Digital Tools for Supporting Efl Learners and Teachers: A Bibliometric Study

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Article History	Abstract
  	The study conducted a bibliometric analysis to map out the research landscape concerning the use of digital tools to support English Foreign Language (EFL) learners and teachers. The primary aim of the research was to identify various aspects of the research field from the analysis of the given set of data. To this end, 350 journal articles published between 2020 and 2026 and indexed in the Scopus database were subjected to systematic analysis. The articles were examined to ascertain the dominant themes of the research, identify the most influential authors and countries, recognize the collaboration patterns, and find the most cited publications in the area. Bibliometric data were processed with the help of VOSviewer, which made it possible to visualize the co-occurrence of keywords, co-authorship at the author and country levels, citation networks, and temporal research trends through network and overlay maps. The findings show that studies for digital instruments in a foreign language learning (EFL) setting have been thematic areas which mostly are educational technology, digital literacy, and technology-enhanced language learning-focused. The research on the co-occurrence of keywords makes it clear that the main role of technology-driven approaches is to solve pedagogical needs and learning challenges in EFL contexts. Analysis of the co-authorship at the author and country levels shows that the production of scholarly works is influenced by a small number of authors of major impact, as well as by the research networks concentrated regionally that, therefore, point to the uneven global participation of the field despite its expansion. Besides, citation analysis serves as an instrument to single out the pivotal group of publications that have been most frequently referred to and, thus, constitute the intellectual foundation of the research on digital tools in EFL education and the subsequent scholarly works. Overall, the results demonstrate that studies on digital tools in EFL education have grown at a very fast pace over the last few years, and this growth has been accompanied by the diversification of themes and by the increasing sophistication of the methodologies used. Nevertheless, the findings also reveal that there is a call for more extensive global cooperation and more significant consideration of those educational environments that are less represented. This research is essential and useful source for literature. It shows how digital tools are studied in the EFL field and how this research has changed and developed itself over time. The study also gives clear information for researchers, teacher, and decision makers are interested in technology-supported language learning. *Keywords: EFL classroom, Digital tools, Educational technology, Bibliometric analysis, VOSviewer.*

1. Introduction

The quick use of digital materials in EFL lessons has changed how teachers teach, how students learn, and how eager students are to learn. New technologies in education, like online learning systems, mobile-assisted language learning apps, AI-based tools, and digital literacy resources, have opened up new ways for both EFL students and teachers to study (Lai & Li, 2018; Stockwell, 2016). Correspondingly, there has been a huge rise in the volume of research which investigates the use of digital resources in EFL contexts, thereby opening up issues such as language skill development, learner motivation, engagement, and teacher performance to be discussed among a vast range of equally substantial research fields (Dörnyei & Ryan, 2015).

Even if there are more and more numerical and conceptual studies in this area, the literature is still broken up into different research areas, methodological approaches, and geographical contexts. Many studies investigate certain digital tools or pedagogical methods; nevertheless, there have been few efforts to offer an overall view of the research environment through comprehensive bibliometric mapping. Consequently, identifying current research trends, significant contributors, and the theoretical foundations of research on digital tools for supporting EFL learners and educators continues to be difficult (Donthu et al., 2021; Zupic & Čater, 2015).

Bibliometric analysis provides a systematic and objective method for evaluating extensive collections of academic literature by showing the relationships among authors, keywords, citations, and countries of publishing. Researchers can use bibliometric tools to find significant works, content structures, and patterns of collaboration in a study field. According to Aria and Cuccurullo (2017), these tools make use of visualization approaches such as co-authorship, co-occurrence, and co-citation mapping. These studies and the understanding of tricky bibliometric correlations in educational and social scientific research have been greatly helped by the use of VOSviewer and other visualization software (van Eck & Waltman, 2010).

The purpose of this study is to carry out a detailed bibliometric analysis of a variety of research on digital tools that support EFL teachers and students. By examining 350 journal articles that are indexed in the Scopus database, this study aims to find out the main research trends, the most significant topics areas, the leading authors and countries, and the most often cited publications.

The study uses bibliometric visualization approaches using VOSviewer to give an organized and comprehensive analysis of the development of research about the usage of digital technologies in EFL contexts over time. The study seeks to clarify the intellectual framework of the field and to offer guidance for research and practice in technology-enhanced language education.

1.1 Objectives and Significance of the Study

This study aims to provide a comprehensive bibliographic review of the research works concerning the technological solutions to help EFL learners and instructors. Using 350 journal articles from the Scopus database, the study applies bibliometric visualization techniques to depict the dynamic organization of the field's ideas, concepts, and collaborations. Mainly, the study intends to identify the most important authors and countries, investigate the most productive keywords and their thematic categories, and recognize the highly cited articles that have a significant influence on research on digital tools in EFL contexts.

This study is important because it helps to fix the problem of the existing literature being poorly organized by providing a comprehensive and large-scale overview of research trends and collaboration patterns. The study offers important information for researchers aiming to contextualize future studies within the field by emphasizing significant contributors, popular themes, and important works. The results may also help EFL teachers, teacher trainers, and policymakers by showing how digital tools have been studied in EFL research. This will help them make decisions based on evidence on how to use technology in language education.

1.2 Research Questions

RQ1: Which authors and countries are the main contributors to research on Digital Tools for supporting EFL learners and teachers?

RQ2: What are the most common keywords in this field, and which thematic clusters (groups) do they form?

RQ3: Which studies are the most highly cited in research on Digital Tools for supporting EFL learners and teachers?

2. Method

This investigation utilizes a bibliometric study layout to strategically inspect the academic publications regarding

the use of digital tools in support of English as a Foreign Language (EFL) learners and teachers.

Bibliometric analysis is a quantitative method that opens up publication patterns, influential studies, and newly developing research trends in a particular field by looking at large volumes of bibliographic data (Donthu et al., 2021; Aria & Cuccurullo, 2022; Moral-Muñoz et al., 2020; Zupic & Čater, 2015). Researchers in educational technology and applied linguistics have been turning to this method more and more to trace the intellectual and thematic changes in a research domain over time.

2.1 Research Model
This study uses a bibliometric research model to analyze papers on digital tools that help both English as a Foreign Language learners and teachers. The study investigated a total of 350 journal articles from 2020 to 2026, all indexed in Scopus. The study used VOSviewer to check how often keywords appear together, how often authors are co-cited, collaborations between countries, and citation patterns. The purpose was to identify patterns and see which individuals impacted research in this field.

2.2 Data Collection and Analysis
Data in this study came from the Scopus database. A total of 350 journal articles were selected for analysis. These articles were published between 2020 and 2026, and the data were collected on December8, 2025. The selected time span needs a short explanation because some studies published towards the end of 2025 were later indexed by Scopus as 2026 publications.

For working with the bibliometric data, VOSviewer was used. Several types of analyses were carried out. These included keyword co-occurrence, author co-citation, country-level collaboration, and citation analysis. To show the findings more clearly, the study continued with network and overlay visualizations. These visualizations helped show recent research trends and how digital tools are connected within EFL education.

2.3 Study Group
The study is based on 350 journal articles indexed in the Scopus database. The articles focus on the use of digital tools to support English as a Foreign Language (EFL) students and teachers. All selected studies were published between 2020 and 2026 about the field. The publications constitute the data set that was examined using bibliometric methods.

3. Findings
This section shows a bibliometric analysis of 350 journal articles published between 2020 and 2026. The studies focus on digital tools used to support EFL learners and teachers. The analysis is organized according to the research questions of the study. The results highlight the main research topics in the field, as well as frequently studied authors and countries. They also show patterns of research collaboration and identify the most highly cited publications. Bibliometric analysis is commonly used to ''map the structure of a research field and its development over time'' (Donthu et al., 2021)

With previous studies, this analysis helps to display research trends and influential contributions in digital language learning (Aria & Cuccurullo, 2017). Also, recognizing the importance is citation is very essential in these kind of studies. Citation and co-authorship patterns also provide useful information about academic impact and cooperation across countries (van Eck & Waltman, 2010).

The findings are represented by network and overlay visualizations created by VOSviewer, which provide insights into:

1. The dominant research themes and keyword clusters related to digital tools in EFL education,

2. The most influential authors, countries, and sources based on citation and collaboration patterns, and

3. The temporal development of research trends identified through overlay visualization.

After each visualization, there is a short description which helps the understanding of the visible patterns and trends in the literature.

3.1 Keyword Co-occurrence Analysis
In this bibliometric analysis, the keyword co-occurrence network illustrates the conceptual structure of research on digital tools in English language teaching. The map reveals that EFL, English as a Foreign Language, educational technology, artificial intelligence, digital literacy, and language learning emerge as the most central and frequently co-occurring keywords. Five major thematic clusters were identified, representing: (1) technology-enhanced language learning and AI-driven tools, (2) digital literacy and CALL (Computer-Assisted Language Learning) practices, (3) learner-related variables such as motivation, engagement, and self-efficacy, (4) skill-focused research including writing, speaking, and digital storytelling, and (5) online learning, ICT (Information and Communication Technology) use, and higher education contexts. Overall, the network highlights the dominant thematic areas that structure research on digital tools in EFL instruction.
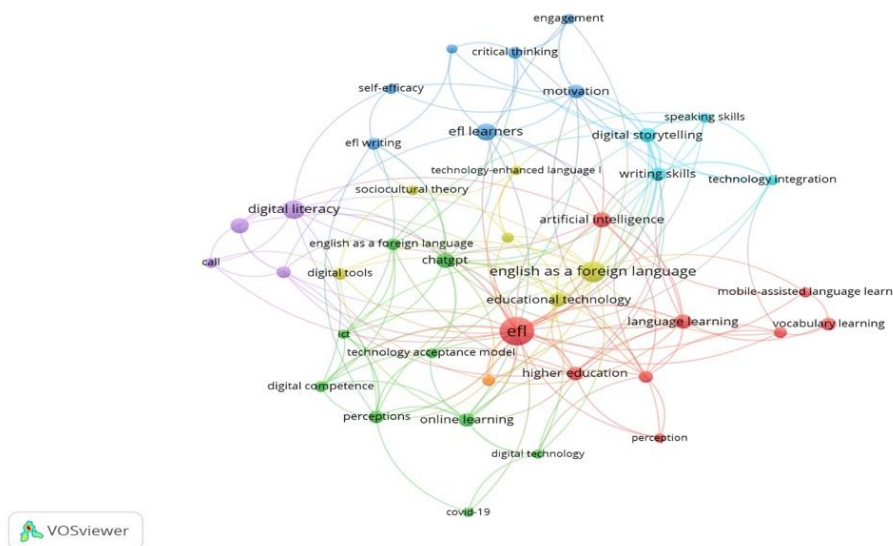
Figure 1. Keyword co-occurrence network map of author keywords in studies on digital tools in EFL contexts

3.2 Author Co-authorship Analysis

Bibliometric and co-authorship analyses are widely used to understand collaboration patterns and influential authors in educational technology research (Zhang et al., 2023; Li & Zhao, 2024). Recent studies emphasizes that author networks help reveal how research fields develop and how knowledge is shared among scholars (Kumar et al.,2024).

In this study, the co-authorship analysis showed three main author groups. This means that collaboration in the area of digital tools in EFL exists, but it is limited and mostly happens in small groups. According to the network map, authors typically collaborate with local research teams. Large-scale international cooperation is rare.

Suryati, Nunung; Rovikasar, Mala; Ndruru, Falentinus; and Basthomi, Y. create Cluster 1. These authors frequently collaborate and release related research. The subject of Cluster 2 is Cahyono, Bambang Yudi. The network's most important author is Cahyono. Among the several different groups, he has the strongest connections and ties. Deiniatur, Much, and Francisca Maria Ivone are part of Cluster 3.

This group is smaller but shows close cooperation. The overlay map shows that many studies were published in 2024 and 2025. This suggests that interest in digital tools for EFL teaching has increased recently. The density map also shows Cahyono as the main collaboration point. Other authors, such as Suryati, Rovikasari, and Deiniatur, appear as secondary collaboration areas.

Overall, the findings show that the field is growing, but it is still shaped by a small number of key authors, supported by several active small groups.
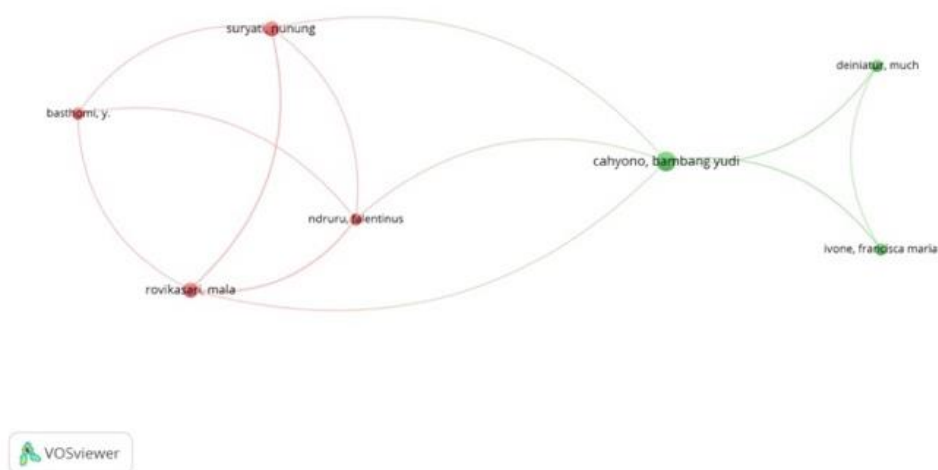

Figure 2. Co-authorship network visualization of authors in research on digital tools in EFL contexts.

3.3 Citation Co-authorship Analysis

People often use citation analysis to find important studies and intellectual foundations in a field of research. Donthu et al. (2023); Lim et al. (2024). Recent study indicates that co-citation maps can help explain how earlier studies continue to affect future research orientations over time (Kumar & Li, 2024).

The co-citation map for this study highlights the most notable research on digital tools for EFL instructors and learners. Certain studies are widely cited, showing their significance in the field. The studies of Perkins (2023), Liu (2024b; 2025b), and Hava (2021) can be seen in the center of the map. This highlights the important impact these books have on modern studies. Furthermore, the map clearly shows previous studies, such as Kim (2020) and Mudra (2020). Despite their age, they are nevertheless frequently used as important references. The map additionally shows the relationships between previous and more recent investigations. This suggests that new publications and research articles continue to add to our understanding. Overall, the data show that the subject is directed by a few major studies, with further research being added throughout time. This maintains the field alive, connected, and rising.
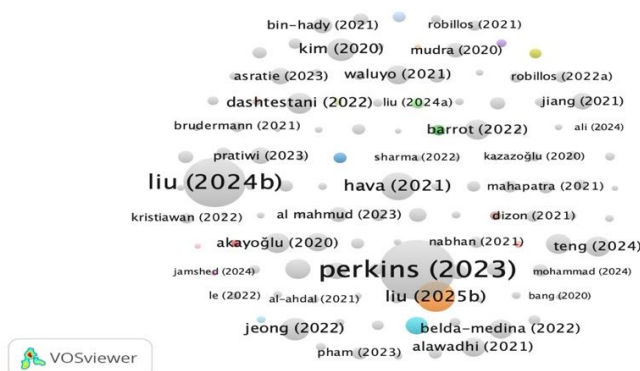

Figure 3. Citation Co-authorship Network Map (n = 35)

3.4 Country-Level Co-authorship Analysis

There were significant regional clusters, particularly in the Middle East, East Asia, and Southeast Asia, according to the country-level co-authorship network. Because they collaborated with individuals from different nations and produced numerous studies, Indonesia, China, Malaysia, Saudi Arabia, Turkey, Iran, and Spain were significant.

Strong Southeast Asian nations that cooperate include Indonesia, Malaysia, Thailand, and Vietnam. One of the network's most productive regions is Indonesia. In addition to Hong Kong, South Korea, Australia, and other nations that worked closely together, China played a significant role in the East Asia-Pacific collaboration. Saudi Arabia, Iran, Jordan, Oman, and Turkey are some Middle Eastern countries that work with other countries a lot. Turkey and Saudi Arabia are the two main places where this network is based. The overlay visualization shows that a variety of studies were published between 2024 and 2025. This shows that scholars are paying more attention to digital tools for learning English as a foreign language. Turkey, Japan, Poland, and Oman were connected to more recent contributions, whereas Indonesia, Malaysia, and China showed research effort that started earlier but has continued.

The density visualization confirmed Indonesia, China, Malaysia, Saudi Arabia, Spain, and Turkey as major research areas, showing their significant influence on the subject. In general, these results show that research on digital tools in EFL is done in many countries, although a small number of them are still responsible for most of the collaborative work and scholarly output.
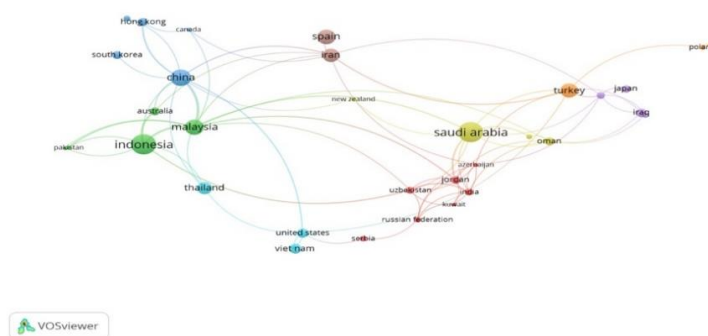

Figure 4. *Country-level co-authorship network visualization in research on digital tools in EFL contexts*

Discussion and Conclusion

This study looked into research regarding digital technologies utilized by EFL learners and educators. The findings indicate that numerous studies concentrate on the same basic concepts. These ideas generally have to do with technology in education, digital literacy, and using technology to learn a language. This illustrates that digital technologies are now a routine aspect of teaching English. Teachers use technology to assist students learn and to make lessons more interesting.

The author and country studies demonstrate that research in this domain originates from a limited number of active authors and nations. Some areas work together a lot, whereas others don't work together too much. The keyword results tell the same story. Some words come up a lot and change the course of the inquiry. But these studies still don't do a good job of showing how things are in many countries and learning situations. The citation results reveal that only a small number of papers are used by other researchers over and over again. These studies steer new research and change the field. Most new studies are based on these well-known publications, which demonstrates how much they have influenced other research.

In recent years, especially following the Covid-19 pandemic, there has been a lot of research on digital technologies in EFL classroom. The subjects are more variety, and the methods are advanced than they were previously. The findings, however, suggest a need for improved international cooperation and further research from other worldwide regions. Future research should also find new digital tools and teaching methods that will make learning a language easier and more accessible to everyone.

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