

METACOGNITIVE READING INTERVENTIONS TO IMPROVE READING COMPREHENSION AMONG ESL LEARNERS: A SYSTEMATIC REVIEW (2018-2025)

SYED HYDER RAZA SHAH¹, ZULIDA ABDUL QADIR², DR ISHFAQUE AHMED ABBASI³, RASHID HUSSAIN ABBASI⁴, KAINAT ALI⁵

¹PH.D. SCHOLAR AT CENTRE FOR LANGUAGE STUDIES, UNIVERSITI TUN HUSSEIN ONN MALAYSIA & LECTURER IN ENGLISH AT SHAHEED BENAZIR BHUTTO UNIVERSITY, SHAHEED BENAZIRABAD, PAKISTAN

²ASSOCIATE PROFESSOR AT CENTRE FOR LANGUAGE STUDIES, UNIVERSITI TUN HUSSEIN ONN MALAYSIA

³ASSISTANT PROFESSOR IN ENGLISH AT SUKKUR IBA UNIVERSITY, SINDH, PAKISTAN

⁴LECTURER IN ENGLISH AT SUKKUR IBA UNIVERSITY, SINDH, PAKISTAN

⁵JUNIOR ELEMENTARY SCHOOL TEACHER AT THE SCHOOL EDUCATION AND LITERACY DEPARTMENT, GOVERNMENT OF SINDH, PAKISTAN

ABSTRACT

Reading comprehension is a foundational skill in academic success, specifically in the context of English as a second Language (ESL) learning. Over the decades, research has increasingly focused on addressing metacognitive reading strategies for improving reading comprehension. Therefore, this systematic review unified past studies on metacognitive reading interventions to improve reading comprehension among ESL learners. Drawing on peer-reviewed studies from 2018 to 2025, this review was conducted in accordance with the Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA) guidelines. A total of 27 past studies relating to metacognitive reading interventions were identified through a keyword search across different databases, including Scopus, SpringerLink, Sage, and Education Resource and Information Centre. Moreover, the interventions in the previous studies examined the use of problem-solving reading strategy, support reading strategy, and global reading strategy during comprehension processes. The synthesis of the results found a frequent use of the Metacognitive Strategy Awareness Inventory, and the problem-solving reading strategy emerged as the most favoured reading strategy in diverse ESL contexts. The overall results indicated that explicit interventions on implementing metacognitive reading strategies led to improvements in reading comprehension, learner autonomy, and engagement. In addition, this systematic review suggested pedagogical implications for teachers and curriculum developers. However, this study also found limitations such as variability in research designs, educational contexts, students' demographics, research instruments, databases, and adoption of longitudinal designs, which limited the generalization of the findings. Further, it is recommended that future research should emphasize using more robust methodologies and define the intervention period to ensure reliability and clarity on treatment success.

Keywords: reading comprehension, metacognition, reading strategies, intervention, systematic review

INTRODUCTION

In the 21st century, thriving academically, professionally, and socially requires advanced literacy skills with reading at the core. Reading is considered one of the significant language learning skills for ensuring academic achievement, critical thinking, and lifelong learning. So, it is important to possess a high level of proficiency in decoding, understanding, and evaluating the credibility and dependability of textual information (Hedgcock & Ferris, 2018). As per psychology, reading is directly related to the cognitive faculties of the brain, and in this whole process, human cognition functions to code and decode the textual knowledge, which is the main reason to consider it a challenging cognitive process that necessitates the use of diverse reading strategies to improve reading comprehension. These strategies include both metacognitive reading strategies like global strategy, problem-solving strategy, and support strategy, and cognitive reading strategies such as planning, goal setting, activating prior knowledge, asking questions, making predictions, developing an understanding, monitoring reading comprehension, revising understanding, reflecting, and creating links (Zhang, 2018). To gather, they contribute to a more strategic, reflective, and effective reading process. But cognitive strategies focus on what the reader does, and metacognitive strategies for how and why the reader does it. Moreover, metacognition is a cognitive process that has emerged from the cognitive approach (Tezer, 2024). In the context of reading, metacognitive reading strategies are practical applications of metacognition. They have been extensively employed in language learning throughout the past decades, with a focus on meeting the specific English language needs of learners. Therefore, having discussed metacognition and metacognitive reading strategies, it is equally crucial to explore particular relevance for ESL learners. According to previous studies, these strategies enable the learners to navigate linguistic and cognitive challenges by motivating them to plan their reading, monitor their understanding, and reflect on what they have read. In consequence, this level of self-monitoring is pivotal in second

language contexts where comprehension can be hindered by complex vocabulary or grammatical structure. So, expanding on the benefits of using metacognitive reading strategies and their integration in the targeted programs has provided promising results in particular for ESL learners. In this regard, the targeted programs are planned for the purpose of spreading metacognitive awareness through training, treatments, and teaching instructions in ESL classrooms, which aim to improve reading comprehension among second language learners. (Urban et al., 2023; Shah et al., 2025).

The metacognitive reading strategies' integration has been under discussion in reading research for decades. Metacognitive strategies can be integrated by either a single method or many strategies, with the aim of facilitating students' learning of improving reading comprehension (Muhid et al., 2020). For example, Perry et al. (2019) focused on examining the impact of metacognition on teachers' performance. The results indicated a visible improvement in teachers' performance after the implementation of metacognitive strategies. As per scholars specializing in the study of improving reading comprehension, it is widely believed that a reliable solution to reading comprehension problems can be achieved after applying a systematic representation of textual information. This can be accomplished by using metacognitive reading strategies (Zhang, 2018). It can be illustrated that metacognitive reading strategies are excellent solutions to students' reading comprehension problems. These strategies help those learners who make efforts to understand the text. The learners can apply such strategies when they meet with reading problems, learn what to do, and recognize what they should do. In other words, metacognitive reading strategies allow learners to regulate their thinking process before, during, and after reading a text.

Though fewer systematic reviews or meta-analytical research have been done on the long-term impacts of strategy education, De Boer et al. (2018) applied a meta-analysis method to collect evidence from past attempts and demonstrated that interventions played a massive role in improving students' performance in comprehension. The research investigated how 48 interventions involving the teaching of metacognitive strategies affected students' academic performance over the long run. Further, the findings demonstrated a negligible long-term increase in the effect when compared to the post-test effects. At the follow-up test, the instruction effect grew from Hedges' $g = 0.50$ to 0.63 at the post-test. Low SES learners gained the most over the long run. Furthermore, compared to interventions without this element, instructions that included the cognitive approach "rehearsal" had less lasting impact. Besides this, the research explored other strategies confines of metacognitive, cognitive management, and motivational elements do not moderate the long-term effect of metacognitive instruction. While numerous studies have demonstrated the positive impact of metacognitive reading strategies on reading comprehension, there is a lack of research on investigating how these strategies are integrated as a structured intervention for ESL learners across diverse educational backgrounds since many of the studies tend to explore the use of metacognitive reading strategies in general contexts, leaving behind specific linguistic and cognitive challenges that ESL learners face. Not only this, but limited attention has been given to long-term effectiveness and contextual adaptation of these reading interventions, concerning different age groups, language proficiency levels, as well as instructional settings. This gap indicates a need for a systematic review that consolidates past studies but also provides information about the existing gap in reading research, which may help to formulate intervention programs in the future.

The present systematic review is focused on identifying, evaluating as well and synthesizing the previous information to come up with evidence-based judgments on metacognitive reading intervention involvement for enhancing reading comprehension among second language learners. Further, this review contributed to recognizing and exploring the level of success of metacognitive reading strategies in improving the reading comprehension of students.

RESEARCH QUESTIONS

The following are three research questions that lead the way for the systematic review:

1. What are explicit strategies for practicing metacognitive reading?
2. Which metacognitive reading strategies do ESL learners tend to prefer?
3. Do interventions instructing the use of metacognitive reading strategies foster reading comprehension among ESL learners?

RESEARCH METHODOLOGY

A systematic literature review methodology was used in this study to conduct a comprehensive search, collect, assess, and synthesize empirical evidence related to the research questions. This process was carried out by following established eligibility criteria and implementing a clear and reproducible method, as described by Berrang-Ford et al. (2015) and Petticrew & Roberts (2006). The application of this methodology ensures a meticulous and transparent article retrieval process using predefined search terms and specific inclusion and exclusion criteria (Robinson & Lowe, 2015).

Furthermore, a systematic literature review seeks to minimize bias in studies and produce more significant outcomes by utilizing suitable synthesis methods across diverse research designs, which may include qualitative, quantitative, or a combination of both. This methodology facilitates the creation of high-quality evidence and improves the precision of findings. As noted by Mallett et al. (2012) and Petticrew & Roberts (2006), while systematic reviews frequently employ statistical techniques such as meta-analysis, alternative methods like narrative or qualitative analysis can be applied when the selected studies do not meet the requisite criteria for meta-analysis (Whittemore & Knafl, 2005). The current research employed integrative analysis due to the heterogeneity of the included studies in terms of research methods, participant traits, intervention formats, and outcome measures.

To satisfy the criteria for research paper publication, the present study emphasizes adherence to the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA; see figure 1), which outlines approximately 27 items and four checklists essential for conducting a systematic review (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2021). The study was structured around three phases: identification, screening, and included.

Identification

The first stage in writing a systematic review is the identification. In which the three review questions were investigated to answer, which led to the process of research. In this regard, the data was collected from six databases, namely Scopus, Science Direct, Educational Resource Information Centres (ERIC), SpringerLink, Sage, and Google Scholar. The search was initiated by searching for key terms like “Metacognition”, “Metacognitive reading strategies”, metacognitive reading strategies intervention “reading skills”, or “reading comprehension”. In 2023, the first attempt for the search was conducted, and it was revised in 2025. This study has confined its search parameters to the years 2018 through 2025 to encompass the latest developments in the research.

Screening

The next phase is to screen the search results obtained from different databases. A total of 1801 records were screened from six search engines, including 180 from Scopus, 720 from Science Direct, 680 from ERIC, 55 from Sage, 45 from SpringerLink, and 121 additional records were found from Google Scholar. About 350 duplicated were removed during the screening phase, and the remaining 1451 records were screened. Among them, 1400 records were excluded due to different reasons, like not published in ESL/EFL settings, not written in English, and not full articles, because those search results only included the titles with abstracts—this phase type or form of literature needed to be reviewed critically. The present study assessed 51 full-text articles meeting with eligibility criteria. The study also excluded 24 full-text articles, as they consisted of review articles, meta-analyses, conference proceedings, and other literature that was not relevant to the research.

Included

As the eligibility phase gave satisfactory results, 27 research articles were selected during the inclusion phase for the present systematic review. Figure 1 shows details regarding the search process: The articles under examination were published from 2018 to 2025.

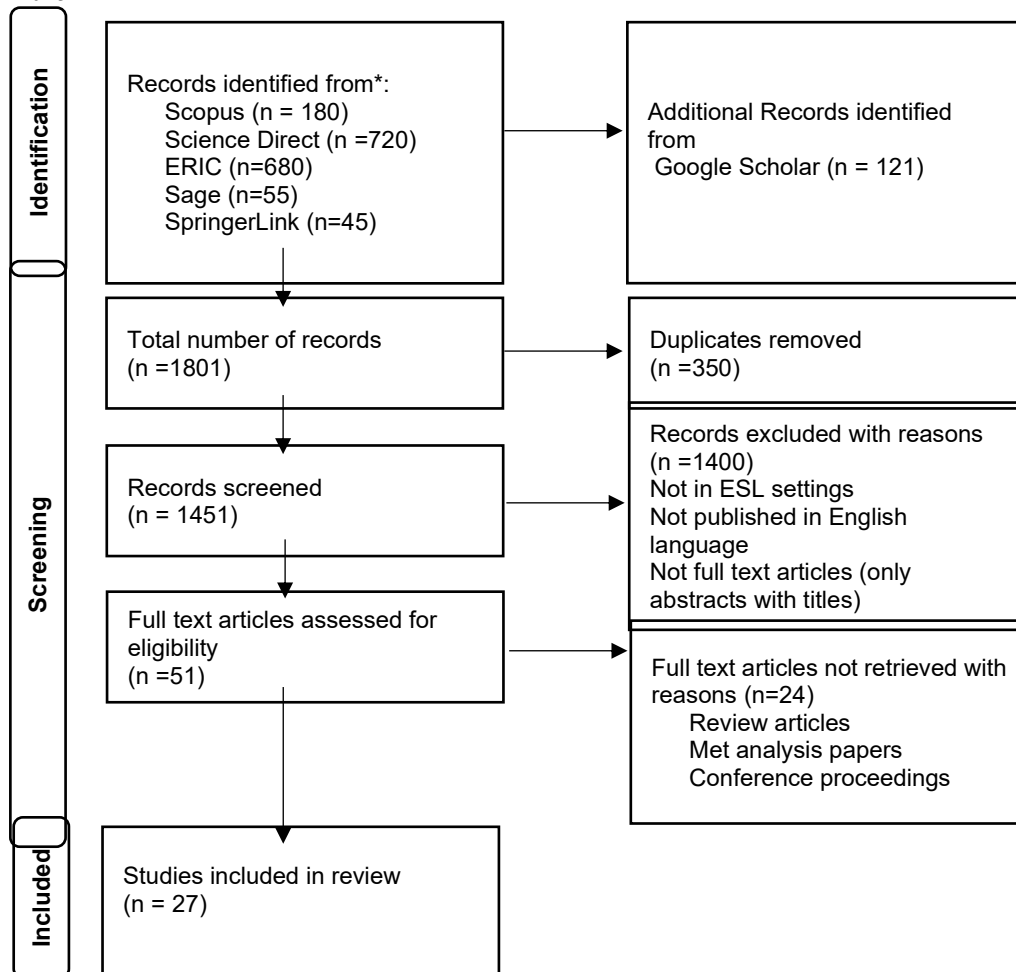


FIGURE 1 Flowchart illustrating the current study (adapted from Moher et al., 2021).

Background information of selected studies during the included phase

TABLE 1

Background information of 27 applicable studies

Author (s), year of publication	Respondents	Country	Method	Time
Ahmed (2020)	375 Undergraduates	Oman	Quantitative research	Not mentioned
Al-Kiyumi et al. (2021)	76 Pre-Intermediate Students	Oman	Quasi-experimental design	Not mentioned
Al-Qahtani (2020)	40 First-Year Secondary School Students	KSA	Quantitative (Quasi-Experimental Research Design)	12 sessions
Alsofyani (2019)	115 Intermediate College Students	KSA	Mixed methods	5 Weeks
Babashamasi et al. (2022)	75 Undergraduates	Malaysia	Mixed Methods (Quasi-Experimental Research Design)	14 Sessions
Chin (2019)	8 Undergraduates	Taiwan	Extensive Research Approach	8 Weeks
Daguay-James and Bulusan (2020)	403 Freshman	Philippines	Mixed Method (Sequential Explanatory)	Not mentioned
Damayanti et al. (2019)	46 Undergraduates	Indonesia	Quantitative Research	5 Meetings
Degennaro (2018)	74 Fifth-Grade Students	Georgia	Quantitative Research	12 Weeks
Deliany & Cahyono (2020)	53 Undergraduates	Indonesia	Quantitative Survey Research	Not mentioned
Do and Phan (2020)	123 Undergraduates	Vietnam	Quantitative Research	Not mentioned
Gatcho and Hajan (2019)	40 Grade 11 Students	Philippines	Quasi-Experimental Design	4 Sessions
Harimurti et al. (2023)	44 Undergraduates	Indonesia	Mixed Methods	Not mentioned
Juhkam et al. (2023)	301 Third-Grade Students	Estonia	Quantitative (Quasi-Experimental)	13 Weeks
Khurram, B.A (2023)	8 Undergraduates	Pakistan	Qualitative Research	2 Months
Kung and Aziz (2020)	25 Secondary School Students	Malaysia	Action Research	4 Sessions
Li et al. (2022)	117 Undergraduates	China	Mixed Methods (Quasi-Experimental Design)	8 Sessions
Martelletti et al. (2023)	117 4th-Grade Students	Argentina	Quantitative Research (Quasi-Experimental)	8 Weeks
Momdjian and Chidiac (2024)	54 Sixth-Grade Students	KSA	Mixed Method (Quasi-Experimental Design)	1 Week
Muche et al. (2024)	150 High School Students	Ethiopia	Quantitative (Correlational)	Not mentioned
Muhid et al. (2020)	50 11th-Grade Students	Indonesia	Quantitative Research (Quasi-Experimental Design)	2 Months
Pahrizal et al (2025)	114 Undergraduates	Indonesia	Quantitative Research	Not mentioned
Shah et al. (2024)	1500 First-Year College Students	Pakistan	Cross-Sectional Survey	Not mentioned
Sheikh et al. (2019)	571 Undergraduates	Pakistan	Quantitative (Survey Design)	Not mentioned
Sutiyatno & Sukarno (2019)	Total 121 (55 Sample) Undergraduates	Indonesia	Quantitative (Survey Study)	Not mentioned
Teng (2019)	25 Primary Students	Hong Kong	Mixed Methods (Quasi-Experimental)	Not mentioned

Wallace et al. (2021)	137 Undergraduates	China	Mixed Methods	Not mentioned
-----------------------	-----------------------	-------	---------------	---------------

Notes: Table 1 gives required information about the author, year of publication, number of respondents, country, method applied, and time taken for intervention.

After observing Table 1, it can be noted that, from 2018 to 2025, most of the studies investigated metacognitive reading strategies in ESL/EFL learners by applying a quantitative research method. Not only this, but eight mixed studies also used a quantitative method fundamentally, which are listed in the table. According to the geographical distribution of the research, approximately 18 studies have been carried out in Asia, 5 in the Middle East, 2 in Europe, 1 in East Africa, and 1 in South America. It is noteworthy that the proportion of studies conducted in Asian countries is considerably high. In consequence, focus on metacognitive reading strategies in ESL learners is comprehensible due to its worth to learn as a second language in Asian regions. Besides this, the population in the relevant studies mostly belonged to undergraduates, which highlighted a crucial relationship between metacognitive reading strategies and university students to enhance reading comprehension skills. Among 27 studies, nine dealt with quasi-experimental research design, 4 with survey research, 1 practiced an extensive research approach, and 1 with action research. A significant commonality among numerous selected studies was their focus on investigating whether metacognitive reading strategies influence the reading comprehension or reading skills of ESL learners.

FINDINGS

RQ-1: What are explicit strategies for practicing metacognitive reading?

Reading strategies, such as metacognitive reading strategies, help readers in monitoring and managing their reading comprehension and learning effectively. The readers reflect on their thought processes, which in the context of reading entails being conscious of their comprehension, analysis, and interaction with the text. These productive techniques in relation to reading skills enable readers in processing information and improving their ability to modify their reading style to comprehend and remember what they read (Khan et al., 2024).

The previous studies suggested that out of 27 studies, 25 applied various types of metacognitive reading strategies. However, 17 studies used reading questionnaires and inventories for the purpose of defining specific metacognitive reading strategies. The questionnaires were comprised of the Survey of Reading Strategies (SORS) created by Mokhtari and Sheoray in 2002, the Metacognitive Awareness of Reading Strategies Inventory (MARSI) developed by Mokhtari and Reichard in 2002, a revised edition of MARSI known as the Metacognitive Awareness of Reading Strategies Inventory-Revised (MARSI-R) introduced by Mokhtari et al. in 2018, and the Metacognitive Reading Strategy Questionnaire (MRS-Q) also formulated by Mokhtari and Reichard in 2002.

Among the 27 studies, six utilized the Metacognitive Awareness of Reading Strategies Inventory (MARSI) to collect the data (Al-Kiyumi et al., 2021; Babashamasi et al., 2022; Daguay-James and Bulusan, 2020; Shah et al., 2024; Sheikh et al., 2019; Wallace et al., 2021). In addition, it was noted that six studies implemented SORS (Ahmed, 2020; Alsofiyani, 2019; Harimurti et al., 2023; Do and Phan, 2020; Muche et al., 2024; Sutiyo and Sukrano, 2019). Furthermore, only three employed MARSI-R (Deliay and Cahyano, 2020; Kung and Aziz, 2019; Pahrizal et al., 2025; Shah et al., 2025).

A thorough examination of the research methodology employed in the three administered questionnaires revealed that each contained three categories of metacognitive reading strategies: global, problem-solving, and support reading strategies, all measured using a five-point Likert scale. Nevertheless, the quantity of items differed among the questionnaires. Besides this, the three reading questionnaires gave similar views on defining three different but complementary strategies: global, problem-solving, and support reading helped the respondents to improve their understanding and interaction with a text.

Muhid et al. (2020) is the only research that utilized the Metacognitive Strategy Questionnaire (MSQ) as adopted by Zhang and Seepho (2013). This questionnaire incorporated planning, monitoring, and evaluating as metacognitive reading strategies relevant to reading comprehension. Moreover, five studies used unspecified or other forms of questionnaires, extracted MCQs from reading passages of varying range to investigate metacognitive reading strategies in ESL learners. The tests were mostly taken before and after providing treatments as pretest and post-test procedures (Al-Qahtani, 2020; Damayanti et al., 2019; Degennaro, 2018; Gatcho and Hajan, 2019; Momdjian and Chidiac, 2024).

RQ-2: What metacognitive reading strategies do ESL learners tend to prefer?

ESL learners benefit from metacognitive reading strategies in order to monitor and enhance their reading comprehension. The past studies repeatedly demonstrated that ESL learners' practical need to overcome language hurdles relies on their dependency on problem-solving strategies. According to research, ESL students can improve their comprehension in both academic and non-academic contexts by using problem-solving strategies. These techniques have been particularly helpful in a variety of educational

settings because they enable ESL students to actively control their reading challenges actively, enhancing their understanding and memory.

Among 27 studies, 17 administered MARSİ, MARSİ-R, and SORS to evaluate metacognitive reading strategy among ESL learners. This review closely analysed 17 studies and found only 10 studies that included specific metacognitive reading strategies like global strategy, problem-solving strategy, and support strategy. The present study attempts to answer which strategy was frequently applied that helped ESL learners in the reading process.

Table 2 lists the studies that clearly mention the preferred metacognitive reading strategy by ESL learners. Moreover, it has been concluded among three sub-scales of metacognitive reading strategy that problem-solving strategy was frequently used by ESL learners (Babashamasi et al., 2022; Daguay-James and Bulusan, 2020; Do and Phan, 2020; Harimurti et al., 2023; Kung and Aziz, 2019; Muche et al., 2024; Pahrizal et al., 2025; Shah et al., 2024; Wallace et al., 2021; Yaghi, 2021).

TABLE 2
Metacognitive Reading Strategy Frequently Used by ESL Learners

Name Of Author, Year of Publication	Preferred Metacognitive Reading Strategy
Babashamasi et al. (2022)	Global strategy
Daguay-James and Bulusan (2020)	Problem-solving strategy
Do and Phan (2020)	Problem-solving strategy
Harimurti et al. (2023)	Problem-solving strategy
Kung and Aziz (2019)	Problem-solving strategy
Muche et al., (2024)	Problem-solving strategy
Pahrizal et al. (2025)	Problem-solving strategy
Shah et al. (2024)	Problem-solving strategy
Wallace et al. (2021)	Problem-solving strategy
Yaghi (2021)	Support strategy

Table 2 revealed that the problem-solving strategy continued as the most prominent metacognitive reading strategy. This finding is consistent with the research conducted by Nisrina (2023), Li and Kaur (2014), Mokhtari and Reichard (2004), and Qusyaeri et al. (2021). ESL students frequently employed problem-solving techniques to get through challenging material, including revisiting challenging texts, reading carefully for a better understanding, speculating about unknown terms based on context, and refocusing the complex text. These techniques helped students to retain their knowledge, particularly when they come across difficult text structures or new vocabulary (Damayanti et al., 2019). As outlined by Mokhtari and Sheory (2002), these strategies provide a proactive way to address comprehension issues as they emerge during reading, assist close language gaps, and increase learners' confidence and engagement when confronting English text. The main reason why ESL learners used a problem-solving strategy was due to the complexity of the text, which led the learners to develop a problem-solving approach and overcome linguistics challenges (Nisrina, 2023). In addition, Annury et al. (2019) also supported problem-solving strategy as a balanced approach to reading comprehension was produced by the focus on problem-solving procedures, which enhance other metacognitive strategies like support-setting and global reading strategies. The study mentioned that ESL students who used these tactics had improved reading competence and metacognitive awareness. Students could participate in self-regulated learning that promoted long-term gains in reading skills by fusing problem-solving strategies with other metacognitive techniques. This thorough approach also showed how ESL students had proactively adjusted to the linguistic requirements of reading in English, setting them up for future success in both academic and professional settings (Naz et al., 2024).

Muche et al. (2024) found a strong correlation between the use of metacognitive reading strategies and self-efficacy. Furthermore, the research demonstrated that self-efficacy is a greater predictor of reading comprehension performance than metacognitive reading strategy use, which together account for a large variance in reading comprehension achievement of students. However, the findings

did not support gender differences in the application of strategies or beliefs in self-efficacy. The results were similar to those previously Wallace et al. (2021) mentioned in their research findings. All of the factors showed a positive correlation with one another. By both efficacy belief and the application of metacognitive reading strategies, students' performance in understanding reading content was improved, with self-efficacy serving as the more robust predictor.

RQ-3: Do interventions instructing the use of metacognitive reading strategies foster reading comprehension among ESL learners?

Metacognitive reading strategy interventions play a crucial role in improving reading comprehension. These interventions equip readers with the skills to recognize their awareness of employing metacognitive strategies when they encounter difficulties in understanding the text. A review of 17 studies focused on the effects of these interventions on the reading comprehension of ESL learners has revealed a favourable correlation between the two factors. Additionally, 11 studies have thoroughly investigated how metacognitive reading strategy interventions contribute to the enhancement of reading comprehension.

A small-scale study conducted at Hong Kong International School examined the impact of metacognitive reading strategy instruction on the reading comprehension of English learners. Teng (2019) gathered both quantitative and qualitative data from twenty-five primary school students who were learning English as a second language. The metacognitive instruction comprised ten process-based lessons designed to guide the students. Data collection involved students' reading notes, post-reading reflection reports, teacher-led group discussions, and two distinct types of reading assessments. The findings revealed that following the metacognitive reading instruction, students were able to articulate knowledge-related dimensions that influenced their reading. Additionally, students expressed increased confidence in completing reading tasks, a heightened awareness of how metacognitive knowledge could enhance reading comprehension, and an improved understanding of reading in relation to both the demands of the text and its inherent nature. The study underscored the significant potential of implementing metacognitive reading instruction to promote reading literacy among ESL learners.

In their research, Muhid et al. (2020) illustrated that the implementation of metacognitive strategies led to a significant enhancement in reading comprehension among students in Indonesia. The study utilized a metacognitive strategy questionnaire (MSQ) and a reading comprehension test (RCT) to gather data from high school participants. A comparison was made between the reading achievements of the control group and those of the experimental group. The results indicated that students in the intervention group experienced a marked improvement in their reading comprehension skills through the application of planning, monitoring, and evaluating strategies. Furthermore, the findings suggested that ESL educators might find the integration of these strategies beneficial, potentially leading to improved reading comprehension outcomes in similar educational contexts.

Al-Kiyumi et al. (2021) discovered that the reading comprehension of Omani EFL foundation-level students was significantly enhanced through the application of metacognitive reading strategies. The study involved participants who were categorized into experimental and control groups, with the experimental group receiving instruction based on the SQP2RS (Survey, Question, Group, Predict, Read, Respond, Summarize) model, while the control group was taught using traditional methods. Statistical analyses revealed that the experimental group exhibited greater improvements in reading comprehension compared to the control group. Overall, the study's findings underscored the effectiveness of metacognitive reading strategies in enhancing reading comprehension among Omani EFL students. Similarly, Babashamasi et al. (2022) reported that Malaysian undergraduate students who received explicit training in metacognitive strategies—encompassing planning, monitoring, and evaluating—demonstrated significant gains in reading comprehension when compared to a control group. Students in the experimental group outperformed their peers on both the Metacognitive Awareness of Reading Strategies Inventory (MARSI) and the IELTS reading test, indicating that training in metacognitive techniques can effectively improve students' comprehension abilities.

Another study in the Malaysian context examined the influence of metacognitive reading strategy on secondary school students. Kung and Aziz (2020) proved that metacognitive instruction played a massive role as the students were able to monitor the reading process, which contributed to developing their reading comprehension skills. The disparity observed in the average scores between the pretest and post-test following metacognitive reading instruction was significant, indicating the advantages of implementing metacognitive reading strategies within the ESL context.

In a quasi-experimental research 75 Malaysian university students participated, in which the study aimed to evaluate the effect of specific metacognitive reading techniques on online reading comprehension. Babashamasi et al. (2020) found that training in metacognitive strategies significantly improved students' reading skills, as evidenced by semi-structured interviews, a reading examination, and the Metacognitive Reading Awareness Strategy assessment. However, the research did not address potential long-term impacts or variations in outcomes based on individual differences, such as prior reading proficiency or learning style, which may limit generalizability. Nevertheless, the mixed-method approach of the study provided strong evidence supporting the benefits of metacognitive training. Similarly, using a mixed-method approach with 301 university students, Yaghi (2021) examined the impact of metacognitive online reading practices on the reading dispositions of Saudi EFL learners. Yaghi's (2021) research validated the beneficial effect of metacognitive techniques on the effectiveness and engagement of online reading. Yaghi's (2021) bigger sample size lends credence to the study, but it could have examined more closely how particular metacognitive techniques

affect various facets of reading inclination. Both studies emphasize the value of metacognitive techniques for improving reading, although they would both profit from examining individual differences and long-term impacts on comprehension abilities.

Li et al. (2022) provided explicit instructions to Chinese undergraduates using a quasi-experimental research design. The research subjects in the experimental group demonstrated significant improvements in reading comprehension. The study also included other factors like self-efficacy, motivation, and learners' attitudes to the use of reading strategy. The findings of research showed students' positive attitude towards the metacognitive reading strategy. However, the use of reading strategy, self-efficacy, and motivation was not substantial in bringing change. Li et al. (2022) concluded the significance of providing systematic instruction on the application of reading strategies for the purpose of reinforcing reading comprehension among EFL learners. Further, contextual elements may influence the depth of effectiveness on motivational dimensions.

Khurram (2023) investigated the impact of instructing metacognitive reading strategies on students' understanding and utilization of these techniques, which were systematically introduced in ESL classes at the university level in Pakistan. The study involved eight undergraduate students who participated in the research. Various data collection tools were employed, including interviews, think-aloud protocols, learner diaries, end-of-class feedback, note-taking, researcher journals, and the Survey of Reading Strategies (SORS) questionnaire. The findings indicated that the instruction of metacognitive reading strategies not only enhanced students' awareness of these strategies in an authentic classroom environment but also encouraged them to implement the knowledge they had acquired.

Martelletti et al. (2023) investigated the effects of improving metacognitive methods on inferential reading skills in 117 fourth-grade ESL students in Argentina through a quasi-experimental study. The results demonstrated that students' inferential reading skills improved over time when they used metacognitive tactics, highlighting the beneficial effects of deliberate metacognitive growth on learning outcomes and student perseverance. Moreover, Juhkam et al. (2023) investigated how improving metacognitive knowledge through an intervention aids reading comprehension in 301 third-grade students in Estonia. Because they stimulate cognitive and metacognitive processes that are required for good reading skills, their research shows that metacognitive knowledge and systematic practice of reading techniques are critical to enhancing comprehension among ESL learners.

DISCUSSION

The findings of this systematic review indicated the positive impact of metacognitive reading strategies intervention on reading comprehension of ESL learners. This intervention can be in the form of treatment, instruction, or training for the purpose of implementing metacognitive knowledge in the ESL classroom. However, variations occurred when comparing the interventions across different educational levels and regional contexts. For example, in the studies of Teng (2019), Kung and Aziz (2020), and Babashamasi et al. (2020), undergraduates exhibited strong performance when introduced to reading interventions, while the young learners in the research of Al Kiyumi et al. (2021) and Muhid et al. (2020) demonstrated variable results, suggesting that age difference and cognitive maturity may moderate intervention effectiveness. In addition, strategies were mainly adapted after focusing on local curricula norms, yet there were few studies (e.g., Khurram, 2023) that attempted to explore the cultural appropriateness of those adaptations geographically.

This review selected 27 studies, of which 15 are based on a quantitative research method. Moreover, the mixed methods studies also applied statistical methods to give reliable and valid results. Because quantitative research employs a preset, fixed study plan based on reconstructed logic that standardizes, codifies, and arranges research into open guidelines, formal processes, and approaches that others can adhere to, rebuild the research (McGregor, 2019). In consequence, this systematic review has provided worldwide acknowledgment of the quantitative method. Further, in a total of 27 studies, correlational methods and surveys were prevalent, in which the relationship between different variables was explored to explore the effectiveness of metacognitive reading strategy in enhancing reading comprehension. After finding the clues from previous research, this systematic review has found that nine studies have used quasi-experimental research design for the reason of its applications in real-life situations with flexibility to true experimental research design.

One of the most important findings in this systematic review is the instrumentation. On examining 27 relevant studies, it has been explored that the use of metacognitive reading strategy is investigated by administering reading questionnaires. At the same time, MARSİ continues to serve as the most common tool for evaluating the use of metacognitive reading strategies among ESL learners. About 17 studies have adopted MARSİ and its other versions. It suggests a notable methodological concern across selected studies because these works heavily rely on self-report instruments like MARSİ or SORS. In addition, the dominance of MARSİ resulted in a lack of accuracy in lifelong learning behavior of readers and obscures the nuanced context-driven nature of metacognitive reading strategies.

According to the present review problem problem-solving reading strategies were reported and emphasized in selected studies. Consequently, the prominence of using problem-solving strategies suggests that the learners are applying strategies reactively rather than proactively, which shows an imbalance in metacognitive development with Global and Support reading strategies as underscored reading strategies.

The study of Jamilah (2021), who gathered data during the pandemic period to explore the influence of metacognitive intervention on online reading comprehension tests during COVID-19, offered an alternative perspective on the application of metacognitive reading strategies in relation to reading comprehension. Therefore, following online metacognitive treatment classes, the results showed a correlation and a considerable increase in reading comprehension on online tests.

All 27 relevant studies suggest that metacognitive reading strategies enhance reading comprehension by fostering the cognitive faculties of the brain. These tactics are employed to oversee or control cognitive strategies (Devine, 1993). Readers employ metacognitive methods to reflect on their reading experience, devise strategies to comprehend the text, and oversee the reading process. Metacognitive reading strategies help the students to think about their own strategy, what, when, and how to use it. In addition, they assist students in managing their reading by enabling them to identify inconsistencies in a text and differentiate between essential and non-essential material (Carrell et al., 1998). Further, the reviewed studies included the significance of metacognitive reading strategies to improve reading skills. For instance, Block (1986) in his descriptive research commented that summarizing texts, using self-questioning during reading, monitoring understanding, employing specific fix-up strategies, activating prior knowledge, making inferences, using reciprocal teaching, and providing explicit explanations are analytically involved to facilitate reading skills, which enhance reading comprehension among skilled readers.

In a research study conducted by Zhang (2008), strategic methods were utilized to implement a two-month reading intervention program at a higher education institution in Singapore. The investigation examined various factors, including students' reading comprehension, their inclination to engage in strategic reading, and the influence of education on reading proficiency. To enhance students' metacognitive awareness and self-regulation in reading techniques, Zhang (2008) incorporated a variety of reading strategies into the curriculum. The findings indicated that the instructional intervention by teachers had a significant impact on the ESL students' application of reading strategies and their subsequent improvement in comprehension. Therefore, it can be concluded that interventions focusing on metacognitive reading strategies empower readers to improve their reading comprehension and become more effective in their reading practices.

RESEARCH IMPLICATIONS

The implications of this review on metacognitive reading strategies intervention for ESL learners underscore the potential to integrate specific metacognitive reading strategies for improving reading comprehension. The systematic review indicates that reading comprehension can be enhanced after providing metacognitive intervention. Moreover, administering MARSII and explicit intervention enables the learners to develop problem-solving skills by re-reading, adjusting speed, focusing and refocusing attention, using context clues, self-questioning, and taking short breaks. Further, this review carries pedagogical implications for teachers and curricular developers. The teachers can include the use of all three metacognitive reading strategies in English lesson plans, including GLOB, PROB, and SUPP reading strategies, to achieve reading goals. Besides this, the curricular developers can design reading exercises in English books where the knowledge regarding metacognitive reading strategies and their practical implementations is given prior importance.

LIMITATIONS

Though the selected studies have addressed the effectiveness of metacognitive reading strategies intervention explicitly, there are many dimensions to explore and research. The past studies have been chosen from limited databases, so other search engines like JSTOR can expand the research on metacognitive reading strategy intervention to improve reading comprehension among ESL learners. Among 27 studies, many are limited to quantitative or mixed methods, leaving behind extensive reading research methods, qualitative methods, and correctional studies. For example, there is only one study correlating reading comprehension and metacognitive reading strategy instruction without specifying the period of intervention. Further, most of the studies used quasi-experimental research as their research design, and overall, 13 studies failed to mention the time needed to provide the metacognitive treatment to ESL learners. Next, most studies have applied MARSII and its versions, whereas a single study has been found to use MSQ as a reading questionnaire; therefore, there is a gap in administering research instruments. The survey studies, correctional study, and action research have tried to explore the impact of applying metacognitive reading strategies on reading comprehension among ESL learners, but none have provided valid directions on how reading comprehension and metacognitive reading strategies influence each other to enhance reading skills.

RECOMMENDATIONS

Future studies on metacognitive reading strategies treatments should focus on a wider variety of databases, such as JSTOR and other scholarly sources, in order to overcome these constraints and gather a more complete collection of literature on the subject. Richer insights into the complex effects of these tactics on reading comprehension would be obtained by extending the approaches beyond quantitative and mixed methods to include more qualitative, extended reading, and correlational investigations. Future research should define the intervention period to enhance reliability and clarity on treatment success. Consistent reporting on the duration of the intervention is also essential, as it influences the extent and durability of the advantages of metacognitive strategies. By using tools like the Metacognitive Strategy Questionnaire (MSQ) or creating new instruments suited to particular learner requirements

and situations, researchers are also urged to expand their tools beyond MARSİ. In order to provide educators with practical advice on how to maximize reading interventions, research should lastly examine the dynamic link between metacognitive processes and reading comprehension.

CONCLUSION

The systematic review emphasized on impact of metacognitive reading intervention to enhance reading comprehension skills among ESL learners. It unified 27 studies across diverse educational and geographical settings. All included studies demonstrated the use of metacognitive reading strategies and the effectiveness of metacognitive reading strategies intervention for enhancing reading comprehension among ESL learners. This review explored MARSİ and problem-solving strategy as the most frequently used self-reported questionnaire and metacognitive reading strategy. Further, it is noticed that many studies have tried to examine the effectiveness of providing metacognitive intervention, but few have succeeded in providing reliable and valid justifications that enable us to understand the role of metacognitive reading strategy intervention to improve reading comprehension in ESL settings. Moreover, this review proves that explicit training on metacognitive reading strategies can significantly improve reading comprehension among ESL learners. Therefore, looking ahead, the implementation of metacognitive strategy instructions into teacher education, professional development, and capacity-building programs is essential. Equipping educators with knowledge and tools to scaffold these tactics can ensure their effective integration in ESL classrooms. To conclude, this review provided research implications, research limitations, and recommendations in the area of reading research.

REFERENCES

- Ahmed, R. M. (2020). Investigating EFL Learners' Awareness of Cognitive and Metacognitive Reading Strategies of Students in Different Disciplines. *Arab World English Journal*, 11(3), 294-304. <https://dx.doi.org/10.24093/awej/vol11no3.18>
- Al-Kiyumi, O., Seyabi, F. A., & Hassan, A. H. (2021). An empirical study on the effect of instruction on metacognitive Strategies on EFL reading comprehension: The case of foundation-level students in Oman. *International Education Studies*, 14(8), 30–42. <https://doi.org/10.5539/ies.v14n8p30>
- Al-Qahtani, A. A. (2020). Investigating metacognitive think-aloud strategy in improving Saudi EFL learners' reading comprehension and attitudes. *English Language Teaching*, 13(9), 50-62. <https://doi.org/10.5539/elt.v13n9p50>
- Alsofyani, A. H. (2019). Examining EFL learners' reading comprehension: The impact of metacognitive strategies, discussion, and collaborative learning within a multimedia E-book dialogic environment. *Graduate Theses and Dissertations*. <https://scholarcommons.usf.edu/etd/7729>
- Annury, M. N., Mujiyanto, J., Saleh, M., & Sutopo, D. (2019, August). The use of metacognitive strategies in EFL reading comprehension. In *First International Conference on Administration Science (ICAS 2019)* (pp. 62-66). Atlantis Press. <https://doi.org/10.2991/icas-19.2019.13>
- Babashamasi, P., Kotamjani, S. S., & Noordin, N. (2022). The effect of explicit training of metacognitive reading strategies on online reading comprehension. *Arab World English Journal (AWEJ) Special Issue on CALL*, 8, 246–261. <https://dx.doi.org/10.24093/awej/call8.17>
- Berrang-Ford, L., Pearce, T., & Ford, J. D. (2015). Systematic review approaches for climate change adaptation research. *Regional Environmental Change*, 15(5), 755–769. <https://doi.org/10.1007/s10113-014-0708-7>
- Block, E. (1986). The comprehension strategies of second language readers. *TESOL Quarterly*, 20(3), 463- 494. <https://doi.org/10.2307/3586295>
- Carrell, P. L. (1998). Can reading strategies be successfully taught?. *Australian review of applied Linguistics*, 21(1), 1-20. <https://doi.org/10.1023/A:1003092114195>
- Chin, M. H. (2019). Can less-proficient adult learners become skilled readers. *International Journal of Teaching and Learning in Higher Education*, 31(1), 1-10.
- Daguay-James, H., & Bulusan, F. (2020). Metacognitive Strategies on Reading English Texts of ESL Freshmen: A Sequential Explanatory Mixed Design. *TESOL International Journal*, 15(1), 20-30.

- Damayanti, P. R., Fitriani, S. S., & Marhaban, S. (2020). The visualization metacognitive strategy to improve reading comprehension. *English Education Journal*, 11(4), 498-511. <https://jurnal.usk.ac.id/EEJ/article/view/17226>
- De Boer, H., Donker, A. S., Kostons, D. D., & Van der Werf, G. P. (2018). Long-term effects of metacognitive strategy instruction on student academic performance: A meta-analysis. *Educational Research Review*, 24, 98-115. <https://doi.org/10.1016/j.edurev.2018.03.002>
- Degennaro, D.N. (2018). The relationship between metacognitive strategies and reading comprehension in fifth grade students. *Graduate Theses and Dissertations*. <https://www.proquest.com/docview/2051879899>
- Deliany, Z., & Cahyono, B. Y. (2020). Metacognitive reading strategies, awareness and metacognitive reading strategies use of EFL university students across genders. *Studies in English Language and Education*, 7(2), 421-437. <https://doi.org/10.24815/siele.v7i2.17026>
- Devine, J. (1993). The role of metacognition in second language reading and writing. In G. Joan and L. I. Carson (Eds.), *Reading in the composition classroom, second language perspective* (pp. 105-130). Boston: Heinle and Heinle Publishers.
- Do, H. M., & Phan, H. L. T. (2021). Metacognitive awareness of reading strategies in the second language, Vietnamese undergraduates. *Arab World English Journal*, 12(1) 90-112. <https://dx.doi.org/10.24093/awej/vol12no1.7>
- Gatcho, A.R.G., & Hajan, B.H. (2019). Augmenting ESL learners' reading skills through explicit instruction of metacognitive strategies. *Journal of English Education and Linguistics Studies*, 6(1), 1-23. <https://doi.org/10.30762/jeels.v6i1.1202>
- Harimurti, K. F., Basthomi, Y., & Zen, E. L. (2023). EFL students' preferences on metacognitive reading strategies within an extensive reading program. *Journal on English as a Foreign Language*, 13(1), 171-194. <https://doi.org/10.23971/jefl.v13i1.5640>
- Hedgcock, J. S., & Ferris, D. R. (2018). *Teaching readers of English: Students, texts, and contexts*. Routledge. <https://doi.org/10.4324/9781315465579>
- Jamilah, N. (2021). The effectiveness of using metacognitive strategy to teach online reading comprehension for English Young Learners. *Journal of Research on English and Language Learning (J-REaLL)*, 2(1), 61-67. <https://doi.org/10.33474/j-reall.v2i1.9519>
- Juhkam, M., Jögi, A.-L., Soodla, P., & Aro, M. (2023). Development of reading fluency and metacognitive knowledge of reading strategies during reciprocal teaching: Do these changes actually contribute to reading comprehension? *Frontiers in Psychology*, 14, 1-17. <https://doi.org/10.3389/fpsyg.2023.1191103>
- Khan, T., Noordin, N., & Ismail, L. (2024). Implementation of Metacognitive Reading Strategies to Improve English Reading Ability: A Systematic Review. *International Journal of Learning, Teaching and Educational Research*, 23(7), 368-389. <https://doi.org/10.26803/ijlter.23.7.19>
- Khurram, B. A. (2023). The Impact of Metacognitive Instruction on ESL University-Level Students' Awareness and Use of the Reading Strategies. *SAGE Open*, 13(2), 21582440231179695. <https://doi.org/10.1177/21582440231179695>
- Kung, L. Y., & Aziz, A. A. (2020). An action research on metacognitive reading strategies instruction to improve reading comprehension. *International Journal of English Language and Literature Studies*, 9(2), 86-94. <https://doi.org/10.18488/journal.23.2020.92.86.94>
- Li, H., Gan, Z., & Leung, S. O. (2022). The impact of reading strategy instruction on reading comprehension, strategy use, motivation and self-efficacy in Chinese University EFL students. *SAGE Open*, 1-14. <https://doi.org/10.1177/21582440221086659>
- Li, L., & Kaur, S. (2014). Textbook Reading Strategies and Its Relationship to Reading Test Performance. *GEMA Online*

Journal of Language Studies, 14(3). <https://doi.org/10.17576/GEMA-2014-1403-01>

- Mallett, R., Hagen-Zanker, J., Slater, R., & Duvendack, M. (2012). The benefits and challenges of using systematic reviews in international development research. *Journal of Development Effectiveness*, 4(3), 445-455. <https://doi.org/10.1080/19439342.2012.711342>
- Martelletti, D. M., Luzuriaga, C., & Furman, M. (2023). 'What makes you say so?' Metacognition improves the sustained learning of inferential reading skills in English as a second language. *Trends in Neuroscience and Education*, 33, 1-11. <https://doi.org/10.1016/j.tine.2023.100213>
- McGregor, S. C. (2019). Social media as public opinion: How journalists use social media to represent public opinion. *Journalism*, 20(8), 1070-1086. <https://doi.org/10.1177/1464884919845458> (Original work published 2019)
- Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., ... & PRISMA Group. (2021). Preferred Reporting Items for Systematic reviews and Meta-Analyses: The PRISMA Statement (2020 update). *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Mokhtari, K., & Sheorey, R. (2002). Measuring ESL students' awareness of reading strategies. *Journal of Developmental Education*, 25(3), 2-1.
- Mokhtari, K., & Reichard, C. (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology*, 94(2), 249-259. <https://doi.org/10.1037/0022-0663.94.2.249>
- Mokhtari, K., & Reichard, C. (2004). Investigating the strategic reading processes of first and second language readers in two different cultural contexts. *System*, 32(3), 379-394. <https://doi.org/10.1016/j.system.2004.04.005>
- Mokhtari, K., Dimitrov, D. M., & Reichard, C. A. (2018). Revising the metacognitive awareness of reading strategies inventory (MARSI) and testing for factorial invariance. *Studies in Second Language Learning and Testing*, 8(2), 219-246. <https://doi.org/10.14746/ssl.t.2018.8.2.3>
- Momdjian, L., & El Chidiac, F. (2024). Enhancing English Reading Comprehension of ESL Underachievers by Fostering Metacognitive Strategies. *Theory and Practice in Language Studies*, 14(1), 21-30. <https://doi.org/10.17507/tp.l.1401.03>
- Muche, T., Simegn, B. & Shiferie, K. (2024). Self-Efficacy and Metacognitive Strategy Use in Reading Comprehension: EFL Learners' Perspectives. *Asia-Pacific Edu Res* 33, 219-227. <https://doi.org/10.1007/s40299-023-00721-5>
- Muhid, A., Amalia, E. R., Hilaliyah, H., Budiana, N., & Wajdi, M. B. N. (2020). The Effect of Metacognitive Strategies Implementation on Students' Reading Comprehension Achievement. *International Journal of Instruction*, 13(2), 847-862. <https://doi.org/10.29333/iji.2020.13257a>
- Naz, S. F., Khan, Z., Khan, I. S., & Hussain, S. Z. (2024). Metacognitive Awareness and Utilization of Reading Strategies among Tertiary Level Students at Private Sector University in Karachi, Pakistan. *Panacea Journal of Linguistics & Literature*, 3(1), 18-43. <https://journals.airsd.org/index.php/pjll/article/view/377>
- Nisrina, N. (2023). Exploring Reading Strategies Used by Students Based on Metacognitive Awareness. *Ahmad Dahlan Journal of English Studies*, 10(1). <https://doi.org/10.26555/adjes.v10i1.273>
- Pahrizal, N., Vintoni, A., Sotlikova, R., & Ya'akub, H. Z. H. (2025). Metacognitive reading strategies and their impact on comprehension: Insights from rural EFL learners. *Indonesian Journal on Learning and Advanced Education (IJOLAE)*, 18-36. <https://doi.org/10.23917/ijolae.v7i1.23908>

- Perry, J., Lundie, D. and Golder, G. (2019) Metacognition in schools: what does the literature suggest about the effectiveness of teaching metacognition in schools? *Educational Review*, 71(4), pp. 483-500. <http://doi.10.1080/00131911.2018.1441127>
- Petticrew, M., & Roberts, H. (2006). Systematic reviews in the social sciences: *A practical guide*. Blackwell Publications. <https://doi.org/10.1002/9780470754887>
- Robinson, P., & Lowe, J. (2015). Literature reviews vs systematic reviews. *Australian and New Zealand Journal of Public Health*, 39(1), 103-103. <https://doi.org/10.1111/1753-6405.12340>
- Shah, S.H.R., Kadir, Z.B.A., Aleksandrova, O.I., (2025). An Investigation on Reading Comprehension Problems Faced by Undergraduates. *Pakistan Journal of Life and Social Sciences*. (23)1, 3153-3163. <https://doi.org/10.57239/PJLSS-2025-23.1.00250>
- Shah, S. G. M., Ali, Z., & Ahmad, N. (2024). Analytical study of Awareness of Metacognitive Reading Strategies and Reading Comprehension among College Students. *Voyage Journal of Educational Studies*, 4(1), 34-46. <https://doi.org/10.58622/vjes.v4i1.120>
- Sheikh, I., Soomro, K. A., & Hussain, N. (2019). Metacognitive awareness of reading strategies, reading practices and academic attainments of university students. *Journal of Education and Educational Development*, 6(1), 126–137. <https://doi.org/10.22555/JOEED.V6I1.2749>
- Sutiyatno, S. (2019). A Survey Study: The Correlation between Metacognitive Strategies and Reading Achievement. *Theory & Practice in Language Studies (TPLS)*, 9(4). <https://doi.org/10.33369/jeet.2.3.62-71>
- Teng, M. F. (2019). The benefits of metacognitive reading strategy awareness instruction for young learners of English as a second language. *Literacy UKLA*, 1-11. <https://doi.org/10.1111/lit.12181>
- Tezer, M. (2024). Cognition and Metacognition in Education. In *Metacognition Learning-New Perspectives*. <https://doi.org/10.5772/intechopen.114857>
- Urban, M., Urban, K. & Nietfeld, J.L. (2023). The effect of a distributed metacognitive strategy intervention on reading comprehension. *Metacognition Learning* 18, 405–424. <https://doi.org/10.1007/s11409-023-09334-1>
- Wallance, M. P., Li, V. M., Huang, T. C., & He, N. C. (2021). Metacognitive strategy use for EFL readers: Differences in gender and reading ability. *Teaching English as a Second Language Electronic Journal (TESL-EJ)*, 25(2), 1–22. <https://tesl-ej.org/pdf/ej98/a8>.
- Whittemore, R., & Knafl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing*, 52(1), 546-553. <https://doi.org/10.1111/j.1365-2648.2005.03621.x>
- Yaghi, E. T. (2021). The impact of metacognitive online reading strategies on the online reading disposition of Saudi EFL learners. *Arab World English Journal (AWEJ)* Special Issue on Covid 19 Challenges, (1), 364–380. <https://dx.doi.org/10.24093/awej/covid>.
- Zhang, L. (2018). Gender differences in metacognitive and cognitive strategy use and reading test performance. In *Metacognitive and Cognitive Strategy Use in Reading Comprehension* (pp. 131-145). Springer, Singapore. https://doi.org/10.1007/978-981-10-6325-1_6
- Zhang, L. J. (2008). A cognitive perspective on Singaporean bilingual children's use of reading strategies in learning to read in English. *British Journal of Educational Psychology*, 78, 245-271. <http://nflrc.hawaii.edu/rfl/April2009/articles/zhang.pdf>

Zhang, L., & Seepho, S. (2013). Metacognitive strategy use and academic reading achievement: Insights from a Chinese context. *Electronic Journal of Foreign Language Teaching*, 10(1). <https://doi.org/10.23917/ijolae.v7i1.23908>