



## ONLINE GAME TO IMPROVE ENGLISH VOCABULARY: A BIBLIOMETRIC ANALYSIS

Fastabiqul Khairati

STKIP Muhammadiyah Aceh Barat Daya

Email: [khairatifastabiqul@gmail.com](mailto:khairatifastabiqul@gmail.com)

### **Abstract**

*This study aims to evaluate and analyse the research that has been conducted on the use of online games to improve English vocabulary. This research uses bibliometric analysis method to analyse and evaluate articles, journals, and conference papers related to Online Game To Improve English Vocabulary. This study collected metadata from Google Scholar through publish or perish in the last 7 years (2017-2023) and visualised with VOSviewer, then analysed and evaluated based on country, author bibliographic pairs, and co-occurrence of author keywords. A total of 463 publications were selected following the research criteria in the last 7 years (2017-2023). The results show that Indonesia is the country where there is a very rapid increase in this research. Hashim, harmawati (Indonesia) (based on author's bibliography) in this study. Language learning, Games and English Vocabulary became the most influential keywords in this study. The results show that there has been a significant increase in research conducted on the use of online games to improve English vocabulary over the past few years. In addition, the analysis identified trends and patterns in this research, including the use of online games as an effective tool for improving English vocabulary, particularly among students. This research suggests that online games can be a useful tool for improving English vocabulary and can help in developing better strategies and practices for teaching English.*

**Keywords:** *Online Game, English Vocabulary, Bibliometric Analysis*

### **INTRODUCTION**

Online games are a technology that can be connected multiplayer (Adha et al., 2022). Based on (Yelia & Efriza, 2021) Online games are games that can be played via an internet connection or other available network devices. Online games are ubiquitous on modern gaming platforms, including PCs, consoles, and mobile devices (smartphones). Many people love playing online games; the majority of players are men, women, children, and students. This is because everyone can enjoy playing online games as they are very entertaining and fun. Games are divided into 2 parts: games that can be played online and games that can be played offline.

Online games are very popular today, surpassing the games played by children and teenagers 30 years ago (Mawalia, 2020). Online gaming is one way to entertain oneself and relieve boredom after one has done tiring activities. Playing is indeed one way for someone to get rid of boredom. Online games have penetrated Indonesia since a long time ago, it doesn't take long for them to spread, especially in about six years, their popularity is very high (Putri et al., 2021). According to (Arik Diantoro, Tri Mulyati, 2022) Online games are one of the mobile learning that students use in the process of learning English at school. Playing online games is one of the excellent techniques to improve English vocabulary because games are very popular in many circles. According to (Adha et al., 2022) using online games can help students to increase students' vocabulary interest and motivation.

According to (Noviyanti et al., 2023) learning English vocabulary is one of the most important components because it is a basic skill for mastering a language and is considered the most important component for students in learning English as a foreign language. In line with (Posyada-AS & Apoko, 2023; Sadiqin et al., 2023; Harahap et al., 2022; Adha et al., 2022; Perkasa et al., 2022; Jannah et al., 2020; Tarina Dashela et al, 2017; Munir, 2016) ‘Learning vocabulary is an important part of learning a language’. One of the most basic things in learning or understanding English is vocabulary. According to Shinoda, 2008 (In Diantoro et al., 2020) English consists of four skills that must be learned, namely listening, speaking, reading, and writing. In addition, in line with (Abbas, 2014) Vocabulary plays a very important role in developing four language skills: listening, speaking, reading, and writing. Online games not only affect positive things but can also affect negative things. As the most influential thing about online games can sometimes forget time, not study and lack of socialising and also adaptation with other friends.

In recent years, there has been an increase in research interest in online games to improve English vocabulary because the use of online games is very common. In the current era of globalisation, humans are faced with the development of sophisticated technology, especially what is clearly visible is the development of cyberspace or the internet (Putri et al., 2021) in journal 25. Online games are one of the technological sophistication in today's internet network. Based on the search results on the Publish or Perish application through Google Scholar related to Online Games to improve language learning with a minimum search limit of 1000 can be seen in the figure below.

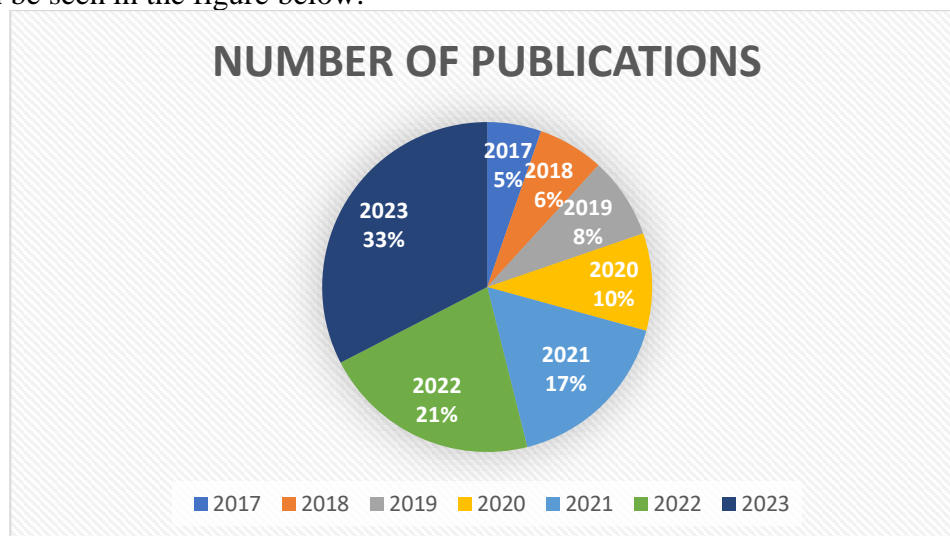


Figure 1. Diagram of the increase in the number of publications of Online Games to improve English Vocabulary (2017-2023)

Based on Figure 1, it can be seen that the number of publications is increasing related to online games to improve English Vocabulary every year. An increase of 33 per cent from 2017 to 2023 means that this research is of great interest to researchers. English is the language of communication in the international world, so there is almost no country that does not use English as a language of communication in its society (Adha et al., 2022). For students in Indonesia, learning English as a foreign language is compulsory starting from junior high school and



continuing to senior high school and university. Technological advancements have given rise to several resources that facilitate our ability to learn English, one of which is online games. Speaking of games, most of the current game applications use English as the main language. So with the online game can improve and also can master vocabulary by the players. According to (Munir, 2016) if students master vocabulary then students will find it easier to learn English.

This study aims to identify publications using bibliometric analysis on online games to improve English vocabulary, starting with the number of publications from year to year, the keywords that are often used, the most influential countries, and the authors that often appear. Bibliometric analysis was used in this study to explore the characteristics of the publications and to understand research trends in this area.

Bibliometric analysis is a quantitative method and describes the characteristics of a set of published literature, such as journal articles or conference proceedings. It involves collecting bibliographic data on publications, such as author, journal, year of publication, and number of citations, and using statistical techniques to analyse and interpret the data. Bibliometric analysis can be used to answer a variety of research questions, such as identifying trends in a research field, measuring the impact of a particular publication or author, or comparing the productivity of different research groups. In line with (Aria & Cuccurullo, 2017) Bibliometric analysis is a systematic and reproducible process of reviewing scientific publications, using quantitative measures to evaluate research articles and describe their trends and patterns within a certain period.

Bibliometric analysis is a quantitative study of published literature. It involves the use of statistical methods to analyse and describe the characteristics of a set of publications, such as journal articles or conference proceedings. Bibliometric methods or 'analysis' are now established as a scientific speciality and an integral part of research evaluation methodologies (Ellegaard & Wallin, 2015). The quality and quantity of publications are important for comparing journals, countries, authors, and institutions. Bibliometrics is a type of quantitative analysis that uses various publication patterns. There are evaluative and descriptive methods that can be used in bibliometric methodology. Evaluative methods, such as bibliographic maps, bibliographic networks, and bibliographic coupling are used to evaluate and compare the impact of publications in a more complex way than descriptive methods. Descriptive methods, such as describing bibliographic information (e.g. countries, institutions, authors, and journals) as they are, are simpler than evaluative methods. This research uses bibliometric visualisation method and bibliometric analysis as a quantitative method, bibliometric analysis uses evaluative and descriptive approaches to represent research trends and characteristics of a set of publications (McBurney & Novak, 2002).

There is previous research on A Bibliometric Review of Vocabulary Learning via Mobile Assisted Language Learning which was researched by (Qiu Chuane, 2023). This research uses bibliometric methods to reveal the type of documents and annual distribution of retrieved articles, the most productive countries and journals, the most used keywords, the most used words in the title and abstract areas, and the most cited publications and authors in the study over a 16-year period. This study aims to identify research points and future trends in the available research literature on vocabulary learning using MALL from 2007 to 2022. Based on previous studies,



the researcher is interested in researching online games to improve English vocabulary. By using bibliometric analysis method to analyse the increase of journals per year, analysis based on country, analysis based on author, and finally based on keywords that are often used.

## METHOD

This research uses bibliometric visualisation techniques and bibliometric analysis as quantitative tools, bibliometric analysis uses an evaluative and descriptive approach to describe the research trends and features of the research subject's publication set. To describe the research trends and features of the set of publications of the research subjects, this study uses bibliometric visualisation as a quantitative method and bibliometric analysis as an evaluative and descriptive approach.

The sample of this research is 463 journal publications obtained from the publish or perish application through Google Scholar in accordance with the keywords. The keywords of this research are online games and English Vocabulary. Some of the 463 journal publications came from articles and also some from book reviews.

The publications selected are in the last 7 years (2017-2023) using the VOSviewer application with 3 views, namely network visualisation, overlay visualisation, and density visualisation. This research collects metadata from Google Scholar through publish or perish in the last 7 years (2017-2023) related to Online Games to Improve English Vocabulary using the keywords 'online game' and 'English Vocabulary'. Publish or perish is a software that can be used to harvest metadata. After analysing the metadata with google scholar, then record the data that has been searched with the RIS file type. The recorded data is then imported into Mendeley. Mendeley is a software that functions to manage metadata or scientific papers that have been recorded.

In this study, a software called VOSviewer was used for this bibliometric analysis. All data about the publications that have been collected in this field-such as keywords, co-occurrence of authors, and countries by using the VOSviewer programme. VOSviewer is software for creating network visualisations of commonly used terms in a particular field. VOSviewer is very useful and widely used in bibliometric analyses.

There are several steps involved in Bibliometric analysis. In the first step, providing keywords and determining keywords: before collecting data, researchers first focus on online game keywords in English vocabulary. The second step is to search for metadata that focuses on the keywords that have been determined through the Publish or Parish software through the google scholar database to search for articles based on the keywords that have been determined and save the data in the form of RIS type. The third step is to process the data that has been retrieved from Google Scholar with the RIS type exported to mendeley and manually select for all search results and perform metadata processing using Mendeley by fixing keywords and separating journals that are not relevant. Then save and export the corrected metadata into a RIS file. In the last stage, bibliometric analysis uses VOSviewer software to identify co-occurrence of keywords, co-occurrence of authors, and countries. VOSviewer visualisation provides a representation of the data in the form of a map of variables associated with keywords and has the opportunity to be

developed.

This research initially contained 998 publications from Google Scholar extracted from Publish or Parish using the keywords ‘online game’ and ‘language learning’. Because the keywords used were too broad, then the researchers changed and narrowed the keywords to ‘Online Game’ and ‘English Vocabulary’. After researchers narrowed the keywords to ‘Online Game’ and ‘English Vocabulary’, Google Scholar publications through Publish or Parish became 463 publications.

Table 1. Number and percentage of publications of online games to improve English Vocabulary (2017-2023)

No	Tahun Publikasi	Jumlah Publikasi	Presentase
1	2017	32	7%
2	2018	33	7%
3	2019	31	7%
4	2020	47	10%
5	2021	80	17%
6	2022	96	21%
7	2023	144	31%
Total Publikasi		463	100%

In the table above, it can be seen that the highest number of publications per year is in 2023, namely 144 publications. There is a rapid increase in each year starting from 2017 there is an increase and a decrease in the next year, after which there begins a rapid increase until 2023. Of the 463 publications, most came from journal articles and some from book reviews.

## RESULT AND DISCUSSION

The researcher uses a deductive method in presenting the results of the analysis. In presenting the results of bibliometric analysis, it is done in a deductive way or starting from general findings to more specific findings, to help readers follow the information provided from general information to more detailed information, such as: country, author, and co-occurrence of the author's keywords.

**Analysis by country / most influential country**

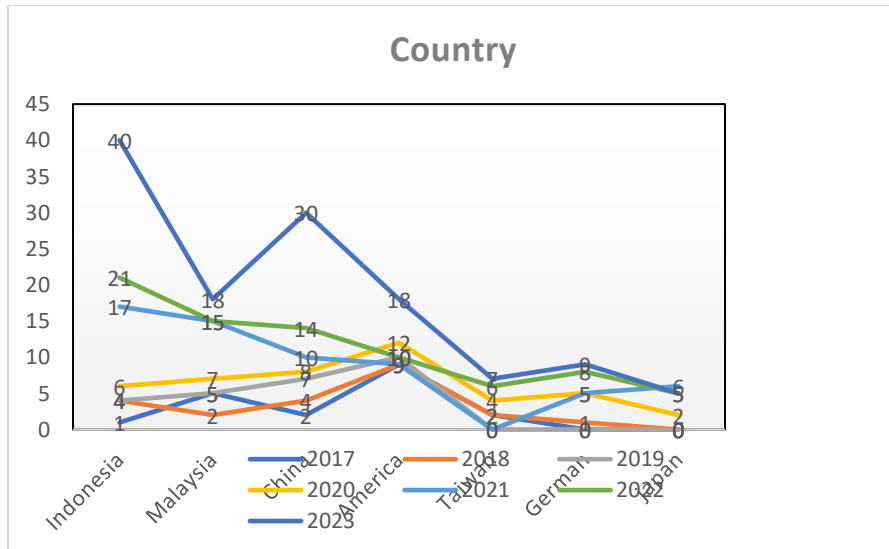


Figure 2. Analysis based on country

Based on Figure 1 in the figure above, it can be seen that there are several countries that fulfil the highest number of publications per year. In 2017 the most countries that fulfilled the number of publications were the United States, then followed by Japan, Malaysia, Germany and Indonesia. In 2018 there was an increase and the first countries to meet the number of publications were the United States, China, Indonesia, Malaysia. In 2019, 2020, 2021, 2022, 2023 there was a very rapid increase in the number of publications, especially in Indonesia, then followed by China, Malaysia, the United States, Germany, Taiwan, and finally Japan. So the number of publications every year has increased in every country.

**Based on the author's bibliographic pairings**

The figure shows the display of author bibliographic pairs in the form of network visualisation. In the bibliographic analysis there are 1256 authors and only 9 authors who meet the threshold with a maximum document number of 5. There are 9 items consisting of 5 clusters. In clusters 1 there are 3 items namely Hashim, harmawati there are 8 documents, then md Yunus, molar there are 5 documents, followed by Yunus, molar md with 5 documents. In the 2nd clusters there are 3 items, namely wang fu lee with 5 documents, xie, haoran with 9 documents, zou di with 11 documents. In the 3rd, 4th and 5th clusters there are Abdul Aziz, Azlina with 7 documents, Bahari, Akbar with 5 documents, and Hwang, Gwo Jen with 10 documents.



Figure 3. *Visualisation of author's bibliographic pairs*

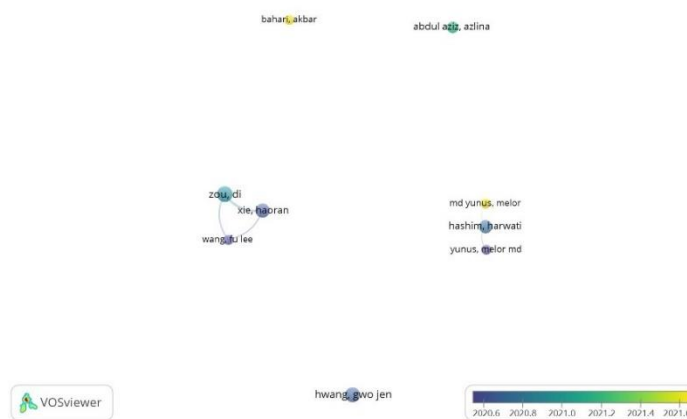


Figure 4. *Visualisation of overlay against author bibliographic pairs*

In Figure 4, the data is displayed with an overlay visualisation, there are several colours such as blue, green and yellow. The colour indicates the time of publication of the author's article. Yellow and green colours indicate new articles published around 2021, and blue colours indicate articles published around 2020. md Yunus, molar and Bahari, akbar are authors with yellow colours which means they have published articles or journals in 2021. Meanwhile, articles that have long been published in this field are written by wang, fu lee, xie, haoran, and zou, di.

Co-occurrence of keywords from Authors

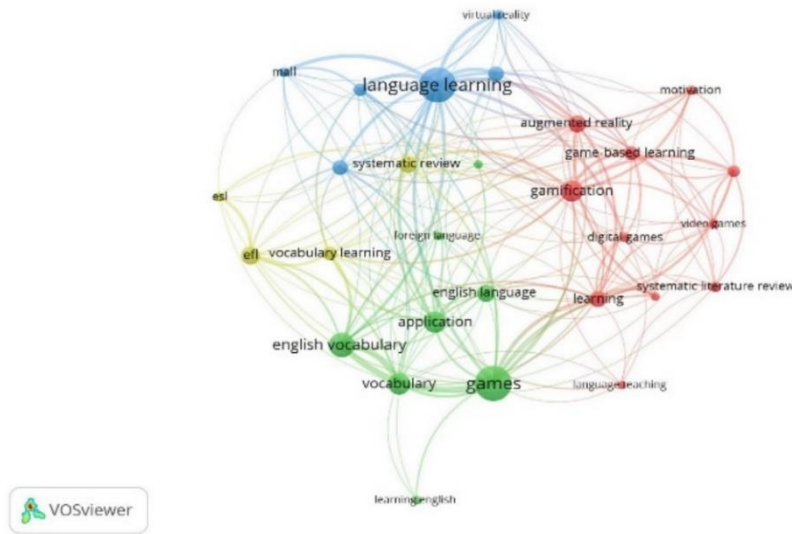


Figure 5. Network visualisation of co-occurrence of author keywords

Figure 5 above shows the network visualisation of keyword co-occurrence. Researchers used a threshold at this stage, which is the minimum number of co-occurrences is 10. There are 963 keywords, only 30 keywords meet the threshold. Language learning came first with 69 occurrences and 73 total power. Furthermore, the keywords that appear in a row are English Vocabulary, gamification, vocabulary, mobile learning, application, learning, English language, augmented reality, vocabulary learning, systematic review, EFL, CALL, literature review, video game, game-based learning, serious game, digital game, MALL, education, motivation, language education, language teaching, learning english, virtual reality.

In Figure 4, there are several colours that show clusters of keywords that are often associated with one another. There are 4 clusters in this study. The first cluster is the red colour, Gamification. The second cluster in green colour is Games and English vocabulary. The 3rd cluster is Mobile learning and the 4th cluster is EFL. Furthermore, the researcher displays the data with an overlay visualisation as shown below.

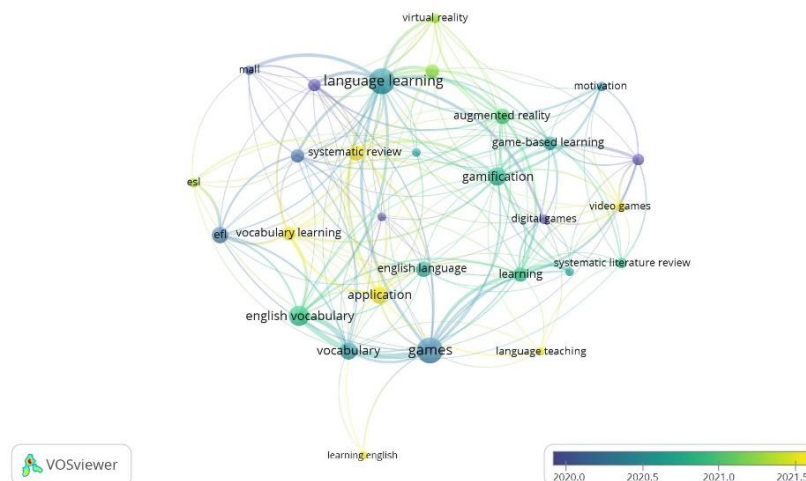




Figure 6. *Overlay visualisation* of co-occurrence of author keywords

Figure 6 above shows the co-occurrence data of the author's keywords with an overlay visualisation. The yellow colour is the keyword with the latest publication, meaning that the keywords vocabulary learning, application, language teaching, video game, systematic review, learning English, and esl are keywords from articles that were published in 2021. It can be seen that the keyword english vocabulary is in green colour, which means that this keyword is often researched in 2020 and is directly related to other variables, namely language learning. Games, vocabulary, application, english language, learning, gamification, game-based learning, vocabulary learning, EFL, CALL, MALL.

## CONCLUSION

Based on the research, it is concluded that Indonesia and China (based on country), and Hashim, harmawati (Indonesia) (based on the author's bibliography pair) are the most influential on the research of online games to improve English vocabulary. Language learning, games, and English vocabulary are keywords that often appear in this research. Through network visualization, it can be seen that the research development map of online games to improve English vocabulary is divided into 4 clusters. Cluster 1 consists of 11 items, cluster 2 consists of 8 items, cluster 3 consists of 6 items, cluster 4 consists of 4 items. Based on the results and discussion above, it can be concluded that VOSviewer can be used as a mapping tool to analyze data bibliometrically. In this study, the data used in data analysis with VOSviewer is research on digital learning media taken from the Google Scholar database through Publish or Parish. The number of publications obtained and related to the theme amounted to 463 documents with a range of years 2017-2023. Changes in the number of publications in this period experienced fluctuating changes but tended to increase rapidly from 2020 to 2023. The results show that there is a significant increase in research conducted on the use of online games to improve English vocabulary over the past few years.

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