

A Bibliometric Analysis on Reading Strategies in ESL/ EFL Context

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Abstract

Reading strategies are crucial in providing the most effective reading experience to English as Second Language (ESL)/English as Foreign Language (EFL) learners. There is a growing trend in the studies on the topic in the recent years. Therefore, this review analyses bibliometrically on the reading strategies in ESL /EFL context and presents an overview of the field in terms of publications, collaborations, most frequently cited studies and keywords. This analysis answers 3 questions: (a) What is the bibliometric information regarding the number of yearly publications and contributions and collaborations by country and region about reading strategies in ESL/EFL context on Scopus, (b) What are the most frequently cited studies in the field of reading strategies in ESL/EFL context, and (c) What are the most used keywords in reading strategies in ESL/EFL context?. 347 documents were retrieved from Scopus website for this study. The data were analysed using Microsoft Excel, VOSviewer version 1.6.20 and Harzing's Publish or Perish software programs. The findings show that the number of publications significantly increased from the year of 2019 to 2024. The collaborations between countries were slightly impressive. The most cited articles consisted of articles from older and newer publications. Keywords were categorised into six main clusters: EFL, cognitive strategies, metacognitive strategies, academic writing, metacognitive awareness, and ESL. The results of this study can provide useful insights to the researchers in tackling some issues related to reading strategies in ESL/EFL context and initiating new discoveries to empower this area.

Keywords: Education, ESL/EFL, Reading, Reading Strategies, TESOL

Introduction

Language acquisition requires the mastery of four fundamental yet essential language skills which are reading, writing, speaking and listening. This is because language fluency opens up a world of options on careers and academics for speakers, particularly in countries where English is either used as a foreign language or a second language. Reading stands out

as a language skill that is in high demand, both in educational settings and in various career paths. Employing an effective habit in reading positively affects the reading proficiency of ESL learners (Wani & Ismail, 2024). The language skill entails an active, dynamic, and intricate cognitive process wherein one selects pertinent information, transforms it into a mental representation, and integrates it with existing knowledge (Lin et al., 2020). Meanings can only be derived through reading. The skill of reading requires learners not only to accurately pronounce words but also to understand the meaning of the diction or the semantic structures (Kiew & Shah, 2020).

In 2015, there was a report released by the World Economic Forum, sharing 16 essential skills that must be acquired by students to prosper in the fast-moving 21st century. The skills are classified under 3 categories which are foundational literacies, competencies and character qualities. Literacy, numeracy, scientific literacy, ICT literacy, financial literacy, cultural and civic literacy fall under the first category which is called Foundational Literacies. Meanwhile, critical thinking/problem solving, creativity, communication and collaboration are listed under the second category, Competence. Lastly, the third category which is character qualities has 6 skills listed under it such as curiosity, initiative, persistence/grit, adaptability, leadership and social and cultural awareness. The majority of them are relevant to numerous fields rather than being directly related to just one field (Cools et al, 2018). This report highlights the value of literacy in a variety of sectors, which explains the significance of reading skill to students and also implies reading as an area that constantly requires improvement to create future generations that are more literate.

Reading involves intricate cognitive processes of deciphering symbols with the aim of constructing meaning or extracting understanding from the written text (Septiyana et al., 2021). Being able to master reading skills will certainly benefit readers in numerous areas. Reading skills also aid ESL learners in building a strong foundation for comprehending and analysing basic phrases, which enhances their language and vocabulary (Gunasegaran & Ismail, 2021). Non-enthusiastic readers may encounter challenges when they read English printed materials and experience difficulties in comprehending it (Petrus & Shah, 2020). Learners will have more access to a multitude of knowledge, varied viewpoints, and global concerns by mastering reading skills (Jendia & Ismail, 2023).

By engaging in reading, students can enhance their language proficiency, broaden their experiences, refine their reading abilities, and stimulate their intellect (Ayu et al., 2017). Most of the daily activities that we do in real life, whether simple or complex, require learners' proficiency in reading. In order to master reading skills and improve reading comprehension, there are wide arrays of reading strategies that need to be learnt and applied in reading by all the language users. Nazarova and Nematjonova (2023) defined a reading strategy as a plan or method for accomplishing a task; it is a particular procedure employed to execute a skill effectively. Various texts demand that readers utilise combinations of reading strategies, with certain texts demanding more diverse strategies than others (Kung & Aziz, 2020). Achieving meaningful comprehension in reading a printed or computerised text is possible with the vast availability of reading strategies (Azmi et al., 2020).

Readers need to choose appropriate reading strategies to enhance their reading comprehension. A reader needs thought and perception for reading comprehension as they

must employ various reading strategies that are essential to assist their understanding in the reading materials (Chandran & Shah, 2019). As stated by Koda (2005), reading strategies play a significant role in guiding readers to adapt their reading behaviours based on factors such as text complexity, task requirements, and various contextual elements. Reading strategies involve important procedures to assist readers throughout the reading process. Students who engage in learning reading strategies aim to identify the main point in a paragraph, clarify ambiguous words, phrases, or sentences, and to summarise what they read (Banditvilai, 2020).

There is a wide range of reading strategies that can assist readers in having effective reading experiences. Brown (2001) suggests 10 strategies for reading comprehension. The first reading strategy is recognizing the main aim of reading. Secondly, graphemic rules and patterns should be used to assist in bottom-up deciphering. This is recommended for beginners. Thirdly, utilising effective silent reading methods to quickly understand material. This is suggested for intermediate to advanced language users. The fourth reading strategy is skimming through text to obtain the main ideas. Next, scanning through text for particular details. The sixth reading strategy is utilising clustering and semantic mapping. The seventh reading strategy is making a guess when you aren't sure. The eighth reading strategy is examining vocabulary. The next reading strategy is differentiating between literal and implied meanings. The last reading strategy is using discourse markers to understand connections more effectively.

Reading strategies are highly important to readers, especially for readers whose English is not their first language, for example, ESL/EFL readers due to its remarkable positive impacts. In a study conducted by Roomy and Alhawsawi (2019) investigating the utilisation of reading strategies and reading habits involving EFL students at a university in Saudi, their results revealed that pupils were highly motivated to read. They also suggest that knowing when and how to employ reading strategies increases pupils' excitement for reading. Naushan et al. (2023) carried out a study to analyse the usage of reading strategies in enhancing the degree of understanding in reading which involved 118 secondary school ESL learners. Their results showed that there was a positive relationship between the comprehension accomplishment and reading strategies. Rusgandi (2023) conducted a review intending to address theories and earlier research on how reading strategies affect learners' reading comprehension. According to the review's findings, using reading strategies has a good impact on students' reading comprehension. Reading strategies are deemed to be effective in enhancing various aspects in ESL/EFL context.

The significance of this study stems from its ability to benefit both students and teachers. Reading strategies in the ESL/EFL context are an essential topic because they can help ESL/EFL educators carefully introduce and teach how to effectively use reading strategies in their classrooms to increase their learners' reading comprehension. With the use of appropriate English reading materials, ESL/EFL educators can provide their students with opportunities to practice reading strategies in their classrooms. According to Yukselir (2014), educators are encouraged to be conscious of the reading strategies which are employed by their pupils. He also adds that educators must expose their students to practical reading strategies that could enhance their understanding when they read academic English contents by utilising some inventories of reading strategies that are prominent. This circumstance is

also beneficial to ESL/EFL learners since the efficient application of reading strategies can assist ESL/EFL learners acquire more confidence and deeper comprehension when reading English materials especially with numerous opportunities presented by their ESL/EFL educators while also encouraging them to be more engaged with English texts. According to Karbalaee (2010), effective reading comprehension requires self-regulation and the use of several reading strategies. Learners' awareness on the correct reading strategies to use during reading activities will lead them to have better grasp on what they read.

The use of reading strategies, its effectiveness, and relationships with other variables are some of the issues that were constantly discussed in the literature. Thus, this review provides an overview on the recent issues and trends related to the reading strategies in ESL and EFL contexts obtained from Scopus from 1978 until 2024. The period between the earliest publication and the latest publication provides some interesting insights and understanding to researchers who are interested in this topic. This review specifies 3 research questions: (a) What is the bibliometric information regarding the number of yearly publications and contributions and collaborations by country and region about reading strategies in ESL/EFL context on Scopus, (b) What are the most frequently cited studies in the field of reading strategies in ESL/EFL context, and (c) What are the most used keywords in reading strategies in ESL/EFL context?

Methodology

Bibliometric analysis, which qualitatively and quantitatively overviews published literature, has become increasingly significant because it offers fresh insights into the structure of knowledge and evolution of scientific fields through data mining, information processing, and visualisation technologies (Huang et al., 2020). In fact, bibliometric analysis can be used for various purposes, including discovering rising trends in article and journal performance, collaboration patterns, and research contributors (Verma & Gustafsson, 2020). This analysis is also used to investigate the intellectual structure of a particular field within existing literature where it has been extensively utilised in various prominent areas such as business, medicine, history, economics, sociology, education and engineering. In order to perform a bibliometric analysis, at least 200 entries are required (Rogers et al., 2020). Some of the popular databases that are selected for a bibliometric analysis are Scopus, Web of Science (WoS), Google Scholar and PubMed.

Data Collection

For this study, Scopus database was used to collect data to perform a bibliometric analysis on reading strategies in ESL and EFL contexts. According to Baas et al. (2020), Scopus is a big database with numerous scientific papers from different parts of the world, featuring extensive coverage of scientific journals, conference proceedings, and books on a global and regional scale. It maintains top-quality data, carefully selected and reviewed by experts. Scopus indexes top journals containing the latest articles (Chadegani et al., 2013).

Table 1

The Details for Data Extraction

Categories	Details
Topics (in article title, abstract and keywords category)	TITLE-ABS-KEY ("reading strategies" AND "ESL" OR "TESOL" OR "EFL") AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch") OR LIMIT-TO (DOCTYPE , "re")) AND (LIMIT-TO (LANGUAGE, "English")).
Keywords	Reading strategies, ESL, TESOL, EFL
Language	English
Types of documents	Journal article Review Conference Paper Book Chapter
Timeframe	All

All the articles are obtained from Scopus database using several criteria as seen in **Table 1** which are in terms of topic, keywords, language, type of document and timeframe. In terms of topic, selection were based on TITLE-ABS-KEY ("reading strategies" AND "ESL" OR "TESOL" OR "EFL") AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch") OR LIMIT-TO (DOCTYPE , "re")) AND (LIMIT-TO (LANGUAGE, "English")). Reading strategies were chosen as a keyword because it served as the main research area that drew the researchers' interest in the exploration while ESL, TESOL and EFL were the options for context that were used in this study. A search using the Scopus database with several identified keywords included "reading strategies", "ESL", "TESOL" and "EFL" with the category article title, abstract, keywords. There was no specified time limit for this review since the researchers wanted to get an overview and progress of this field from the earliest publication to the most current publication.

A collection of 350 documents were obtained in the initial search. In the second step, which is the screening phase, two factors were considered as filters: (a) language and (b) types of documents. Only papers written in English were taken into consideration. Since English is a globally recognised language, the language was chosen as one of the filters, which enabled the extraction of an extensive selection. The types of documents chosen were journal articles, conference papers, book chapters and reviews as shown in Table 1. The second search after the 2 filters were applied enabled the extraction of 347 documents from a variety of fields such as Social Sciences, Arts and Humanities, Psychology, Computer Science, Engineering, Health Professions, Multidisciplinary, Economics, and Medicine. As a result, these 347 documents were retained for further review. Figure 1 illustrates the steps for obtaining the data from Scopus website.

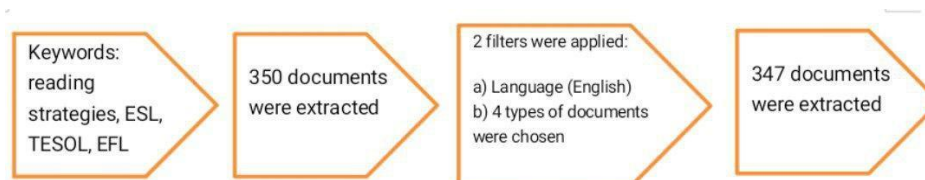


Figure 1 Steps in Obtaining Data from Scopus website

Data Analysis

The data obtained from the search were analysed and processed using a few software programs. Firstly, Microsoft Excel 2010 was used to get the required data. They were divided into various categories such as year, authors' names, subject areas, document types, source titles, keywords, affiliations, countries, and language. Microsoft Excel 2010 was used to identify the number of publications by year and turned into a chart. VOSviewer version 1.6.20 was also used to portray the data in the form of visuals, graphics and maps of the bibliometric data where several analyses related to authors, countries, contributions and keywords were conducted. In fact, researchers can easily present a bibliometric map to illustrate relationships (Shah et al., 2019). Harzing's Publish or Perish tool was also used in this study to discover the most frequently cited studies for this field where the data is presented in a Table 2. In summary, the methodology for this study is divided into 3 main steps as seen in **Figure 2**.

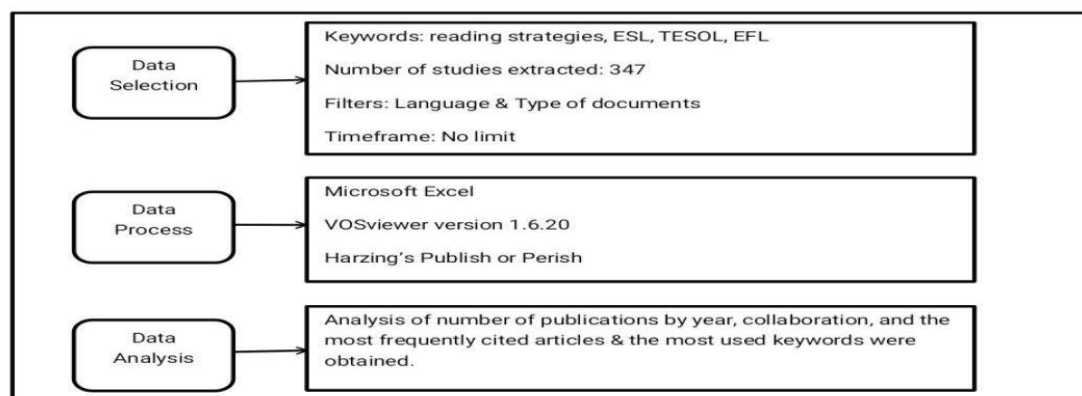


Figure 2. The Summary of Methodology

Results and Discussion

In this section, the bibliometric information regarding the number of publications by year, contributions and collaborations (by country and region) on reading strategies in ESL/EFL context using Scopus database, the most frequently cited studies in the field of reading strategies in ESL/EFL context, and the most used keywords in reading strategies in ESL/EFL context are presented and discussed.

The Bibliometric Information

Number of Publications by Year

Figure 3 shows the publications of past studies on reading strategies in ESL/EFL context ranging from 1978 to 2024.

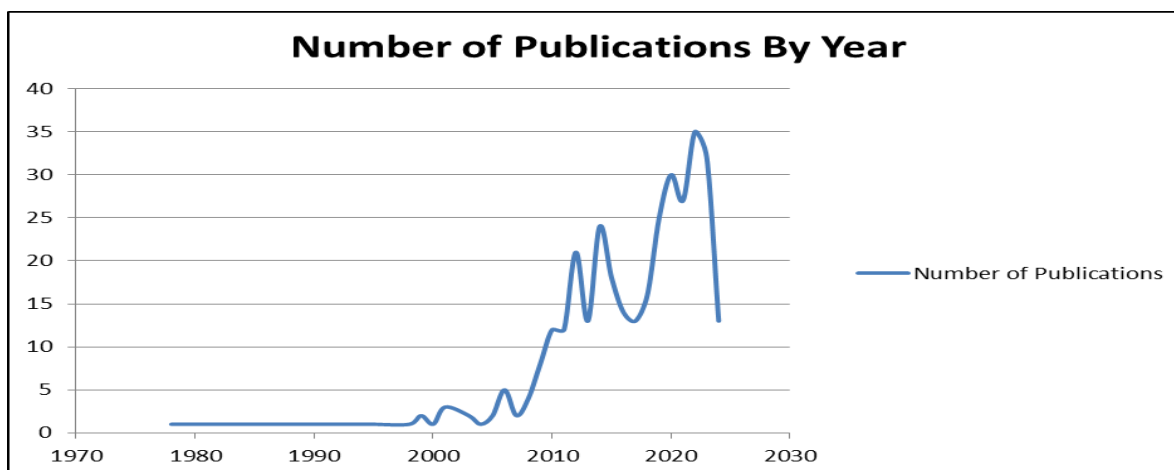


Figure 3 Number of Publications by Year

There are 3 identifiable ranges observed. Those published between 1978 and 2009 showed a steady progress where the number of publications progressed steadily around 1-8 publications. Publications from 2010 and 2011 recorded the same number of publications where both years produced 12 documents. The publications of studies in this field progressed steadily from 2012 until the 2019 where around 13 to 24 documents were published each year. However, there was a remarkable increase in terms of publications between 2020 and 2023, where a startling leap indicated a rise from 25 publications in 2019 to 30 publications in 2020, followed by 27 publications in 2021, 35 publications in 2022, 32 publications in 2023 and 13 publications until May 2024. All this indicated that research interest in understanding reading strategies continuously grew.

The findings indicated that there has been a growing number of research studies in reading strategies in ESL/EFL context, especially in the last 5 years in terms of the numbers of publications by year. This rise might be partially due to the technological advancements in this field, especially during and after the COVID19 pandemic where lessons mainly took place online due to the movement control order (MCO). With the shift to online learning, students were still required to have a meaningful and effective reading experience, despite not being physically present in classrooms. Due to the challenging circumstances that pupils had to encounter during the pandemic, being a “strategic reader” was essential (Hidayat & Saleh, 2022, p.1038). Researchers likely sought to explore more vigorously on possible ways of adapting or enhancing reading strategies on various digital platforms to ensure positive learning outcomes for students in virtual settings. A positive rise in the utilisation of technology has been detected since COVID-19 (Li & Lalani, 2020). The rise in the numbers of publications between 2020 and 2023 is evident and the pattern is likely to continue, considering that the review was done until May 2024, which leaves another 7 months till the year ends. In total, there are 13 publications under this research area for 2024 where the numbers are observed to rise because based on the pattern shown in the previous 5 years, around 25 to 35 publications were produced each year from 2019 until 2023.

Contributions and Collaborations (by Country and Region)

Figure 4 depicts a citation network from 1978 to 2024, with a minimum number of 5 documents per country, with at least 1 citation for each involving 19 countries that met the conditions. The United States of America emerged as the top country in terms of citations, totalling 984 citations, despite producing only 30 documents. The United States of America

may have received the most citations due to its feature of having a diverse nation, which may have produced significant findings in the context of ESL/EFL that were found to be beneficial and helpful by other researchers who were in the same field. The total link strength for American publications was 145. Total link strength refers to standard weight attributes that show how strongly an item is linked to other items overall (Van Eck & Waltman, 2018). Following closely was Iran, where English is considered as a foreign language, producing the highest number of documents (67) with 418 citations, with a total link strength of 134. This suggested a significant demand for effective reading strategies in both ESL and EFL contexts. According to Guo (2022), if the total link strength is higher, it means the link is stronger. Taiwan, where English is also a foreign language, ranked third with total link strength of 126 and 833 citations based on 50 publications.

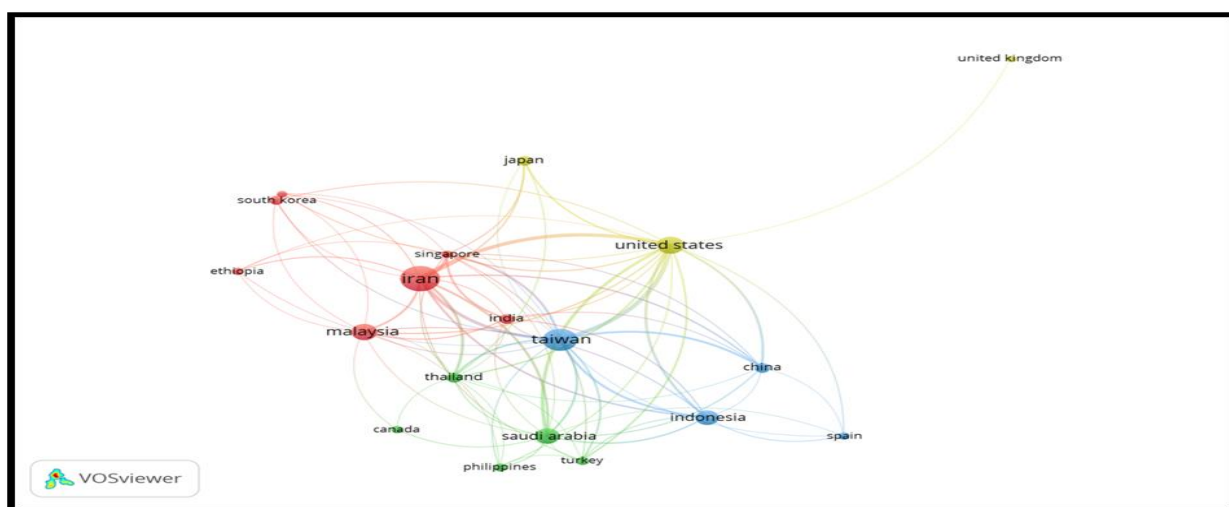


Figure 4. Citation Network

Saudi Arabia, which also considers English as its foreign language, ranked fourth, contributing 26 publications and receiving 158 citations, with a total link strength of 54. Malaysia, with a reputation for ESL, ranked ninth, with 29 publications, 163 citations, and total link strength of 29. Asian countries such as Singapore, Indonesia, China, and Thailand are among those included in the top 10 list of this citation network. It highlighted the active participation from Asian countries in contributing their experiences, discussions and insights to enrich this research area which was reflected on their ranking on the list. Overall, over the last 46 years (1978-2024), this research area has recorded a total of 3684 citations within 347 documents. The fundamental idea is that greater citation counts in a scientific field are the indication of greater significance, quality, and extraordinary (Donthu et al., 2021). In conclusion, for citation analysis by country, the United States of America was believed to have the most remarkable studies since they were cited the most.

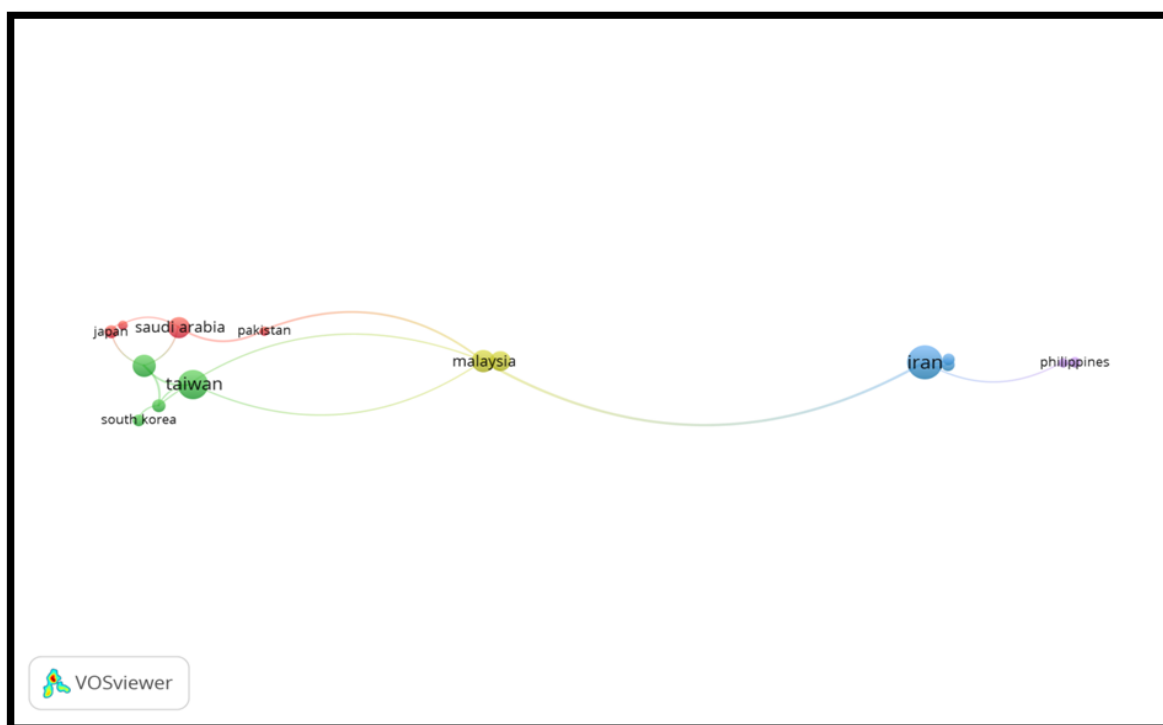


Figure 5. Co-authorship Relationship

Figure 5 provides a summary of co-authorship relationships among the countries, illustrating active collaborations within the research community with the conditions of at least 5 documents and 1 number of citations per country. The results show 19 countries met the thresholds. However, some remained disconnected with one another. The largest grouping comprises 15 countries which can be divided into several clusters. The first cluster consists of 4 countries which are Japan, Pakistan, Saudi Arabia and the United Kingdom while the second cluster consists of 4 other countries which are China, South Korea, Taiwan and the United States. Cluster 3 consists of 3 items which are India, Iran and Turkey. Following closely was Indonesia and Malaysia for Cluster 4 and finally Canada and Philippines complete Cluster 5.

The co-authorship which is seen in Figure 5 shows that collaborations also portrayed a proneness towards a partial focus. For example, the main collaborating country for China, South Korea and Taiwan is the United States while the main collaborating country for Pakistan, Japan and Saudi Arabia is the United Kingdom. This suggests that multidirectional collaboration among these countries requires a more comprehensive understanding on this topic. All these countries needed to collaborate with other countries from various areas or regions to successfully address their needs, cause changes and suggest new developments or discoveries. Indeed, collaborations among scholars can yield significant improvements in research. By pooling together expertise from diverse backgrounds, scholars can enhance clarity and generate richer insights, ultimately advancing the field (Tahamtan et al., 2016).

The Most Frequently Cited Studies in the Field of Reading Strategies in ESL/EFL Context

Figure 6. Density map of the most cited articles

Next, Table 2 shows 10 studies that were frequently cited in the field of reading strategies in ESL/EFL context. Overall, more than a span of 46 years of publications on this subject matter, ranging from 1978 to 2024, the total number of citations for 347 documents amounted to 3683 citations.

Cites	Authors	Title	Year
280	Sheorey & Mokhtari	Differences in the metacognitive awareness of reading strategies among native and non-native readers	2001
167	Liu et al.	Effects of a computer-assisted concept mapping learning strategy on EFL college students' English reading comprehension	2010
159	Carrell et al.	Metacognitive Strategy Training for ESL Reading	1989
113	Jun Zhang	Awareness in reading: EFL students' metacognitive knowledge of reading strategies in an acquisition-poor environment	2001
110	Jun Zhang	Constructivist pedagogy in strategic reading instruction: Exploring pathways to learner development in ESL classrooms	2008

103	Huang et al.	EFL learners' use of online reading strategies and comprehension of texts: An exploratory study	2009
84	Klingner & Vaughn	The helping behaviours of fifth graders while using collaborative strategic reading during ESL content classes	2000
68	Dabarera et al.	The impact of metacognitive scaffolding and monitoring on reading comprehension	2014
68	Aghaie & Zhang	Effects of explicit instruction in cognitive and metacognitive reading strategies on Iranian EFL students' reading performance and strategy transfer	2012
65	Carrell	Awareness of Text Structure: Effects on Recall	1992

Topping the list in Table 2 is a survey investigating how native and non-native English speakers reportedly employed different reading methods when reading academic contents, conducted by Sheorey and Mokhtari (2001). The study which was cited 280 times over the years, involved college students who were 150 native English speakers and 152 ESL students. Second, was a study by Liu et al. (2010), which was cited 167 times. The participants for the study were 194 college students which were divided into 2 groups based on their English levels of proficiency. It was revealed that the groups were low-level and high-level groups. The study examined the impacts of a computer-assisted concept mapping learning strategy with EFL students as the participants. Third was a pilot test by Carrell et al. (1989), which was about metacognitive strategy training for ESL reading. It was mentioned in the article where the control group did not experience strategy training. However, the experimental group received the strategy training. These papers were frequently cited which shows the height of their influence in this field. They might have provided essential insights and opinions that were found to be impactful in the field.

As suggested by the list, studies on the reading strategies in ESL/EFL context have been an interest to researchers for decades regardless of the years they were published. It has shown the research area is relevant until today due to numerous advantages they offer. Andi Rusgandi (2023) highlighted that reading strategies played a prominent role in improving comprehension. He also added that learners' problems in reading comprehension could be overcome by degrees with the application of reading strategies. According to the frequently cited studies list, the metacognitive area has likely become the main interest in reading strategies in ESL/EFL context since 5 out of 10 most frequently cited articles discuss metacognitive aspects. Recently, educators and researchers have focused on metacognitive strategies among other learning strategies, as metacognitive strategies are thought to improve reading comprehension. (Çakıcı, 2017). This might have explained the fascination of understanding metacognition in reading. According to Hapsari (2020), metacognitive strategies are deemed to be efficient in understanding reading because she indicated that students who were taught reading comprehension utilising metacognitive strategy performed better than students who were taught using conventional methods. The most frequently cited articles discussing the blending between technologies and reading strategies in ESL/EFL context were also found after 2009. It was due to technological advancements

during that time. Leu (2002) stated that compared to books, television, and other technologies, the internet invaded classrooms more quickly.

The Most Used Keywords in Reading Strategies in ESL/EFL context

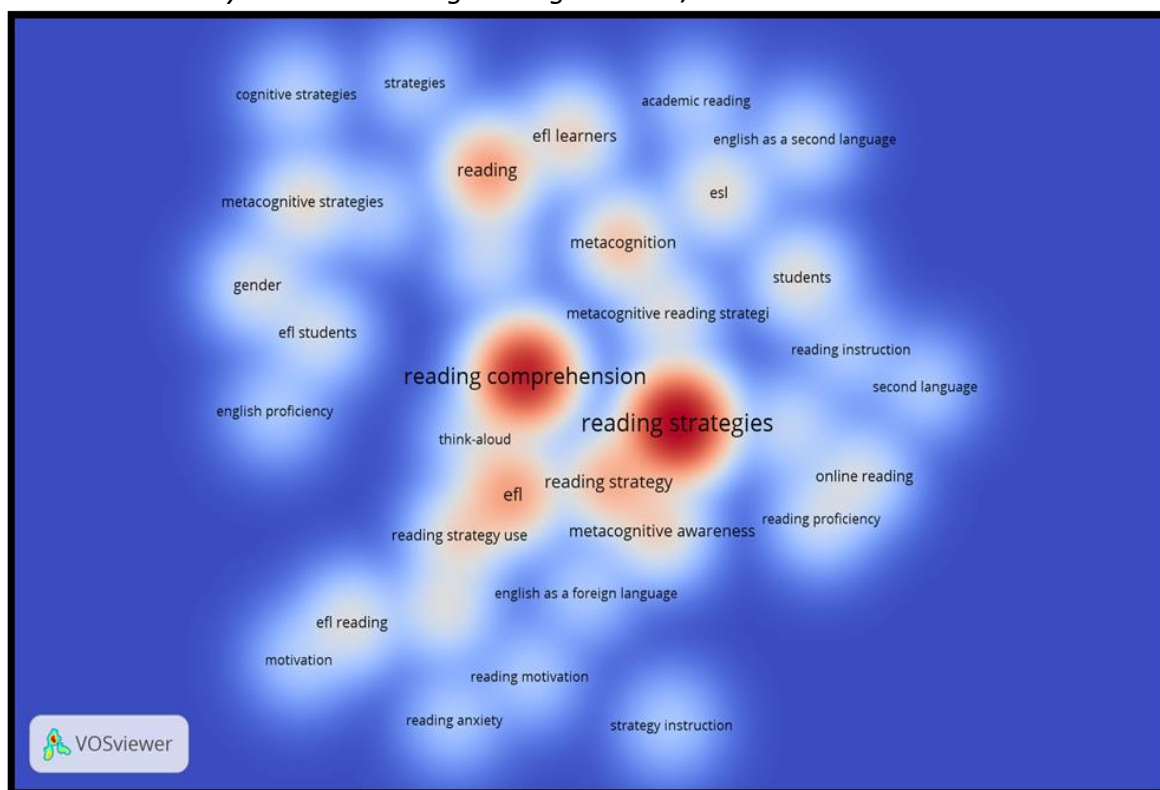


Figure 7. Density map for keyword analysis in ESL/EFL reading strategies

Figure 7 shows 35 keywords which were frequently used for reading strategies in ESL/EFL context under the condition of 5 as the minimum number of occurrences of a keyword. A practical method for evaluating the condition of the research area and identifying hot topics is through keyword co-occurrence of analysis (Sun & Lan, 2021). There were 6 clusters formed for this map. The first cluster consisted of 11 items and mostly dealt with EFL, motivation and reading strategy. The second cluster had 9 items for instance comprehension, gender and English proficiency while the third cluster contained 6 items for example online reading, second language and students. The fourth item included 4 items such as metacognition, academic reading and EFL learners. The fifth cluster had 3 items such reading strategies, strategy instruction and metacognitive awareness. The final cluster which was cluster 6 only dealt with 2 items which were ESL and reading instructions.

According to Van Eck and Waltman (2020) the colour becomes brighter when there are more studies conducted on the topics. Reading strategies and reading comprehension were the items with the brighter and bigger areas compared to others. Reading strategies were used 95 times and reading comprehension were used 75 times under this topic. Some other most frequently used keywords are reading (29), EFL (27), reading strategy (23), metacognition (19), metacognitive awareness (15), reading strategy used (14), metacognitive strategies (13) and reading strategy instruction (11). These brighter and bigger areas demonstrated the fields or themes that became researchers' interests from the earliest to the latest publications in this research area. Based on the 6 clusters above, it can be

summarised that researchers had a wide interest in this area covering crucial aspects for example reading anxiety which might appear to be a negative keyword or theme. It is undoubtedly a challenge to ESL/EFL learners since learning a new language is certainly not an easy task however it is a keyword or theme that has to be explored especially on discovering the reasons behind it in order to create an effective reading experience. According to Bensalem (2020), some factors that contributed to the reading anxiety for EFL learners were related to comprehension, reading ability and phonics. Next, an example of a positive keyword from this analysis is reading motivation which is highly essential in reading. When learners are motivated to read, it might improve their academic achievement and reading satisfaction. A study was conducted by Mohamad Yusop (2022) on reading motivation among ESL learners and the results showed that reading motivation relied on a few aspects such as accessibility to interesting reading materials, surroundings, the causes of their reading and self-competency. The act of exploring the negative and positive sides of this research area shows that researchers might always strive to contribute to the betterment of this area.

Conclusion, Limitation and Recommendation

This review found out that publications on reading strategies in ESL /EFL context significantly increased from 2019 to 2024 indicating an increasing interest in the research area, which might be caused by the advent of digital learning. The collaborations between countries such as the United States, Iran, Taiwan and Saudi Arabia were slightly impressive where the majority of the countries that contributed to the publications were countries with ESL/EFL. The most cited articles consisted of both older and recent publications, which suggest the relevance of the research till present. There is also a wide range of keywords in the research which can be divided into 6 clusters such as EFL, cognitive strategies, metacognitive strategies, academic writing, metacognitive awareness, and ESL, which suggest popular themes in the research area. Nevertheless, there are some limitations in this study. Firstly, there was only one database used to gather information for this study which is Scopus website. Therefore, there are still some studies on this topic that were not included in this review which might lead to some imperfections in the findings. Future researchers are encouraged to widen their choices in databases, especially Web of Science (WOS) and other indexed databases. Secondly, the findings were also narrowed down to studies which were searched under the title, abstract and keywords category only, thus providing limited results. In order to get more extensive results, researchers might use different categories such as authors, affiliation, funding information, and DOI. However, the findings of this study will be helpful to future researchers in determining new interests in the research area, which are left unexplored. Additionally, the findings of this study will also help researchers identify the most effective writers for collaboration to improve research contribution.

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