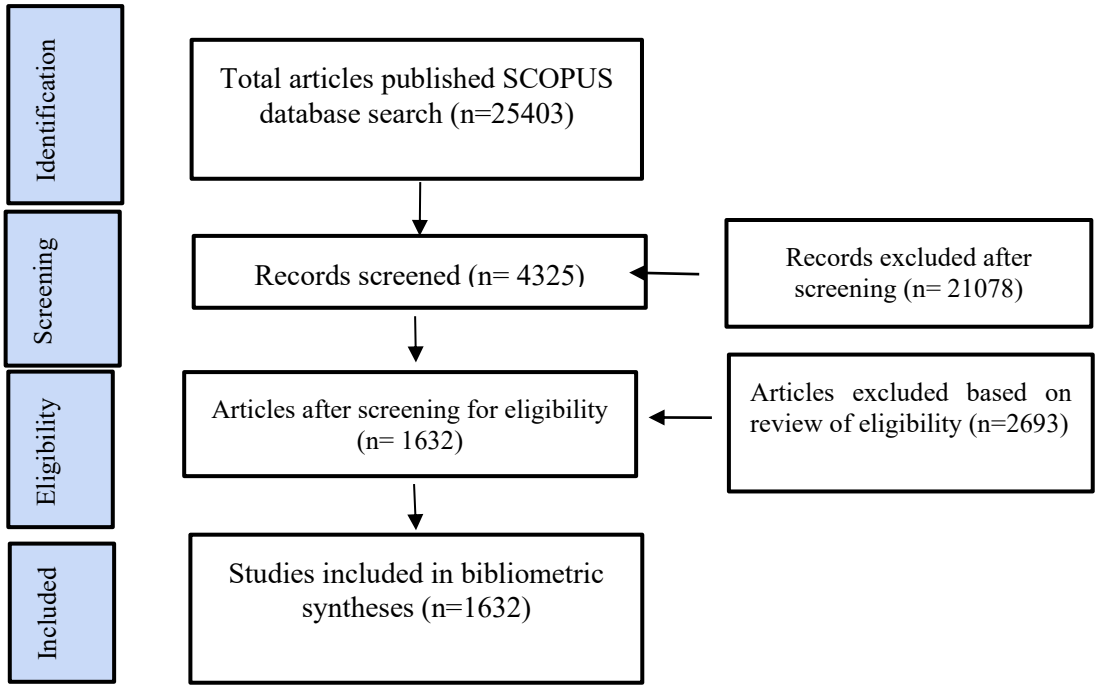

Figure 1. PRISMA diagram represents the narrowing of the analysis dataset of case studies in Experiential learning

Subsequently, the titles and abstracts of the retrieved articles were screened to determine eligibility based on their relevance to the research topic, following the predefined inclusion and exclusion criteria. A significant number of articles were removed due to irrelevant content. Consequently, an additional 2693 documents were excluded. Therefore, the final dataset comprised 1632 articles for systematic evaluation.

We conducted the bibliometric analysis using the R package Bibliometrix (version 5.1.0) [23]. This software provides comprehensive tools for science mapping and quantitative research

evaluation, enabling the analysis of publication trends, co-authorship networks, and keyword co-occurrences.

VOSviewer software (version 1.6.20) was employed for data processing and visualization, owing to its widespread use and effectiveness in bibliometric analysis [24], [25]. As a specialized tool for constructing and visualizing bibliometric networks, including co-authorship, co-citation, and keyword co-occurrence networks, VOSviewer complemented the quantitative analysis by generating deeper insights into research relationships and collaborations. Specifically, in this study, VOSviewer was applied to (i) visualize co-authorship networks to identify collaborative patterns among authors and countries, and (ii) map keyword co-occurrence networks to uncover prominent and emerging research themes as well as their interconnections within the domain of experiential learning. These visualizations contribute to a clearer understanding of the intellectual structure and the evolutionary trajectory of the field.

Limitations of bibliometric analysis.

While bibliometric analysis provides a robust quantitative overview, it is essential to acknowledge its limitations. This method primarily focuses on quantitative metrics (such as the number of publications and citations) and does not inherently involve a qualitative content analysis of the full texts of the documents. As such, it may not capture the nuanced discussions, specific methodologies, or detailed findings contained within each paper. Furthermore, the results are contingent on the chosen database (Scopus) and the precision of the search strategy; consequently, some relevant publications might exist outside this database or might not have been captured due to variations in keyword usage. Despite these limitations, bibliometric analysis remains an effective tool for identifying broad trends and patterns within the scientific literature.

2.2. Result

2.2.1. General statistical information

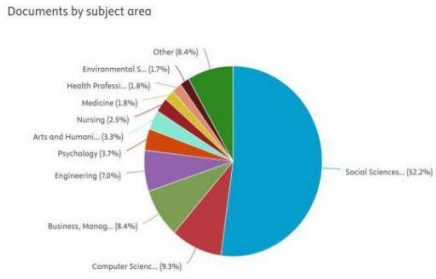

Figure 2 . Documents by subject area (Source: Scopus, 2025)

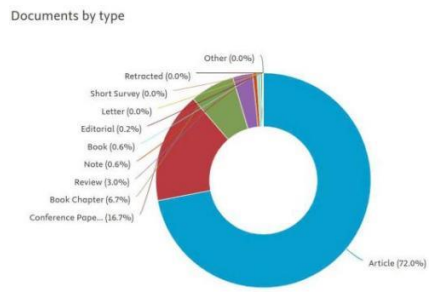

Figure 3. Documents by type (Source: Scopus, 2025)

The distribution of publications by research field indicates that experiential learning has been applied across a wide range of disciplines. Social Sciences represent the largest share of the literature (52.2%), followed by Computer Science (9.3%) and Business and Management (8.4%). Engineering (7.0%) and Psychology (3.7%) account for smaller proportions, while Arts and Humanities, Medicine, and Public Health contribute marginal shares. Notably, the "Other" category comprises 8.4% of the publications, reflecting the thematic diversity and interdisciplinary nature of experiential learning research (Figure 2). This pattern is consistent with international trends, as experiential learning research predominantly addresses educational, social, and interpersonal skill development contexts traditionally situated within the social sciences.

Regarding publication formats, peer-reviewed journal articles are widely regarded as the primary and most authoritative channel of scholarly communication, owing to their rigorous quality control, impact metrics, and high visibility within the academic community. This publication pattern is reflected in the present dataset, in which approximately 72.0% of experiential learning studies are disseminated through scientific journal articles. Conference proceedings account for 16.7% of the publications, followed by book chapters (6.7%) and review articles (3.0%). The remaining outputs are distributed across books, notes, and editorials, further highlighting the dominance of journal articles in the dissemination of experiential learning research (Figure 3).

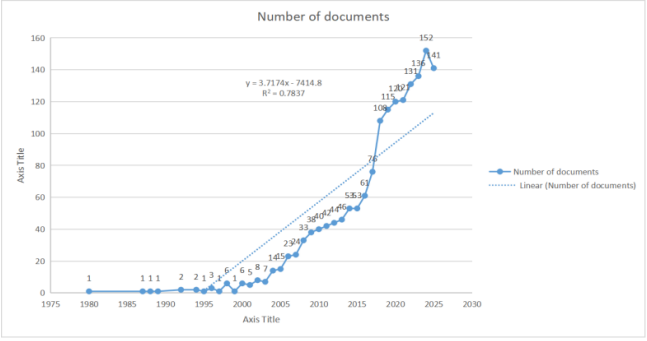

Figure 4. Number of research papers on experiential learning in education by year

Figure 4 illustrates the distribution of research publications on experiential learning (EL) (including data) in the field of education annually from 1980 to 2024. The data reveal a progressive expansion in the number of publications can be seen over the years. While only a single publication was recorded in 1980, this figure escalated to 120 in 2020, 121 in 2021, 136 in 2023, and peaked at 152 in 2024. This substantial growth underscores the intensifying interest in the field of EL research. The acceleration in scholarly output following 2018-2019 may have been influenced by several factors, most notably the adoption of technology during the COVID-19 pandemic, as educational and training institutions prioritized more effective and interactive learning methods for online and blended environments [15]. Overall, the temporal analysis shows that the volume of literature on experiential learning has increased significantly in recent years, indicating the growing recognition of the importance of an essential active learning approach that promotes the development of 21st century skills and learner-centered education. This upward trend suggests that experiential learning is firmly established as a pivotal area of research within the global academic community.

2.2.2. Comparison between countries

The geographical collaboration network was constructed utilizing VOSviewer, revealing a multidisciplinary structure across 39 participating countries. The network is organizedinto distinct clusters, forming a polycentric configuration that reflects relatively stable scientific consortia. Prior to 2008, scholarly output across all nations was negligible. However, post-2008, research output began to ascend significantly, with theperiod 2014 - 2025 witnessing exponential growth and pronounced clear differentiation among nations.

The United States, with 636 publications, emerges as the primary node of the global collaboration network, distinguished by both the highest research output and the most extensive international linkages. It maintains robust partnerships with other key actors, notably the United Kingdom, China, Australia, and Canada, thereby forming major cooperative axes that exert a systemic influence on the overall network. Within Europe, the United Kingdom serves as a pivotal role as a regional hub, exhibiting dense collaborative links with Germany, France, and Spain, while also extending its reach to Latin American countries such as Brazil and Mexico.

In Asia, China occupies a central position, reflecting sustained state investment in science, technology, and education, alongside national strategies aimed at enhancing global research visibility [26]. China's collaboration network is particularly interconnected with Japan, Taiwan, Thailand, Hong Kong, and the Philippines, underscoring the growing prominence of East Asia in international scientific cooperation.

Australia and Canada likewise function as vital regional hubs. Australia demonstrates strong collaborative connections with New Zealand, Vietnam, Denmark, and Romania, while maintaining close ties with the United States. Canada, similarly, is closely integrated with the United States and shows notable connections with the Netherlands and Colombia. In contrast, countries such as Vietnam, Romania, Israel, the Czech Republic, and Saudi Arabia occupy more peripheral positions in the network, characterized by relatively modest publication output and weaker collaborative linkages. Despite the overall expansion of international research connectivity, a persistent asymmetry between developed and developing countries remains evident. Advanced economies continue to dominate both research production and collaboration intensity, whereas developing countries remain constrained by limitations in research funding, infrastructure, and institutional capacity [27]. Nevertheless, the increasing participation of emerging economies indicates a gradual, albeit uneven, broadening of global scientific collaboration.

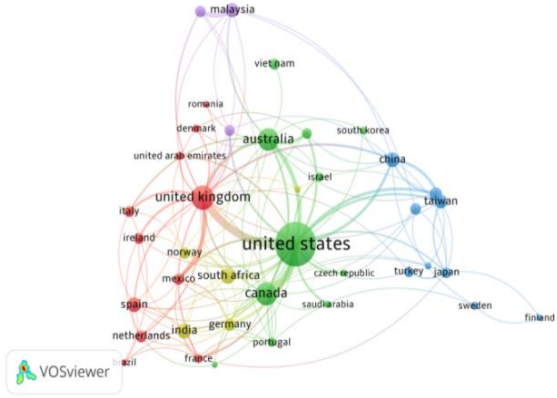

Figure 5. Transnational cooperation network of 39 partner countries on the topic of experiential learning in education (Source: Author's own compilation, using VOSviewer)

2.2.3. Keyword analysis

The visualization of experiential learning (EL) research trends using VOSviewer reveals several distinct clusters, each representing a thematic focus. The green cluster highlights the application of experiential learning in higher education, pedagogy, and skill development for both students and educators, emphasizing active learning methodologies such as collaborative learning, project-based learning, service learning, and transformative learning. The red cluster focuses on the integration of technology and digital tools in education, particularly within STEM education, e-learning, and virtual learning environments. The blue cluster reflects the experiential approach through simulations, experimental design, and academic research, demonstrating its methodological and theoretical foundations. The yellow cluster centers on innovation and sustainability-oriented education, emphasizing the transformative potential of EL in fostering long-term educational reform. Finally, the purple cluster underscores aspects of assessment, teacher professional development, and reflection aimed at enhancing the quality of teaching and learning practices. Overall, the clustering results indicate that experiential learning research has evolved into a multidimensional field, integrating pedagogical innovation,

technological advancement, and sustainable educational development, while maintaining a strong emphasis on educator training and student-centered pedagogies.

The trend topics analysis illustrates a distinct temporal evolution of research themes. Early studies were centered focused on foundational concepts such as learning theory, assessment, and active learning. From the mid-2010s, scholarly attention shifted toward professional development, engineering education, and problem-based learning. In recent years, emerging topics, notably STEM education, virtual reality, educational technology, and immersive learning, have gained prominence, indicating a growing emphasis on technology-mediated and interdisciplinary approaches within the experiential learning domain.

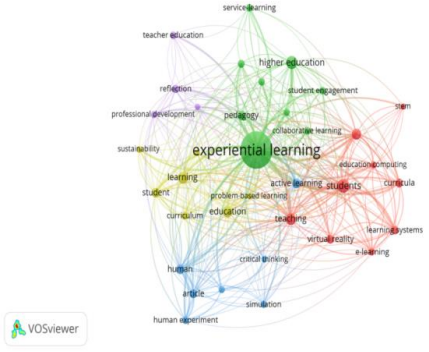

Figure 6. A keyword co-occurrence map for experiential learning research was generated based on a total of 5386 keywords. Applying a minimumthreshold of 20 co-occurrences, 36 keywords met the criteria for visualization. (Source: Author compiled, using VOSviewer)

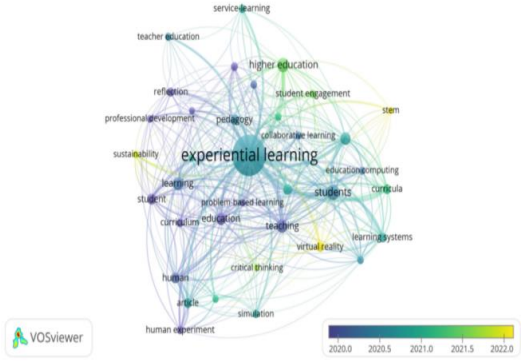

Figure 7. The overlay visualization of keywords, utilizing the co-occurrence analysis method, was based on a total of 5386 keywords. By applying a minimum threshold of 20 co-occurrences, 36 keywords were identified for visualization to illustrate the chronological development of the research theme. (Source: Author compiled, using VOSviewer)

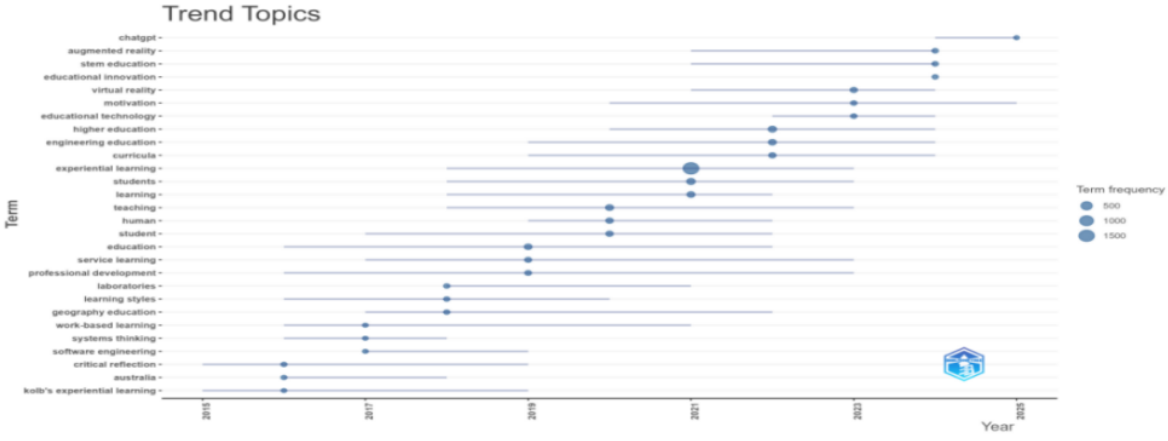

Figure 8. Topic trends of the publication collection by keywords (Source: Author's own compilation, using Biblioshiny)

2.2.4. Most cited articles

Table 1 presents the 10 most highly cited works (scientific articles) on the topic of experiential learning indexed in the Scopus database. The majority of the publications were issued by sources with high top-tier rankings within the Scopus database.

Rank	Author	Article title	Source / Journal	Global Citations	Year of Publication	SQ	TC per Year	Normalized TC
1	Huang TC; Chen CC; Chou YW.	Animating Eco-Education: To See, Feel, and Discover in an Augmented Reality-Based Experiential Learning Environment	Computers & Education	322	2016	Q1	32.2	11.51
2	Behrendt M; Franklin T.	A Review of Research on School Field Trips and Their Value in Education	Int. J. Environ. Sci. Educ.	295	2014		24.58	11.22
3	Phillips TB; Ballard HL; Lewenstein BV; Bonney R.	Engagement in science through citizen science: Moving beyond data collection	Science Education	233	2019	Q1	33.29	12.69
4	Ritter, B. A.; et al.	Designing Management Curriculum for Workplace Readiness: Developing Students' Soft Skills	J. Manage. Educ.	160	2018	Q1	20	11.49
5	Girvan C; Conneely C; Tangney B.	Extending the role of experiential learning in teacher professional development	Teaching and Teacher Education	155	2016	Q1	15.5	5.54
6	Fromm J; Radianti T. A; Wehking C; Stieglitz, S; Majchrzak TA; vom	More than experience? – On the unique opportunities of virtual reality to afford a holistic experiential learning cycle	Internet and Higher Education	152	2021	Q1	30.4	15.82

	Brocke J.							
7	Konak A; Clark TK; Nasereddin M.	Using Kolb's Experiential Learning Cycle to Enhance Student Learning in Virtual Computer Laboratories	Computers & Education	147	2014	Q1	12.25	5.59
8	Falloon G	Utilizing simulations to teach young students science concepts: an Experiential Learning theoretical analysis	Computers & Education	130	2019	Q1	18.57	7.08
9	Kolb AY; Kolb DA; Passarelli A; Sharma G.	On Becoming an Experiential Educator: The Educator Role Profile	Simulation & Gaming	123	2014	Q2	10.25	4.68
10	Duval-Couetil N, Shartrand, A, & Reed, T.	The Role of Entrepreneurship Program Models and Experiential Activities on Engineering Student Outcomes	Advances in Engineering Education	111	2016	Q3	11.1	3.97

The analysis of the "Most global cited documents" reveals the ten most influential publications in the educational research domain, with a strong emphasis on experiential learning and technology-enhanced pedagogies. Among these, Huang T-C (2016) stands out as the most prominent work, with 322 global citations, followed by Behrendt M (2014) and Phillips TB (2019), which have accumulated 295 and 233 citations, respectively. These highly cited studies underscore the profound scholarly impact of experiential learning frameworks within science and environmental education.

Furthermore, publications by Ritter BA (2018), Girvan C (2016), and Fromm J (2021) have also garnered considerable academic attention, reflecting the growing integration of experiential approaches into management education, teacher professional development, and online higher education contexts. Overall, the preponderance of studies published between 2014 and 2021 indicates a period of significant expansion and scholarly interest in experiential and digitally mediated learning, highlighting its pivotal role in driving pedagogical innovation and digital transformation within contemporary education. These findings not only affirm the centrality of experiential learning as a dominant pedagogical paradigm but also suggest promising directions for future research focusing on its adaptability across diverse disciplines and digital learning environments. Consequently, these insights provide a solid empirical foundation for advancing innovative, experience-based educational models in the 21st century.

3. Conclusions

Research on Experiential Learning (EL) demonstrates a profound evolution in scholarly approaches, shifting from foundational theoretical, critical, and experimental approaches towards a flexible, diverse, and technology-driven learning ecosystem: orientations related to digital technology, STEM, and pedagogical innovation within higher education, driven by the imperatives of digital transformation and the long-term impact of the COVID-19 pandemic. This underscores the robust potential of the field to synthesize traditional pedagogical foundations with new emerging technological solutions to enhance education efficacy.

Looking ahead, experiential learning is poised not only to reinforce its value in improving student learning outcomes but also to serve as a catalyst for institutional innovation of higher education, adapting to the evolving demands of social development. This trajectory opens significant avenues for multidisciplinary research, bringing the gap between theory and practice in an increasingly interconnected educational landscape.

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