

International Journal of Learning, Teaching and Educational Research
 Vol. 23, No. 11, pp. 89-112, November 2024
<https://doi.org/10.26803/ijlter.23.11.5>
 Received Sep 5, 2024; Revised Nov 15, 2024; Accepted Nov 19, 2024

Factors Influencing EFL/ESL Students' Use of Reading Strategies: A Systematic Review

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Abstract. Reading strategies are deliberate actions taken by readers to enhance comprehension or tackle challenges. Despite numerous studies exploring factors influencing reading strategies among EFL/ESL readers, a gap remains in synthesizing findings specific to college-level students and the nature of these influences. This systematic review aims to fill this void by examining the factors affecting EFL/ESL college students' reading strategies, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The review consolidates results from 41 studies conducted between 2014 and 2023, pinpointing sixteen factors influencing reading strategy use. To evaluate the consensus and divergence among study conclusions, eight factors examined in multiple studies were analysed in detail: English reading proficiency, gender, field of study, academic year, text type, reading anxiety, academic level, and nationality. Evidence suggests that proficient readers typically employ a wider array of effective strategies and demonstrate superior metacognitive awareness in strategy use. Female students tend to use diverse strategies compared to their male counterparts. Additionally, students in higher academic years use reading strategies more frequently than those in lower grades. It was also noted that strategy use varies depending on text type, and there is an inverse relationship between reading anxiety and strategy use. Nationality alone has no significant impact, but its interplay with other factors reveals different insights. Based on these findings, the study recommends that EFL/ESL teachers tailor reading instruction to students' reading proficiency, academic level, gender, and text type, while addressing reading anxiety and considering cultural interactions to enhance strategy use.

Keywords: English reading strategy; systematic review; influencing factors; reading proficiency; metacognitive awareness

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1. Introduction

Reading comprehension in L2 remains a persistent challenge in language learning, with researchers grappling with its complexities for decades. Rumelhart's (2013) interactive model is widely recognized for explaining the cognitive processes involved in reading (e.g., Grabe, 1991; Hedgcock & Ferris, 2009; Hudson, 2007; Rosenblatt, 2018). The model posits that reading comprehension results from the interaction of two processes: top-down, where readers use background knowledge to interpret the text, and bottom-up, where meaning is derived from linguistic cues (Bensoussan & Kreindler, 1990). This approach highlights the dynamic relationship between the reader and the text, with both reader-related factors (e.g., background knowledge, cognitive skills, motivation) and text-related factors (e.g., complexity, structure, vocabulary) playing key roles in comprehension. In addition to cognitive processes, reading also involves metacognition, which Flavell (1979) defines as "cognition about cognition". While cognition refers to the ability to develop learning processes and process information, metacognition involves the skills to observe, regulate, and evaluate these processes, as well as applying knowledge in new contexts (Lee & Mark, 2018). Researchers agree that metacognitive awareness is crucial for guiding EFL/ESL learners in using reading strategies effectively (Alkhaleefah, 2023; Burin et al., 2020; Kusumawardana & Akhriyah, 2022; Shah et al., 2024). Together, cognitive and metacognitive components shape a dynamic reading process, where the reader's strategies interact with the text's characteristics to foster understanding (Alderson, 2000). Although no single theory fully explains reading due to its complex, interrelated components (Perfetti & Stafura, 2014), the interactive model and metacognition theory offer valuable insights into reading comprehension and serve as the theoretical framework for this study.

Researchers widely acknowledge that reading is a strategic process (e.g., Par, 2020; Wallace et al., 2021; Zhang & Zheng, 2020). This indicates that learners employ various reading strategies to aid in constructing textual meaning. Broadly speaking, reading strategies encompass any action taken by readers to promote comprehension (Lee, 2012). More specifically, they represent readers' intentional, goal-oriented efforts to regulate their attempts to decode text, comprehend words, construct meanings, or resolve reading issues at multiple levels (e.g., word-related, text-related problems) (Afflerbach et al., 2008; Alkhaleefah, 2017). In both interpretations, reading strategies involve conscious, deliberate efforts by readers to derive meaning from the text.

Numerous empirical studies have explored how EFL/ESL college-level readers' use of reading strategies varies depending on factors, such as text types (e.g., Alkhaleefah, 2017; Barrot, 2016), reading proficiency (e.g., Al-Mekhlafi, 2018; Endley, 2016), gender (e.g., Alfarwan, 2021; Bensaad & Ghania, 2020), and reading anxiety (e.g., Lu & Liu, 2015; Kim, 2021). Synthesizing these findings is necessary to gain a comprehensive understanding of how the factors impact strategy use among EFL/ESL readers. In a previous review, Zhang (1993) summarised the reading strategies recommended in the research, and identified emerging trends in reading strategy instruction. However, he did not address the underlying factors that might influence the use of these strategies. Lin (2019) analysed 20

studies from the Linguistics and Language Behaviour Abstracts (LLBA) and Education Resource Information Centre (ERIC) databases, covering research published between 2000 and 2017 on college-level EFL/ESL learners' use of reading strategies. Lin identified four influencing factors: (a) English proficiency, (b) L1 literacy experience, (c) gender, and (d) motivation. Nevertheless, her discussion focused only on the first two factors—English proficiency and L1 literacy experience, leaving a gap in understanding the broader range of influences on reading strategies. Existing studies on reading strategies exhibit considerable variation in their data collection methods, taxonomies of strategies, and the range of influencing factors considered. Without a systematic synthesis of these methodologies and taxonomies, it is challenging to draw consistent conclusions or effectively apply findings across educational contexts. Consequently, a comprehensive systematic review of recent studies is essential to consolidate these components.

This review focused on studies examining factors that influence EFL/ESL college-level students' reading strategy use. The objectives were to analyse studies over the past decade on college-level EFL/ESL students' reading strategies by examining their background, data collection methods, taxonomies of strategies, influencing factors, and ultimately capture scholarly agreements and debates regarding their influence from international literature. Investigating the variations of strategy use with underlying factors enhances our understanding of how readers approach a text, make sense of what they read, and address difficulties in the reading process (Akhmetova et al., 2022). These insights into the influences on strategy use provide valuable implications for researchers to develop comprehensive frameworks in the study of reading strategies in EFL/ESL contexts, and explore effective instructional practices tailored to diverse learner needs. Consequently, this systematic review aimed to address the following four questions:

1. What is the background of the selected studies?
2. What are the data collection instruments and taxonomy of reading strategies of the selected studies?
3. What factors influence college-level EFL/ESL students' use of reading strategies?
4. What agreements and disagreements exist regarding the influence of these factors on college-level EFL/ESL students' use of reading strategies?

2. Methodology

2.1 The Review Protocol – PRISMA

This systematic review adheres to the standards outlined in the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) Statement developed by Page et al. (2021). PRISMA enables academic authors to compile comprehensive systematic analyses that are of significant interest to researchers. It also aids readers in gaining a thorough understanding of the research topic and in identifying new questions for future investigation (Sohrabi et al., 2021). PRISMA offers three key advantages, as highlighted by Pazin et al. (2022): 1) defining clear research questions that facilitate systematic research, 2) establishing inclusion and exclusion criteria, and 3) examining extensive literature databases

within a defined timeframe. The statement includes a 27-item checklist and a four-phase flow diagram covering identification, screening, eligibility, and inclusion processes.

2.2 Systematic Searching Strategies

This systematic review retrieved relevant studies from five databases: Education Resources Information Center (ERIC), Scopus, Sage Journals, Web of Science (WoS), and Academic Search Complete (ASC). Since studies on EFL/ESL readers' comprehension strategies appear across a diverse range of journals in multiple disciplines (e.g., linguistics, reading, psychology, and English language learning), using these five databases enabled us to access a broad and comprehensive list of relevant articles. The articles were located using the four-phase systematic approach of PRISMA: identification, screening, eligibility, and inclusion.

2.2.1 Identification

In the initial phase of the PRISMA guidelines, three key terms were derived from the research questions: EFL/ESL, college, and reading strategy. Synonyms for these terms were identified using an online thesaurus, such as thesaurus.com, and variations were collected by referring to previous studies. These term combinations were processed using search techniques such as field code functions, phrase searching, wildcards, truncation, and Boolean operators. The search keywords used in the five databases are presented in Table 1.

Table 1: The search string for the systematic review process

Databases	Keywords used
ERIC	(English OR EFL OR ESL) AND (college OR university OR tertiary OR "higher education" OR postsecondary OR undergraduate) AND "reading strategy"
Scopus	TITLE-ABS-KEY (English OR EFL OR ESL) AND (college OR university OR tertiary OR "higher education" OR postsecondary OR undergraduate) AND "reading strategy"
Sage Journals	Abstract (English OR EFL OR ESL) AND (college OR university OR tertiary OR "higher education" OR postsecondary OR undergraduate) AND "reading strategy"
Web of Science (WoS)	TS= (English OR EFL OR ESL) AND (college OR university OR tertiary OR "higher education" OR postsecondary OR undergraduate) AND "reading strategy"
Academic Search Complete (ASC)	AB (English OR EFL OR ESL) AND (college OR university OR tertiary OR "higher education" OR postsecondary OR undergraduate) AND "reading strategy"

The review focused on articles published between 2014 and 2023 to ensure current research emphasis on the subject. The final search was conducted in December 2023. 950 potential articles were identified from the selected databases, including book chapters, journal papers, reports, theses, questionnaires, and conference papers.

2.2.2 Screening

Following the identification phase, a screening process was conducted in which articles were either included or excluded based on a set of criteria, as outlined in Table 2.

Table 2: The inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Timeline	2014-2023	<2014
Literature type	Journal (research articles)	book chapters, conference papers, theses, review papers, questionnaires and reports
Language	English	Non-English
Population characteristics	EFL/ESL learners at college level	native English speakers, K-12 students, adult learners in non-academic contexts (e.g., workplace or informal settings)

After limiting the timeline to 2014–2023, the review further restricted the literature type to include only published empirical studies in journals. Due to the international perspective, only journal articles written in English were selected. The research population was further limited to college-level EFL/ESL learners. Consequently, 368 articles were excluded for not meeting the inclusion criteria. After removing 112 duplicate articles, 470 remained for assessment in the next stage.

2.2.3 Eligibility

To confirm the relevance of the remaining 470 articles, the authors manually reviewed them by reading the titles, abstracts or the entire articles. Given that the scope of this review focuses on the factors influencing EFL/ESL college-level students' use of reading strategies, certain categories of studies in the following were excluded, resulting in the removal of 429 articles from the dataset.

- 1) Studies that examined the effectiveness of reading strategy instruction without further exploring the influence of specific factors on strategy use.
- 2) Studies that investigated the effects of reading strategies on other factors, such as reading performance.
- 3) Studies that examined readers' use of reading strategies without considering any factors that influence strategy use.
- 4) Studies that aimed to construct an inventory of reading strategies.
- 5) Studies that focused on strategies used by readers with learning obstacles (e.g., low motivation) or reading deficiencies (e.g., dyscalculia).
- 6) Studies that investigated online or computer-based reading.

2.2.4 Inclusion

After the removal of the aforementioned articles, 41 full-text studies were incorporated into this systematic review. All these studies were concerning EFL/ESL college-level students' use of reading strategies influenced by certain factors. The complete search process is shown in Figure 1.

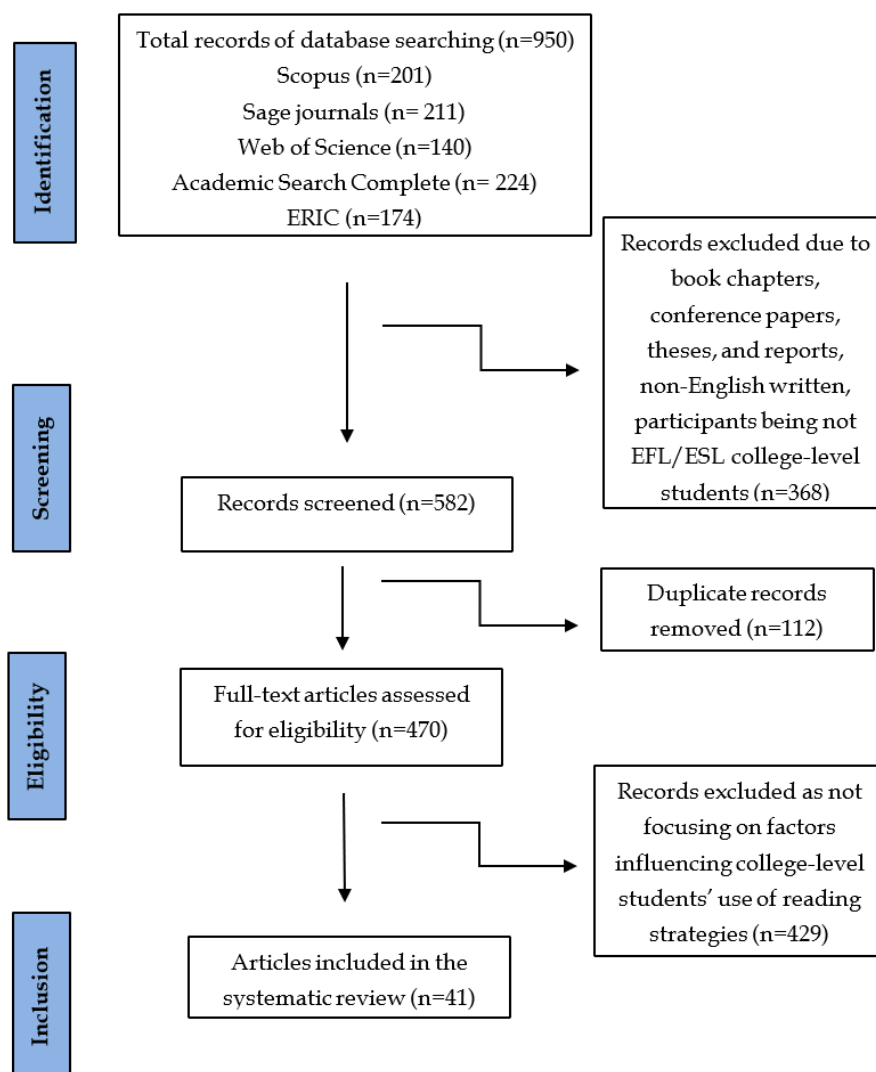


Figure 1: Data collection process based on PRISMA (Page et al., 2021)

2.3 Data Analysis

Drawing on the theoretical framework of the interactive reading model and metacognition theory, we developed a structured format for summarising the articles reviewed in our study. This format captures key information that highlights both cognitive and metacognitive elements of reading comprehension. The format includes the following components: 1) reference; 2) research context and participants; 3) research methodology; 4) research questions; 5) factors in research; 6) data collection instruments; 7) taxonomy of reading strategies; 8) results and conclusions; and 9) agreements and disagreements. During the abstraction process, we aimed to use language closely mirroring the original text of the articles to maintain fidelity to the authors' intentions. After compiling this information, the results were critically evaluated and discussed within the research team. This iterative process enhanced the clarity and coherence of our findings, contributing to a nuanced understanding of how various factors influence reading strategies.

3. Results

3.1 Background of the Selected Studies

Figure 2 illustrates the research methods used in studies from various countries and regions. A total of 17 countries and regions were involved, with 14 located in Asia. Among the 41 articles, six studies were conducted in both mainland China and Saudi Arabia. Taiwan, Oman, Korea, Iran, and Bosnia and Herzegovina each had three studies. Vietnam, Thailand, the Philippines, and Indonesia each had two studies.

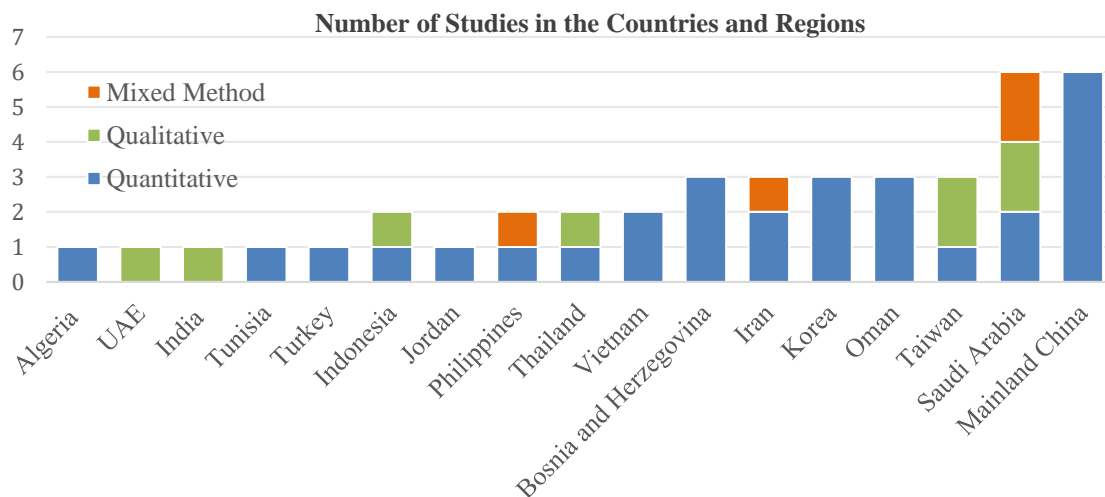


Figure 2: Research method of studies in the countries and regions

Figure 2 also shows that the distribution of research methodologies is uneven across most countries and regions. Saudi Arabia is unique in that studies employed all three research methods equally, with two studies for each. In Taiwan, Thailand, and Indonesia, both quantitative and qualitative approaches were used. Studies in the Philippines and Iran employed both quantitative and mixed methods. In the remaining countries and regions, research design is dominated by a single method: the quantitative approach in mainland China, Oman, Korea, Bosnia and Herzegovina, Vietnam, Turkey, Tunisia, and Algeria, and the qualitative approach in the UAE and India. Figure 3 provides further insight into these research methodologies.

Research Methodology

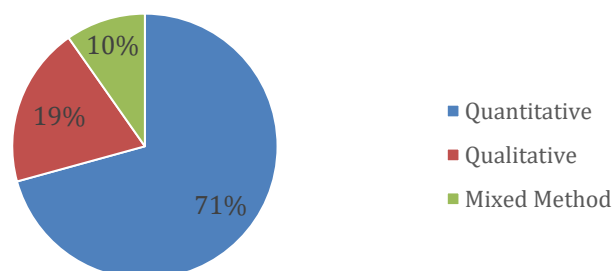


Figure 3: Proportions of research methodology

Of the 41 articles, 29 were quantitative (71%), 8 were qualitative (19%), and 4 were mixed-method studies (10%). Each methodology serves distinct purposes. The quantitative method allows researchers to gather extensive data on reading strategies and their relationships with other variables, as demonstrated in studies by Bećirović et al. (2018), Khreisat (2022), and Wallace et al. (2021). The qualitative approach enables a detailed exploration of the reading process and strategy use in different contexts, such as in the study by Alkhaleefah (2017). Mixed-method designs, like those used by Daguy-James and Bulusan (2020), first collect quantitative data on strategy differences and then use qualitative analysis for deeper insights.

In summary, the 41 studies reviewed indicate that the use of reading strategies among college-level students was extensively investigated across EFL and ESL countries over the past decade, particularly in Asia. Mainland China and Saudi Arabia received the most attention from researchers. The majority of studies employed a quantitative approach, while mixed-method studies were the least common. The quantitative research method appears to be particularly attractive to researchers studying the factors influencing reading strategies. Studies conducted in Saudi Arabia showed the most balanced use of all three methodological approaches, whereas, in most other countries and regions, research predominantly followed a single or occasionally two methodological approaches.

3.2 Data Collection Instrument and Taxonomy of Reading Strategies

Different classifications of reading strategies depend on the instruments used to collect data, which, in turn, influence the conclusions drawn about the impact of the involved factors. Therefore, before summarising the factors affecting reading strategy use, it is essential to review the research instruments and the taxonomy of reading strategies.

Self-report questionnaires predominated as instruments for collecting quantitative data on reading strategies. All 29 quantitative studies and 4 mixed-method studies utilized self-report questionnaires with Likert scales to investigate reading strategies. Self-reports are advantageous because they minimally disrupt the reading process compared to online measurement techniques and can be administered on a large scale with relative ease (Bogaert et al., 2023). Among the questionnaires used to collect data on reading strategy use, Mokhtari and Reichard's (2022) Metacognitive Awareness of Reading Strategies Inventory (MARSİ) and Mokhtari and Sheorey's (2002) Survey of Reading Strategies (SORS) were the most popular. Consequently, their categorization of reading strategies into global (GLOB), problem-solving (PROB), and support strategies (SUP) was widely adopted by researchers. MARSİ and SORS both assess self-reported reading strategies in academic texts. MARSİ was initially developed for native English learners, while SORS includes translation-related strategies, enhancing its popularity for assessing EFL/ESL students' perceived frequency of strategy use. SORS has been extensively employed in studies across various EFL/ESL regions, facilitating comparative insights into reading strategy use among English learners from different cultural contexts (Alsuhailani, 2019).

For collecting qualitative data on reading strategies, the think-aloud protocol (TAP) was the most frequently used instrument. The think-aloud protocol provides benefits when studies aim to gain insights into learners' online reading processes rather than merely assessing reading comprehension outcomes (Alkhaleefah, 2017). The classification of reading strategies under SORS was also preferred by researchers employing qualitative and mixed-method designs. The common classifications of reading strategies across different research methodologies facilitated the comparison of research results.

3.3 Factors Influencing Reading Strategy Use

A total of 16 factors deemed to influence college-level students' use of reading strategies were identified across the 41 studies. Some articles focused on the impact of a single factor on reading strategies (e.g., Abu-Snoubar, 2017; Al Qahtani, 2020), while others examined multiple factors (e.g., Do & Phan, 2021; Wallace et al., 2021). The study by Becirovic et al. (2017) investigated up to four factors: gender, field of study, nationality, and grade level. Table 3 categorizes these factors.

Table 3: Categories of factors influencing reading strategy use

Factors	Reader	Text
Reading proficiency	√	
Gender	√	
Field of study	√	
Academic year	√	
Text type		√
Reading anxiety	√	
Academic level	√	
Nationality	√	
Monolingual or bilingual	√	
University status	√	
Metacognition	√	
Multiple intelligences	√	
Motivation	√	
Exposure to specialized courses	√	
Self-efficacy	√	
Reading attitude	√	

Comprehension success or failure is influenced by reader characteristics, text properties, and the context of reading (Britton & Graesser, 1996; Van Oostendorp & Goldman, 1999). Based on this premise, the 16 factors were classified into reader and text categories. Reader characteristics include individual traits and abilities that a reader brings to the process, such as prior knowledge, motivation, and metacognitive awareness, while text properties refer to the inherent characteristics of the reading material itself, which can facilitate or hinder comprehension. As shown in Table 3, research on reader factors predominated, with 15 of the 16 factors related to the reader. This emphasis supports the notion that the reader plays a central role in reading (Rumelhart, 2017). The remaining

factor, text type, was explored based on the idea that understanding different text structures is crucial for effective reading, thus impacting reading comprehension and strategy use (Barrot, 2016; Snyder, 2010).

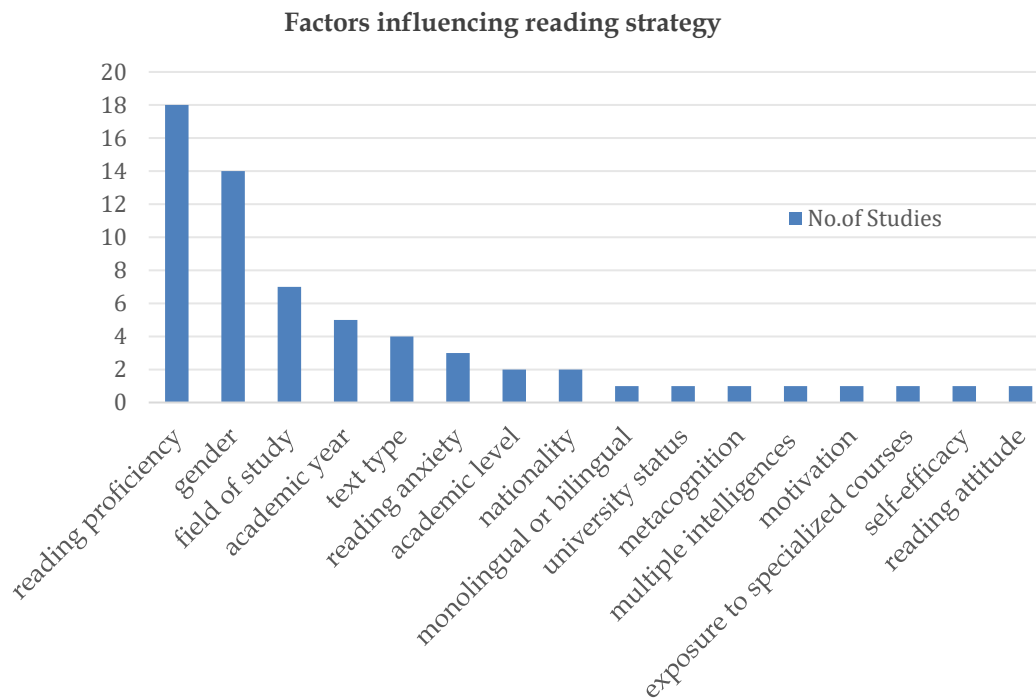


Figure 4: Numbers of studies on factors influencing reading strategy use

Figure 4 illustrates the scholars' interest in the 16 factors. Reading proficiency received the most attention, with 18 articles examining the use of strategies by readers at various EFL/ESL proficiency levels. This focus is understandable, given that reading strategies are defined as deliberate, conscious behaviors of readers to enhance comprehension and address reading difficulties. Researchers have aimed to determine which strategies are used by more proficient readers that are not employed by less proficient ones, or to what extent strategies differ, thus providing pedagogical insights for EFL/ESL reading instruction. Gender was the second most researched variable, with 14 studies investigating its influence. This interest might partly stem from gender being an easily included independent variable (Alfarwan, 2021) and the fact that genders are sometimes taught separately in certain regions (e.g., Saudi Arabia). The field of study was the third most investigated variable, with 7 studies exploring its effects on strategy use. Understanding interdisciplinary differences in strategy use is important for EFL/ESL instructors to tailor their courses to specific student fields (Peacock & Ho, 2003).

3.4 Influence of the Factors on Reading Strategy Use

Concerning the influence of the aforementioned factors on reading strategy use, consensus is not always reached in the findings. To address the agreements and disagreements in the conclusions of the studies, this section analyses the influence attributed to the first eight factors (starting from the left in Figure 4), each of which was investigated in more than one study. This approach allows for comparisons

across research findings.

3.4.1 English Reading Proficiency

The factor of students' English reading proficiency was the most extensively investigated among the factors, with 8 quantitative, 8 qualitative, and 2 mixed-method studies dedicated to this exploration, as shown in Table 4. Various terms were used to differentiate proficiency levels, such as successful, partly successful, and unsuccessful readers by Nalliveettil (2014), high, medium, and low-ability readers by Al Qahtani (2020), and good and poor readers by Alkhaleefah (2017).

Table 4: Studies on influence of English reading proficiency

Research method	Number	Study
Quantitative	8	Al-Mekhlafi (2018); Chen and Intaraprasert (2014a); Dallagi (2021); Do and Phan (2021); Hong-Nam and Page (2014); Khreisat (2022); Kim (2016); Wallace et al. (2021)
Qualitative	8	Al Qahtani (2020); Alkhaleefa (2017); Endley (2016); Fitriana (2018); Lin and Yu (2015); Nalliveettil (2014); Shih and Huang (2018); Pattapong (2022);
Mixed method	2	Alfarwan (2021); Nilforoushan et al. (2023)

Quantitative studies verified the correlation between reading proficiency and strategy use, revealing both agreements and disagreements in their results. While most studies concluded that reading proficiency level was significantly correlated with reading strategy subscales (e.g., Kim, 2016; Khreisat, 2022), there were differing findings regarding the frequency of strategy use. For example, Chen and Intaraprasert (2014a) and Hong-Nam and Page (2014) found that high proficiency students applied reading strategies more frequently than low proficiency ones. Conversely, Wallace et al. (2021) found that high-ability readers used significantly fewer support strategies than low-ability readers. Moreover, Dallagi's (2021) study showed that the frequency of strategy use is not necessarily related to proficiency level.

Qualitative studies provided insights into differences in strategy use among readers of varying proficiency levels. Shih and Huang (2018) argued that while there was no significant difference in the quantity and diversity of metacognitive strategies used by high and low scorers, the effectiveness and flexibility of strategy use appeared to be crucial in determining reading performance. The ability to orchestrate strategies was highlighted as a key determinant distinguishing proficient language learners from less proficient ones. Proficient readers were characterized by frequent and strategic inspection of difficulties and self-monitoring of understanding (Alkhaleefah, 2017). Additionally, compared to proficient readers who employed more effective and diverse reading strategies, less-proficient readers predominantly relied on language-based strategies, focusing on linguistic elements and local textual relationships (Lin & Yu, 2015).

Mixed-method studies sought to identify similarities or differences among

readers of varying proficiency and provide justifications for these differences. Nilforoushan et al.'s (2023) mixed-method study concluded that high-proficiency readers used more global strategies (GLOB) than low-proficiency readers. One explanation for this result, according to Nilforoushan et al. (2023), was that low-proficiency readers, having lower English proficiency, may require specific reading strategies to compensate for this deficiency. However, these findings contrasted with those of Alfarwan (2021), who, based on quantitative data from questionnaires and qualitative data from think-aloud protocols (TAP), found that high-proficiency students employed more strategies than low-proficiency ones. Alfarwan (2021) suggested that some strategies require a certain threshold level of proficiency to be used effectively

3.4.2 Gender

Fourteen studies addressed the influence of gender on reading strategy use, comprising 13 quantitative studies and 1 mixed-method study (see Table 5).

Table 5: Studies on influence of gender

Research method	Number	Study
Quantitative	13	Alami (2016); Al-Mekhlafi (2018); Altalhab (2019); Bećirović et al. (2018); Becirovic et al. (2017); Bensaad and Ghania (2020); Dallagi (2021); Deliany and Cahyono (2020); Do and Phan (2021); Hong-Nam and Page (2014); Khreisat (2022); Wallace et al. (2021); Yukselir (2014)
Mixed method	1	Alfarwan (2021)

The findings from these studies can be categorized into two main groups: 1) there were no significant differences in strategy use between male and female readers (e.g., Altalhab, 2019; Bensaad & Ghania, 2020; Hong-Nam & Page, 2014; Khreisat, 2022; Yukselir, 2014), and 2) significant differences existed in reading strategy use, with female readers employing strategies more frequently than their male counterparts (e.g., Alami, 2016; Alfarwan, 2021; Bećirović et al., 2017; Bećirović et al., 2018; Do & Phan, 2021).

Some studies clarified differences in specific types of strategies used by male and female students. For instance, Do and Phan (2021) observed that female readers used support strategies (SUP) more frequently than male readers, although there was no significant difference in the use of global (GLOB) and problem-solving (PROB) strategies. Conversely, Alfarwan's (2021) mixed-method study found that female students employed PROB and SUP strategies more frequently than male students, while the use of GLOB strategies did not differ significantly between the genders. Alfarwan (2021) suggested that female readers demonstrated a higher level of effort and attention to detail in comprehending text passages compared to male readers.

3.4.3 Field of Study

Table 6 presents that six quantitative studies and one mixed-method study investigated the influence of students' field of study, also referred to as major (Abu-Snoubar, 2017), discipline (Mustajab, 2020), or department (Yukselir, 2014).

Table 6: Studies on influence of study field

Research method	Number	Study
Quantitative	6	Abu-Snoubar (2017); Becirovic et al. (2017); Brdarevic Celjo et al. (2021); Dallagi (2021); Mustajab (2020); Yukselir (2014)
Mixed method	1	Daguay-James and Bulusan (2020)

Some studies revealed significant differences in reading strategy use across various majors. For instance, Becirovic et al. (2017) found that English Language and Literature Department students used metacognitive reading strategies – both pragmatic and analytic – more frequently than their peers in the Management Department. Conversely, Dallagi's (2021) study did not find a distinct relationship between academic specialty and any specific sub-strategy group (GLOB, PROB, or SUP strategies), although humanities students showed greater awareness of strategies compared to their counterparts in hard sciences such as Medicine and Engineering. This increased awareness led to more frequent strategy use. In contrast, other studies, including those by Abu-Snoubar (2017) and Mustajab (2020), found no significant differences in reading strategy use among students from different majors.

3.4.4 Academic Year

Table 7 illustrates that five quantitative studies investigated the impact of students' academic year on reading strategy use. Most studies reported that students' year level significantly influenced their use of reading strategies. For example, Zhou and Zhao (2014) identified variations in the popularity of specific reading strategies between first-year and third-year students. Additionally, Becirovic et al. (2017) found a positive correlation between academic year and strategy use, noting that students in higher grade levels exhibited a notably greater frequency of using metacognitive reading strategies – both pragmatic and analytic – compared to those in lower grade levels. These results align with Hong-Nam and Page (2014), who found that senior students used more metacognitive strategies than their junior, sophomore, and freshman counterparts. However, some studies did not support this view. For instance, Khreisat (2022) reported no significant differences in the use of metacognitive reading strategies among Saudi tertiary students across different year levels.

Table 7: Studies on influence of academic year

Research method	Number	Study
Quantitative	5	Becirovic et al. (2017); Brdarevic Celjo et al. (2021); Hong-Nam and Page (2014); Khreisat (2022); Zhou and Zhao (2014)

3.4.5 Text Type

As discussed in section 3.3, text type is a text variable examined in studies of reading strategy use. Among the reviewed articles, four studies investigated the impact of text type on reading strategy use (see Table 8).

Table 8: Studies on influence of text type

Research method	Number	Study
Quantitative	2	Barrot (2016); Suraprajit (2019)
Qualitative	1	Alkhaleefah (2017)
Mixed method	1	Nilforoushan et al. (2023)

Barrot's (2016) quantitative study found that Philippine ESL students generally applied a broad range of strategies consistently across different text types. Their use of reading strategies did not vary with text type, although GLOB strategies were utilized more frequently than PROB and SUP strategies. In Suraprajit's (2019) quantitative study, no significant differences were observed in the frequency of reading strategies employed for academic versus business texts. Consequently, it was concluded that text type did not influence reading strategy use.

In contrast, Alkhaleefah's (2017) study of Saudi EFL students revealed that narrative texts presented greater challenges than expository texts due to more frequent explicit issues, leading to more strategic processes to address these problems. Conversely, Nilforoushan et al. (2023) found that expository texts were perceived as more difficult than narrative texts, leading to the employment of more metacognitive reading strategies for expository texts. Thus, text type does affect readers' use of reading strategies.

3.4.6 Reading Anxiety

The impact of reading anxiety on strategy use was examined in three quantitative studies (i.e., Kim, 2021; Lu & Liu, 2015; Lien, 2016). All three studies measured reading anxiety by using Saito et al.'s (1999) Foreign Language Reading Anxiety Scale (FLRAS), though they employed different scales for assessing reading strategies. Kim (2021) and Lien (2016) used Mokhtari and Sheorey's (2002) Survey of Reading Strategies (SORS), while Lu and Liu (2015) utilized the Foreign Language Reading Strategy Use Scale (FLRSUS) developed by Dreyer and Nel (2003).

Lu and Liu's (2015) correlational analysis revealed a significant inverse relationship between FLRAS and FLRSUS among Chinese EFL university students. Specifically, students with higher reading anxiety exhibited a lower frequency of employing reading strategies. Kim (2021) found that reading anxiety led to increased use of metacognitive strategies, whereas confident readers used metacognitive strategies more frequently compared to anxious readers. Thus, confidence or positive emotions appeared to be a stronger contributor to metacognitive strategy use among Korean EFL university students. Conversely, Lien (2016) concluded that more confident or satisfied EFL learners in Taiwan did not show a higher frequency of using metacognitive strategies.

3.4.7 Academic Level

The influence of students' academic level on reading strategy use was investigated in two quantitative studies: Bećirović et al. (2018) and Lien (2016). Both studies employed SORS to measure reading strategy use. The key finding was that neither students' GPA (Lien, 2016) nor academic levels (Bećirović et al., 2018) were correlated with reading strategy use. This consistent conclusion suggests that EFL learners at higher academic levels did not employ more reading strategies compared to those at lower levels.

3.4.8 Nationality

The influence of students' nationality on reading strategy use was examined in two quantitative studies by Bećirović and colleagues (2017; 2018). The 2017 study investigated nationality as an individual factor and found no significant differences in strategy use between Bosnian and Turkish students. The 2018 study, however, explored the combined effects of nationality, gender, and GPA on reading strategy use. It was reported that, while nationality alone had no significant impact, the interaction effect of Nationality \times GPA on the Survey of Reading Strategies (SORS) was significant. Additionally, the null hypothesis, which posited that the combined effects of nationality, gender, and GPA did not significantly influence SORS, was supported.

3.5 Agreements and Disagreements on Factors Influencing Reading Strategy Use

Research findings generally concur on several factors influencing reading strategy use. First, reading proficiency significantly correlates with strategy use; proficient readers typically apply strategies more effectively and flexibly, often employing a broader range of strategies than less proficient readers. Gender also plays a role, with female readers generally employing strategies more frequently than male readers, especially in categories like support strategies. Text type influences strategy application as well, with expository texts often requiring greater strategic effort. Additionally, reading anxiety consistently impacts strategy use, as higher anxiety levels generally lead to reduced strategy application. Academic progression influences strategy use, with students in higher academic years more frequently using metacognitive strategies. Finally, nationality alone does not significantly impact reading strategy use, though it may have an effect when interacting with other factors such as GPA.

In areas where studies show disagreement, there is no consensus on whether the frequency of strategy use directly ties to proficiency. While some studies find that high-proficiency readers use strategies more frequently, others suggest these readers may use fewer strategies or that frequency does not align with proficiency level. Evidence is also mixed on the impact of academic specialization, with some studies showing substantial differences in strategy use across fields, while others report no significant variation. Furthermore, although studies agree on the general influence of reading anxiety, findings differ in specifics. Some studies suggest that higher anxiety reduces strategy use, whereas others find it may lead to an increase in metacognitive strategies, reflecting a complex relationship

between emotions and strategy choice.

4. Discussion

4.1 Gaps in the Current Literature on Reading Strategies Influenced by Factors

This review highlights several gaps in the research on the influence of various factors on EFL/ESL students' reading strategy use. Future studies could address these gaps to better understand how different factors shape reading strategy use.

Firstly, among the 16 factors identified from the 41 studies, 15 were categorized as reader factors, while the remaining factor, text type, was classified as a text factor. Success or failure in comprehension is influenced by both reader attributes and text properties (Kendeou et al., 2011). Although various reader factors have been examined, the impact of text-related factors remains insufficiently addressed. Future research should explore additional text properties, such as text complexity, structure, and cohesion.

Secondly, an analysis of research methodologies reveals that quantitative, qualitative, and mixed methods are not evenly distributed across studies within a single country or region. For example, all six studies conducted in mainland China exclusively employed quantitative methods, potentially indicating a lack of qualitative insights into the reading processes of Chinese EFL learners. Regarding research instruments, the Survey of Reading Strategies (SORS) (Mokhtari & Sheorey, 2002) was the most commonly used self-report tool for collecting quantitative data on reading strategies. However, self-report studies may suffer from issues such as participants overrating or underrating their abilities and interpreting questionnaire items inconsistently (Oxford et al., 2004). Although questionnaires help us understand readers' knowledge of reading strategies, they do not guarantee that L2 readers can effectively implement these strategies (Adunyarittigun, 2021). Only two studies sought to address this issue. Barrot's (2016) quantitative study incorporated an on-task assessment, requiring participants to respond to the questionnaire immediately after completing a task, thus enabling more detailed and contextually framed evaluations of strategies. Nilfroushan et al. (2023) employed both SORS and think-aloud protocols (TAP) to assess reading strategies, revealing discrepancies between perceived and actual strategy use. Future research should focus on data triangulation and the comparison between SORS and TAP to better evaluate the use of reading strategies.

Thirdly, the literature lacks an inventory specifically for English for Specific Purposes (ESP) reading strategies. While two studies (Bensaad & Ghania, 2020; Nalliveetil, 2014) investigated ESP reading strategies with SORS, which was designed for academic texts, it is insufficient for specialized fields. Chen and Intaraprasert (2014a & b) developed the "Strategy Questionnaire for Business English Reading (SQBER)" to examine strategies used by Business English majors in mainland China, but the questionnaire lacked items specific to ESP. Future research should develop inventories and scales tailored to specialized reading contexts to provide more targeted insights.

Lastly, most studies have examined how individual factors affect reading strategies. However, the use of EFL/ESL reading strategies is often influenced by multiple factors. Only one study (Bećirović et al., 2018) investigated the collective impact of multiple factors (nationality, gender, and GPA) on different categories of reading strategies. Future research should explore how individual factors interact and collectively influence reading strategy use.

4.2 The Consensus and Discrepancy in Research Findings

Reading proficiency has emerged as the most extensively researched factor among those examined, highlighting researchers' interest in understanding the relationship between reading proficiency and strategy use. Studies consistently show that proficient readers exhibit a greater ability to plan, monitor, and adjust strategies to meet textual demands. This correlation underscores the importance of cognitive awareness and adaptability, which are central to metacognition theory. These observations support researchers' findings that skilled L2 readers are both strategic and metacognitive (Fang & Rahman, 2024; Grabe & Stoller, 2019; Reiber-Kuijpers et al., 2021), while also echoing Lin's (2019) conclusions on the relationship between metacognition and reading proficiency in her review study. The positive correlation between metacognition and reading proficiency can be interpreted in two ways. First, high-proficiency readers experience fewer difficulties with lower-level reading processes, such as word recognition and semantic parsing, allowing them to allocate more cognitive resources to metacognitive processes. Second, their high level of metacognition is reflected in their flexibility and orchestration of reading strategies, which enhances their reading proficiency. The effectiveness of reading strategies depends on whether they are employed with a metacognitive approach (Carrell, 1998). High-proficiency readers are skilled at recognizing the benefits of using reading strategies and can select appropriate strategies based on specific reading challenges. In contrast, the issue for low-proficiency readers is not a lack of knowledge about cognitive strategies but rather their failure to employ these strategies metacognitively.

Despite these agreements, inconsistencies regarding how various factors influence strategy use remain prevalent in the reviewed studies. These discrepancies can be attributed, in part, to the different instruments used for data collection. For example, Wallace et al.'s (2021) study using MARSII yielded different results compared to Lin and Yu's (2015) qualitative interpretation using TAP, particularly when comparing the frequency of strategy use between high- and low-proficiency students. Furthermore, even the same instrument can produce conflicting results, which can be partially explained by variations in participants and contexts (Lin, 2019). Whether using the same or different instruments, conflicting results may arise due to differences in participants' characteristics across various contexts, including academic, social, cultural, and linguistic backgrounds (Al Qahtani, 2020; Oranpattanachai, 2023). Brantmeier (2002) argues that L2 readers' use of strategies remains inconclusive, as researchers in this field utilize a diverse range of participants, reading materials, and research instruments. However, this diversity of research findings contributes to a more comprehensive understanding of ESL/EFL learners'

reading processes and strategy use.

5. Conclusion

This review examined 41 studies on factors influencing ESL/EFL college students' use of reading strategies, focusing on eight key factors. The findings indicate that both learner characteristics and text features impact reading. Metacognitive awareness is emphasized for its role in enhancing strategy effectiveness, adaptability, and its strong connection to reading proficiency. Insights from the review highlight that understanding reading strategies can inform education by identifying cognitive and metacognitive processes behind academic success or challenges. This knowledge can inform a more comprehensive framework for L2 reading and guide targeted instructional interventions to meet diverse learners' needs. Further research is recommended on the impact of different participant demographics and contextual factors on reading strategy use. Pedagogically, this review supports integrating reading strategy instruction into EFL/ESL curricula. Teaching contents and methods should adapt to students' fields of study, grade levels, cultural backgrounds, and the types of texts to be read. Additionally, teachers can scaffold strategies progressively to build students' confidence and reduce reading-related anxiety. The studies reviewed indicate a positive correlation between proficiency and the use of GLOB, PROB, and SUP strategies. Therefore, teachers should emphasize the strategies that distinguish proficient from less proficient readers, focusing on when, where, and how these strategies are used.

Several limitations affect this review. Firstly, the researches reviewed varied in study designs, participant characteristics, reading strategy taxonomy, and measurement tools, which may impact the comparability of findings and generalizability of the results. Secondly, to address the agreements and disagreements across conclusions, this review focused on the influence of eight factors investigated in multiple studies, leaving the remaining eight unexplored (the articles investigating these factors are listed in Table 9 of the Appendix). Finally, this review confined its focus to college-level students, so the results may not extend to other educational levels, such as primary or secondary students.

6. References

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Appendix

Table 9: List of factors studied in only one reviewed article

Factor	Source
self-efficacy	Alsuhaibani (2019)
university status	Brdarevic Celjo et al. (2021)
exposure to specialized courses	Chen and Intaraprasert (2014b)
motivation	Han (2021)
monolingual or bilingual	Keshavarz and Ghamoushi (2014)
reading attitude	Kim (2016)
multiple intelligences	Mirzaei et al. (2014)
metacognition	Nguyen and Phung (2021)