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by

Submission date: 06-Apr-2023 10:52AM (UTC+0700)

Submission ID: 2057233176

File name: World_wide_research_productivity.pdf (1.26M)

Word count: 4469

Character count: 24562

Worldwide research productivity and tendency of online English learning a bibliometric analysis (2011-2021)

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KEYWORDS

Bibliometrics
Education
Online English Learning
Productivity
Tendency

ABSTRACT This study was aimed to illustrate the global research productivity and the tendency of online English learning in recent years (2011-2021). Researchers investigated 922 articles in Google Scholar, which was retrieved via Publish or Perish. A bibliometric methodology was adopted in this study. The data was analyzed to reveal prominent articles distribution from 2011 to 2021, most productive journals, popular keywords and most-cited articles. This study revealed that from the beginning of the Covid-19 pandemic (2020-2021), the research productivity in online English learning topics showed a significant increase. IEEExplore was the most productive publisher, followed by CNKI and Springer. The top 10 most-cited articles mainly were written by authors from a developed country. Furthermore, the analysis of the keyword was assisted by VOSviewer software. The result presented the most frequent keyword, including "covid" with (155) occurrences, "online learning" (191) occurrences, "pandemic" (124) occurrences, "technology" (89) occurrences, keyword "platform" with (67) occurrences. The most tendency topics in different years were students' perception, students' motivation, technology and the online learning environment. Further areas of inquiry to advance research in online English Learning were suggested, including teaching strategies on online English learning, online English vocabularies, and reflection of online English teaching

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1. INTRODUCTION

Currently, online learning is the latest and most prominent kind of distant education. Online learning is a term that refers to an internet-based learning environment that enables individuals from different locations to connect. According to Means et al. (2009), it occurs partly or wholly through the Internet and becomes a subset of distance learning, which is implemented outside. It is commonly referred to as e-learning, among other titles.

In this globalization era, the use of online learning has improved significantly. According to Coombs (2010) the increase in online education is partly a result of current technological advancements. As technology advances and develops, the students can be taught via online instruction Shag (2014). The availability of high-speed Internet and novel technologies such as 4G and 5G has spread out quickly in the world. In addition, this cellular wireless network has the capacity to support hundreds of billions of connections, massive machine communication, and ultra-high-speed mobile Internet Kajeet (2010). Thus, this phenomenal growth of online learning is predicted to increase at a breakneck pace shortly.

Online learning dates back to the nineteenth century. One of the earliest examples of online learning in the world may be dated back to 1960, at the University of Illinois, USA. Though the Internet had not been developed at the time,

students began studying using computer terminals connected to a network. However, online learning in education was at first entirely offered in 1981 (Halevi et al., 2015). Since the early 1990s, schools and universities worldwide have been offering courses and even complete degrees online, a development made feasible by technological advancements which were not predicted previously. This advancement marked the start of a revolution whose full potential was largely unknown to the general public at the time.

In this 21st century, Online teaching and learning are becoming more prevalent in education institutions due to technology development. These education institutions recognize the rising relevance of online learning and teaching in information systems and information technology education and provide online courses and programs to students (Sarkar, 2020). This program supports students from different geographical locations to engage with an academic institution and other students. It enables students to get an accessible education more flexibly and more independent in studying while pursuing education. According to Coombs (2010) the increase in online education is partly a result of current technological advancements. As technology advances and develops, students/learners may be taught remotely or via online instruction Shag (2014).

Online learning offers an interactive learning environment for the English language education system, putting it on a level with classroom-based instruction. Effective

online teaching must facilitate online learning, which can take the form of asynchronous learning. Students are not required to be online simultaneously and instead use discussion boards and e-mail to complete coursework. On the other hand, synchronous learning requires students to be online simultaneously and complete coursework via discussion boards and e-mail Sheg (2014).

One of the popular subtopics of online learning research discussed is online English learning. Over the years, research on online English teaching and learning has grown in popularity. The novelty of research in Online English learning is significant to explore by using bibliometrics that previous work did not conduct.

The terms "bibliometrics" and "metrics" originated from the Latin and Greek words "biblio" and "metrics," respectively, and refer to the application of mathematics to the study of bibliography Wil (2016) According to Durieux & Gevenois (2010) "Bibliometrics is a set of mathematical and statistical methods engaged to analyze and measure the quantity and quality of books, articles and other foinsanalyzingit analyzes papers' bibliographic and content information in a particular field using quantitative analysis, correlation networks, and statistics. Bibliometric analysis can present a macro-level overview and evolution assessment for a given area and is particularly useful in interdisciplinary and frontier domains.

Some researchers have conducted several studies related to this current research. All these previous studies utilized bibliometrics as the research method. The first research was written by Van et al. (2021). This research concerns digital readiness for social educators in health care and online learning. The findings cover three main themes: digital readiness in learning management, learners' digital readiness, and educator digital readiness. The second previous study discussed bibliometric analysis of Computer-assisted English Learning (CAEL) from 2001 to 2020 (Liu & Zhang, 2021). The result of this study presents the most frequent keyword in documents. The previous study was by Oliveira et al. (2019) concerning a bibliometric analysis of the open access scientific production through the Web of Science.

Many scholars employ a bibliometric method to research science, economy, library, technology and health. However, the research that utilizes the bibliometric method in online English learning is rarely discussed. The research about online English learning by bibliometric analysis is significant due to this COVID-19 pandemic situation. Many scholars need a review of online English learning research to conduct further research regarding this topic.

This research is a modest attempt to collect data and describe the scholarly output in the field of online English learning using bibliometric analysis. Researchers conducted a bibliometric study of Online English learning studies to determine their productivity in years, journals, keywords, topics and citation. This research is significant to assist relevant researchers in tracking the evolution of research on Online English learning at various stages. The following research issues will be addressed in detail below

- a. What year is the most productive research in the area of Online English learning?
- b. Which journal do most contribute/publish to Online English learning?
- c. What is the distribution of the most-used keywords?

- d. What are the popular research topics in different periods?
- e. What is the most citation research of Online English learning?

2. METHOD

This research implied the bibliometrics method in which the data was extracted from Publish or Perish as the data source for retrieving research publications. VOSviewer was employed to generate the network of keywords. All the collected data were processed by using VOSviewer. VOSviewer is a software tool for constructing and visualizing bibliometric networks (Van Eck & Waltman, 2017). The result was displayed in social network map. In addition, excel is utilized to categorize and display a diagram. Quantitative analysis, correlation networks and tendency analysis were used to analyze the content information of the journal article in the term of Online English learning.

The literature search focused on Google Scholar due to Google Scholar has become a portal in accessing scientific articles. Research findings by Halevi et al. (2016) indicate that Google Scholar has dramatically increased its coverage over the years, transforming it into a formidable database of scientific literature. The period of publication was from 2011-2021.

The total journal article on Online English learning topics published between 2011-2021 is 989. To analyze the research productivity and tendency worldwide, the researcher selected some indicators. The number of publications by year, 10 most contributive journals, top 5 most-used keywords, 3 most popular topic publications, and top 10 most-cited articles

The researcher typed keywords in Publish or Perish. All the literature related to the keyword "Online English learning" emerged in various forms, including scientific articles or books. The researcher eliminated the keyword which was not relevant to the "Online English learning" keyword. The second eliminating keywords process was done to recheck the irrelevant keyword. This process was aimed to delete the tick on the application and acquire the highest relevant keyword. The final data was saved in RIS format to be processed by VOSviewer.

In this research, the researcher employed a VOS viewer to analyze the metadata. VOSviewer is a software tool for constructing and visualizing bibliometric networks (Van Eck & Waltman, 2017). Cluster analysis and generated social network maps were performed to analyze the trend of the topic. The social network maps became the source data to analyze how many topics related to the keyword and study areas. Researchers finished the analysis with density visualization maps, networking visualization maps, or world maps. In networking visualization maps, the thickness of the line between any two items reflects the strength of relationships, which is based on the number of lines between the two items. Besides, the researcher also used excel to present the graph of the trend by year and most contributive journals.

3. RESULTS AND DISCUSSION

3.1 Distribution of Publication by Years

Figure 1 shows that the trend of research productivity on Online English learning from 2011-2021. It is clear from

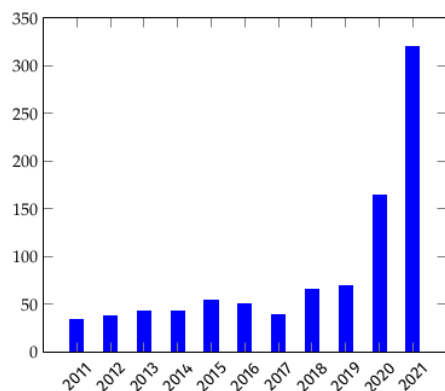


Figure 1. The Distribution of Publication by Year

the data that, in the last two years, from 2020 to 2021, the COVID pandemic began, the trend of research productivity booms almost fivefold. From 2011 until 2014, the data remains stable at the starting point, up to 30 and under 50 publications. Then in 2015, the total publication increase by 54 and decline steadily to 39 in 2017. A moderate increase came up in the next year, 2018, with 64 total publications, and it is almost stable to 2019. At the beginning of the COVID-19 pandemic, 2020, the research productivity rises more than twofold, from 69 to nearly 165. Finally, in the last year, 2021, the research productivity shows a significant climb to 320 total publications

3.2 Most Contributive Journals

The total number of publishers that contributes to Online English learning research are 50 publishers. As shown in figure 2, the data compares the top publishers who publish up to 10 online English learning topics over the last decade. Overall, the leading three publishers show significant differences compared to the fourth rank and following rank.

The most productive publisher's first rank was IEEExplore which owns 32 publications, followed by CNKI (27) and Springer (25). On the other hand, the last rank is CORE with 10 publications. Interestingly, there are the same at 11 publications among Elsevier, LearnTeachLib, and IGI Global. Besides, Reserchgate is positioned at 4th rank with 16 publications and ERIC as the 5th rank with 13 journals.

3.3 Most-Used Keywords

Keywords can be used to express the primary themes and ideas of a piece of literature (Liu & Zhang, 2021). It can reflect the most popular journal subjects. The researcher employed VOSviewer software to carry out the keyword co-occurrence network of Online English learning. From 986 research, there were 5457 total keywords, and 163 keywords met the threshold. The researcher selected the keyword and excluded not relevant terms. The total selected keywords were 57 keywords with a high occurrence score. The data revealed the most frequent keywords in 10 years (2011-2021).

The 57 selected keywords were categorized into 4 clusters. Each cluster's subjects are summarized, and the keywords are listed. Each cluster owns different colour. Clus-

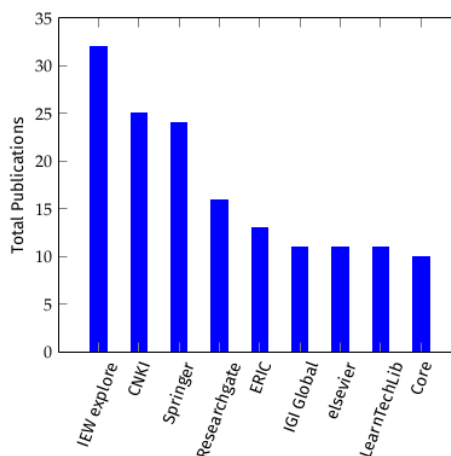


Figure 2. The Most Contributive Publishers

ter 1 consisted of 27 keywords and possessed the most occurrence keywords. Besides, cluster 2 presents 14 occurrence keywords. Cluster 3 with 13 keywords, and cluster 4 only shows 3 keywords.

In Figure 3, the node area and font size are based on the keyword's weight value. The stronger the weight value, the more times the term emerges. Besides, the line between nodes means that a keyword appears in common with another keyword. The thickness of the link line represents the degree to which the two terms co-occur. The thickness of the connection line is related to the strength of the co-occurrence, which implies that the thicker the connection line, the more often the two terms occur together.

In figure 3, it can be concluded that the top 5 keywords with the strongest total link. The keyword "online learning" presented (49) links with the most total strength (426). It is followed by the keyword "covid" that shows (45) links and presents (435) total strength. The next was "pandemic" with links (42) and total link strength (390), "environment" owns (43) link with (199) total link strength and "students' perception" shows (41) links and (153) total strength.

VOSviewer can examine co-occurrence keywords by year. The co-occurrence chronology of keywords enables us to observe the initial co-occurrence of two terms, which assist us in understanding the area research of online English learning. Figure 4 depicts the co-occurrence timeline. The colour of the line connecting the two terms in the figure shows the time of their first co-occurrence. The thicker the line, the more intense the two co-occurrences are, and the more co-occurrences appear between the two terms.

In addition, the number of most frequent keywords consist of "online learning" (191) occurrences, "covid" with (155) occurrence, "pandemic" (124) occurrences, "technology" (89) occurrences, keyword "platform" with (67) occurrences, "student perception" (58) occurrences. The following keywords were "environment" (55) occurrences, "model" (56) occurrences, "online English learning with (41) occurrences. These findings indicate that some frequent research topics in Online English learning including, the

covid pandemic era, technology, platform, students' perception, environment and model.

The data shows that based on the distribution publication during 2011-2015 that the most topic publication of online English learning is an online learning environment. Meanwhile, in 2016-2018, most researchers investigated online English learning in technology. In recent years (2020-2021), most scholars research students' perception on online english learning in covid-19 pandemic.

Figure 5 presents the clustering density view of keyword co-occurrence. Each node in this image represents a keyword and the density of the node in which the node will alter as the surrounding keyword values change. The density is greater in the centre area of the node. If the colour is more profound, the focus area is brighter. The topic is not a trending topic when the nodes are denser or near the edges and become closer to blue.

According to figure 5, it is clear that the yellow colour, which is located in the centre era, is currently the most trending keyword research. The trending keywords were online learning, covid, school, and technology. The other related topic research area were online English learning, students perception, community, paper, platform and model.

3.4 Most Cited Articles

Citation analysis assesses the connection between a paper and the papers it has cited. It means that there is a relation between citation in somehow (Van Eck & Waltman, 2017). After screening the data, the researchers found that there are 2.927 citations were required from (989) publications with cites/year (292.70), the average number of citations per item: (2.96), the average number of authors/paper: (1.74), the value of h-index= (24), and the value of g-index= (41).

The first rank of the most-cited article was written by G Sockett, D Toffoli in 2012. This article was cited (169) times, followed by an article by H Ashraf, FG Motlagh with (113) times, M Salami in 2014. The third rank of the most-cited article was IC Ke and H Cahyani's article with (91) times. The following table (table 1) presents the top 10 most-cited articles during 2011-2021.

Over the last decade (2011-2021), the number of publications in terms of online English learning improved significantly in the last two years, especially 2020-2021. The display indicates that the frequent topic to research and attract more attention. Based on the finding, some areas become active studies based on year distribution.

It can be seen from the distribution that during 2011-2015, the most topic publication of online English learning is an online learning environment. Most researchers conduct this topic due to its significance in improving quality of education. Online learning environments put in prominence to develop a positive attitude towards the course and increase academic success have an essential place in enhancing student motivation (Sheg, 2014). The other popular topic in this period was the online learning community and informal online learning.

In 2016-2018, most research investigated online English learning in technology. The research that referred technology can be divided into 3 classifications. Firstly, computer games electronic dictionary, etc.), classroom-based multimedia devices (e.g. digital videos, interactive white board, etc.) and network-based social computing (e.g. Twitter, blog, etc.), which assisted the establishment of English learning environment (Ignatius, 1999).

In the Covid-19 era (2020-2021), most scholars conducted research about students' perception on online english learning in covid-19 pandemic. According to [14] it is essential for students to understand their perception

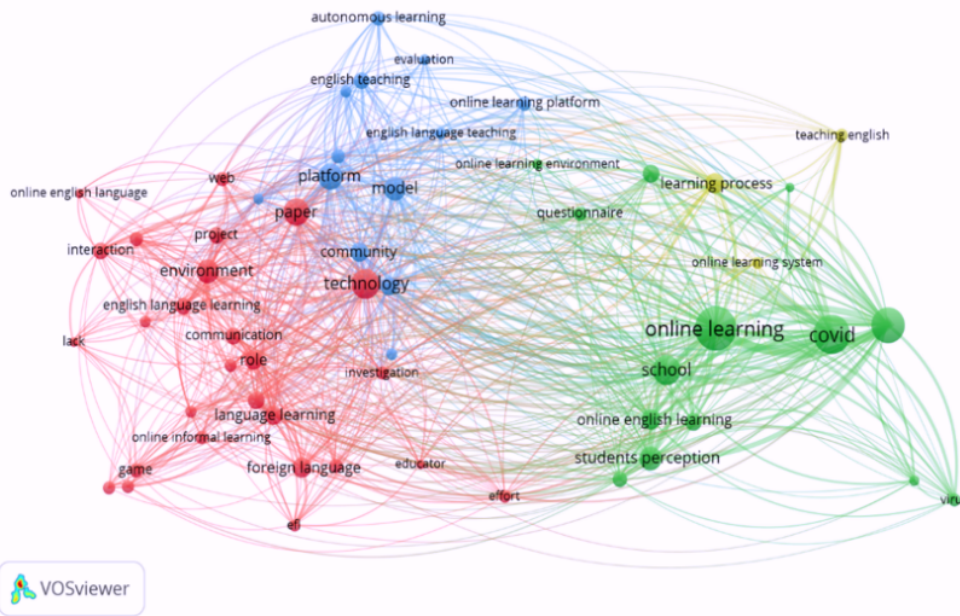


Figure 3. The Co-Occurrence Network of Top Frequent Keywords

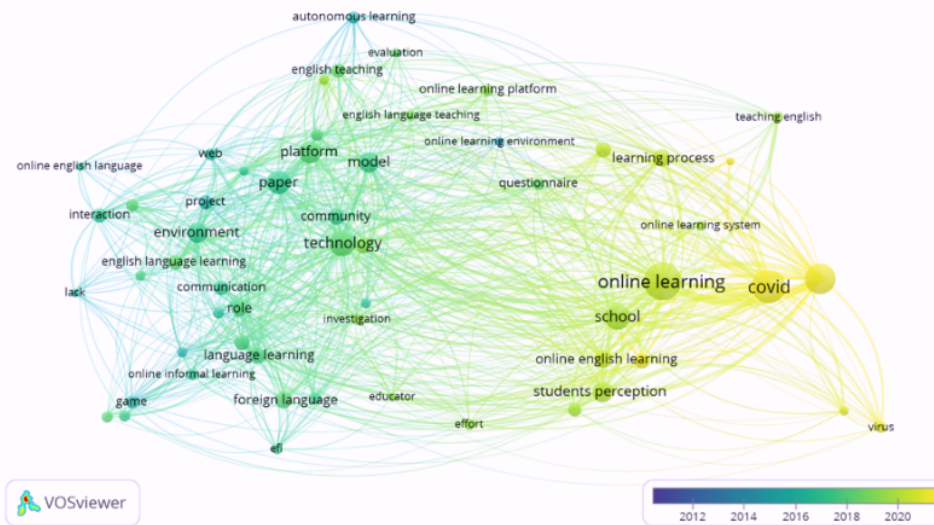


Figure 4. Distribution of Publication by Year

Table 1. Most Cited Articles

No.	Citation	Author	Title	Year	Country	Publisher
1.	169	G Sockett, D Toffoli	Beyond learner autonomy: A dynamic systems view of the informal learning of English	2012	France	cambridge.org
2.	113	H Ashraf, FG Motlagh, M Salami	The impact of online games on learning English vocabulary by Iranian (low-intermediate) EFL learners	2020	Iran & Dubai	Elsevier
3.	91	ASN Agung, MW Surtikanti,	CA Quinones Students' perception of online learning during COVID-19 pandemic: A case study on the English students of STKIP Pajene Talino	2020	Philippines & Indonesia	ojs.pnb.ac.id
4.	85	IC Ke, H Cahyani	Learning to become users of English as a Lingua Franca (ELF): How ELF online communication affects Taiwanese learners' beliefs of English	2014	China & Indonesia	Elsevier
5.	79	D Toffoli, G Sockett	University teachers' perceptions of online informal learning of English (OILE)	2015	French	Taylor & Francis
6.	63	I Jung, M Kudo, SK Choi	Stress in Japanese learners engaged in online collaborative learning in English	2012	Japan	Wiley Online Library
7.	59	G Sockett	Understanding the online informal learning of English as a complex dynamic system: An emic approach	2013	French	cambridge.org
8.	57	V Jurkovič	Online informal learning of English through smartphones in Slovenia 2019 Slovenia	Elsevier		
9.	53	PY Wang, HC Yang	Using collaborative filtering to support college students' use of online forum for English learning	2012	China	Elsevier
10.	47	H Mulyono	Using Quipper as an online platform for teaching and learning English as a foreign language	2016	Indonesia French	Ceeol.com
11.	43	G Sockett	From the cultural hegemony of English to online informal learning: Cluster frequency as an indicator of relevance in authentic documents	2011	French	Journals.openedition.org

since perception is the process through which information is obtained by sense receptors (e.g., eyes, ears, nose, and skin) and changed into a perception of what we think, see, hear, smell, taste, or touch. Thus, perception provides pos-

itive effect on the students' behaviour intention (Sun & Goa, 2019). It is critical in increasing lecturers' motivation to teach throughout the learning process, particularly online

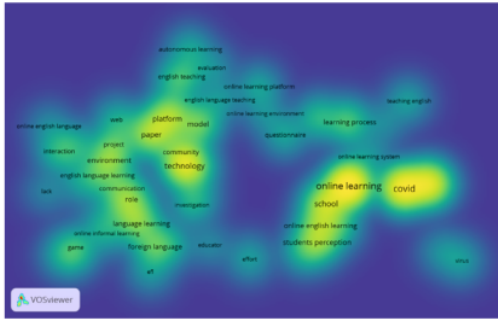


Figure 5. Clustering Density View of Keyword Co-Occurrence

learning. The other focused topic in online English learning involves effect and motivation.

4. CONCLUSIONS

This research presents a comprehensive overview and an intellectual structure of the global research productivity and trend of online English learning published from 2011 to 2021. The scholarly features are displayed by statistical description and geographical visualization. The analysis results that online English learning has become a popular topic in recent years.

There are some limitations of this study. Firstly, the database was only accessed in Google Scholar, which provided open access articles and not access the paid access article. It might be possible that the database does not cover all global research from the search engine. Thus, it may induce the loss of potential articles. Secondly, topic exploration merely based on keyword terms may result in a content loss when concluding. While the current study has the aforementioned limitations, it does present some observations and findings that may assist the researchers in getting better to understand future trends in online English learning research. Future research may enhance or eliminate the limitations.

Further areas of inquiry to advance research in online English Learning are suggested. Researchers observed that some areas, including teaching strategies on online English learning, online English vocabularies, and reflection of online English teaching must be paid attention to—this study possibly aid researchers, particularly scholars, in the comprehensive progress of the area.

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