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Research Article

A mixed method study on the metacognitive awareness of reading strategies used by Saudi EFL students

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Metacognitive awareness of reading strategy has a significant impact on language learning. It addresses how students organize context-based interactions and how they may employ reading comprehension strategies. Saudi students of English still face reading comprehension issues that significantly affect their overall language learning. Therefore, this mixed method study sought to assess Saudi English students' metacognitive awareness of reading strategies, determine whether gender and university level affect their use of these strategies, and explore English instructors' views on this issue. Two instruments were used to achieve these objectives. Two hundred ten students were surveyed for quantitative data. 15 English instructors were interviewed in a semi-structured manner for qualitative data. Descriptive statistical analysis was used to analyze the quantitative data gathered, while pattern matching and thematic content analysis were applied to analyze the qualitative data. The results demonstrated that Saudi EFL students' metacognitive awareness of reading methods was generally moderate. This awareness was moderate regarding the use of global reading strategies and low regarding support and problem-solving strategies. The metacognitive awareness levels for global strategies vary significantly by gender, in favour of females. Senior and junior university students had better global and support reading methods than freshmen. The qualitative data from the interview supported the quantitative data suggesting Saudi EFL students had low to moderate metacognitive awareness. Their low-to-moderate level explains their poor reading comprehension. Based on these findings, limitations and recommendations are given.

Keywords: English; Metacognitive awareness; Mixed method; Reading comprehension; Reading strategies; Saudi EFL students

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1. Introduction

English has been "recognized as the global language among speakers of thousands of different languages" in the twenty-first century (Rao, 2019, p .66). It is a lingua franca in many countries and is also utilized as a medium of communication and education instruction. As a result, it is also necessary for one's intellectual and professional development. English is regarded as one of the essential subjects in Saudi Arabian education. It is taught as a foreign language (FL) (Al-khresheh,

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2020). As a result, learners of English as a foreign language (EFL) must develop their reading, vocabulary, speaking, listening, and writing skills to communicate effectively. Furthermore, teachers need to help these students learn these skills. One of these crucial skills is reading. It is worth noting that reading is regarded as a primary input skill necessary among the four fundamental English language skills for language learners. It is also a top priority when teaching EFL (Ali & Razali, 2019; Aziz et al., 2019; Muhid et al., 2020). Compelling reading is essential for academic success (Meniado, 2016).

Reading comprehension is influenced by readers' prior knowledge and their numerous reading styles. Reading an academic text and deciphering its meaning requires multiple reading strategies (Mokhtari & Sheorey, 2002). Such strategies determine how readers interact with the text. The nature of reading comprehension can be better understood, in fact, by analyzing pupils' varied strategies for reading (Alsheikh & Mokhtari, 2010). However, many EFL students will find it too challenging to implement the necessary reading skills. Proficient readers demonstrate a high level of reading comprehension. Rather than relying solely on the material, individuals use their prior knowledge to conclude. In other words, good readers obtain a greater level of comprehension since they are aware of the basic strategies for dealing with written material. On the other hand, novice readers typically do not use reading strategies effectively (Mokhtari & Reichard, 2002).

Several scholars have explored the role of metacognition and metacognitive methods in increasing reading comprehension during the last century (Algraini, 2022; Alrabah & Wu, 2019; Khellab et al., 2022; Mokhtari & Reichard, 2002). They argued that metacognitive awareness is vital for improving reading comprehension. They found a significant association between the successful application of metacognitive strategies and high reading comprehension levels among EFL students. As a result, experts advocate metacognitive strategies for addressing the challenges non-skilled readers face.

Academic reading is efficient when specific techniques maintain the reader's attention and enthusiasm. Students must consistently seek to enhance their reading skills and know how to implement the strategy (Louiza & Fadhila, 2022). In addition, teachers must provide clear training on the skills and encourage students to embrace critical thinking. This can assist students in overcoming the reading issues they experience. EFL students must be aware of the skills needed for better reading comprehension. Following a mixed method approach, this study seeks to determine the metacognitive awareness of reading strategies used by Saudi EFL students, considering whether these levels diverge significantly due to their gender and university level. In light of these objectives, this study seeks to answer the following questions:

RQ 1) What is the level of metacognitive awareness of reading strategies among Saudi EFL students?

RQ 2) Does the level of metacognitive awareness of reading strategies deviate significantly due to gender and university level?

RQ 3) How do EFL teachers perceive the level of metacognitive awareness of reading strategies among Saudi EFL students?

2. Literature Review

Over the last decade, there has been a plethora of literature about reading comprehension (Abu-Snoubar, 2017; Acar-Erdol & Arikan, 2022; Babashamasi et al., 2022; Deliany & Cahyono, 2020; Farahian & Rezaee, 2015; Louiza & Fadhila, 2022; Meniado, 2016; Mohseni et al., 2020; Muhid et al., 2020; Wikandari, 2020). Each one of these studies studied the issue of reading comprehension from different angles. Most of these studies were in line with each other regarding EFL learners facing some comprehension barriers while reading. These barriers were found to be overcome once appropriate strategies were implemented.

Reading is necessary for mastering language proficiency (Divrik et al., 2020). It is essential both within and outside of the classroom. According to Muhid et al. (2020), reading skill is crucial for EFL students since it enhances the expansion of their English language skills. Improving the

reading skills of EFL students will improve their academic performance. Sheorey and Mokhtari (2001) state that reading comprehension is among the essential language-learning objectives. Reading comprehension is a challenging endeavour requiring the reader's prior knowledge to employ appropriate strategies. EFL students will, however, be able to comprehend the content they read if they employ efficient reading strategies, as text comprehension is not a natural process. Readers must employ particular strategies. Similarly, Sariçoban and Behjoo (2017) claimed that reading comprehension is a crucial goal for EFL students. By employing a variety of reading strategies, EFL students will be able to get a deeper comprehension of the materials they read. These techniques include skimming, scanning, inferring, skipping unclear or unfamiliar words, and critical reading (Hughes, 2019; Wikandari, 2020).

Many scholars have recently urged the adoption of additional thinking techniques, such as the metacognitive strategies on which this study is based. Reading skills used by EFL students need to be explicitly taught. To learn a foreign language, students must develop an awareness of the language's forms and functioning, a scenario referred to in the literature as language awareness. As defined by Carter (2003), language awareness is the development of students' perceptual and cognitive abilities concerning language. When EFL students are conscious of the input they are receiving, they are more engaged and motivated (Amjadiparvar & Zarrin, 2019; Farahian & Rezaee, 2015). Fairclough (1992) describes language awareness as "conscious attention to properties of language and language use as an element of language education" (p. 2). Therefore, students must be aware of the language used while reading a text to ensure reading comprehension. To achieve this, they can make use of metacognitive strategies.

The metacognitive strategies are founded on the notion of metacognition, which is known as a method for predicting the learner's reading comprehension skills (Ngoc, 2022). In reality, numerous researchers have sought to define the idea of metacognition over the past few decades. This word originates from the work of Flavel (1979, as cited in Algraini, 2022), who defined metacognition as "thinking about one's cognitive processes and outcomes" (p. 44). This term was coined to describe the level of reading comprehension awareness and monitoring processes among learners. As Ngoc (2022) stated, numerous academics have recently recognized metacognition as "an empowering factor" in learning a FL. It signifies the skill to monitor one's mental processes. Researchers have found that emphasizing metacognitive reading skills positively impacts students' academic performance, and this is all down to the idea of metacognition. Metacognitive reading strategies are cognition related to the reading process and self-control mechanisms used to monitor and improve comprehension, as determined by the idea of metacognition (Farahian & Rezaee, 2015; Mokhtari & Sheorey, 2002).

According to Yüksel and Yüksel (2012), the efficient use of metacognitive techniques in reading comprehension relates to students' ability to extract meanings from the written data they receive. Furthermore, according to Ali and Razali (2019), the metacognitive strategy is one in which the learner prepares for learning, thinks about the learning process as it unfolds, monitors their understanding, and assesses after completing the task.

Iwai (2011) classified readers' use of metacognition into three groups: planning, contemplation, and evaluation. Skilled readers make plans before reading, so they can read more efficiently. Mokhtari and Richard (2002) provide an example of a planning strategy as activating previous knowledge and determining if the information meets the aim. While reading a book, monitoring strategies such as grasping the meanings of unknown terms and summarising occur. After reading a text, students apply evaluation procedures to ensure a deeper comprehension of the material. They can discuss what they have read with others (Ali & Razali, 2019; Iwai, 2011). It is important to note that the key to successful strategic reading, especially in academic settings, is awareness of one's metacognitive processes. Mokhtari & Richard (2002) found a discrepancy between students' opinions about utilizing the methods and actual practice. The awareness of learners about how to perceive their reading strategies is called metacognitive awareness of reading strategies (Forbes & Fisher, 2018; Louiza & Fadhila, 2022; Magogwe, 2013).

As a result, EFL educators can assess their students' self-reported familiarity with metacognitive techniques to gain insight into their students' reading preferences and choose which reading strategies will have the most significant impact in the classroom (Algraini, 2022; Alqahtani, 2019; Fitrisia et al., 2015). Numerous frameworks addressed metacognitive reading strategy awareness. This study is founded on the taxonomy provided by Mokhtari and Richard (2002), who classified the reading strategies measured by the 'metacognitive awareness of reading strategies inventory' into three distinct categories: 'global reading strategies', 'problem-solving strategies', and 'support reading strategies'.These metacognitive tactics can be utilized to improve a student's reading skills (Ali & Razali, 2019).

To gauge a student's prowess in dealing with reading difficulties, problem-solving strategies were identified by Semtin and Maniam (2015). Reading strategies include reading more slowly or quickly, skimming, reading aloud, and attempting to guess the meaning of unfamiliar words (Ali & Razali, 2019). Global Reading Strategy, on the other hand, tries to encourage students to read texts for specific reasons, such as to extend their vocabulary or gain more knowledge. The support reading strategy revolves around offering students with additional reading techniques. Students are more likely to engage in reading practises that increase comprehension if they use reference materials like the dictionary, take notes, and highlight specific lines to remember them (Ali & Razali, 2019). The practical assessment of these categories will improve reading comprehension. Ngoc (2022) highlighted that metacognitive awareness and the practical usage of reading strategies could assist EFL students in selecting the appropriate strategies and knowing when to employ them. Effective readers will arise from a metacognitive approach to reading practises.

Due to the importance of reading in language learning, the literature has many studies about reading strategies. Fitrisia et al. (2015) underlined that students become thoughtful readers if they are conscious of their reading strategies. Sarıçoban and Behjoo (2017) discovered a significant association between reading achievement and correctly applying metacognitive methods in the Turkish setting. Alrabah and Wu (2019) discovered that Kuwaiti EFL students' metacognitive understanding of reading strategies is limited. They suggested that EFL instructors consistently implement practical training to enable students to employ metacognitive reading strategies appropriately. Singh (2019) attempted to identify differences between the levels of comprehension of students who received training on how to utilize metacognitive strategies and those who used traditional approaches. Those with metacognitive methods did better, according to his findings. Teachers must assist students in activating their metacognitive processes by encouraging them to ask questions, conduct research, and summarise what they have read (Divrik et al., 2020). Rabadi et al. (2020) discovered that participants use metacognitive strategies moderately. The Global reading strategy had the most incredible score of the three. They proposed that EFL students receive training in correctly applying metacognitive strategies. They pointed out that EFL students must discern how to choose the most effective reading strategies. Sinom and Kuswandono (2022) demonstrated quantitatively that academic reading comprehension is positively correlated with a high metacognitive awareness of reading strategies. Similarly, Rani (2022) found an association between high metacognitive awareness and reading comprehension. This positive correlation was also acknowledged by other studies (Algraini, 2022; Bagri & Dickinson, 2022; Forbes & Fisher, 2018; Köse & Günes, 2021; Villanueva, 2022; Wikandari, 2022), which confirmed that reading comprehension is boosted with the successful use of metacognitive strategies.

In conclusion, existing research has underscored the significance of enhancing students' awareness of their cognitive processes to foster improved reading skills. While studies have demonstrated substantial interest in metacognitive awareness of reading strategies, exploring this topic remains limited in Saudi Arabia. Consequently, there is a pressing need to further investigate and address this gap by examining the metacognitive awareness of reading strategies among Saudi EFL university students.

3. Method

This study aims at determining the level of metacognitive awareness of reading strategies used by Saudi EFL students, considering whether these levels deviate significantly due to their gender and university level.

3.1. Research Design

This study used a mixed-method design combining quantitative and qualitative data. Such a design improves the validity and reliability of the collected data (Palinkas et al., 2011). The premise is that integrating quantitative and qualitative approaches provides more affluent and more synergistic data utilization, leading to a deeper and more thorough understanding of research challenges and complex phenomena. One can learn more and strengthen the reliability of conclusions by combining the findings of multiple studies. Mixed approaches reflect how people gather information by incorporating quantitative and qualitative data (Creswell & Plano Clark, 2011; Fetters & Freshwater, 2015).

3.2. Participants

This study's participants are drawn from two different groups: students and teachers. The participants were chosen using a probability sampling method, in which every member of the population has an equal chance of being selected. This method of sampling is commonly used in quantitative studies. The most accurate and reliable way to get results that reflect a whole population is to use probability sampling techniques (Palinkas et al., 2011). Using this method, 210 male and female EFL students were involved in this study. The ages of the participants ranged from 18 to 25. Their mother tongue is Arabic. They are at various university levels. Table 2 displays the characteristics of the sample selected for the quantitative phase of this study.

Table 1
The Characteristics of the Quantitative Research Sample

Variables	Frequency	Percentage
Gender		
Male	71	33.8%
Female	139	66.2%
Total	210	100.0%
University level		
Freshman	26	12.4%
Sophomore	56	26.7%
Junior	57	27.1%
Senior	71	33.8%
Total	210	100.0%

A purposive sampling method was used to pick the teachers because it is a great way to get valuable data from a manageable research sample. This sampling method allows for collecting qualitative responses, yielding more insightful and reliable study results (Cresswell, 2012). Utilizing this methodology, fourteen EFL teachers participated in this study. They were chosen based on their qualifications and teaching experiences. They hold positions of lecturer, assistant, associate, and full professor and are all highly skilled and experienced. They ranged in age from 32 to 56 years old. They are of various nationalities. Table 2 displays the characteristics of the sample selected for the qualitative phase of this study.

Table 2
The Characteristics of the Qualitative Research Sample

Variables	Frequency	Percentage
Gender		
Male	6	42%
Female	8	58%
Total	14	100.0%
Teaching experience		
1-5	2	13%
6-10	8	58%
More than 11	4	29%
Total	14	100.0%
Academic rank		
Lecturer	4	30%
Assistant Professor	6	42%
Associate Professor	2	14%
Full Professor	2	14%
Total	14	100%

3.3. Instruments

As this study followed the mixed method approach, which integrates quantitative and qualitative data, two instruments were used: a questionnaire and an interview.

The questionnaire was administered to the chosen students. Using questionnaires to acquire quantitative data is the easiest and simplest method. They are inexpensive and give a quick technique for attaining results (Mertens, 2009). Mokhtari et al. (2018) conceived and constructed the questionnaire utilized in the study. It was used by several studies (Algraini, 2022; Alqahtani, 2019; Fitrisia et al., 2015; Meniado, 2016). The primary purpose of this questionnaire is to examine the metacognitive awareness of reading strategies. This tool is believed to help teachers understand better some of the reading comprehension problems, modify assessment methods, and enhance reading instruction (Rabadi et al., 2020). In addition to the two questions relevant to the respondents' demographic information, the questionnaire consists of 30 items organized into three primary components. The first factor (Global Reading Strategies) had 13 items and indicated a collection of reading methods geared towards global text analysis. The second component (Problem-Solving Strategies) had eight items focusing on problem-solving tactics when the material is hard to read. The third element (Support Reading Methods) had nine items, most of which addressed using different reference materials, note-taking, and further practical or support tactics. This questionnaire utilized the Likert scale with five points ranging from 1 (=I never or almost never do this) to 5 (=I always or almost always do this).

Interviews were conducted with the selected teachers. Interviews are regarded as one of the most effective techniques for collecting qualitative data. They are also regarded as valuable sources of information and permit thorough evaluation. The interview affords the interviewers flexibility. The response rate for interviews is higher than for mailed questions. The interviewer can read the respondent's body language to gain insight into the respondent's thoughts and feelings. The interviewer can alter the order of the questions and evaluate the respondent's spontaneity (Mertens, 2009). To establish the relevance and appropriateness of a collection of questions to the scope of the study, they were initially presented to a panel of EFL education specialists. The jury chose only four questions out of twelve. In the style of a semi-structured interview, these open-ended questions were posed. In addition to these questions, the interview also included three questions regarding the respondents' demographic information, including their age, teaching experience, and qualifications.

3.4. Data Collection and Analysis

The quantitative data were gathered online between December and January 2023. The questionnaire was uploaded online using Google Forms to distribute and collect data from the participants, who are the researchers' students. The qualitative data were gathered through a face-to-face interview in the third week of February. The primary purpose of this study was stated to both groups of respondents orally. In addition to maintaining the confidentiality of all data, it was specified that data would not be disclosed until required for this study.

Once the quantitative data was obtained, a descriptive quantitative analysis was carried out using the SPSS program. Specifically, frequencies and percentages were employed to explain the characteristics of the study population in light of the study's objectives and questions. Moreover, Cronbach's alpha was used to determine the questionnaire's reliability. The independent sample *t*-test, one-way ANOVA, and arithmetic means and standard deviations were also used to determine differences based on the study's variables. The data were represented using a tabulation technique.

This study followed the thematic analysis to analyze the qualitative data obtained from the interview questions. Thematic analysis is an appropriate technique for analyzing qualitative data. It is most commonly used with written materials like transcripts or interviews. The researchers look through the data meticulously to find recurring themes, which include concepts, ideas, and meaning patterns (Creswell & Plano Clark, 2011)

4. Results

Before carrying out the main study, a pilot study was conducted on a group of 30 students to confirm the reliability of the questionnaire. The reliability coefficient was estimated using Cronbach's alpha equation (α). The results are presented in Table 3 below.

Table 3
Cronbach Alpha Reliability Coefficients

Factors	No. of items	Cronbach Alpha
Global Reading Strategies	13	0.887
Problem-Solving Strategies	8	0.852
Support Reading Strategies	9	0.865
Total	30	0.912

According to Table 3, the overall reliability coefficient of the questionnaire was 0.912. The Cronbach alpha internal consistency method yielded reliability indications ranging from 0.852 to 0.887, all of which are greater than the required minimum reliability of 0.6. As a result, it is possible to infer that the questionnaire has a high degree of reliability and is appropriate for use with the primary study sample.

4.1. The Quantitative Data Analysis

To answer the first research question of this study, which deals with the level of metacognitive awareness of reading strategies among Saudi EFL students, the means and standard deviations were calculated for all dimensions (Factors) of the questionnaire (measuring variables) to measure the level of metacognitive awareness of reading strategies among Saudi EFL students. The five-point Likert scale employed in this study was transformed to a range of 1-5 degrees to measure the level of Metacognitive Awareness of Reading Strategies. These degrees were then classified into five categories: very low (1-1.79), low (1.80-2.59), moderate (2.60-3.39), high (3.40 to 4.19), and very high (4.20- 5). The dimensions of the questionnaire are ordered in descending order according to their means, as displayed in Table 4.

Table 4

Descriptive Statistics for the Questionnaires' Factors

Factors	Items	Mean	SD	Level	Rank
Global Reading Strategies	13	2.93	0.70	moderate	1
Support Reading Strategies	9	2.52	0.91	low	2
Problem-Solving Strategies	8	2.32	0.95	low	3
Total	30	2.65	0.70	Moderate	

As shown in Table 4, the Saudi EFL students' metacognitive awareness of reading strategies is moderate, with a mean of 2.65 and a standard deviation of 0.70, less than 1.0. This value indicates the homogeneity of the study sample's metacognitive reading strategy awareness level assessment. The metacognitive awareness of the study participants in employing global reading strategies was at the top, with a mean of 2.93 and a moderate level. The mean levels of awareness for supporting reading and problem-solving strategies were 2.52 and 2.42, respectively. The level of metacognitive awareness of the reading, as mentioned earlier strategies, from the perspective of the study sample, is described in depth in the following sections.

4.1.1 Global reading strategies

The means and standard deviations of the global reading strategies were computed for each of the 13 questionnaire items. The overall average was also computed and placed in descending order, as shown in Table 5.

Table 5

Descriptive Statistics for Global Reading Strategies

Items	Statements	Mean	SD	Level	Rank
29	I check to see if my guesses about the text are right or wrong.	3.571	1.344	high	1
17	I use tables, figures, and pictures in text to increase my understanding.	3.029	0.912	moderate	2
19	I use context clues to help me better understand what I'm reading.	3.024	0.920	moderate	3
23	I critically analyze and evaluate the information presented in the text.	2.962	0.948	moderate	4
4	I preview the text to see what it's about before reading it.	2.957	0.955	moderate	5
14	I decide what to read closely and what to ignore.	2.952	0.911	moderate	6
26	I try to guess what the text is about when reading.	2.948	0.949	moderate	7
1	I have a purpose in mind when I read.	2.919	0.890	moderate	8
25	I check my understanding when I come across conflicting information.	2.914	0.934	moderate	9
7	I think about whether the content of the text fits my purpose.	2.910	0.921	moderate	10
3	I think about what I know to help me understand what I'm reading.	2.886	0.936	moderate	11
10	I skim the text first by noting characteristics like length and organization.	2.857	0.922	moderate	12
22	I use typographical aids like boldface type and italics to identify key information.	2.157	1.007	Low	13
Total		2.93	0.70	moderate	

The arithmetic mean of 2.93 in Table 5 indicates that the level of metacognitive awareness of global reading strategies among the participants in this study was moderate. Regarding the distribution of each item's level of metacognitive awareness, only one item, representing 8% of all the items, came in at a high level. 11 (or 84%) of the total items were rated moderate. One item came in at a low level, accounting for only 8% of the total items. The items had arithmetic means ranging from 2.157 to 3.571.

4.1.2. Problem-solving strategies

The means and standard deviations for each of the eight items measured by the questionnaire with regard to problem-solving strategies were reported. As indicated in Table 6, means were also determined and placed in descending order.

Table 6
Descriptive Statistics for Problem-Solving Strategies

Items	Statements	Mean	SD	Level	Rank
21	I try to picture or visualize information to help me remember what I'm reading.	2.614	1.400	moderate	1
8	I read slowly but carefully to be sure I understand what I'm reading.	2.343	1.285	Low	2
11	I try to get back on track when I lose concentration.	2.333	1.280	Low	3
18	I stop from time to time to think about what I'm reading.	2.305	1.291	Low	4
16	When text becomes difficult, I begin to pay closer attention to what I'm reading.	2.295	1.305	Low	5
27	When text becomes difficult, I reread to increase my understanding.	2.257	1.302	Low	6
13	I adjust my reading speed according to what I'm reading.	2.252	1.337	Low	7
30	I try to guess the meaning of unknown words or phrases.	2.190	1.291	Low	8
Total		2.324	0.95	Low	

Table 6 shows that the average participant's metacognitive awareness when employing the Problem-Solving strategy was 2.32. While looking at the distribution of the items representing the participants' metacognitive awareness of the Problem-Solving strategies, one item was found to be at a moderate level, with a rate of 13% of the total items. Eighty-seven percent of the remaining items were of a low level. The arithmetic means of the items ranged from 2.190 to 2.614.

4.1.3. Support reading strategies

The means and standard deviations for each of the nine items measured by the questionnaire on reading support strategies were provided. As seen in Table 7, the mean was also calculated and displayed in descending order.

Table 7
Descriptive Statistics for Support Reading Strategies

Items	Statements	Mean	SD	Level	Rank
28	I ask myself questions I like to have answered in the text.	3.105	1.546	moderate	1
9	I discuss my reading with others to check my understanding.	2.829	1.503	moderate	2
20	I paraphrase (restate ideas in my own words) to better understand what I'm reading.	2.814	1.473	moderate	3
24	I go back and forth in the text to find relationships among ideas in it.	2.671	1.471	moderate	4
5	When text becomes difficult, I read aloud to help me understand what I'm reading.	2.329	1.269	Low	5
2	I take notes while reading to help me understand what I'm reading.	2.271	1.290	Low	6
6	I write summaries to reflect on key ideas in the text.	2.248	1.296	Low	7
15	I use reference materials such as dictionaries to help me understand what I'm reading.	2.214	1.311	Low	8
12	I underline or circle information in the text to help me remember it.	2.214	1.326	Low	9
Total		2.52	0.91	Low	

Table 7 shows that students who used the Support Reading strategy had a mean metacognitive awareness score of 2.52. The distribution of the items indicating the amount of metacognitive awareness of Support Reading strategies showed that four items, or 44% of the total, were placed at a medium level. A little over half (56%) of the remaining items were at a low level. The items' average arithmetic mean was somewhere in the range of 2.214 and 3.105.

4.1.4. Gender-based differences

The means and standard deviations for each questionnaire dimension and the overall score were computed based on the gender variable. Table 8 displays the results of an independent sample *t*-test to determine whether or not there were statistically significant differences in the means.

Table 8
Statistical Analysis for Gender-based Differences among the Study's Participants

Factors	Gender	Mean	SD	df	t	Sig
Global Reading Strategies	Male	2.78	0.74	208	−2.209	0.028*
	Female	3.00	0.66			
Problem-Solving Strategies	Male	2.40	0.90	208	0.845	0.399
	Female	2.28	0.98			
Support Reading Strategies	Male	2.51	0.84	208	−0.095	0.924
	Female	2.53	0.95			
Total	Male	2.60	0.72	208	−0.676	0.50
	Female	2.67	0.69			

Note. *is significant at the 0.05 level.

Table 8 shows significant gender differences in the participants' metacognitive awareness levels of global reading strategies. These differences worked out better for females overall. However, the level of metacognitive awareness and other reading strategies did not show any statistically significant differences.

4.1.5. University level-based differences

One-way ANOVA analysis was utilized to determine whether or not there were significant differences in the means of responses from the study sample individuals regarding the metacognitive awareness of reading strategies according to the university-level variable. Table 9 displays the outcomes of this test.

Table 9
One-way ANOVA Analysis of Level-Based Differences

Factors	Source	Sum Squares	df	Mean Square	F	Sig.
Global Reading Strategies	Between Groups	5.857	3	1.952	4.197	.007*
	Within Groups	95.827	206	.465		
	Total	101.683	209			
Problem-Solving Strategies	Between Groups	4.801	3	1.600	1.792	.150
	Within Groups	183.992	206	.893		
	Total	188.793	209			
Support Reading Strategies	Between Groups	7.460	3	2.487	3.095	.028*
	Within Groups	165.484	206	.803		
	Total	172.944	209			
Total	Between Groups	5.560	3	1.853	3.949	.009*
	Within Groups	96.677	206	.469		
	Total	102.237	209			

Note. *is significant at the 0.05 level.

Table 9 reveals that the level of metacognitive awareness in the global reading strategies and the support reading strategies varies significantly depending on the university level. However, no differences in the use of other reading strategies were discovered. The posttest (LSD) was utilized

to assess the direction of these differences. The table below indicates the direction of these differences.

Table10
Multiple Comparisons (LSD)

Factors	University level	Mean	Junior	Sophomore	Freshmen	Senior
Global Reading Strategies	Junior	2.98	-	.191	.360*	−.122
	Sophomore	2.79	.191	-	.168	−.314*
	Freshmen	2.62	.360*	.168	-	.481*
	Senior	3.11	−.122	−.314*	.482*	-
Support Reading Strategies	Junior	2.58	-	.049	.547*	−.063
	Sophomore	2.53	.049	-	.498*	−.113
	Freshmen	2.03	.546*	.498*	-	−.611*
	Senior	2.64	−.063	−.113	−.611*	-
Total	Junior	2.70	-	.114	.438*	−.085
	Sophomore	2.59	−.114	-	.323*	−.199
	Freshmen	2.26	−.438*	−.323*	-	−.522
	Senior	2.79	.085	.199	.522	-

Note. *is significant at the 0.05 level.

In terms of global reading strategies, Table 10 above demonstrates differences between the junior and freshmen levels, with the junior level outperforming the first-year students. There are other differences among the sophomores, freshmen, and senior levels, with the senior level prevailing. Regarding the Support Reading Strategies, there are distinctions between the junior and freshmen levels, with the junior level having the advantage. Other differences between the sophomores and freshmen levels favour the sophomore level. In addition, there are differences between the freshman and senior levels, favouring the senior level. Overall, disparities between the junior and freshmen levels favour the junior. Significant differences between the levels of sophomores and freshmen favour the level of sophomores. It is commonly accepted that increased metacognitive awareness accompanies higher university levels.

4.2. The Qualitative Data Analysis

The data collected from the interviews were coded, analyzed and divided into two main themes. The first topic is related to reading comprehension problems. The second theme deals with the perception of EFL teachers towards the level of metacognitive awareness of reading strategies among Saudi EFL students.

4.2.1. Teachers' opinions towards reading comprehension problems

Teachers have always emphasized that understanding what is read is a complex cognitive task that calls for a wide range of abilities and approaches. They also stated that the ability to comprehend what is read is crucial for students to develop since it necessitates the reader's participation in constructing their comprehension of the text. Teachers of English as a Foreign Language in Saudi Arabia agreed that several factors, such as students' lack of vocabulary, phonological ignorance, and learning disabilities, contribute to their students' difficulties with reading. All the teachers agreed that adequate comprehension is essential if students are to actively read with intent to participate in and gain knowledge from the text, and if they are to like what they are reading eventually. Students can't learn anything from what they read if they do not grasp the material. Teachers have noted that students tend to avoid doing the tasks that are the most challenging for them. Students will avoid reading, not fully engaging with the text, or quitting quickly if they perceive it as uninteresting or unduly challenging. Reading comprehension enhances the enjoyment and effectiveness of reading and is advantageous academically, professionally, and personally.

Teacher No. 8 remarked, "Saudi EFL students are not proficient readers due to infrequent English practice. They have low English proficiency. Their English vocabulary is minimal, and they are unfamiliar with several reading strategies."

Teacher No. 14 stated, "Understanding what students read involves engaged reading skills, critical analysis, prior knowledge, and a vast and diverse vocabulary. Such a combination is absent among Saudi English students. Thus, it is predicted to have low reading comprehension."

4.2.2. Teachers' opinions towards the metacognitive awareness of reading strategies

Teachers' perspectives regarding metacognitive reading strategies by Saudi EFL students were quite comparable. They confirmed the significance of such strategies for enhancing students' reading comprehension. They argued that increased metacognition led to more effective learning processes. Specifically, they reported that cognitive reading methods assist students in continuing to read when complexity hinders understanding. Most interviewees stated that most Saudi EFL students lack the skills essential to utilize metacognitive reading strategies before, during, and after reading. They observed that initial comprehension-enhancing processes such as contextualizing, predicting, moderating, and engaging still require considerable attention from students. Learning about these processes without enough training will be useless.

All interviewees agreed that students' metacognitive awareness of such reading strategies falls between low and moderate levels. This moderate awareness is typically attributed to low English proficiency and, more specifically, insufficient reading strategy understanding among the students themselves. Teachers play a pivotal role in helping students develop reading methods through explicit instruction or the development of reading instruction cues that follow a five-stage process: planning, presenting, practising, assessing, and expanding. These steps are helpful because they promote the conscious application of reading skills. In this sense, Teacher 1 stated that:

> I believe the metacognitive awareness of reading methods employed by Saudi students is low for several reasons. One of these is their incomplete understanding of reading techniques. Although some of them are familiar with strategies such as scanning and skimming, they are unable to distinguish between them.

In another response, Teacher 15 commented that:

> There is a high association between metacognitive reading strategy awareness and reading comprehension. In reality, effective readers employ multiple metacognitive reading strategies when reading. In contrast, less adept or poor readers do not employ these reading strategies; hence, they cannot increase their reading comprehension. The majority of Saudi English students are less proficient. Hence, their metacognitive awareness of reading strategies is lacking, and their comprehension is poor.

5. Discussion

5.1. The Quantitative Data Discussion

The thorough analysis revealed that the levels of metacognitive awareness and global reading strategies are moderate, while the levels of support and problem-solving reading strategies are low. Modest metacognitive awareness can be attributable to several reasons. First, EFL students place less emphasis on comprehension and more on reading aloud. Furthermore, moderate awareness can be ascribed to the students' lack of desire, demonstrating that they cannot take charge of their learning, resulting in reading comprehension issues. Reading comprehension gets difficult when students are disinterested in the reading material (Nanda & Azmy, 2020). A lack of background knowledge may exacerbate reading comprehension issues. Students struggle with reading comprehension because they lack prior knowledge to grasp the offered materials. Learning will have a negative effect if existing knowledge is inconsistent with the new material being taught. Students' drive to learn improves when they have more working memory to store new information.

Students' limited vocabulary is another factor that makes reading comprehension challenging. If the literature contains complex vocabulary, the students find it difficult to comprehend. Knowing about metacognitive reading strategies but being unable to employ them effectively is a common reason for moderate awareness of such strategies (Yuksel & Yuksel, 2012). They probably had a moderate awareness of metacognitive reading strategies due to their limited daily exposure to English and reading habits (Meniado, 2016). Students must recognize how to use the methods to read in a foreign language successfully; simply knowing the strategies is insufficient. These findings were consistent with other several studies (e.g. Deliany & Cahyono, 2020; Do & Phan, 2021; Hughes, 2019; Kazi et al., 2020; Louiza & Fadhila, 2022; Meniado, 2016; Rabadi et al., 2020; Sheorey & Mokhtari, 2001). However, these findings do not align with other studies that focused on determining the level of metacognitive awareness (e.g. Köse & Günes, 2021; Magogwe, 2013; Mokhtari & Richard, 2002; Yuksel & Yuksel, 2012). Their findings indicated that students' overall metacognitive awareness of reading strategies scored high. This might be explained by the fact that these studies were conducted in different contexts, each with its conditions.

Of the three types of reading strategies, this study's participants are moderately aware of global reading strategies. Students cannot use prior knowledge in two key areas essential for reading comprehension: text previewing and reading with a purpose. They struggle to comprehend what is necessary for the overall analysis of the reading text. This conclusion is consistent with other studies (e.g. Do & Phan, 2021; Yuksel & Yuksel, 2012).

Despite numerous studies indicating that problem-solving strategies are the most popular strategy among EFL students (Meniado, 2016; Villanueva, 2022), the low awareness of problem-solving reading strategies among the participants in this study could be due to various factors. Problem-solving strategies are often a weak spot for students who struggle with reading comprehension because these strategies are time-consuming and involve additional student effort (Yuksel & Yuksel, 2012). These strategies are time-consuming to master and simple to quit (Mokhtari & Richard, 2002). Hence, students with little metacognitive awareness tend to have poor reading skills (Do & Phan, 2021). For instance, when confronted with difficult words, they cannot deduce their meanings from the context. When a reader comes across an unfamiliar term in context and does not know the most critical word meaning in the text, comprehension may suffer (Villanueva, 2022). A lack of vocabulary may prevent a reader from comprehending the meaning of the text. The metacognitive awareness of the third category of reading strategies, support strategies, was poor among the participants of this study. To achieve reading comprehension, these participants appear to need more guidance in recognizing the significance of reference resources.

The study also attempted to examine the possible correlation between the metacognitive awareness level and other variables, namely gender and university level. The findings of this study concerning the gender variable revealed no significant gender differences in the overall level of metacognitive awareness of reading strategies. Further investigation of the level of metacognitive awareness of the support and problem-solving strategies did not show significant gender differences. However, the global strategies showed significant gender differences in the participants' metacognitive awareness levels in favour of females. It can be inferred that female students are more strategic readers than males. Females read better than males and have a positive attitude towards reading. This result might be elicited by the females' commitment to the reading tasks and their motivation while reading. This result is consistent with other studies (Abu-Snoubar, 2017; Do & Phan, 2021; Mahasneh et al., 2016; Tavakoli, 2014; Zhang, 2018).

This study's findings showed no significant differences in the overall metacognitive awareness of reading strategies depending on the university level. In terms of problem-solving strategies, there is also no significant difference. This may be related to these students' inability to build their metacognitive awareness, particularly regarding reading issues. They cannot read proficiently. This result is consistent with previous research (Do & Phan, 2021; Fitrisia et al., 2015). Yet, there are considerable differences in the global and support reading strategies based on the university level

of the participants, with the senior and junior levels outperforming the freshmen level. The greater the level, the more significant the improvement in the student's awareness and command of the language. Courses at higher levels are more rigorous and require a wide vocabulary range. This finding is consistent with previous research (Alrabah & Wu, 2018; Do & Phan, 2021; Fitrisia et al., 2015) that reported the effect of the university level on metacognitive awareness of reading strategies.

5.2. The Qualitative Data Discussion

The study also sought to investigate teachers' perceptions of the metacognitive awareness of reading strategies. Fifteen teachers took part in an open-ended structured interview. The responses to the interviews revealed that teachers concurred that Saudi EFL students had issues with reading comprehension. The teachers underlined that the EFL students' inadequate vocabulary knowledge makes reading comprehension more challenging. Because vocabulary is crucial to reading comprehension, poor comprehension arises when EFL students struggle to determine the meanings of unknown words. The meanings of most of the words used are crucial to comprehending the text.

Furthermore, they argued that lacking interest and motivation is problematic because students must deal with lengthy and somewhat challenging reading material. They cannot choose the topics of the reading texts they deal with. For instance, some students find certain literary books difficult and require additional effort. Teachers also noted that students' lack of analytical ability exacerbates difficulties with reading comprehension. There is a significant positive association between critical thinking and reading comprehension. It implies that the stronger a student's critical thinking, the greater their reading comprehension.

In addition, Students' low background knowledge might be attributed to a lack of reading practice and exposure to the target language. The inability of EFL students to activate and apply prior knowledge makes reading comprehension challenging. Anxiety may also contribute to reading comprehension difficulties, illustrating why many students struggle with the skill. Teachers also claimed that insufficient instruction in reading strategy implementation was to blame for students' comprehension problems.

All participants concurred that students employ little metacognitive reading skills. They highlighted the most common strategies their students employ, including reading aloud, attempting to guess the meaning of unfamiliar terms, utilizing a dictionary, summarising, paraphrasing, and taking notes. Yet, the participating teachers acknowledged that students could not implement these strategies frequently and effectively. Hence, when questioned about the metacognitive awareness of reading methods among Saudi EFL students, they all agreed that it is moderate to poor. They believe that EFL students are unaware of the necessary methods necessary for reading.

6. Implications

Based on this study's main quantitative and qualitative findings, which showed that metacognitive awareness of reading strategies is moderate overall and low in some sub-reading strategies, this study proposed some pedagogical implications to raise awareness of the importance of using important reading comprehension techniques. Having a solid vocabulary is the first step towards reading successfully. Students that use effective vocabulary strategies know what the words mean and have the required context to understand the material they are reading. Context cues are used to decipher unknown phrases. Reading comprehension is doomed from the start if students do not have a broad vocabulary or the ability to assimilate new words.

One of the biggest obstacles to reading is a lack of background knowledge. Teachers should assist students in expanding their existing knowledge. This is accomplished by having students record or explain what they already know about a subject. Short questions like a KWL (Know, Want to Know, Learned) chart, followed by class discussion, might elicit simple insights from

students. Teachers should ensure their pupils grasp vital topics and vocabulary before assigning readings (literally). Students can level the playing field in terms of prior knowledge by using this strategy to draw inferences and connect the text and things they already know about.

Summarizing a material after reading it can help students extract the text's key ideas and retain more knowledge. In particular, students need to be taught how to identify important words and phrases, differentiate between facts and opinions, and look up unknown language. Intentionally training students to begin summarising improves their overall reading comprehension. Moreover, thinking strategies must always be employed. Questions like "Why did the author choose this genre or style?" or "What do you think happened before or after this event?" or "Why did the characters react the way they did?" can help students engage in critical thinking about a text. These questions urge students to analyze the text's more profound meaning and to utilize critical thinking skills as they look for significant themes. When students struggle to grasp a topic, they should be encouraged to ask questions for clarification or make mind maps to illustrate how the concept relates to their existing body of knowledge.

7. Limitations and Recommendations

This study has some limitations. At first, the study's sample size is limited due to the small number of respondents to the survey. The study targeted participants from a single university. Thus, the generalizability of the results might not apply to all Saudi students. Further research is encouraged to include students from different academic institutions exploring various proficiency levels of reading comprehension. Second, the respondents to the survey were primarily female students. Thus, comparing male and female levels of metacognitive awareness of reading strategies might not be accurate. Other studies are recommended to find out more about the gender role in reading comprehension. Third, concerning the research method, a triangulation of other methods, such as class observation or case study, would provide a much deeper analysis of metacognitive awareness of reading strategies among EFL students. Notwithstanding such limitations, the research provides essential findings that need replication on a larger scale, potentially even globally.

8. Conclusion

The study found that Saudi EFL students' metacognitive awareness of reading strategies is generally moderate. Remarkably, this awareness was moderate regarding using global reading strategies and low regarding support and problem-solving reading strategies. The study also indicated that the participants' metacognitive awareness levels differed significantly by gender for global strategies favouring females. There were also significant differences in the global and support reading strategies based on the participants' university level, with the senior and junior levels exceeding the freshmen level. Interviews with teachers who participated in this study confirmed the findings of the quantitative phase. All agreed that Saudi EFL students' metacognitive awareness of reading strategies falls between the low and moderate range. Their low-to-moderate level explains why their reading comprehension is poor.

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