



IOT RESEARCH IN ONLINE LEARNING PLATFORM FOR EFL: A BIBLIOMETRIC ANALYSIS USING VOSVIEWER SOFTWARE

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Abstract

The era of the COVID-19 pandemic has changed the course of the world's education system. Various innovations carried out by educational institutions. They built an online platform to help facilitate access to teaching and learning that is fun and not boring for students in this pandemic era. This article focuses on research on the use of online learning platforms for EFL. The researcher used VOSviewer software to analyse and visualize the use of online learning platform for EFL. Through bibliometric analysis and knowledge domain mapping, we systematically evaluated global research trends in online English as a foreign language (EFL) learning platforms on the spine. Dimension was used to conduct a systematic literature search. Microsoft Excel, the Online Analysis Platform of Bibliometrics, and VOSviewer were used to analyze the number, countries, journals, and authors of the publications, total citations, average publication year, and institution sources. VOSviewer was used to analyze and visualize the hotspots. We found a total of 158 publications. VOSviewer classified the research hotspots into three categories: online learning platforms as supplements, complements, and substitutions. According to the average publication year, the most recent hotspot was online learning platforms as a replacement, and the oldest hotspot was online learning platforms as supplements. During the Covid-19 pandemic, the number of studies conducted on an online EFL platform has increased.

Keywords: EFL, learning management system, online learning platform

Introduction

Before the COVID-19 outbreak, the Indonesian educational system used a traditional face-to-face or offline learning management system, and there was little awareness of online learning platforms there. Nearly 1.6 billion students were significantly impacted by the COVID-19 pandemic due to school closures, which had a significant influence on the global education system (*Preventing and Mitigating COVID-19 at Work*, 2021; UNESCO, 2020). Governments were required to take significant steps to stop the virus from spreading, including social isolation, quarantine, and the closure of workplaces, public areas (such as shopping malls), and school (De Giusti, 2020; Porcher, 2020; UNESCO, 2020).

All institutions in Indonesia are worried about the most recent circumstances that have allowed the Covid-19 virus to spread. Issuing certain stringent regulations is one method used to stop the spread of the disease (Yunus & Rezki, 2020).

Nowadays, in the field of education, online learning systems have emerged as a critical requirement. The number of platforms utilized to enhance the quality of online learning is enormous. Online learning is currently the only option that can be provided to educators as a solution. Providing lectures, materials delivery, and even an assessment system for students is one of the most important aspects of higher education. Utilizing technology is a part of online learning, and students use it to transfer knowledge and complete projects. For students that communicate online, this online learning activity is particularly effective for raising performance standards (Hassan et al., 2020). Applications, websites, social networks, and learning management systems can all be used effectively in online learning activities (LMS). Platforms are used for material distribution, assessment, and even just accumulating tasks, among other things, to help the learning process. According to several authorities, the LMS's extensive and user-friendly features promote effective learning (Gunawan & Suranti, 2020).

To determine the topic of articles, the number of studies that It is necessary to draw out the English Teaching Method in the Covid-19 Pandemic. The Covid-19 Pandemic English Teaching Method area is being mapped through bibliometrics analysis. The term "bibliometric analysis" refers to a process for reviewing and evaluating bibliographic data from research papers that may be presented mathematically, statistically, or scientifically and then used as a resource for scientific or research development trends.(Ardito et al., 2019; Ellegaard, 2018; Yu et al., 2019). Scientific article references must be verified, article citations must be indexed, similar articles must be grouped, and the scientific topics of journals must be mapped. It will be simpler for researchers to plan and carry out their research with the help of this bibliometrics, which will give an overview of the features of changes and developments in research on current trends and future trends (Nobre & Tavares, 2017).

Based on the aforementioned theories, this study aims to show how many articles about online learning platforms for efl have been written by researchers between 2020 and 2022 using bibliometrics analysis of VOSviewer to determine whether or not articles on this topic still need to be researched in the future.

Method

The researcher examined the bibliographic mapping information of publications written about the online learning platform for EFL using a program called VOSviewer. VOSViewer is a computer program developed to build and view bibliometric maps (van Eck & Waltman, 2010). The methods for using this tool to examine the study's bibliographic mapping data are as follows.

Analysis tool preparation

There are several things that need to be prepared before using VOSViewer to conduct data analysis. First, VOSviewer is use as a mapping tool in this study to visualize the data that will be mapped (**Figure 1**). Dimension-Publication data that has already been gathered is the second thing to put up (**Figure 2**). This

Dimension is used to gather research information that will then be examined bibliometrically by VOSviewer.

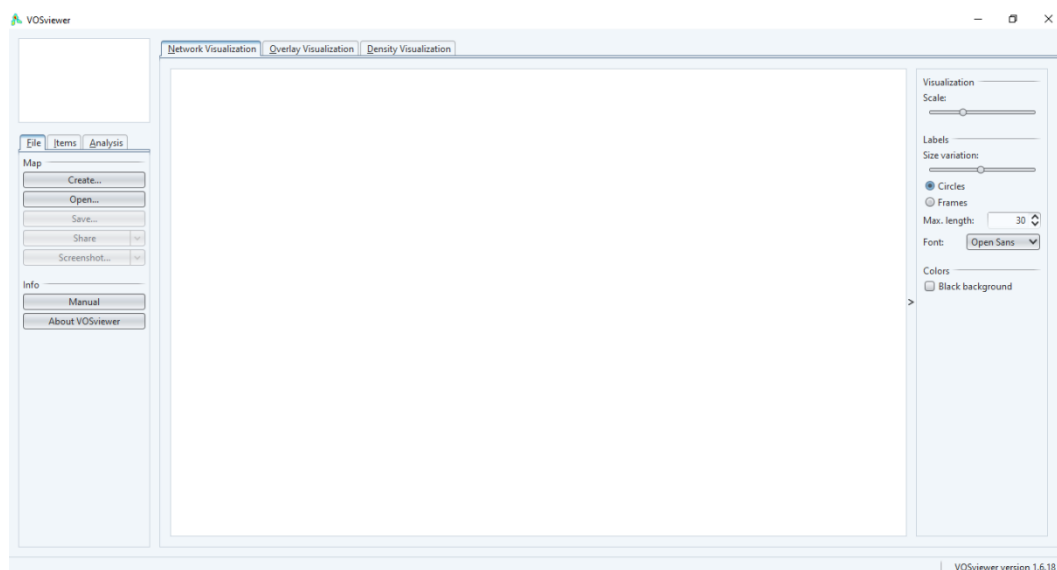


Figure 1. VOSviewer application.

PubYear	Volume	Issue	Paginatio	Authors	Authors A	Authors A Dimension	Times cite	Cited references
2022	128		6	2820-2848	Wang, Xin Xi'an Univ China	https://ag	0	[Hew, Khe Foon; Cheung, Sum] [ur.07366715465.03; ur.014326715166
2022	13			852360	Yu, Qiang Xi'an Univ China	https://ag	0	[Baldwin, Tamara; Blattner, Nancy] [;] College Teaching [2003] [51]1
2022	17	1	24	Farahian, Islamic Az Iran; Iran	https://ag	0	[Abdullah, Fazil; Ward, Rupert] [ur.012253233571.45; ur.01567460653	
2022	30	3	217-228	Lian, Jing Beijing U; China; Chi	https://ag	8	[Brown, John Seely; Collins, Allan; Duguid, Paul] [ur.014430365055.1	
2022	17	1	24	Farahian, Islamic Az Iran; Iran	https://ag	0	[Chang, Yu-Shan] [ur.015114317605.71] [International Journal of Tech	
2021	60	1	196-219	Li, Bingqir Monash U Australia	https://ag	5	[Liu, Qingtang; Zhang, Si; Wang, Qiyun] [ur.016455426763.51; ur.0155	
2021	12		722622	Wang, Ying University China; Chi	https://ag	1	[Shao, Kaiqi; Yu, Weihua; Ji, Zhongmin] [ur.011363700765.07; ur.0127	
2022	13		839267	Wang, Xin Xi'an Univ China; Chi	https://ag	1	[Egbert, Joy] [ur.012616225703.56] Modern Language Journal [2003] [
2020	11		549653	Gao, Lori Taiyuan U China; Ne	https://ag	71	[Vaish, Vinit] [ur.010050202317.06] International Journal of Billing;]	
2021	1	10	246	BeAtirov Internatio Bosnia an	https://ag	0	[Sullivan, Patrick] [] Community College Journal of Research and Pri	
2021	30		6	509-518	Jiang, Liar Education China; Chi	https://ag	5	[Lee, Icy] [ur.015767514575.51] TESOL Quarterly [2014] [48] [] 201-213
2021	27	1	243-265	Shrestha, Dublin Cit Ireland; B	https://ag	8	[Sandberg, Jacobijn; Maris, Marinus; de Geus, Kaspar] [ur.011437334	
2021	12		710736	Bao, Chun Jilin Univ China; Ne	https://ag	12	[Cheung, Yin Ling; Said, Selim Ben; Park, Kwanghyun] [; ur.01527066	
2021	12		742742	Jiang, Yuh Shanghai i China	https://ag	3	[Miyazoe, Terumi; Anderson, Terry] [ur.012724704257.61; ur.0731065	
2021	12		713057	Amerstou University Austria	https://ag	1	[Finn, Amber N.; Schrodt, Paul; Witt, Paul L.; Elledge, Nikki; Jernberg,	
2022	13		903452	Alamstou Near East. Cyprus	https://ag	0	[Ennis, Robert H.] [] Educational Researcher [1989] [18] [3] [4-10] 10.31C	
2022	13		829193	Yang, Gan Shandong China; Chi	https://ag	0	[Brooks, Catherine F.; Young, Stacy L.] [;] Technology Pedagogy and	
2022	9	1	13	Segbenya University Ghana; Mi	https://ag	2	[Paechter, Manuela; Maier, Brigitte; Macher, Daniel] [ur.0765723412	
2016	44		66-73	Tai, Hung-Chang Gui Taiwan	https://ag	6	[Miyazoe, Terumi; Anderson, Terry] [ur.012724704257.61; ur.0731065	
2022	21	1	22	Khodaei, Lorestan I Iran; Iran	https://ag	5	[van Vliet, E. A.; Winnips, J. C.; Brouwer, N.] [ur.01341622133.46; ur	
2021	8	1	e08663	Saha, Sou Bangladesh; Banglade	https://ag	7	[Deressa, Temesgen Tadesse; Hassan, Rashid M.; Ringle, Claudia; Ah	

Figure 2. Dimension-publication

Bibliometric map research on online learning platform for EFL

This section explains how to use VOSviewer to study data on the growth of journal publications with the topic of online learning platforms for EFL by Dimension database from 2020 to 2022.

As an example of this research, the data will be taken through Dimension that has been gathered before (Figure 2). This data is used to conduct the bibliometrics analysis using the VOSviewer. The steps to get the data are as follows.

Open the VOSviewer application

The first step in using the Dimension to obtain data is to launch the VOSviewer and then select the Create button. The initial window will then appear.

Start to create the new mapping

To begin developing a new mapping, click create after launching the VOSviewer. There are three data kinds available: text data, bibliographic data, and network data for creating maps. Because the research for this study to conduct the bibliographic mapping, the map was created using bibliographic data. Click the next button after that.

Choose and select the type of data source

The following step in creating a research map, and there are 3 options for data sources: read data from bibliographic database files, read data from reference manager files, and download data from API. We used dimensions to collect data for the method section, and we decided to generate the map using bibliographic data. Therefore, we must select Read data from bibliographic database files in this phase. Thus, 5 type files—web of science, scopus, dimension, lens, and pubmed—were available to support this type. Select the dimension section. Then click the next button to proceed to the next stage.

Choose file to extract

Next, the Choose file page appears, select and enter the file that has been obtained via dimension, by pressing the three dots button. Then click the next button to proceed to the next stage.

Choose type of analysis and counting method

There are 2 steps in this phase, the type of analysis type and counting method. There are 4 different types of analysis, each with 5 separate units. For the type of analysis, there are co-authorship, citation, bibliographic coupling, and co-citation, documents, sources, authors, organizations, and countries in the analysis's unit. Depending on the type and units of analysis we require, we can conduct data.

There are two different kinds of counting methods: full counting and fractional counting. Each contributing author receives one credit after full counting, thus five authors obtain five credits. A fraction of one credit is given to each author when using fractional counting (Egghe, Rousseau, & Van Hooydonk, 2000; Osório, 2018; Waltman, 2016; Waltman & van Eck, 2015).

In this study, we apply full counting to conduct the bibliometrics mapping based on the number of counties that publish the article of online learning platform for EFL. We also chose the bibliographic coupling by countries.

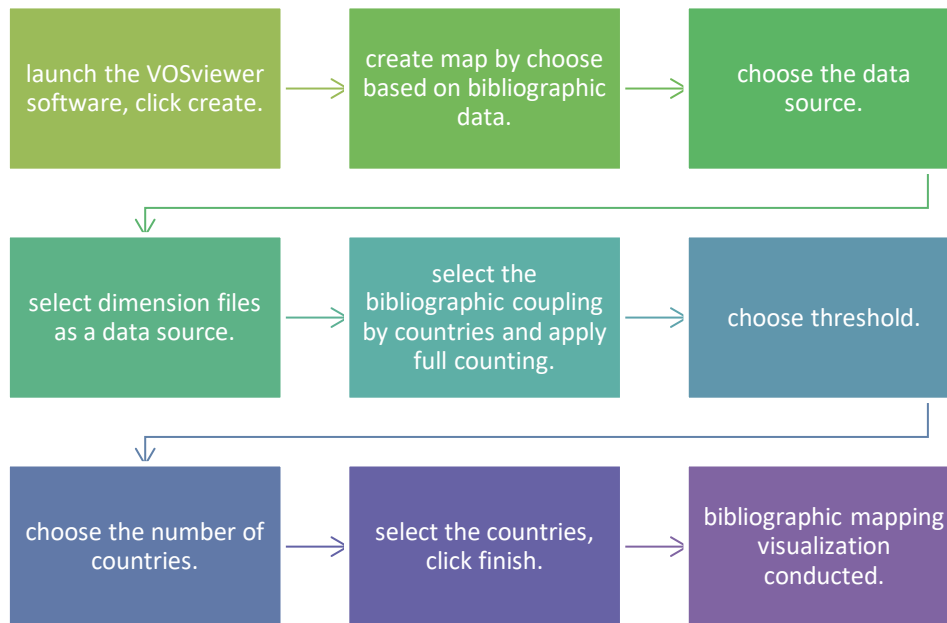
Choose threshold

This is the Threshold selection. The minimum amount of documents per country that must appear in order for them to be presented in a folder is determined on this page. The amount of documents in this study that mention at

least five countries at a minimum and no citations. Since 28 countries are detected, we maximum the data display by 28.

Verify selected countries and click finish Button

This phase is the last step of the method, it is the selection of the used and developed research mapping's countries, select the countries on the page then followed by a finish button. The mapping of the research topic of online learning platforms for EFL is indeed visible.



Findings and Discussion

Findings

Two distinct visualization methods for bibliographic mapping will be used to present the results. The first is a map of the bibliographic coupling created by network visualization, while the second is a map of the bibliographic coupling created by density visualization.

Bibliographic coupling map by network visualization

Two distinct visualization methods for bibliographic mapping will be used to present the results. The first is a map of the bibliographic coupling created by network visualization (**Figure 3**), while the second is a map of the bibliographic coupling created by density visualization (**Figure 4**).

The results of the visualization of the bibliographic coupling map network of research developments regarding the topic article on online learning platform for EFL are divided into 5 clusters as shown in **Figure 3** below.

- Cluster 1. The red color consists of 13 items including Bangladesh, China, Egypt, Indonesia, Iran, Malaysia, Romania, South Africa, South Korea, Spain, Taiwan, Thailand and United States.
- Cluster 2. Green color consists of 5 items including Belgium, India, Japan, Saudi Arabia, Vietnam.

- Cluster 3. Blue color consists of 4 items including Australia, Canada, Singapore, Turkey.
- Cluster 4. Yellow color consists of 4 items, Cyprus, Oman, United Emirate Arab, United Kingdom.
- Cluster 5. Purple color consists of 2 items including Pakistan, Russia.

In study articles on the subject of online learning platforms for EFL, the number of links, total link strength, and documents obtained by mapping on VOSviewer are indicated from each country on each cluster. As shown by the table below.

Bibliographic coupling map by density visualization

The cluster density view shows items that contain the same markings as the visible item. The item point has a certain color depending on the density of the item at that point. It is obvious that the color of the dots is fixed and determined by the object that is linked to other items. The cluster density view shows items that contain the same markings as the visible item. The item point has a certain color depending on the density of the item at that point. It is obvious that the color of the dots is fixed and determined by the object that is linked to other items. The 28 countries are organized into 5 clusters, and of the 5 clusters, cluster 1 has the largest density dot as compared to the other clusters. Indonesia has the highest density, followed by other countries whose density is decreasing.

CLUSTER 1	LINKS	TOTAL LINK STRENGTH	DOCUMENTS
Bangladesh	26	439	6
China	27	4479	118
Egypt	25	198	6
Indonesia	27	2592	158
Iran	27	869	15
Malaysia	27	2279	34
Romania	25	363	5
South Africa	24	188	6
South korea	27	839	8
Spain	27	420	15
Taiwan	27	2907	42
Thailand	27	268	8
United states	27	1726	36
CLUSTER 2	LINKS	TOTAL LINK STRENGTH	DOCUMENTS
Belgium	24	308	9
India	26	1312	12
Japan	24	132	6
Saudi Arabia	27	1946	20
Vietnam	25	540	6
CLUSTER 3	LINKS	TOTAL LINK STRENGTH	DOCUMENTS
Australia	27	1891	20
Canada	19	241	7
Singapore	19	228	7
Turkey	26	608	10
CLUSTER 4	LINKS	TOTAL LINK STRENGTH	DOCUMENTS
Cyprus	23	470	5

Oman	26	698	5
United Emirate Arab	25	372	7
United Kingdom	27	1938	20
CLUSTER 5	LINKS	TOTAL LINK STRENGTH	DOCUMENTS
Pakistan	21	1757	5
Russia	22	2134	17

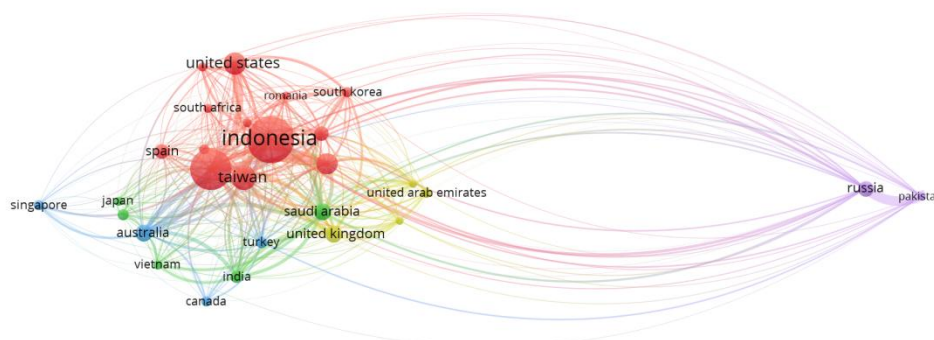


Figure 3. Bibliographic mapping network visualization on VOSviewer

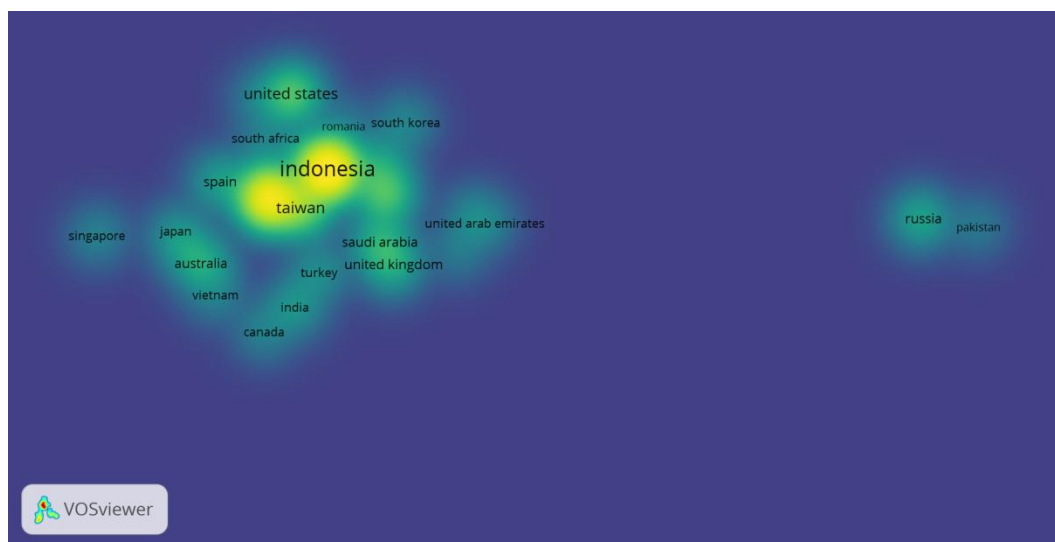


Figure 4. Bibliographic mapping density visualization on VOSviewer.

Discussion

According to a bibliographic map visualization created in this study using the publication of articles about online learning platforms for EFL from a dimension database and bibliometric analysis with VOSviewer, Indonesia is the country that conducts the most research and publishes the most articles on the topic. The online learning platform for EFL from 2020 to 2022 has been the topic of 158 documents (articles) from Indonesia. To carry out the online learning, a variety of platforms and applications, including learning management systems and other materials, are used (Atmojo & Nugroho, 2020). The usages of digital

learning like Google Classroom, Cisco WebEx, Wooclap, Edmodo, Quizizz, Kahoot!, Google Meet, Zoom, PowToon, YouTube and Discord is covered in each topic. Even various social media platforms like Facebook, Instagram, and WhatsApp have evolved into learning tools that are frequently the subject of studies. In Indonesia, these media are usually applied as tools to assist online learning activities. According to Amin and Sundari (2020), video conferences held using Google Classroom, WhatsApp Messenger, and Cisco WebEx Meetings have been considered to be significantly positive across the board. Almurashi Wael (2016) stated that YouTube's availability of audio and video elements draws students' interest. According to Hamid (2020), Zoom application could be a useful and effective learning platform for students with impaired vision (recording, chatting, and video conference). WhatsApp is a platform that advises and suits the demands of both students and lecturers in online learning environments during the COVID-19 pandemic (Asmara, 2020). Thus, the previously stated online learning platform, which is popular in Indonesia, has also been the focus of studies ever since the COVID-19 epidemic in 2020.

Conclusion

Indonesia is the country that has studied the most articles of online learning platforms in EFL, according to the findings of the bibliographic analysis carried out by VOSviewer, which were displayed in the network visualization and density visualization by country. There were 158 documents with a total of 27 links connecting articles with a total link strength of 2592 from different countries. Each article analyses several media, platforms, and learning media that are commonly applied in Indonesian teaching and learning activities. In Indonesia, platforms and LMS including Google Classroom, Cisco WebEx, Wooclap, Edmodo, Quizizz, and Kahoot! YouTube, Discord, Google Meet, Zoom, PowToon, Facebook, Instagram, WhatsApp, and Facebook are frequently utilized as online learning media. This shows that Indonesia no longer needs to research articles of online learning platforms in EFL because the subject has been thoroughly researched. In addition, the Indonesian education system can continue to use online learning platforms as learning materials. Since the need for technology integration in language learning is inevitable, Future teacher preparation programs must incorporate these concepts into their course content: courses offered online, information and communication technology in language learning, and technology-enhanced language learning (Atmojo & Nugroho, 2020). Indonesia's new education system has developed into a hybrid system because, after the COVID-19 epidemic, we will enter a new era where online education can become an alternative media.

Suggestion

For the further researcher, there is no need to examine previously researched articles about online learning platforms. There are still a lot of other platforms, such coursera, udemy, skillshare, masterclass, etc., that have not been thoroughly examined as to whether or not these platforms and LMS are suitable for usage in the Indonesian educational system.

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