

# A Ten-Year Bibliometric Analysis of E-Learning in English as a Foreign Language (EFL) Context

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## ABSTRACT

This bibliometric study offers a comprehensive overview of e-learning research landscape in English as a foreign language (EFL) context, including the publication trend, country contributions and collaboration, productive authors and journals, and key topics of interest. Through a thorough review of 602 documents extracted from the Scopus database from 2013-2022 using VOSviewer, Excel, and Tableau, the study reveals a significant increase in e-learning publications since 2020, with China, Saudi Arabia, and Indonesia emerging as the leading contributors and collaborators. The study further identifies the most productive authors and journals and highlights six key topics, including the effectiveness of e-learning, learners' perceptions, mobile learning, e-education during COVID-19, Chinese EFL teachers, and teacher education. The study provides innovative insights for EFL practitioners, researchers, and policymakers, and contributes to the general knowledge about the hotspots and frontiers of literature in the e-learning landscape of the EFL context.

## KEYWORDS

Bibliometric, Country Contributions and Collaboration, e-Learning, English as a Foreign Language (EFL), Key Topics of Interest, Productive Authors and Journals, Publication Trend, Research Landscape

## INTRODUCTION

In the current transformative era, the educational landscape, including the field of English as a foreign language (EFL), has been significantly impacted by the rapid advancements in technology. As noted by Rahim (2019), the integration of technology in foreign language instruction has garnered considerable attention from both language educators and learners. To meet the global demand for technology integration in classrooms, EFL teachers have been transitioning from traditional teacher-centered pedagogies to embracing e-learning approaches that foster student-centered learning, as observed by Aboud (2020) and El Khairat (2021). In the meantime, contemporary EFL learners, who are often digital natives (Şahin Kızıl, 2017), are proficient in navigating web-based learning environments (Çam et al., 2021) and possess independent and interactive learning skills (Daulay &

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Anwar, 2022; Yumnam, 2021). Given the vital role of e-learning in enhancing EFL teachers' student-centered pedagogical approaches and improving EFL learners' language proficiency and autonomous learning abilities, it becomes crucial to gain a comprehensive understanding of the research landscape in e-learning within EFL teaching and learning contexts.

The concept of e-learning has been a subject of extensive discussion and exploration in academic discourse (Rodrigues et al., 2019). The Commission of the European Communities (2001) defines e-learning as the utilization of internet-based technologies to enhance the quality of learning by enabling access to remote resources and facilitating collaboration. Similarly, Wang et al. (2010) characterize e-learning as the delivery of knowledge and instructional materials to learners through computer network technology via the internet. Taking a broader perspective, Khan (2005) describes e-learning as an innovative approach that provides well-designed, learner-centered, interactive, and facilitated learning environments accessible to anyone, anywhere, and anytime. In general, e-learning transcends temporal and geographic constraints (Alqudah et al., 2020; Ja'ashan, 2020), enabling learners to accumulate technology-driven learning experiences, as noted by Horton (2006).

It is noteworthy that technical terms such as e-learning, online learning, web-based learning, virtual learning, digital learning, and distance education are commonly used interchangeably within the literature (Gurcan et al., 2021; Reis & Gulsecen, 2014). However, it is important to highlight that e-learning and distance learning are not synonymous terms, as underscored by Rodrigues et al. (2019), since the physical distance between the learner and teacher is not a distinguishing feature of e-learning (Ali et al., 2018). Furthermore, the aforementioned concepts, e-learning, online learning, web-based learning, and virtual learning, are derived from the broader notion of distance learning, as posited by Moore et al. (2011). Notably, the emerging trend of mobile learning (m-learning) is often considered a subset of e-learning (Kumar Basak et al., 2018). Due to the ever-changing nature of emerging technologies, a consensus has not been made on specifying a widely accepted and clear-cut interpretation of the term e-learning (Rodrigues et al., 2019). Nonetheless, it is widely recognized that e-learning involves the utilization of computers to facilitate learning (Shahi, 2016).

Over the past three decades, there has been considerable debate surrounding the use of technology in the realm of language learning (Şahin Kızıl, 2017). Specifically within EFL context, research on e-learning has primarily focused on exploring EFL learners' perceptions and experiences of technology-based learning environments (Ngo, 2021; Rahim & Sandaran, 2021), as well as examining EFL teachers' readiness and experiences during the transition from traditional face-to-face instruction to online teaching (Al-Furaydi, 2013; Lim & Yunus, 2021; Mathew et al., 2019). Notably, the current pandemic situation has led to a surge in the publication of e-learning-related documents in international context (Gao et al., 2022; Karakose & Demirkol, 2021). As a novel teaching and learning approach, e-learning has played a significant role in mitigating the negative impact caused by the pandemic.

A substantial body of research has explored various theoretical and practical aspects pertaining to e-learning within EFL context, with particular emphasis on examining the effectiveness of emerging technological tools in EFL teaching and learning settings (Mathew et al., 2019). Aisyiyah et al. (2020) note that the integration of technology in foreign language instruction can be traced back to the 1960s with the introduction of computer-assisted language learning (CALL). As technology continues to evolve, an increasing array of e-learning devices have been employed to enhance the quality of EFL teaching and improve students' learning outcomes. These devices encompass a diverse range, including smartphones (Oh et al., 2022), e-book readers (Mizher & Alwreikat, 2023), podcasts (Indahsari, 2020), and platforms such as YouTube (Chien et al., 2020).

The majority of research in this field suggests that technological aids in EFL teaching and learning contexts have positive effects on both EFL teachers' pedagogical practices and their learners' language proficiency, in contrast to traditional teaching and learning methods. Putri (2019) and Putri et al. (2020) contend that e-learning grants learners with access to up-to-date information without time and place constraints, thereby facilitating their development of English language proficiency. Furthermore, e-learning has been found to alleviate learners' anxiety levels (Dwijonagoro & Suparno,

2019; Shahi, 2016) and foster holistic skills such as autonomy and interaction (Daulay & Anwar, 2022; Yumnam, 2021). In addition to these benefits, e-learning has the potential to transform a teacher-centered environment into a dynamic and constructive teaching and learning context (Aboud, 2020; El Khairat, 2021).

Considering the potential transformative impact of e-learning on the future of education, particularly in the shift from traditional classroom settings to online platforms (Encarnacion et al., 2021), it is imperative to gain a comprehensive understanding of the overall research landscape concerning e-learning studies in EFL context. While there has been a rise in comprehensive reviews exploring e-learning across various educational domains, there remains a scarcity of studies specifically focusing on e-learning within EFL context. These investigations include systematic reviews conducted by Seraj et al. (2021), which investigated the use of mobile phones in EFL instruction in Bangladesh; Lim and Yunus (2021), who explored teachers' perspectives on e-learning tools in EFL environments; and Kuswoyo et al. (2022), who assessed the effectiveness, challenges, and recommendations associated with addressing the impact of the post-COVID-19 pandemic on online EFL learning. Nevertheless, it should be noted that previous research efforts have not fully focused on the overarching research landscape in this domain, as highlighted by Rodrigues et al. (2019) that since the beginning of the 21st century, diverse research fields have provided fragmented insights into e-learning and education rather than adopting a comprehensive perspective. Additionally, bibliometric analyses have been conducted to identify emerging research trends in the broader field of e-learning, encompassing specialized areas such as e-learning in health science education (Sweileh, 2021), e-learning in higher education during the COVID-19 pandemic (Fauzi, 2022), and the intersection of e-learning and artificial intelligence (Jia et al., 2022). However, limited quantitative efforts have been made to examine the research landscape specifically pertaining to e-learning in EFL teaching and learning contexts.

Overall, despite some progress made in investigating issues related to e-learning in modern education, there remains a dearth of comprehensive research examining e-learning specifically in EFL context from a bibliometric perspective. Considering the increasing prominence of e-learning in the realm of education, particularly within academic settings as highlighted by Selwyn (2014), it becomes imperative to undertake a meticulous bibliometric analysis to gain insights into the research landscape to fill these gaps and advance the understanding of e-learning in EFL context. Therefore, this research aims to contribute toward visualizing the scientific landscape of this particular field by illustrating the publication trend, country contributions and collaboration, productive authors and journals, and key topics of interest of this particular field. The specific research questions are as follows:

1. What is the publication trend on e-learning in EFL context over the past decade?
2. What are the country contributions and collaboration in the field of e-learning in EFL context?
3. Which authors and journals have made the greatest contributions to the research on e-learning in EFL context?
4. What are the most prevalent and recurring themes explored in studies focused on e-learning in EFL context?

## METHODOLOGY

This study employs bibliometric analysis to trace the development of research in the area of e-learning in EFL context. The bibliometric analysis involves the application of quantitative metrics to graphically analyze a vast number of published documents in specific research domains (Baker et al., 2020), including co-authorship networks, co-citation, bibliographic coupling, and co-occurrences of keywords (Van Eck & Waltman, 2014). Being increasingly used for research performance evaluation, the bibliometric method can be employed to quantitatively assess the unlimited quantities of publications and, at the same time, make claims regarding qualitative features (Wallin, 2005). This section outlines

the methodology of the study, including database selection, search criteria, data collection, and data analysis methods.

## Database Selection

To achieve the research objectives, the Scopus database was selected as the primary data source for this study. Scopus is a comprehensive database containing a vast collection of high-quality, peer-reviewed scholarly literature that provides extensive coverage of academic research from around the world (Can & Hou, 2021). This database offers a wide range of functions, including source titles, document types, authors and affiliations, and keywords, among others, making it well-suited for conducting bibliometric analyses (Sweileh et al., 2016). Although the Web of Science serves as a prominent bibliometric repository, it is commonly utilized within the natural and engineering sciences, whereas Scopus finds greater prevalence in social science research (Mongeon & Paul-Hus, 2016). Given the focus of this study on e-learning in EFL context, it is anticipated that conducting bibliometric analysis based on the Scopus database will yield reliable and valuable insights.

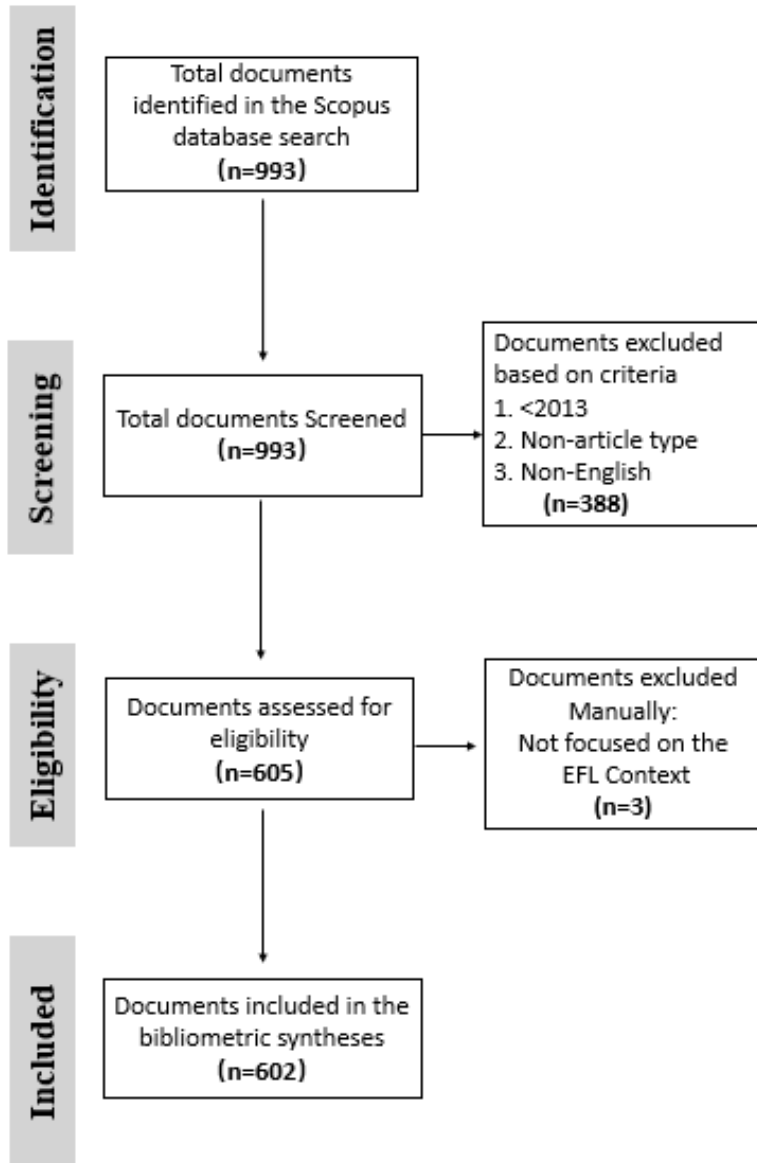
## Search Criteria

A comprehensive search string was developed to explore the concept of e-learning in EFL context. It consisted of two main keywords, “e-learning” and “EFL,” along with their associated synonyms. Due to the interdisciplinary and multidisciplinary nature of e-learning (Gurcan et al., 2021), various fields employ numerous synonyms to refer to this concept, necessitating the specification of search terms in order to obtain a comprehensive overview of e-learning research. In this particular study, which focuses on teaching and learning within EFL context, it is crucial to include terms such as “e-teaching,” “e-training,” and “e-education” (Gao et al., 2022) in the search query. Relevant literature (Gao et al., 2022; Martin et al., 2020; Valverde-Berrocoso et al., 2020) was referred to inform the formulation of the search string. Finally, the search queries for “e-learning” are TITLE-ABS-KEY (“e-learning” OR “electronic learning,” OR “web learning” OR “web-based learning,” OR “internet learning” OR “internet-based learning,” OR “computer-based learning” OR “digital learning,” OR “virtual learning” OR “online learning,” OR “m-learning” OR “mobile learning,” OR “e-teaching” OR “electronic teaching,” OR “web teaching” OR “web-based teaching,” OR “internet teaching” OR “internet-based teaching,” OR “computer-based teaching” OR “digital teaching,” OR “virtual teaching” OR “online teaching,” OR “mobile teaching” OR “e-education,” OR “electronic education” OR “web education,” OR “web-based education” OR “internet education,” OR “internet-based education” OR “computer-based education,” OR “digital education” OR “virtual education,” OR “online education” OR “mobile education,” OR “e-training” OR “electronic training,” OR “web training” OR “web-based training,” OR “internet training” OR “internet-based training,” OR “computer-based training” OR “digital training,” OR “virtual training” OR “online training,” OR “m-training” OR “mobile training”). Furthermore, to broaden the scope of the search and include all relevant publications, additional synonym expressions associated with EFL context, including “English as a foreign language” and “EFL,” were incorporated. Boolean operators “OR” and “AND” were employed to combine the search queries, thereby ensuring a thorough and efficient exploration of relevant information.

## Data Collection

The data extraction was conducted on January 12, 2023. To ensure the accuracy and relevance of the collected data, the study adhered to the established guidelines outlined by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher et al., 2009), which are widely recognized in the academic community. A rigorous filtering process was implemented in accordance with these guidelines. Figure 1 presents a visual depiction of the sequential stages involved in this process.

Figure 1. PRISMA flowchart of document identification



In the first stage, the aforementioned search string was employed, resulting in the identification of 993 publications based on the search strategy described in the preceding section.

In the subsequent screening phase, the search criteria were limited to documents published between 2013 and 2022, with a preference for peer-reviewed journal articles to ensure the quality of the content (Santini, 2018). Additionally, only English-language papers were considered. As a consequence of this screening process, a total of 388 documents were excluded from the dataset.

To ascertain the eligibility of the documents for inclusion in the study, a comprehensive manual review was conducted for the 605 remaining documents. This review involved evaluating the titles

and abstracts to determine their relevance to the subject of e-learning in EFL context. Consequently, three documents that did not specifically focus on the EFL context were excluded.

Following the filtering steps, a total of 602 documents were determined to be relevant and thus were selected for further analysis.

### Data Analysis Methods

In terms of data analysis, this study employed bibliometric analysis as a research method to identify the research performance in the area of e-learning in EFL context. This bibliometric analysis served the purpose of offering valuable insights into publication trends, country contributions and collaborations, key authors and journals, and prominent topics in this area. To accomplish this, VOSviewer, a highly regarded computational software package acknowledged for its proficiency in constructing maps and visualizing bibliometric networks based on co-occurrence matrices (Van Eck & Waltman, 2010) was utilized. Additionally, Microsoft Excel and Tableau were employed as tools for visualizing the findings.

More specifically, the publication trends pertaining to this particular domain was elucidated by utilizing the data extracted from the Scopus database. To visually represent the annual number of publications, a graph was created using Microsoft Excel 2019.

In addition, to capture the geographical distribution of publications, a world map was generated using Tableau 2023.1. Additionally, to visualize the collaborative network among countries, the VOSviewer 1.6.16 software was employed to create a network visualization map.

Furthermore, leveraging the bibliometric data extracted from VOSviewer 1.6.16, Microsoft Excel 2019 was utilized to compile a listing of the most prolific authors and journals. Additionally, relevant information such as total citations, average citations per article, SJR (Scimago Journal Rank) 2021, h-index, and journal quartiles were included in the analysis for a more comprehensive understanding.

Lastly, the network visualization map of co-occurring keywords, aimed at identifying the research foci, was generated using VOSviewer 1.6.16. This analysis helped uncover the interconnections and relationships among keywords in the research literature. Notably, to ensure the accuracy of the keyword dataset, a thorough refinement process was undertaken to eliminate duplicates. This involved referring to a thesaurus file and resolving instances where similar keywords existed. For example, if duplicates such as “mobile assisted language learning” and its abbreviation “MALL” were identified, the former was replaced with the latter to ensure consistency. After this meticulous process, a total of 51 distinct keywords were identified from an initial pool of 1582 when setting the minimum occurrence of a keyword at five.

Altogether, Table 1 presents the key data extracted from the collected dataset, which comprises 602 documents from 211 sources published between the years 2013 and 2022. The analysis revealed that a total of 1148 authors, spanning 59 countries, have contributed to the research area under investigation. Additionally, a total of 1582 distinct author keywords were identified.

**Table 1. Key data from the dataset**

Description of the Key Data	Results
Time	2013-2022
Total documents	602
Sources	211
Countries	59
Authors	1148
Author keywords	1582

## RESULTS

By employing bibliometric analysis, the present study involved a rigorous analysis of a pool of 602 documents derived from the Scopus database and published within the last decade. Detailed analysis is presented in the following sub-sections.

### Publication Trend of E-Learning Research in EFL Context

The overall research performance of e-learning in EFL context is revealed through an evaluation of the annual distribution of published documents. Figure 2 visually presents the outcomes, indicating a consistent level of publication output from 2013 to 2019. However, a noteworthy surge in publications is observed in subsequent years, with 68, 153, and 203 publications recorded in 2020, 2021, and 2022, respectively. It is worth emphasizing that the number of publications in 2022 exhibits an approximately 16-fold increase compared to that documented in 2013, signifying a substantial growth trend over the course of time.

### Country Contributions and Collaboration

The geographical distribution of publications by country was created by Tableau. The results indicate that a total of 59 countries have contributed to this area of research, with China (142 publications), Saudi Arabia (89 publications), and Indonesia (78 publications) emerging as the top three publishing countries, followed by Iran (69 publications), Turkey (34 publications), Thailand (27 publications), South Korea (23 publications), and Malaysia (22 publications). Figure 3 visually represents these findings, clearly showing that a significant number of publications originate from Asian countries. On the other hand, the representation of scholars from African countries in the research of e-learning in EFL context is relatively limited.

The network of country collaborations was produced using VOSviewer, wherein 20 out of 59 countries were not linked with others in terms of collaboration and therefore was not represented on the map. The visualization in Figure 4 displays eight clusters differentiated by color, which exemplifies the significant international cooperation in e-learning research in the EFL domain. The

Figure 2. Publication trend between 2013 and 2022

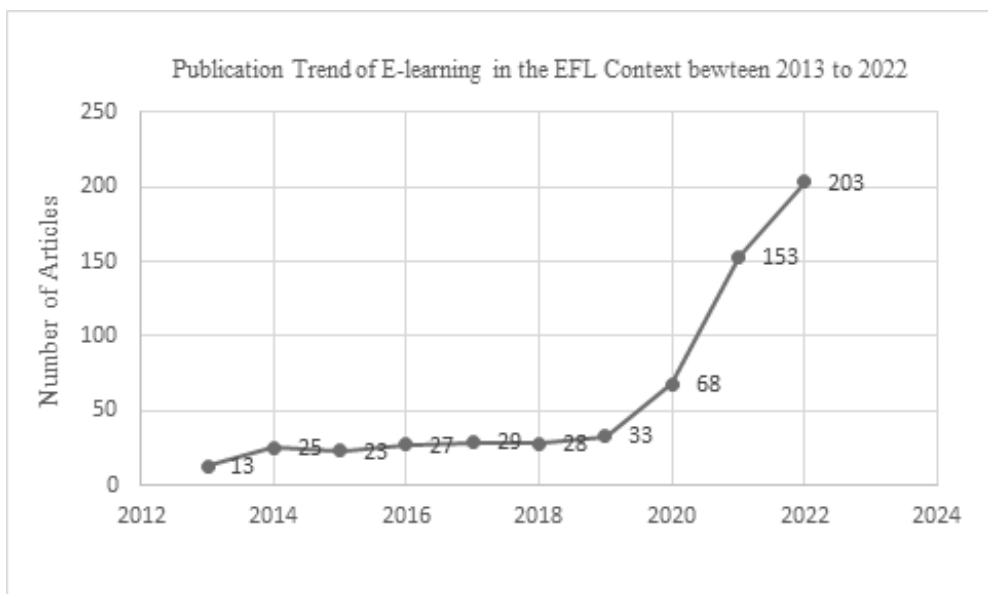
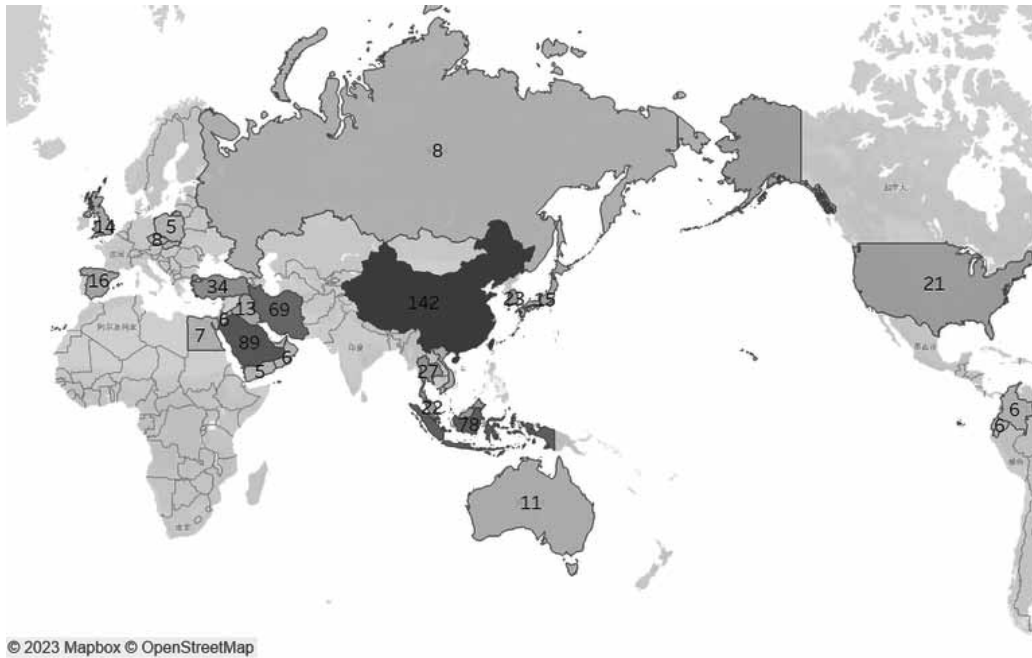


Figure 3. Geographical distribution of publications by country



most extensive cluster, represented by the color red, comprises developing nations, including six Asian countries (i.e., Indonesia, Bangladesh, Malaysia, Philippines, Jordan, and Afghanistan) and one African nation (i.e., Kenya).

The analysis reveals that Saudi Arabia and Indonesia exhibit the most significant collaboration networks, with connections to 15 countries spanning both within and beyond Asia. Notably, China closely follows with 13 observed links in the network figure.

### Most Productive Authors and Journals

From 2013 to 2022, a total of 1148 authors contributed to the field of e-learning research within EFL context. According to the data presented in Table 2, it is evident that six authors have published more than five articles on the subject during the specified period. Lee, J. S., Hwang, W. Y., and Chalak, A. emerge as the most prolific authors, with 11, 8, and 6 publications, respectively. Following closely are Hwang, G. J., Metruk, R., and Tabrizi, H. H. It is worth noting that a considerable number of these highly productive authors are affiliated with Asian countries, particularly China and Iran.

With regard to citation metrics, Hwang, G. J. garnered the highest number of citations among the five documents, with a total of 332 citations. Hwang, W. Y. follows closely behind with an average of 32 citations per article. It is noteworthy that scholars from China received the highest overall number of citations.

Table 3 presents the top 10 most productive journals out of the total of 211 journals that were analyzed. The *Computer Assisted Language Learning Electronic Journal (CALL-EJ)* and *Computer Assisted Language Learning (CALL)* journals lead all others with a total number of 23 publications, followed closely by *Frontiers in Psychology* with 18 publications. Furthermore, the journals with over 100 citations are *Computer Assisted Language Learning*, *Frontiers in Psychology*, *Computer Assisted Language Learning Electronic Journal*, and *International Journal of Emerging Technologies in Learning (iJET)*. Notably, the majority of the identified journals are situated in high quartiles, with the exception of *World Journal of English Language (WJEL)* and *Asian EFL Journal*.



Figure 4. The network visualization map of country collaboration

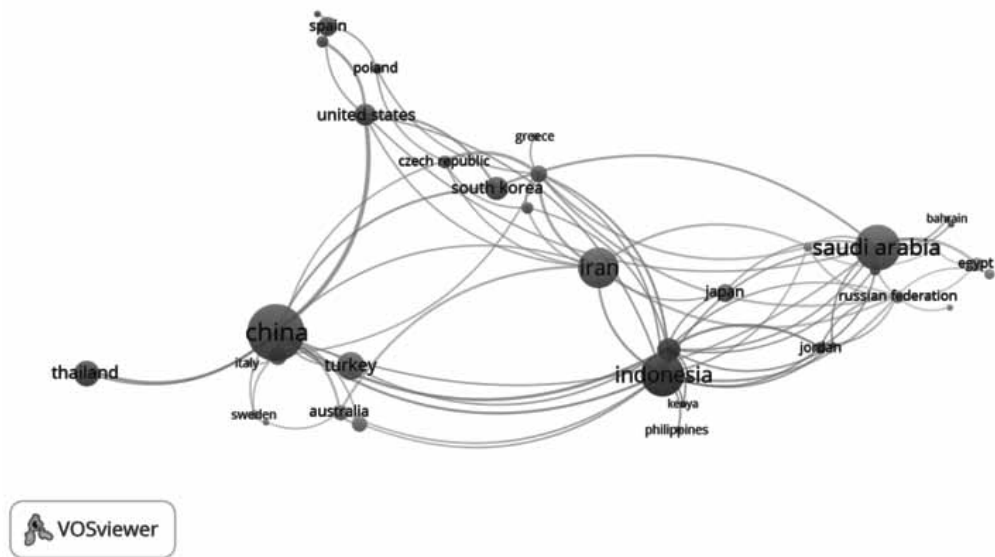


Table 2. Top six productive authors

Rank	Author	Nation/Institution	NoP	TC	ACPC
1	Lee, J. S.	China/The Education University of Hong Kong	11	81	7
2	Hwang, W. Y.	China/National Central University	8	258	32
3	Chalak, A.	Iran/Islamic Azad University	6	25	4
4	Hwang, G. J.	China/National Taiwan University of Science and Technology	5	332	66
5	Metruk, R.	Slovakia/University of Žilina	5	26	5
6	Tabrizi, H. H.	Iran/Islamic Azad University	5	20	4

Note: *NoP* = Number of Publications, *TC* = Total Citations, *ACPC* = Average Citations Per Article

## Key Topics of Interest

Keyword analysis is a valuable tool for researchers seeking to identify emerging trends in specific scientific fields (Guo et al., 2016). In this study, author keywords co-occurrence was utilized as the primary analytical unit in bibliometric investigations, with VOSviewer employed to identify emerging areas of research interest. Out of the total 1582 keywords analyzed, 51 keywords met the predetermined threshold for inclusion, with a minimum occurrence of five times, as Figure 5 illustrates.

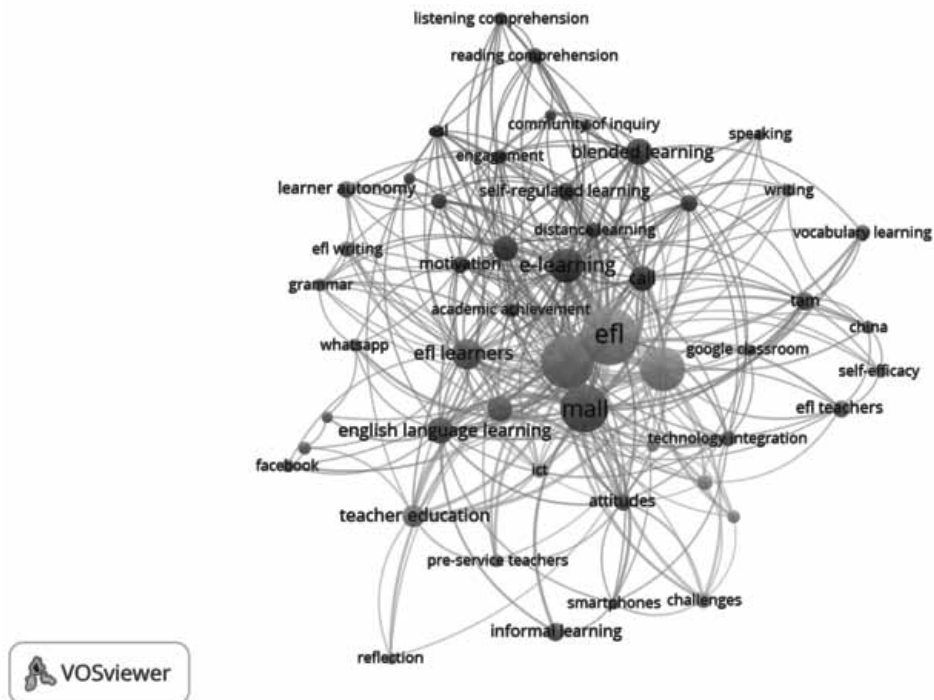
Based on the size of the nodes, the top 10 frequently used keywords in e-learning research within EFL context were identified. The most prominent keywords include “EFL” with 133 occurrences, “online education” with 116 occurrences, “MALL” (mobile-assisted language learning) with 91 occurrences, “COVID-19” with 79 occurrences, “e-learning” with 47 occurrences, “EFL learners” with 36 occurrences, “English language learning” with 29 occurrences, “blended learning” with 27 occurrences, “higher education” with 25 occurrences, and “perceptions” with 24 occurrences. These findings indicate that mobile learning, EFL learners, blended learning, higher education, and perceptions were the primary areas of focus in e-learning research within EFL context.

### Table 3. Top ten productive journals

Rank	Source Title	Country	NoP	TC	ACPC	SJR 2021	H-index	JQ
1	CALL-EJ	Japan	23	115	5	0.37	8	Q1
2	CALL	UK	23	548	24	1.84	54	Q1
3	FiP	Switzerland	18	152	8	0.87	133	Q1
4	WJEL	US	16	3	0.2	0.1	2	Q3
5	iJET	Austria	15	123	8	0.63	30	Q1
6	TEwT	Poland	15	94	6	0.42	13	Q1
7	EAIT	US	14	76	5	1.06	48	Q1
8	Asian EFL Journal	UK	12	72	6	N/A	18	N/A
9	Sustainability	Switzerland	12	50	4	0.66	109	Q1
10	ILE	UK	10	86	9	1.17	49	Q1

Note: *NoP* = Number of Publications, *TC* = Total Citations, *ACPC* = Average Citations Per Article, *JQ* = Journal Quartiles. *CALL* - *EJ* = Computer Assisted Language Learning Electronic Journal, *CALL* = Computer Assisted Language Learning, *FIP* = Frontiers in Psychology, *WJEL* = World Journal of English Language, *iJET* = International Journal of Emerging Technologies in Learning, *TEwT* = Teaching English with Technology, *EAIT* = Education and Information Technologies, *ILE* = Interactive Learning Environments, *UK* = the United Kingdom, *US* = the United States, *N/A* = Not Applicable

**Figure 5. Co-occurrence network of author keywords (occurrence threshold  $\geq 5$ )**



The identified set of keywords was systematically categorized into six distinct clusters represented by different colors, each representing a specific research topic. The largest cluster, depicted in red, comprised 17 keywords, including “academic achievement,” “blended learning,” “motivation,” and “engagement,” emphasizing the central theme of research as the effectiveness of e-learning. The green

cluster, consisting of nine keywords such as “computer-mediated communication,” “EFL learners,” and “perceptions,” centered on learners’ perspectives towards e-learning. The dark blue cluster, characterized by keywords like “MALL,” “technology integration,” and “smartphones,” converged on the subject of mobile learning. The yellow cluster, containing keywords such as “challenges,” “COVID-19,” and “English language teaching,” pertained to the theme of e-education during the COVID-19 pandemic. In the purple cluster, the primary focus was on Chinese EFL teachers. Lastly, the light blue cluster suggested the theme of teacher education as evidenced by the inclusion of keywords such as “pre-service teachers,” “teacher education,” and “reflection.”

## DISCUSSION

The findings obtained through the bibliometric analysis offer significant insights into the current state of e-learning research within EFL context.

### Publication Trend of E-Learning Research in EFL Context

In terms of the publication trajectory, the findings of this study reveal a persistent and substantial increase in the number of documents related to e-learning in EFL context between 2020 and 2022. This observation aligns with prior research that has demonstrated a growing academic interest in the integration of technology-enhanced learning within English language education (Hariadi & Simanjuntak, 2020; Hwang & Fu, 2019; Shadiev et al., 2017). The recent surge in the application of e-learning in EFL teaching and learning can be attributed to rapid technological advancements (Ja’ashan, 2020; Mujiono & Herawati, 2021). However, the primary reason behind the substantial increase since 2020 can be connected to the outbreak of the COVID-19 pandemic, which necessitated widespread adoption of digital transformation during the pandemic (Eltahir et al., 2023; Iglesias-Pradas et al., 2021; Khan et al., 2022; Treve, 2021) and led to heightened academic interest in this area (Gao et al., 2022; Karakose & Demirkol, 2021). It is acknowledged that e-learning has the potential to revolutionize traditional approaches to teaching and learning English (Encarnacion et al., 2021; Yan, 2022) and address the challenges posed by the COVID-19 pandemic in the field of pedagogy (El Khairat, 2021). Although the pandemic will eventually come to an end, it is conceivable that the positive publication trend observed in this study will persist in the post-pandemic era.

### Country Contributions and Collaboration

The results of this study indicate that China, Saudi Arabia, and Indonesia, three Asian countries, have made substantial contributions and collaborations in the field of e-learning research specifically in EFL context. These findings are consistent with Rahim and Sandaran’s (2021) assertion, which highlights the growing significance of e-learning in Asian countries and its impact on EFL teaching and learning. Moreover, these findings align with the bibliometric analysis conducted by Gao et al. (2022), which identifies China and Saudi Arabia as the leading countries in terms of e-learning research publications from 2019 to 2022. The emphasis on the research field of e-learning in EFL context in these countries can be attributed to the longstanding importance of EFL education in China (Ene & Hryniuk, 2018), Saudi Arabia (Althobaiti, 2020), and Indonesia (Indrayadi, 2021), as well as the integration of EFL teaching and learning into technological innovations during the anti-pandemic era (Rahim & Sandaran, 2021).

Additionally, the findings of the study revealed that scholars from Asian countries demonstrated a higher degree of commitment towards the exchange of ideas and sharing of best practices concerning technological advancements, particularly in the midst of the ongoing global pandemic. These outcomes align with the previous research conducted by Gao et al. (2022) and Hwang et al. (2022), which further support the notion that scholars originating from Asia display a higher degree of interest and investment in the field of e-learning compared to their counterparts from other regions. Thus, it can be contended that fostering international collaborations and promoting knowledge sharing among

Asian scholars would significantly contribute to the advancement and innovation of e-learning on a global scale.

## Most Productive Authors and Journals

Regarding the authors who have demonstrated remarkable productivity, it is worth highlighting that half of the prominent authors, namely Lee, J. S., Hwang, W. Y., and Hwang, G. J., are affiliated with academic institutions in China. Furthermore, their publications have garnered the highest number of citations within the scholarly community. These outcomes underscore the substantial contributions and impact of Chinese scholars in the realm of e-learning, particularly in EFL context. This influence can potentially be attributed to China's proactive adoption of nationwide online courses in colleges and universities as a strategic response to the challenges posed by the pandemic crisis (Gao et al., 2022; Younas et al., 2022).

Additionally, the outcomes derived from the bibliometric analysis indicate that the *Computer Assisted Language Learning Electronic Journal (CALL-EJ)* and *Computer Assisted Language Learning (CALL)* were the most productive journals in the e-learning research field in EFL context. These findings indicate that these journals have recognized the significance of this particular research domain and have facilitated a platform for scholars to publish their scholarly contributions. Additionally, it is important to highlight that a significant majority of the leading journals identified in this study were positioned within the high quartile, which serves as an indicator of their substantial international influence in disseminating e-learning research within EFL context.

## Key Topics of Interest

The current investigation employed a keyword co-occurrence analysis to discern the primary research themes prevalent in the domain of e-learning research within EFL context spanning the years 2013 to 2022. Through this analysis, six key topics of interest emerged, namely “effectiveness of e-learning,” “learners’ perceptions,” “mobile learning,” “e-education during COVID-19,” “Chinese EFL teachers,” and “teacher education.” While there were slight discrepancies observed compared to earlier bibliometric studies that primarily focused on e-learning, such as those conducted by Djeki et al. (2022), Gao et al. (2022), and Rodrigues et al. (2019), the present findings indicated that the themes of “perceptions,” “e-education during COVID-19,” and “teacher education,” continued to garner substantial scholarly attention both in the broader field of e-learning research and specifically within EFL context.

To be specific, the primary topic that has received extensive attention within e-learning research in EFL context is the “effectiveness of e-learning.” As argued by Mathew et al. (2019), numerous studies have focused on evaluating the effectiveness of emerging technological tools in EFL teaching and learning environments. These e-learning aids have demonstrated a positive influence on the pedagogical approaches of EFL teachers (Aboud, 2020; El Khairat, 2021) and have been found to enhance learners’ comprehensive skills (Wu et al., 2012; Yumnarn, 2021). However, due to the challenges faced by EFL learners, such as low engagement in e-learning environments (Hijazi & AlNatour, 2021; Ngo, 2021) and limited access to the internet and other resources (Susanti et al., 2023; Yani, 2021), their perceptions and attitudes towards e-learning must be carefully examined to identify obstacles and opportunities for integrating e-learning into EFL education (Rahim & Sandaran, 2021). Another area of significant research interest is mobile learning, which has emerged as a valuable and informative tool in e-learning, facilitating easier access to learning materials for EFL learners (Chung et al., 2015). Given the increasingly prominent role of mobile phones in the current educational landscape, a growing body of studies (e.g., Al-Shamsi et al., 2020; Seifert & Har-Paz, 2020) has highlighted the benefits of integrating mobile technology to enhance learners’ language proficiency, urging EFL teachers to incorporate it into their instructional practices.

There is no doubt that the emergence of the COVID-19 pandemic has brought about unprecedented challenges in the field of education worldwide. As such, the theme “e-education during COVID-19”

has become a key priority in academic research (Gao et al., 2022; Iglesias-Pradas, 2021; Treve, 2021). Though the global pandemic indeed has posed significant challenges and obstacles for both EFL teachers and learners, amidst these difficulties, there have also emerged various solutions and opportunities as presented in the research studies conducted by Alammery et al. (2022) and Salman et al. (2022). These aspects have garnered considerable attention in academic literature, where scholars have engaged in extensive discussions to gain insights into this issue. In addition, the popularity of the research theme “Chinese EFL teachers” is partly attributed to the widespread implementation of online education in China during the pandemic (Gao et al., 2022; Younas et al., 2022), as well as the global interest in how Chinese EFL teachers can cope with the demands of mandatory online teaching (Gao et al., 2021). As for the theme of “teacher education,” the findings are consistent with those reported in Gao et al.’s (2022) study, which suggests that teacher education and professional development are always topics of discussion in the area of e-learning. Despite the increased adoption of technology, many EFL teachers have been found to be unprepared for the transition from face-to-face teaching to online education (Binmahboob, 2022; Lukas & Yunus, 2021). Therefore, providing EFL teachers with more technology-related training programs to enhance their skills in integrating technological aids in an online environment is considered necessary (Aboud, 2020; Al Awabdeh & Albashtawi, 2023).

## Discussion of Related Works

This bibliometric study provides a comprehensive overview of the research landscape concerning e-learning in the EFL context, offering a more comprehensive perspective compared to previous review studies. Previous studies have either focused on a specific e-learning tool or on e-learning during the COVID-19 period, relying on a limited number of articles from non-established databases. For example, Seraj et al. (2021) reviewed 11 articles specifically addressing the use of mobile phones for teaching English in Bangladesh and found that these studies primarily explored teachers’ professional development through mobile phone usage. This finding aligns with the present study, which also identifies teacher development as a prominent theme in e-learning within EFL context. Another review conducted by Lim and Yunus (2021) primarily examined teachers’ perceptions of Quizizz, a game-based learning platform, in English language teaching and learning. This present study highlights the importance of considering not only teachers’ perceptions but also those of the students. As Al-Dosari (2011) highlights, the perceptions of both teachers and EFL learners towards e-learning should be explored. Additionally, Kuswoyo et al. (2022) investigated the effectiveness, challenges, and recommendations related to the impact of the pandemic on EFL education, further supporting the notion that e-education during the COVID-19 period is a prominent theme. While earlier research has provided valuable insights, its scope has been limited, leading to a fragmented understanding of e-learning, as highlighted by Rodrigues et al. (2019). In contrast, this bibliometric analysis not only includes these topics but also offers a broader perspective on the research trends in this area. Furthermore, although numerous studies have employed quantitative methods to explore e-learning in various educational fields, such as health science education (Sweileh, 2021), higher education during the COVID-19 pandemic (Fauzi, 2022), and the intersection of e-learning and artificial intelligence (Jia et al., 2022), few have specifically focused on EFL context. In response to this gap, this study provides an overall view of the field, encompassing the publication trends, country contributions and collaborations, productive authors and journals, and key topics of interest, serving as a valuable guide for new entrants interested in conducting research in this area.

The findings of this study have significant implications for various stakeholders in EFL field, including practitioners, researchers, and policymakers. EFL practitioners can benefit from these findings by focusing on the utilization of effective e-learning tools, such as the recommended innovative e-learning tools proposed by Stecuła and Wolniak (2022), during their teaching practice, with specific emphasis on tackling the challenge of limited learner engagement in e-learning environments. For researchers, it is essential to continue conducting in-depth empirical investigations

in various research areas related to e-learning. This includes examining the specific effectiveness of e-learning tools, understanding learners' perceptions and attitudes towards e-learning, exploring the challenges and opportunities of e-education in the post-COVID-19 era, investigating teacher education in the context of e-learning, and exploring emerging themes to expand the scope of research. Policymakers should place importance on ensuring equitable access to resources for learners, particularly in disadvantaged areas. In addition, as Aboud (2020) and Al Awabdeh and Albashtawi (2023) suggest, EFL teachers should be provided with more technology-related training programs to enhance their skills in integrating technological aids in an online environment. By utilizing more effective e-learning tools, conducting further research, and implementing supportive policies, the field of EFL can enhance learner engagement, improve teaching practices, and ensure equal access to quality education.

## LIMITATIONS

Despite the meticulous procedures adopted in conducting the study and the comprehensive quantitative analysis presented, there are still some limitations that should be noted. One limitation is related to the selection of the Scopus database as the sole source of data. Although Scopus is recognized as the largest and most diverse database with broad coverage of documents across various disciplines, it cannot contain all relevant documents in this particular field. As a result, certain crucial documents may have been excluded, which could have influenced the findings. Another limitation concerns the criteria used to select the documents. The study's focus was restricted to peer-reviewed articles, and thus, some high-quality conference papers or book chapters, which may have provided valuable insights into the research trends and frontiers of the field, may have been overlooked.

## CONCLUSION

Through bibliometric analysis of 602 documents retrieved from the Scopus database spanning the years 2013 to 2022, the present study offers a comprehensive overview of e-learning research in EFL context. The major findings of this investigation are summarized as follows. To begin with, over the past decade, a consistent level of publication output has been observed in the field of e-learning in EFL context. Notably, there has been a significant surge in the number of publications from 2020 to 2022, indicating a substantial increase in research activity during the pandemic period. In addition, China, Saudi Arabia, and Indonesia have emerged as prominent contributors and collaborators in this field, demonstrating primary involvement and partnerships in conducting research and advancing knowledge in this particular area. Furthermore, among the identified authors, Lee, J. S., Hwang, W. Y., and Chalak, A. stand out as the most prolific contributors in the field. Regarding the prominent journals, *The Computer Assisted Language Learning Electronic Journal (CALL-EJ)* and *Computer Assisted Language Learning (CALL)* have been identified as the most productive journals within the domain. Lastly, the analysis of keyword co-occurrence has revealed six prominent themes, namely, the effectiveness of e-learning, learners' perceptions, mobile learning, e-education during COVID-19, Chinese EFL teachers, and teacher education.

In addition to contributing to the general knowledge about the hotspots and frontiers of literature in the e-learning landscape of the EFL context, this study also carries valuable implications for EFL practitioners, researchers, and policy-makers to attach more importance to this field. In order to advance future research in EFL context, it is advisable to delve deeper into specific aspects of e-learning. Firstly, a thorough investigation should be undertaken to understand the factors that influence learner engagement, encompassing their perceptions, attitudes, motivations, obstacles, and opportunities pertaining to e-learning. Additionally, it is recommended to examine the challenges and solutions encountered by both EFL teachers and learners during the pandemic, with the aim of gaining deeper insights into effective pedagogical practices in online and blended learning environments.

Furthermore, emphasis should be placed on teacher education and professional development, including an investigation of the preparedness of EFL teachers for the transition to online teaching, as well as an exploration of technology-related training programs aimed at enhancing their skills in integrating technology and pedagogies within online environments. By addressing these areas of inquiry, future research endeavors can contribute to overcoming the challenges faced by EFL learners and teachers in e-learning environments, ultimately leading to the enhancement of e-learning effectiveness in EFL context. Just as Khan (2013) asserts, the significance of e-learning cannot be overstated as it has become a global trend in education. Considering the challenges e-learning poses in EFL education, particularly during this pandemic era (Ja'ashan, 2020), it is crucial for all stakeholders to collaborate in order to optimize the e-learning environment from innovative and interdisciplinary perspectives.

## **AUTHOR NOTE**

The author states that there are no conflicts of interest to disclose. Correspondence concerning this article should be addressed to Feifei Chen, Zhejiang Yuexiu University, Shaoxing, China.

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