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**| RESEARCH ARTICLE**

# The Ten Rs' Commandments: An Explicit-Integrated Instruction of both Cognitive and Metacognitive Reading-Comprehension Strategies

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**| ABSTRACT**
Reading comprehension is the ability to construct meaning through various sub-processes, including understanding word meanings, recognizing text organization, and activating prior knowledge. However, some learners enter higher education without being equipped with sufficient strategies to facilitate their reading process. Consequently, they tend to approach reading comprehension tasks differently, as they lack the necessary tools to understand English texts. Some individuals may perceive the reading comprehension process as a challenge, which could impede their acquisition of the English language. They often feel lost due to a lack of strategies to address the misunderstanding or non-understanding of English texts. Therefore, the instruction of reading comprehension strategies has become an indispensable part of the language learning process, enabling students to construct meaning from a given text. To achieve this goal, the present study targeted a randomly selected sample of 283 university students, along with three professors who completed a survey assessing their awareness and use of reading comprehension strategies in their classes. Specifically, the study aims to evaluate Moroccan EFL students' awareness of reading comprehension strategies, as this is a prerequisite for understanding the area of investigation. In other words, it examines whether first-semester (S1) students develop the necessary strategies through their reading comprehension courses and whether this awareness affects their performance in related activities. Furthermore, this study aims also to highlight the role of explicit and integrative instruction of both cognitive and metacognitive reading strategies in enhancing students' performance in reading comprehension. Its ultimate objective is to demonstrate the effectiveness of an explicit model of reading comprehension strategies - The Ten Rs' Commandments Model -which integrates cognitive and metacognitive strategies to develop efficient, independent readers capable of applying these strategies appropriately to achieve better comprehension of texts in EFL contexts.

**| KEYWORDS**

Reading Comprehension Strategies; Strategy Instruction; Learner Awareness; Reading Performance; Integrated Instruction; Explicit Instruction; Cognitive Strategies; Metacognitive Strategies; EFL.

**| ARTICLE INFORMATION**

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## 1. Introduction

Reading comprehension is the ability to construct meaning through various sub-processes, including word recognition, word meanings, text organization, and prior knowledge (Cain et al., 2004). However, some learners enter higher education without sufficient strategies to facilitate their reading process. Consequently, they tend to approach reading comprehension tasks differently, as they lack the necessary tools to understand English texts efficiently (Nouri & Zerhouni, 2016).

Some learners may consider the reading comprehension process as a nightmare that hinders their acquisition of the targeted foreign language. This perception can create an internal psychological barrier, as they feel they lack the necessary techniques to overcome their weaknesses in reading comprehension. They become lost due to insufficient strategies to address the problem of misunderstanding or non-understanding of English texts (Zhiri, 2019). Therefore, the instruction of reading comprehension

strategies has become an indispensable part of the language learning process, helping students learn how to construct meaning from a given text. However, students' unawareness or lack of instruction in these strategies can negatively affect their comprehension of the written texts (Anderson, 1991; Carrell et al., 1989; Paris et al., 1983). Ultimately, the main goal of a reading comprehension course is to help readers acquire the necessary strategies to derive meaning from English texts, interpret them, and make connections.

To achieve this, evaluating the awareness of reading comprehension strategies among Moroccan EFL students is essential for understanding the area of investigation. Mokhtari and Sheorey (2002) state that both familiarity with and frequency of use of reading strategies affect students' performance in reading comprehension tasks. Specifically, this research aims to investigate whether S1 readers acquire the necessary reading comprehension strategies throughout their S1 reading comprehension courses and whether this awareness affects their performance in reading comprehension activities. Furthermore, this study highlights the role of the explicit and integrative instruction of both cognitive and metacognitive reading strategies in enhancing the students' performance, enabling them to become efficient and independent readers (McEwan, 2007). Ultimately, the primary objective of this study is to develop a Reading Comprehension Strategies Model that will help S1 students increase their awareness about these strategies —in terms of familiarity, frequency, and appropriate use —to achieve a better understanding of English comprehension texts.

### *1.1 Rationale*

The choice of this topic is motivated by several reasons. Firstly, reading comprehension is an indispensable, fundamental, and critical skill for learners to perform well in other learning skills. In other words, once students master reading comprehension, they can better control the other skills —mainly listening, speaking, and writing. The skill of reading comprehension provides students with a solid background to understand spoken language and enables them to effectively reproduce or recall the meaning they have acquired when speaking and writing.

Secondly, EFL students are expected to read a wide range of materials, including textbooks, articles, short stories, and novels. Through this extensive reading, they can acquire valuable knowledge about the English language, culture, and civilization. Therefore, they need to learn how to read these materials effectively and comprehend their content in order to achieve good academic results across all subjects taught in English.

Thirdly, the researcher is deeply eager to help English learners master specific reading comprehension strategies that will enable them to understand texts more easily and become successful, independent readers. These strategies are essential tools that learners should be aware of and practice appropriately to reach the goal of comprehending English texts, as Oxford (2002) stated.

Fourth, choosing this topic stems from the desire to conduct a study that may enhance the teaching of English in the EFL context. Many teachers have received little or no training on how to effectively teach or incorporate reading strategies in their EFL reading classes. As Kara (2015) reported in her study on teachers' reading comprehension practices and instruction in Turkey, most teachers are unaware of effective reading comprehension strategies or tools that could improve their students' abilities to comprehend texts in an EFL setting. While some teachers recognize the importance of these strategies, they often cannot integrate them into their courses because they are not included in the academic syllabus. Therefore, developing an integrated instructional method for reading comprehension strategies would provide teachers with a practical, teachable model that can help them teach reading more effectively and efficiently. Consequently, teachers need to learn these reading comprehension strategies themselves so they can instruct their students appropriately, while adhering to the syllabus requirements set by educational authorities (Zhang & Wu, 2009).

Finally, another reason for conducting this study is to raise awareness among curriculum designers about the importance of integrating reading-strategy instruction within University English Studies departments in Morocco. Such integration would enable both teachers and students to understand which reading comprehension strategies to teach or learn, as well as how, when, where, and why to apply them effectively.

### *1.2 The Objectives of the Study*

Driven by these concerns, this study aims to evaluate S1 university students' awareness of reading comprehension strategies in terms of familiarity and frequency of use. Additionally, it seeks to highlight the importance of appropriate instruction of reading comprehension strategies, particularly explicit instruction that includes both cognitive and metacognitive strategies. Most importantly, this study aims to develop a Reading Comprehension Strategies Model to

help S1 readers enhance their awareness of these strategies in terms of familiarity, frequency, and appropriate application, thereby improving their understanding of English comprehension texts.
Moreover, the use and instruction of reading comprehension strategies are essential phases in reading comprehension mastery (Carrell, 1998; Eskey, 2005; Gunning, 1996; Spangler & Mazzante, 2015).

### *1.3 Research Questions*

This study aims to provide answers to five main research questions:

1- To what extent do usual S1 reading classes help students increase their use of reading comprehension strategies and familiarity with them, as measured by post-test compared to pre-test results?
2- Is there a significant difference between the pre-test and post-test scores of the experimental group regarding their frequency of use and familiarity with reading comprehension strategies?
3- Is there a significant difference between the pre-test and post-test scores of the control group regarding their frequency of use and familiarity with reading comprehension strategies?
4- To what extent do students' frequency of use and familiarity with reading strategies correlate with their proficiency-test scores in reading comprehension tasks on both the pre-test and post-test?
5- To what extent does explicit and integrated instruction of both cognitive and metacognitive reading strategies positively correlate with S1 students' proficiency in reading comprehension?

### *1.4 Research Hypotheses*

1) The usual reading comprehension courses offered to S1 English Studies' students do not provide them with adequate tools to become familiar with reading comprehension strategies or to use them frequently enough to improve their proficiency in reading comprehension.
2) The more reading comprehension strategies students use, the higher their performance in reading comprehension tasks.
3) The greater the students' familiarity with reading strategies, the higher their performance scores in reading comprehension tasks.
4) Students in the experimental group who become more familiar with reading comprehension strategies and use them frequently will achieve higher scores on the post-test compared to the pre-test.
5) Learners who receive explicit and integrated instruction in cognitive and metacognitive reading comprehension strategies will demonstrate greater familiarity with these strategies, use them more frequently, and score higher on proficiency tests (pre- and post-tests) than learners who do not receive such instruction (control group).

## 2. Literature Review

To fulfill the purpose of this study, address the aforementioned research questions, and confirm or reject the five hypotheses, the following section provides a brief overview of the field of reading comprehension strategies, which serves as the framework and point of orientation for this study.

This literature review is organized into four main sections that address key aspects related to reading strategies: Models of Reading Comprehension, Cognitive and Metacognitive Reading Comprehension Strategies, the Effectiveness of Reading Strategy Instruction, and the Use of the Think-Aloud Approach as both a Learning and Instructional Strategy. While this review does not cover all issues related to reading comprehension strategies, it provides a concise overview of the surveys, theories, and reading models that underpin and inform this research.

### *2.1 Models of Reading Comprehension*

According to Gunning (1996), there are three main theories of reading comprehension: Schema Theory, Mental Models Theory, and Propositional Theory. Schema Theory posits that learners relate the new information encountered in a text to previously stored knowledge in their minds. The Mental Models Theory suggests that learners develop mental representations of situations described in the text, which helps them situate themselves within the narrative or content. This process involves techniques such as open discussions, questioning, visualizing, checking, and confirming or rejecting information. These strategies assist readers in reconstructing and monitoring the accurate meaning of the text. The third theory, Propositional theory, involves readers constructing the main ideas of the text and organizing them hierarchically according to their importance. In this study, Propositional Theory is applied through various reading strategies such as skimming, graphic organizers, and questioning.

Consequently, Gunning (1996) proposed four main learning strategies to implement the previously mentioned theories. The first set, called Preparational Strategies, includes predicting, guessing, inferring, and questioning. These strategies help learners activate their background knowledge about the topic of the text. Additionally, they assist readers in becoming more familiar with the text and increase their motivation and ability to understand it.

Second, Organizational Strategies involve the reader's process of selecting details, identifying main ideas, classifying information, rewriting, and summarizing parts or the entirety of a text. This category includes reading strategies such as skimming, scanning, graphic organizers, paraphrasing, and summarizing.

Third, the Elaboration Strategies help readers connect the information they have obtained from the text with their background knowledge about the topic, mainly through the use of inferencing, visualizing, and questioning.

The final type of reading strategies identified by Gunning (1996) is called Monitoring Strategies. These involve the reader's ability to reflect on how and what actions to take in order to understand a text. In other words, monitoring strategies refer to knowing what, when, and how to use other reading comprehension strategies to achieve a more accurate understanding of the text's meaning.

Eskey (2005) identifies three main models of reading comprehension. The first, the Bottom-up model, relies on decoding words to derive meaning from the text. The second, the Top-down model, emphasizes that the reading process is driven by the reader's prior knowledge and experience. The third model, known as the Interactive model, involves a dynamic interaction between the information provided by the text, the reader's background knowledge, and the various metacognitive reading strategies employed.

Accordingly, this research adopts the theories and learning strategies proposed by Gunning (1996) and Eskey (2005) to develop an efficient and comprehensive model for teaching and learning reading comprehension strategies. This model aims to raise learners' awareness of reading comprehension strategies and emphasize the importance of effective instruction. Ultimately, it seeks to equip readers with the necessary skills and knowledge to use these strategies appropriately, thereby enhancing their understanding of English texts.

### *2.2 Cognitive and Metacognitive Reading Comprehension Strategies*

#### *2.2.1 Cognitive Reading Comprehension Strategies: Definition and Role*

According to Chamot and El-Dinary (1999), cognitive strategies are the mental procedures that help learners to achieve learning. They involve hypothesizing the meaning of new words and memorizing them through developing certain skills, such as rapid word recognition, using context to comprehend a passage, decoding (anticipating, predicting, and inferencing), skimming, scanning, and extensive/intensive reading. Thus, cognitive strategies shall help readers to connect the learner's background knowledge and the new information provided by the text. Furthermore, Ahmadi et al. (2013) define cognitive strategies as the student's direct interaction with the text, including "recognizing, using topics, guessing from the text, using dictionary, writing down, imagery, activating background information, summarizing, using linguistic clues, using text markers, skipping the difficult parts and repeating words or phrases" (p. 236).

Importantly, McEwan (2007) identifies seven cognitive reading comprehension strategies that effective readers or high-achieving readers use to enhance understanding: activating, inferring, monitoring–clarifying, questioning, searching-selecting, summarizing, and visualizing-organizing strategies. These strategies help readers approach texts with a clear purpose and highlight the importance of strategic instruction by teachers. As McEwan (2007) affirms, "we can teach all the students to become more strategic readers" (p. 3). However, the use of cognitive strategies alone is not sufficient; learners must be able "to draw metacognitively on their personal strategic reading habits" (p. 3). In other words, they need to know how and when to apply these strategies independently and effectively. Therefore, the following section of this article will focus on metacognitive strategies.

#### *2.2.2 Metacognitive Reading Comprehension Strategies: Definition and Role*

Jarrar (2022) emphasizes that teaching metacognitive skills at an early age fosters learners' ability to self-regulate their thoughts, which in turn enhances academic achievement. This highlights the importance of instructing students early on in how to autonomously understand reading texts by knowing which reading strategies to use, as well as when and how to apply them to overcome difficulties encountered in reading comprehension. To accomplish this, it is essential to understand the concept of metacognition. For example, Flavell (1976, 1981) defines metacognition as knowledge about cognition—people's awareness and control of their cognitive processes, along with their desires and motivations. Similarly, Carrell et al. (1989) describe metacognition as readers' understanding of cognitive processes, indicating that metacognition in reading encompasses both knowledge of reading strategies and control over one's actions to comprehend a text. Carrell (1998) further characterizes metacognition as "cognition about cognition" or "thinking about thinking." Importantly, metacognition enables readers to be consciously aware of their actions during reading and to strategically select the most effective reading strategies for understanding a given text. Therefore, readers must know the strategies and understand how and when to use them correctly and efficiently.

Correspondingly, Paris et al. (1983) and Brown (1987) identify three key aspects of metacognitive strategies. The first aspect, declarative knowledge, refers to knowing "what" a reading strategy is; it encompasses the reader's awareness of cognitive processes related to memory. The second aspect, procedural knowledge, involves understanding how to use or apply a reading strategy and reflects the learner's automatic awareness of strategy use. The third aspect, conditional knowledge, concerns knowing when and why to use a particular strategy effectively and appropriately. This aspect emphasizes the learner's ability to regulate and monitor cognition by applying metacognitive knowledge strategically (Brown, 1987; Baker, 1991). Building on these ideas, Anderson (2002) proposes a model of metacognition comprising five components: (1) preparing and planning for learning, (2) selecting and using learning strategies, (3) monitoring strategy use, (4) orchestrating various strategies, and (5) evaluating strategy use and learning (pp. 3–4).

After presenting the various definitions and categories of metacognitive reading strategies, it is important to highlight empirical evidence supporting their effectiveness. For instance, Koda (2005) reports a strong correlation between metacognitive reading strategy awareness and reading comprehension. In this regard, proficient readers tend to employ a variety of metacognitive reading strategies to enhance their understanding of texts. In contrast, less proficient readers often fail to apply such strategies effectively, which limits their comprehension.

In addition, Amzil (2014) investigates the impact of metacognitive intervention—specifically monitoring and controlling—on students' reading performance and metacognitive awareness. His findings reveal that "college students can be trained in metacognition" (p. 39), which, in turn, enhances both their reading abilities and their metacognitive awareness. In other words, metacognitive intervention benefits readers across proficiency levels, enabling both low-achieving and high-achieving students to improve their reading performance.

Similarly, Msaddek (2018, 2020) argues that metacognitive strategies "enable learners to assess their cognitive progress while engaged in the process of reading the written input" (p. 2). However, his findings reveal that Moroccan EFL university students "did not sufficiently use metacognitive strategies during the act of textual reading." Consequently, he recommends that reading comprehension courses be "accompanied with explicit/direct strategy instruction with the intent of enabling flexible use of metacognitive reading strategies among Moroccan EFL university learners" (p. 5).

Correspondingly, Sheorey and Mokhtari (2001) state that there is a strong and significant correlation between readers' use of metacognitive reading strategies and their reading comprehension ability. Thus, proficient readers tend to demonstrate greater awareness and more frequent use of such strategies compared to less proficient readers.

### *2.3 The Effectiveness of Reading Strategies*

After presenting an overview of the theories adopted in this study, and before discussing the importance of reading strategy instruction, it is essential to examine what other researchers have reported about the effectiveness of reading comprehension strategies. These strategies refer to the specific, conscious actions or operations that readers employ to understand a text, or the range of tactics they use to engage in the reading process and construct meaning from it.

Several studies emphasize that using a limited range of strategies or employing reading comprehension strategies (RCS) infrequently often results in poor comprehension of English texts. For instance, Jimenez et al. (1996) found that less successful readers tend to rely on the same strategies repeatedly. Their use of these strategies is largely automatic rather than flexible, and they struggle to apply them effectively to achieve comprehension. Conversely, frequent use of a wide range of RCS has been shown to enhance comprehension. Brookbank et al. (1999) confirmed that employing various reading strategies can help learners improve their reading comprehension proficiency. In other words, the strategic use of multiple reading approaches enables readers to address comprehension problems by shifting from one strategy to another when encountering difficulties. In line with this, McEwan (2007) observed that skilled readers engaged in reading activities consistently adapt and vary their strategies to process and construct meaning from the text they are reading.

Later, Spangler and Mazzante (2015) argue that the mere use of multiple strategies does not guarantee successful reading comprehension; rather, what matters is the appropriateness of their use. They emphasize that effective readers are strategic learners who interact with texts and apply strategies purposefully to achieve comprehension. Such readers construct meaning, make predictions, organize and evaluate information, connect ideas to prior knowledge, and monitor their understanding throughout the reading process. In other words, efficient reading involves an appropriate interaction between the text and the strategies adopted to comprehend it. In this regard, Oxford (2002) highlights that the use of appropriate language learning strategies often leads to improved proficiency and achievement. Similarly, Rouai (2013–2014) notes that the appropriate teaching and learning of "reading strategies … will enable EFL learners to achieve comprehension in reading successfully, without facing any problems" (p. 1).

### *2.4 How Reading Strategies are Taught*

After emphasizing the importance of both the wide and appropriate use of reading comprehension strategies in achieving effective comprehension, it is essential to consider how these strategies should be taught efficiently. Carrell (1998) suggests that teachers can enhance the instruction of reading comprehension strategies by following five steps. First, "What a Strategy Is"—teachers should describe or define the reading strategy to be taught. Second, "Why a Strategy Should Be Learned"—teachers should explain the purpose behind each strategy and why it is worth learning. Third, "How to Use the Strategy"—teachers can demonstrate the process through task analysis, think-aloud protocols, or other explicit instructional methods. Fourth, "When and Where the Strategy Should Be Used"—teachers should guide learners in recognizing appropriate contexts and avoiding inappropriate situations for using specific strategies. Fifth, "How to Evaluate the Use of a Reading Strategy"—teachers should help learners assess the effectiveness of the strategy and make adjustments to improve comprehension. In short, teachers should move beyond prescriptive instruction by allowing learners to experiment with different reading strategies, ultimately selecting and retaining those most suitable for each reading comprehension task.

Similarly, Spangler and Mazzante (2015) emphasize the importance of teaching reading comprehension strategies in the EFL context and how to apply them effectively. In their study, they classified reading comprehension strategies into three categories based on the stage of use: pre-reading, during-reading, and post-reading strategies. Pre-reading strategies aim to prepare learners to read a text and support their understanding of what they are about to read. This category includes two main activities. The first involves activating students' prior knowledge about the topic through activities such as agreeing or disagreeing with statements, and sharing information acquired before, during, and after reading. The second involves connecting the learners' background knowledge with the information provided in the text, thereby building a stronger foundation for comprehension.

The second main type of reading comprehension strategies identified by Spangler and Mazzante (2015) consists of those used during reading. They outlined six key activities within this category. The first is individual annotation, where students write brief notes or key points about the text as they read. The second involves group discussion, in which learners share and discuss the main ideas in small or large groups. The third is choral reading, where students read a text, or parts of it, aloud together. The fourth is question generation, encouraging students to formulate and answer their own questions about the text. The fifth activity is gist writing and illustration, enabling students to capture the main ideas while also scanning for specific details. Finally, the sixth is inferring vocabulary meaning from context, helping students deduce the meaning of unfamiliar words based on clues within the text.

The third main type of reading comprehension strategies identified by Spangler and Mazzante (2015) is post-reading strategies, which involve four key activities. The first is called Quick Draw, designed to encourage students to review and recall what they have just read. The second activity involves creating a dialogue between teachers and students or among students, which includes summarizing, question generation, clarifying, and predicting. The third activity is a paired summary, where students work together to summarize the text. The fourth activity is known as SQ3R, an acronym representing a sequence of strategies: Survey, Question, Read, Recite, and Review. Survey involves examining the organization of each chapter or text section. Question refers to transforming headings or subheadings into questions. Read and Recite involves selectively reading the text and answering questions in one's own words. Finally, Review includes both immediate and delayed recall of what has been read to reinforce understanding.

In summary, the approaches to reading strategies proposed by Carrell (1998) and Spangler and Mazzante (2015) are both important and effective in enhancing reading comprehension. They appear to complement each other by providing a comprehensive perspective on the use and instruction of reading comprehension strategies for EFL students. These strategies have since been classified into cognitive and metacognitive categories. The following section of this review will examine these two types of strategies separately to facilitate a deeper understanding and mastery, enabling their complementary use to successfully navigate English text comprehension.

### *2.5 The Effectiveness of the Instruction of Reading Strategies*

After outlining the main theories, models, and types of reading comprehension strategies, we will now examine their instruction and its effectiveness for readers.

Anderson (1991), Carrell et al. (1989), and Paris et al. (1983) state that students who receive training in reading comprehension strategies, as described above, tend to become more efficient readers than those who do not. However, the lack of awareness of reading comprehension strategies (RCS), as Zhiri (2019) points out, can negatively affect students' performance in reading comprehension. He explains that Moroccan university students enter higher education without being trained to become independent learners. They arrive unaware of the necessary strategies—both cognitive

and metacognitive—that are essential for mastering reading comprehension. Similarly, Nouri and Zerhouni (2016) note that students in higher education often lack adequate effective strategies to support and ease their reading process.

To address the issue of insufficient exposure to reading comprehension strategies among high school and higher education students, Clarke and Silberstein (1977) recommend providing students with training and practice in reading strategies from an early age. Supporting this, Khatri (2018) found a positive correlation between learners' use of strategies and their reading comprehension performance. Following the intervention, participants demonstrated increased use of reading strategies immediately after the post-test, as measured by the Survey of Reading Strategies (SORS), with the improvement being statistically significant. Therefore, instruction in reading strategies plays a crucial role in the learning process of EFL and L2 readers, as their performance improves significantly after receiving such instruction.

Furthermore, Carrell (1998) emphasizes that training in reading comprehension strategies, especially metacognitive ones, produces significant positive outcomes. She argues that integrating metacognitive components into cognitive strategy training enhances readers' performance. In other words, the experimental group that received this additional strategy training alongside the regular curriculum actively and successfully engaged with the reading comprehension tasks, unlike the control group, which followed only the usual curriculum and struggled to become successful readers.

### *2.6 "Think-Aloud Approach" as a Learning and an Instructional Strategy*

After highlighting the importance of instructing reading comprehension strategies, the next section of this paper will focus on the Think-Aloud Method as an instructional approach for teaching these strategies to the experimental group. This technique relies on the verbalization of the reading process. Van Someren et al. (1994) define the think-aloud protocol as a problem-solving process that depends on verbal expression. Similarly, Wilhelm (2001) describes it as "talking about the reading strategies you are using and the content of the piece you are reading" (pp. 35–37). Thus, the think-aloud method can serve both as an instructional tool to help readers construct meaning from an English text and as a research instrument to collect data on learning and teaching methods. In other words, Dunston and Headley (2002) describe it as a way of verbally demonstrating reading comprehension strategies to help students learn how to make sense of a text. The method is characterized by the teacher modeling the thinking process through verbalizing their thoughts while reading.

Along with this, Baumann et al. (1992) reveal that "explicit, teacher-led instruction in thinking aloud is an effective means to enhance students' comprehension monitoring abilities" (p. 164). Similarly, Gunning (1996) notes that it is a strategy that can be used to model specific reading strategies, including predicting, creating mental images, connecting information in the text with prior knowledge, monitoring comprehension, and overcoming challenges related to vocabulary and understanding.

For this purpose, the think-aloud protocol described above is adopted in this research and integrated into the explicit and metacognitive instruction of ten cognitive reading comprehension strategies selected for the experimental group. The instruction of both cognitive and metacognitive strategies was carried out simultaneously while addressing and attempting to answer comprehension questions for both simple and complex texts, whether short or long. In contrast, the control group received regular instruction in comprehension texts without the integration of the think-aloud protocol or the explicit teaching of cognitive and metacognitive reading comprehension strategies. This will be examined in greater detail in the methodology section of this article.

### *2.7 Key Terms Definitions*

This chapter provides brief definitions of the key terms that form the foundation of the present study, offering readers a general overview of the paper's context. These terms will be discussed in greater depth in the Review of Literature chapter and include the following:

#### *2.7.1 Reading Strategies*

According to Garner (1987), reading strategies are the actions adopted by the reader to construct meaning. They refer to specific, consciously used actions or operations that help the reader understand a text. Similarly, Barnett (1989) defines them as the mental operations or actions employed by a reader to engage with a text in order to make sense of what he or she is reading.

#### *2.7.2 Reading Strategies Awareness*

In reading comprehension, readers employ a wide range of strategies, involving both the "conscious and unconscious use of various strategies" to understand a text (Johnston, 1983). In this paper, this conscious and unconscious use is

referred to as reading strategies awareness, which is determined by both the students' familiarity with reading comprehension strategies and the frequency of their use.

#### *2.7.3 Cognitive Strategies*

Cognitive strategies involve the learner's direct interaction with the text and include "recognizing, using topics, guessing from the text, using dictionary, writing down, imagery, activating background information, summarizing, using linguistic clues, using text markers, skipping the difficult parts and repeating words or phrases" (Ahmadi et al., 2013, p. 236).

#### *2.7.4 Metacognitive Strategies*

According to Anderson (2002), metacognitive strategies involve the reader's ability to plan, monitor, regulate, question, and reflect while reading. They refer to the reader's awareness and control of their cognitive processes, as well as their desires and motivations, during the process of understanding a text (Flavell, 1976, 1981).

#### *2.7.5 Explicit Instruction of Strategies*

Explicit instruction refers to the deliberate teaching of specific strategies by first defining them, modeling their use, and providing guided practice with feedback, followed by opportunities for independent application. As Winograd and Hare (1988) explain, it involves clarifying what the strategy is, why it should be taught, how it is used, when and where it is applicable, and how to assess its effectiveness.

#### *2.7.6 Think-Aloud Protocol*

The think-aloud protocol is defined by Ness (2014) as "the reader's ability to verbally report one's thinking while reading a text and trying to understand its meaning" (p. 3). This approach enables learners to monitor their cognitive processes by applying reading strategies to enhance comprehension. Moreover, it supports the development of metacognitive awareness, helping readers understand and regulate the processes involved in comprehension (Jackson, 2016, p. 18).

## 3. Methodology

### *3.1 Introduction*

This research is a descriptive study employing mixed methods, incorporating both quantitative and qualitative approaches. It is divided into two parts: an exploratory phase and a quasi-experimental phase. Quantitative data were collected using TOEFL tests (pre- and post-tests), the Survey of Reading Strategies (Mokhtari & Sheorey, 2002), and a demographic survey that gathered basic participant information, including their awareness of reading comprehension strategies. Qualitative data were gathered through a questionnaire completed by the professors who taught the standard reading comprehension syllabus to the S1 students, who served as the study's sample population during the 2021–2022 academic year at the Faculty of Languages, Letters, and Arts in Kenitra.

### *3.2 Research Sample*

The total number of participants in this study is approximately 283 first-semester (S1) students enrolled in the English Studies program at the Faculty of Languages, Letters, and Arts, Ibn Tofail University, Kenitra. This sample, which includes both the experimental group and the control group, was randomly selected, based on the professors' willingness to dedicate two of their classes to data collection.

Unfortunately, due to the widespread COVID-19 pandemic and the associated serious health risks during the data collection period, it was initially decided to limit the ideal target population for this research to S1 students from both Ibn Tofail University in Kenitra and Mohammed V University in Rabat. However, the participation of S1 students from Mohammed V University was later cancelled, given concerns that all universities might close again due to the ongoing spread of the pandemic, as well as the logistical challenges that would arise from attempting to collect data from students at both universities during the same period.

Moreover, the choice of the S1 level is based on the complexity of the study and the need to control any intervening variables that might arise from the extensive input students could accumulate if the study were to cover more than one semester. Exposure to varied EFL learning experiences, particularly in reading comprehension, could affect the results. Therefore, it was deemed preferable to restrict the scope of the sample to a single educational level and, by extension, one basic semester. In addition, the administration of the TOEFL tests and the SORS took place during the third academic session of the S1 Reading course and shortly before the final two sessions of the same course—specifically, prior to the final winter exams of the 2021–2022 academic year.

Prior to this, seven professors of the Reading Comprehension course were briefed on the objectives of the study, the instruments used for data collection, and were invited to complete a questionnaire regarding their knowledge of and approach to teaching reading comprehension strategies. They were also asked how they might integrate such strategies into their own classes.

However, only three professors agreed to participate in the study and completed the questionnaire—specifically, those whose students constituted the entire sample population under investigation.

To encourage participation in the study, the professors had previously informed their students about the purpose of my visit and the significance of contributing to this academic research. Most students willingly agreed to take part in the survey, aiming to assess their knowledge of reading comprehension strategies and explore how they could autonomously and integratively employ a wide range of these strategies to achieve effective comprehension of texts.

At the beginning of the study, the experimental group consisted of fifty-seven participants; however, only thirty-eight completed the full thirty hours of treatment. These thirty-eight students were then divided into two sub-groups, with a maximum of sixteen participants per class. One sub-group attended morning sessions from 10:00 a.m. to 12:00 p.m., while the other attended afternoon sessions from 2:30 p.m. to 4:30 p.m. Additionally, an extra daily session was held from 5:00 p.m. to 7:00 p.m. for students who missed one of their regular classes, allowing them to keep pace with their group. Members of both sub-groups were permitted to attend each other's classes on the condition that they did not receive instruction on the same strategy twice. To ensure this, an attendance sheet was maintained for each strategy instruction and checked before the start of each class to prevent duplicate attendance.

The flexibility described above in delivering reading strategy instruction to the experimental group was intentionally adopted to encourage regular attendance and minimize dropout rates. Additionally, this flexibility aimed to maintain control over the experimental group within a limited timeframe, given the uncertain pandemic situation and rumors of a possible lockdown. Indeed, the time constraints imposed by the unstable pandemic conditions posed a significant challenge to the progress of the treatment and the overall data collection process for this study.

### *3.3 Data Collecting Instruments*

This study consists of two main parts: first, the evaluation of reading comprehension strategies use and awareness; and second, the instruction of these strategies. It primarily relies on quantitative statistical analysis of reading strategy usage and qualitative analysis of professors' reading comprehension courses based on a specially developed questionnaire. Data were collected through a student survey, which included the Survey of Reading Strategies (Mokhtari & Sheorey, 2002) along with a brief questionnaire on participants' personal information and familiarity with reading comprehension strategies. Additional data collection tools included a questionnaire for professors and TOEFL tests administered as pre-tests and post-tests to assess the participants' reading comprehension performance and proficiency.

#### *3.3.1 Students' Survey*

As mentioned above, the students' survey consists of two parts. The first part includes eight questions about each participant's personal information, academic level, familiarity with the concept of reading comprehension strategies, and their willingness to join the experimental group. Participants could also optionally provide their phone number and email address to be contacted regarding the time and place of the treatment. This section also contains space for the researcher to record each participant's SORS score as well as their pre-test and post-test results.

The second part of the survey consists specifically of the Survey of Reading Strategies (SORS), adopted from Mokhtari and Sheorey (2002). Written permission was obtained from the authors to use the survey without any changes to its content or format. The SORS has been widely used by many researchers in the USA and various EFL/ESL contexts—including Hungary (Sheorey & Baboczku, 2008), Japan (Sheorey et al., 2008), Bahrain (Malcolm, 2009), Iran (Kamaran & Maltoon, 2012), and China (Pei, 2014)—to measure students' awareness and frequency of reading strategy use through 30 items related to academic reading comprehension.

#### *3.3.2 Professors' Questionnaire*

The professors' questionnaire consists of seven open-ended questions designed to explore three main aspects of teaching reading comprehension strategies in S1 classes: which strategies they teach, how they teach them, and why they choose to teach them.

#### *3.3.3 The Pre-Test and the Post-Test: TOEFL iBT Reading Comprehension Practice*

The TOEFL test was adopted in this research because of its broad recognition as a measure of general English proficiency, accepted worldwide by both American and non-American universities where English is the medium of instruction. Accordingly, the reading comprehension texts used in the pre-test and post-test were selected from TOEFL preparation materials. The purpose is to examine whether the regular reading comprehension classes and the treatment have differing effects on S1 students' reading proficiency.

Furthermore, due to the limited proficiency level of S1 students, and unlike the pilot study where the pre- and post-tests consisted of four or five reading passages, the main study's pre-test and post-test each include only one reading passage. However, to avoid bias and control for text-theme effects, three different versions of the reading passage were prepared and administered across different classes. Each participant reads one version and answers the corresponding comprehension questions. To minimize cheating, students seated next to each other receive different texts. Each passage is followed by thirteen comprehension questions, which include multiple-choice, matching, and sequencing tasks. These questions assess various skills such as understanding vocabulary (synonyms and antonyms), scanning for specific information, identifying main ideas and gist, recognizing the writer's purpose and text organization, making inferences, paraphrasing, and summarizing.

Additionally, it is worth highlighting that both the pre-test and post-test include measures aligned with the strategies taught to the experimental group. These measures cover skills such as identifying main ideas in long and short passages (both implicit and explicit), summary writing, scanning, skimming, inferring, and recalling, among others. This alignment ensures coherence between the strategies instructed and those assessed in the tests.

### *3.4 Data Collection Procedure for the Entire Sample*

The collection of the data started on the first of October 2021, by visiting three classes of S1, whose students took the pre-test and filled in the students' Survey that includes the Survey of Reading Strategies created by Mokhtari and Sheorey (2002). Before they did so, the researcher talked to them about his project and they were informed that if they were interested in having reading comprehension classes for free, they shall mention it in the survey cover and provide him with their phone numbers and emails. Besides, the collection of data was done for a semester post -long period in the Autumn Term 2021, including the two sessions allotted to the pre-test,–test, the questionnaires administered to the students and teachers, and also the ten sessions of the instruction of reading comprehension strategies devoted to the experimental group.

### *3.5 Data Collection Procedure for the Experimental Group and the Control Group*

The second part of this research is experimental, involving the random assignment of participants to specific conditions or treatments that will be evaluated later. The participants who agreed to receive the treatment were drawn from the same classes as the control group students. The experimental group students were randomly selected from three academic classes, as previously mentioned.

### *3.6 The Treatment*

In the treatment classes, the researcher demonstrated to students how to plan and select appropriate cognitive strategies to understand a text, while also monitoring and orchestrating the use of these strategies to regulate their application, address problems of misunderstanding, and ultimately achieve better comprehension. Additionally, students were encouraged to evaluate their use of strategies to assess and reflect on their understanding, allowing them to adjust and adopt the most effective strategies to grasp the correct meaning.

In summary, the combined use of five key metacognitive strategies—planning, selecting, monitoring, orchestrating, and evaluating—alongside cognitive strategies, supports learners in achieving efficient reading comprehension of any given text.

The treatment lasted for a total of twenty-six hours, with twenty hours dedicated to teaching ten cognitive reading comprehension strategies alongside five metacognitive strategies, allotting two hours to each cognitive strategy. Each class focused on instructing one cognitive strategy while referencing previously taught strategies to encourage readers to apply the five metacognitive strategies implicitly. In this way, readers are prompted to reflect on their actions and select the most appropriate strategy or combination of strategies during subsequent readings. Additionally, six hours were reserved for comprehensive practice of all the reading comprehension strategies together, helping learners to effectively adopt the most suitable strategies.

In addition to the twenty-six hours dedicated to the simultaneous practice of the ten cognitive and five metacognitive reading strategies, the participants attended four additional hours during which the researcher explained the purpose of the study, despite prior explanations by the professors. This time also included the administration of both the pre- and post-tests, as well as the completion of the Survey of Reading Strategies (SORS).

#### *3.6.1 Think-Aloud Protocol*

The "think-aloud protocol" is a teaching method that involves readers verbalizing their thoughts while engaging in a reading comprehension task. This approach helps instructors understand how effectively readers process and interact with the information in a text. Additionally, it enables researchers to gain insight into the challenges readers face when trying to comprehend a passage.

In this study, the think-aloud protocol is used to teach both cognitive and metacognitive reading strategies, complementing the results obtained from the survey mentioned above. Specifically, before implementing this treatment, the experimental group that participated in the survey received instruction using the think-aloud protocol to help raise their awareness of effective ways to apply these strategies. This approach is incorporated into both Phase 1 and Phase 2 of each lesson plan for teaching cognitive and metacognitive strategies. These two phases rely on the instructor's modeling of each strategy through the think-aloud method, followed by guided practice with the students, structured around the following two main steps:

#### *3.6.1.1 Demonstration*

The teacher should read the material aloud in front of the students while verbalizing their thoughts and the actions they are taking during the reading process, as outlined in Phase 2 of each strategy lesson plan template.

#### *3.6.1.2 Training Sessions*

Students should be given different texts to practice reading comprehension strategies using the think-aloud method. During these training sessions, the teacher may interrupt the students while they are performing the task to ask them to verbalize what they are doing or thinking about during the reading, as outlined in Phase 3 of each lesson plan.

Moreover, while teaching reading strategies using the think-aloud protocol, students in the experimental group were given adequate time to practice these strategies through the protocol to achieve better mastery. The instruction was guided by ten lesson plans designed as a training guide for the reading comprehension instructor. To ensure effective teaching, the researcher personally conducted the reading strategy lessons for the experimental group. Consequently, the experimental group received guided practice, modeling, and explicit instruction, whereas the control group did not receive any reading strategy training or explicit instruction.

The "think-aloud protocol" was adopted to facilitate the implementation of the ten lessons, incorporating the five metacognitive strategies outlined by Anderson (2002), as detailed below in *The Planning Structure of Ten Cognitive Strategies and Five Metacognitive Strategies for Better Comprehension*.

Additionally, the planning structure used to develop the lesson plans for the ten reading comprehension strategies is based on two models: the template for teaching cognitive strategies proposed by McEwan (2007), and the five metacognitive reading strategies outlined by Anderson (2002). These metacognitive strategies include Preparing and Planning for Learning, Selecting and Using Learning Strategies, Monitoring, Orchestrating Various Strategies, and Evaluating (see pages 73–75). In the treatment, these five metacognitive strategies were integrated with the cognitive strategies to form the Ten Rs Commandments, which are presented later.

Before presenting the integrative method of combining cognitive and metacognitive strategies, it is important to introduce readers to the explicit instruction of the ten reading comprehension strategies, whose lesson plans are described below. However, these lesson plans are incomplete without the guidance of the Ten Rs Commandments, which incorporate the five metacognitive strategies suggested by Anderson (2002). For a clearer understanding of the application of each strategy, sample activities are provided in the appendices section and referenced by page numbers within each lesson plan.

Each lesson follows four main phases, detailed in the ten templates below. The first phase focuses on defining, explaining, describing, and regulating the strategy through specific tools. Notably, participants in the experimental group contributed to this phase by suggesting ways to control and regulate the strategy using particular skills. The second phase involves the instructor modeling the use of the strategy through the Think-Aloud Protocol. The third phase centers on guided practice using easy-to-read texts. Finally, the fourth phase consists of self-practice with longer texts, beginning in the classroom under instructor supervision, continuing at home, and concluding in the classroom with collective correction of the reading tasks by the teachers.

### *3.7 Explicit and Integrated Teaching of Reading Strategies Using the 10 Rs Commandments and Think-Aloud Protocol: Combining Cognitive and Metacognitive Approaches*

The treatment was conducted using the think-aloud method to provide learners with a real model of reading comprehension. For example, the teacher might say: "I look at the text in front of me and plan how to understand it. First, I examine the title and predict the meaning of the text based on the title and accompanying pictures. I activate my prior knowledge about the topic, which helps me confirm or reject my predictions. Then, I read all the questions to get a better sense of what the text is about. Next, I read the first and last sentences to identify the main idea. I compare this understanding with the predictions I made earlier and decide to reject my initial guess. After that, I quickly read the entire text and scan for sentences that support my revised understanding. I also read the first and last paragraphs to capture

their gist and verify if this aligns with my earlier conclusions. For each paragraph, I read the first and last sentences to guess the main idea, then read the full paragraph to confirm it. I visualize the content by transforming paragraphs into images and then into a graphic organizer. Throughout this process, I take notes and paraphrase the content, extracting the gist of each paragraph. Finally, I gather all the paragraph summaries to create a summary of the entire text."

The think-aloud method was used to model the teaching and learning of both cognitive and metacognitive strategies for the treatment group, guided by the 10 Rs Commandments to regulate the practice of reading comprehension strategies. These Ten (10) Rs Commandments focus on planning, controlling, monitoring, selecting, evaluating, predicting, confirming, rejecting, and rectifying strategies. Their application is illustrated in Figure 1 below.

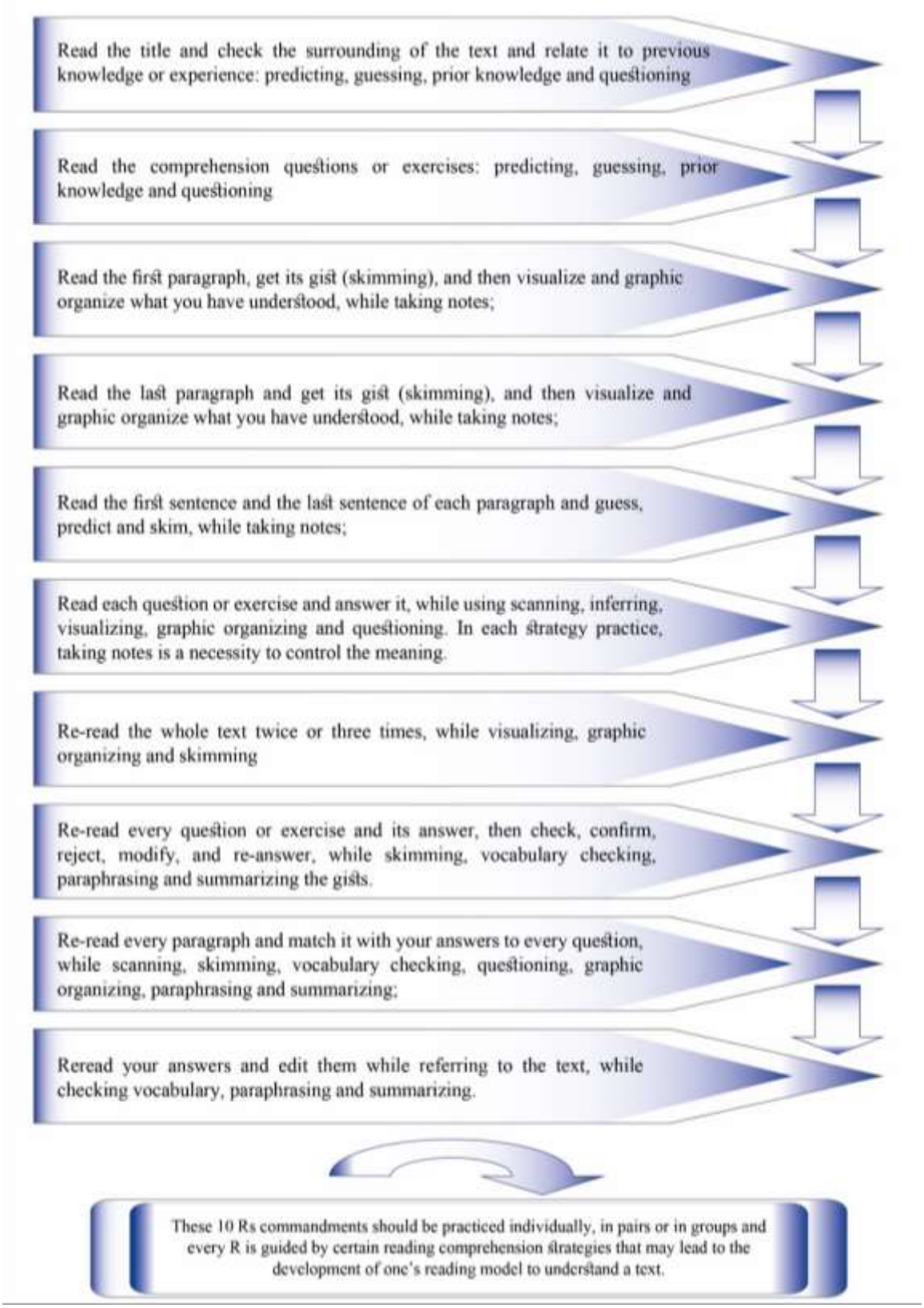


Figure 1 The Ten Rs Commandments of RCS

## 4. Findings and Discussions

### *4.1 Introduction*

This research paper aims to make a significant contribution to the field of reading comprehension strategies. Its main objectives are: first, to assess S1 students' awareness of reading comprehension strategies by examining their familiarity with and frequency of use; second, to determine whether a high level of awareness of these strategies positively influences students' success in reading comprehension tasks; third, to evaluate the effectiveness of explicit and integrated instruction of both cognitive and metacognitive reading comprehension strategies in fostering successful and autonomous readers; and fourth, to develop an effective model for teaching and learning reading comprehension strategies that can be adopted by both instructors and learners to enhance understanding of English texts.

Accordingly, this section of the chapter presents the findings of the study along with their discussions. The results are primarily drawn from data collected through the students' Survey, the professors' questionnaire, and the pre- and post-tests.

Keeping this in mind, it is important to note that the entire sample of participants in this study completed the students' survey. This survey includes the Survey of Reading Strategies (SORS) developed by Mokhtari and Sheorey (2002), which measures students' frequency of using reading strategies while attempting to comprehend texts, along with a few additional questions assessing their familiarity with these strategies. Furthermore, the interpretation of the students' survey results is analyzed in light of data gathered from the professors' questionnaire. This questionnaire aims to determine the professors' awareness of reading strategies and the importance they assign to teaching them, as well as to assess whether the instruction of these strategies is carried out appropriately and effectively to support S1 English students in becoming successful readers.

The findings of this study will be presented in four main parts. The first part is exploratory, focusing on a sample of 189 participants who attended the regular curriculum without receiving any treatment. The second part compares the experimental and control groups, comprising approximately 76 participants. The third part provides a qualitative analysis of the professors' questionnaires, assessing their awareness of reading strategies and the extent to which they model these strategies appropriately within the S1 reading comprehension classes outlined in the course syllabus. Finally, the fourth section discusses the overall research results, highlighting pedagogical implications, limitations, and recommendations.

### *4.2 Exploratory Study: Proficiency and Reading Comprehension Strategies Awareness.*

In this first part of the data analysis, the target population consists of approximately 189 participants who attended regular reading comprehension classes without any special treatment. The aim of this exploratory phase is to measure the students' awareness of reading strategies as they attempt to understand comprehension texts.

#### *4.2.1 Pre-Test and Post-Test Scores*

First of all, by examining Figure 2, the blue line shows a steady downward curve. This indicates that the students' average scores decrease, despite having completed 30 hours of S1 reading comprehension courses.

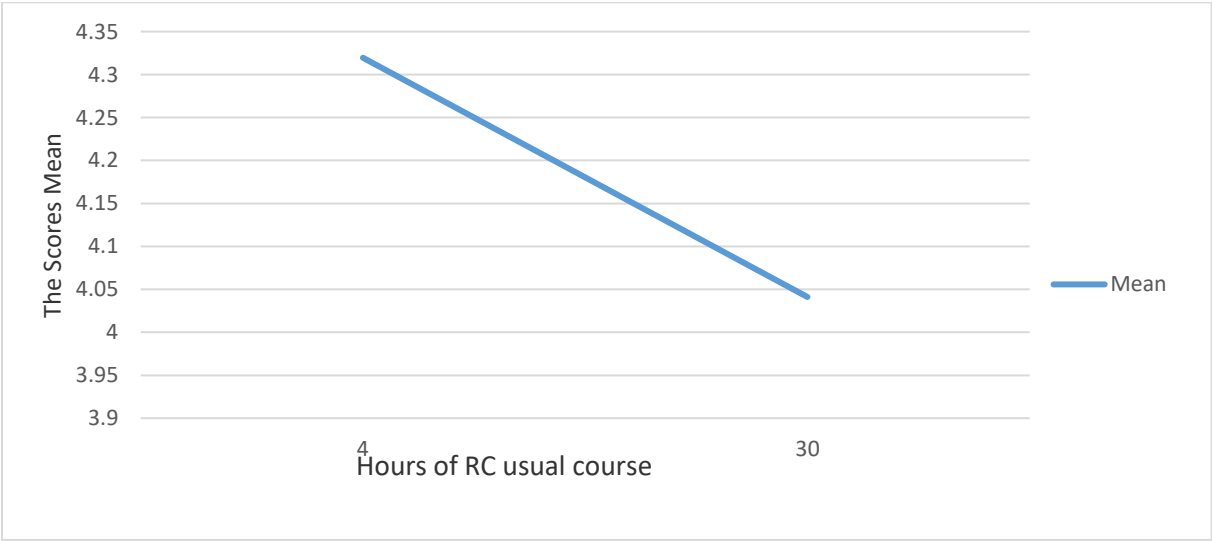


Figure 2 The Scores of the Pre-test and Post-test

Referring to Table 1, the comparison of mean scores between the pre-test and post-test shows that the pre-test mean was 4.31, while the post-test mean dropped to 4.04. This provides statistical evidence that the participants did not improve their reading comprehension proficiency. In fact, their post-test scores decreased, indicating a decline in their performance on reading comprehension tasks.

Table 1 Paired Samples Statistics for Pre-test and Post-test

| | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|
| Pre-test Score | 4.3196 | 158 | 2.92487 | .23269 |
| Post-test Score | 4.0411 | 158 | 2.68753 | .21381 |

These results are further supported by the data in Table 2, which shows a t-test value of 0.313, indicating no statistically significant difference between the pre-test and post-test scores. In conclusion, it is clear that the reading comprehension courses provided to S1 students did not lead to an improvement in their performance on reading comprehension tasks.

Table 2 Paired Samples T-Test for Pre-test and Post-test

| | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| -Pre-test Score/ -Post-test Score | .27848 | 3.46111 | .27535 | -.26539 | .82235 | 1.011 | 157 | .313 |

Accordingly, the results presented in Figure 2 and Tables 1 and 2 indicate that the reading performance of S1 students at the beginning of their S1 classes is higher than the scores they achieved at the end of the course. This slight decline of -0.27 may be attributed to the students' lack of benefit from the reading comprehension instruction provided during their S1 classes.

### *4.2.2 Reading Strategies Frequency*

While Figure 2 and Tables 1 and 2 show that students' reading performance did not improve after attending the reading comprehension classes, the upward-trending blue line in Figure 3 indicates that these students increased their use of reading comprehension strategies compared to when they first started the S1 reading comprehension courses.

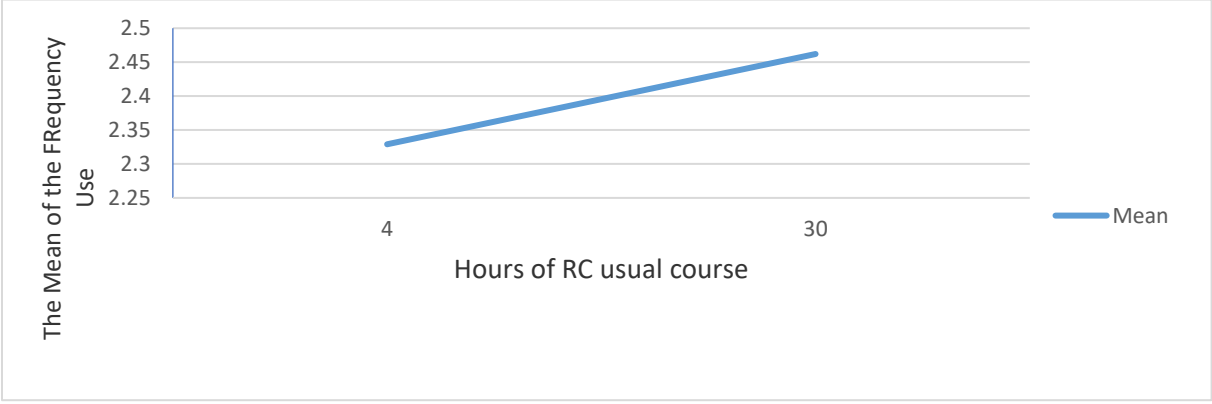


Figure 3 The Frequency Use of RCS during the Pre-test and Post-test

Moreover, Table 3 shows that the frequency of reading comprehension strategy use was 2.32 during the pre-test and slightly increased to 2.46 during the post-test.

Table 3 Paired Samples Statistics for the Frequency Use of Reading

| | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|
| While Pre-test R C S Freq Use | 2.329 | 158 | .6429 | .0511 |
| While Post-test R C S Freq Use | 2.462 | 158 | .5602 | .0446 |

Thus, the results presented in Figure 3 and Table 3 provide clear evidence that the use of reading comprehension strategies has slightly increased, with the mean score rising by approximately 0.14. However, Table 4 challenges this interpretation, as the t-test value of 0.022 indicates that the difference in frequency of reading comprehension strategy use between the pre-test and post-test is not statistically significant.

Table 4 Paired Samples T-Test Statistics for The Frequency Use of Reading Comprehension Strategies

| | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| While Pre-test R C S Freq Use<br>While Post-test R C S Freq Use | -.1329 | .7236 | .0576 | -.2466 | -.0192 | -2.309 | 157 | .022 |

In brief, Figure 3 and Tables 3 and 4 reveal disappointing results regarding the S1 reading classes. Although the students' frequency of reading comprehension strategy use showed a slight increase, there is no statistically significant evidence to confirm a substantial improvement by the end of the S1 classes. In other words, the regular reading comprehension courses provided to S1 students have failed to significantly enhance their frequent use of these strategies, despite thirty hours of academic reading instruction in English.

### *4.2.3 Familiarity with Reading Comprehension Strategies*

In addition, the upward blue line in Figure 4 indicates that S1 students have become more familiar with reading comprehension strategies compared to when they first began attending regular S1 reading comprehension courses.

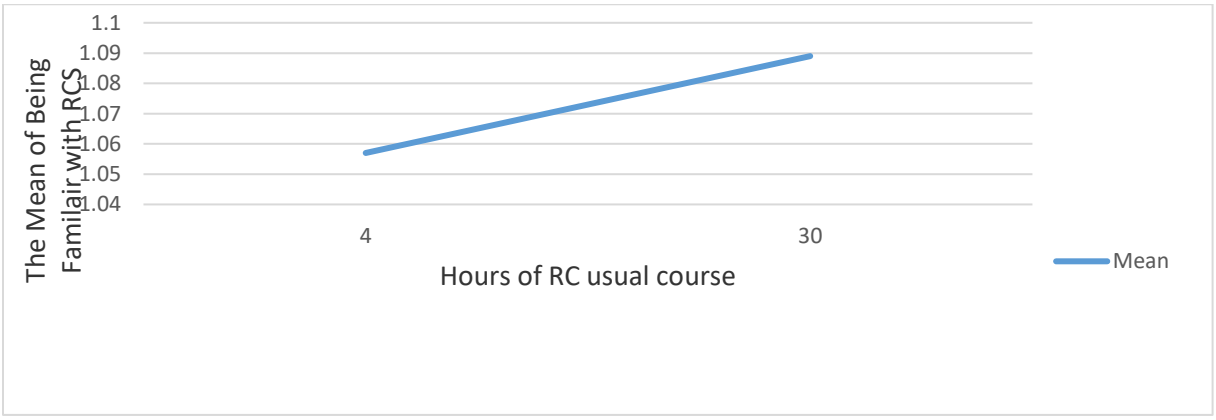


Figure 4 The Frequency Use of RCS during the Pre-test and Post-test

Correspondingly, Table 5 shows that the students' mean score for familiarity with reading comprehension strategies was 1.057 in the pre-test, increasing to 1.089 in the post-test.

Table 5 Paired Samples Statistics for Being Familiar with Reading Comprehension Strategies After Taking Both the Pre-test and Post-test

| | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|
| Pre-test Familiar with RCS Term | 1.057 | 158 | .2325 | .0185 |
| Post-test Familiar with RCS Term | 1.089 | 158 | .2851 | .0227 |

However, this difference in frequency appears too slight and statistically non-significant, as confirmed by the T-test value (.096) shown in Table 6 below.

Table 6 Paired Samples T-Test for Being Familiar with Reading Comprehension Strategies after Taking Both the Pre-test and Post-test

| | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| Pre-test Familiar with RCS Term Post-test Familiar with RCS Term | -.0316 | .2373 | .0189 | -.0689 | .0056 | -1.676 | 157 | .096 |

Therefore, the statistical results in Figure 4 and Tables 5 and 6 provide clear evidence that S1 students did not benefit from the regular reading courses, which were intended to enhance their familiarity with reading comprehension strategies.

A detailed analysis of Figures 3 and 4, along with Tables 3–6, shows that S1 students maintained almost the same frequency of strategy use and demonstrated no significant improvement in their familiarity with these strategies. Moreover, their post-test scores did not improve compared with their pre-test scores. In summary, the reading comprehension courses offered to S1 students fail to provide the necessary knowledge and tools to increase their awareness of reading comprehension strategies beyond the level they had before entering university. This conclusion is reinforced by statistical evidence indicating that neither of the independent variables—familiarity nor frequency—showed significant improvement.

In brief, the main finding from this part of the research is that the reading comprehension syllabus fails to help S1 students improve their English proficiency or enhance their awareness of reading comprehension strategies, which remains weak. Therefore, the following analysis will examine whether awareness of these strategies affects students' performance in reading comprehension tasks, considering both frequency and familiarity.

### *4.2.4 Correlation: Tests Scores, Familiarity and Frequency Use of Reading Comprehension Strategies*

As stated by Mokhtari and Reichard (2002), students' awareness of reading comprehension strategies positively influences their proficiency in reading comprehension. Accordingly, this research also seeks to test the hypothesis that such awareness affects students' performance in reading comprehension tasks. To this end, the study measures awareness through two components: familiarity with and frequency of using reading comprehension strategies. As shown in Table 7, the correlation between the frequency of strategy use and pre-test scores is not statistically significant, with a p-value of 0.071 (> 0.05).

Table 7 Correlation between Pre-test Scores and Frequency Use of Reading Comprehension Strategies

| | | Pre-test Score | While Pre-test R C S Freq Use |
|---|---|---|---|
| Pre-test Score | Pearson Correlation | 1 | .132 |
| | Sig. (2-tailed) | | .071 |
| | N | 189 | 189 |
| While Pre-test R C S Freq Use | Pearson Correlation | .132 | 1 |
| | Sig. (2-tailed) | .071 | |
| | N | 189 | 189 |

Moreover, the p-value of 0.597 (> 0.05) shown in Table 8 indicates that there is no significant correlation between pre-test scores and S1 students' familiarity with reading comprehension strategies.

Table 8 Correlation between Pre-test Scores and Familiarity with Reading Comprehension Strategies

| | | Pre-test Score | Pre-test Familiar with RCS Term |
|---|---|---|---|
| Pre-test Score | Pearson Correlation | 1 | -.039 |
| | Sig. (2-tailed) | | .597 |
| | N | 189 | 189 |
| Pre-test Familiar with RCS Term | Pearson Correlation | -.039 | 1 |
| | Sig. (2-tailed) | .597 | |
| | N | 189 | 189 |

Correspondingly, Table 9 indicates that the correlation between S1 students' post-test scores and the frequency of using reading comprehension strategies is also non-significant, with a p-value of 0.673 (> 0.05).

Table 9 Correlation between Post-test Scores and Frequency use of Reading Comprehension Strategies

| | | Post test score | While Post-test R C S Freq Use |
|---|---|---|---|
| Post-test Score | Pearson Correlation | 1 | .034 |
| | Sig. (2-tailed) | | .673 |
| | N | 158 | 158 |
| While Post-test R C S Freq Use | Pearson Correlation | .034 | 1 |
| | Sig. (2-tailed) | .673 | |
| | N | 158 | 158 |

Similarly, Table 10 shows that the correlation between students' post-test scores and their familiarity with reading comprehension strategies is not significant, with a p-value of 0.965 (> 0.05).

Table 10 Correlation between Post-test Scores and Familiarity with Reading Comprehension Strategies

| | | Post-test Score | Post-test Familiar with RCS Term |
|---|---|---|---|
| Post-test Score | Pearson Correlation | 1 | .004 |
| | Sig. (2-tailed) | | .965 |
| | N | 158 | 158 |
| Post-test Familiar with RCS term | Pearson Correlation | .004 | 1 |
| | Sig. (2-tailed) | .965 | |
| | N | 158 | 158 |

To conclude, the results presented in Tables 7, 8, 9, and 10 indicate no significant correlation between pre-test scores and S1 students' familiarity with or frequency of using reading comprehension strategies, nor between post-test scores and these variables. Therefore, changes in students' awareness of reading comprehension strategies do not appear to affect their performance in reading comprehension tasks. The lack of correlation suggests that S1 students have not benefited from any direct or explicit instruction on these strategies. However, the upcoming analysis of the professors' questionnaire (IV-2) will confirm or refute whether students have gained from practicing certain, possibly limited, reading strategies. In other words, inadequate and inappropriate instruction of reading comprehension strategies is a primary factor contributing to the failure to enhance S1 students' awareness and proficiency in reading comprehension.

### *4.3 The Experimental Group VS the Control Group*

After evaluating S1 students' awareness and proficiency levels before and after following the regular S1 reading comprehension syllabus, it has become evident that students need appropriate instruction in a variety of reading comprehension strategies. Therefore, this part of the analysis will examine data from an Experimental group that received explicit and integrated instruction in reading comprehension strategies, and a Control group that only attended the regular reading comprehension classes. The

analysis will focus on comparing SPSS-generated statistics for pre-test and post-test scores, as well as the mean levels of awareness of reading comprehension strategies, specifically familiarity and frequency of use.

### *4.3.1 Reading Comprehension Strategies Instruction: The Students' scores in the Pre-test and Post-test*

First of all, Figure 5 illustrates the change in mean pre-test and post-test scores for both the treatment and control groups. The blue line slopes downward, indicating that the control group's mean scores have decreased and that these students failed to improve their performance in reading comprehension tasks. In contrast, the orange line trends upward, showing that the treatment group's scores improved after receiving explicit and integrated instruction in reading comprehension strategies.

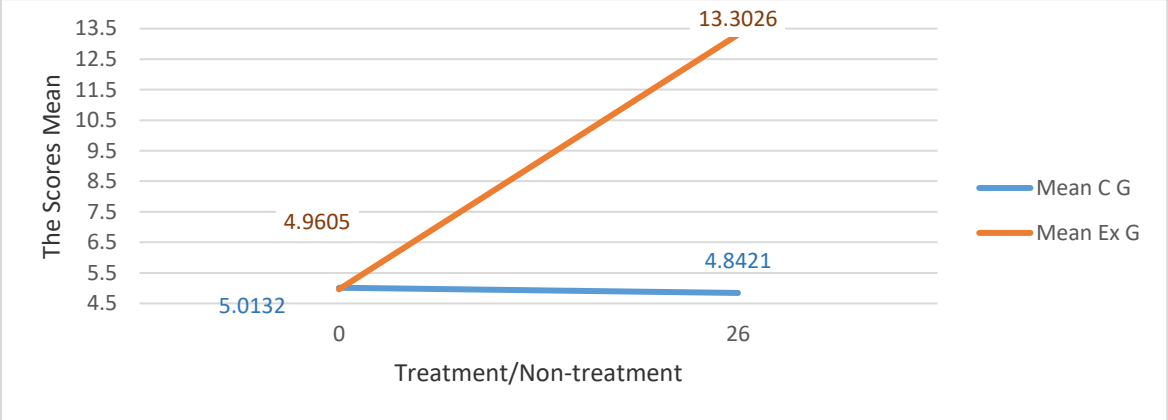


Figure 5 Pre-test and Post-test Scores of the EX.G and C.G

Accordingly, Table 11 compares the mean pre-test and post-test scores of both the treatment and control groups, confirming a significant difference in their performance on reading comprehension tasks.

Table 11 Paired Samples Statistics for Pre-test and Post-test: Ex.G/C.G

| Treatment and Control Groups | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Control Group | Pre-test Score | 5.0132 | 38 | 2.71006 | .43963 |
| | Post-test Score | 4.8421 | 38 | 2.28717 | .37103 |
| Experimental Group | Pre-test Score | 4.9605 | 38 | 2.26125 | .36682 |
| | Post-test Score | 13.3026 | 38 | 1.82157 | .29550 |

Regarding the control group, the mean pre-test score is 5.01, while the mean post-test score has unfortunately decreased to 4.84. This table thus provides statistical evidence of a difference between the pre-test and post-test results, indicating a decline in performance.

On the other hand, the mean results for the experimental group are statistically significant. Before the treatment, the pre-test mean was 4.96, which increased dramatically to 13.30 after the treatment, representing a substantial difference of 8.34, as shown in Table 11.

Moreover, there is a significant difference in post-test mean scores between the control group (4.84) and the experimental group (13.30). This difference of 8.46, highlighted in Figure 5 and Table 11, underscores the crucial role of the instructional reading strategies provided to the experimental group.

To confirm that the treatment yielded results, Table 12 presents the paired samples T-test comparing the pre-test and post-test means for both the control and treatment groups. The T-test result for the control group is 0.672, indicating no statistically significant difference between their pre-test and post-test scores. In contrast, the experimental group shows a statistically significant difference, with a T-test value of 0.000.

Table 12 Paired Samples T-Test for the Pre-test and Post-test: EX.G/C.G

| Treatment and Control Groups | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | | Lower | Upper | | | |
| Control Group | Pre-test Score / Post-test Score | .17105 | 2.47221 | .40105 | -.64154 | .98365 | .427 | 37 | .672 |
| Treatment Group | Pre-test Score/ Post-test Score | -8.34211 | 2.47448 | .40141 | -9.15545 | -7.52876 | -20.782 | 37 | .000 |

Thus, the results presented in Tables 11 and 12 indicate that the control and experimental groups were homogeneous at the start of the study, suggesting that both groups had comparable reading proficiency levels prior to instruction. Furthermore, the much higher post-test mean score of the experimental group (13.30), compared to the control group (4.84), demonstrates the positive effect of the treatment. This conclusion is strongly supported by the experimental group's T-test value of 0.000 for the difference between pre-test and post-test scores. The significant improvement can be attributed to the effectiveness of the explicit and integrated instruction in reading comprehension strategies received by the experimental group.

### *4.3.2 Reading Comprehension Strategies Instruction: Performance and Awareness*

In reading comprehension, readers employ a wide range of strategies, involving both the conscious and unconscious use of various techniques to understand a text (Johnston, 1983). In this study, this conscious and unconscious use is referred to as reading strategies awareness, which is measured by students' familiarity with reading comprehension strategies and their frequency of use. Thus, the key variables investigated in this part of the study are performance and reading strategies awareness, specifically focusing on frequency of use and familiarity.

#### *4.3.2.1 Reading Comprehension Strategies Instruction: Frequency Use and Performance*

The first aspect of reading strategies awareness investigated is the frequency of strategy use by S1 students.

Table 13 compares the frequency of reading comprehension strategy use in the pre-test for both the experimental and control groups, showing statistical evidence for the comparison. The mean frequency for the experimental group before treatment is 2.28, while the control group's mean is 2.44. This indicates that the experimental group had slightly lower proficiency in reading comprehension than the control group. However, this difference is very slight and statistically marginal when comparing the mean scores of both groups.

Table 13 Paired Samples Statistics for Frequency Use of

| Treatment and Control Groups | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Control Group | While Pre-test R C S Freq Use | 2.447 | 38 | .5549 | .0900 |
| | While Post-test R C S Freq Use | 2.342 | 38 | .5825 | .0945 |
| Treatment Group | While Pre-test R C S Freq Use | 2.289 | 38 | .6939 | .1126 |
| | While Post-test R C S Freq Use | 2.763 | 38 | .4309 | .0699 |

Additionally, Table 13 shows that the mean frequency of using reading comprehension strategies for the control group decreased slightly from 2.44 in the pre-test to 2.34 in the post-test. This result indicates that the control group's use of reading comprehension strategies did not improve significantly, which aligns with the fact that this group did not receive any specific training or instruction on these strategies. These findings support the earlier analysis in Part IV-1, which concluded that the S1 reading comprehension syllabus is ineffective in enabling students to use reading comprehension strategies more appropriately and efficiently. The syllabus content appears insufficient to improve the frequency with which S1 students use these strategies.

Moreover, Figure 6 clearly shows in orange that the mean frequency of reading strategy use for the experimental group increased from 2.28 to 2.76. In contrast, the control group's mean frequency, shown in blue, decreased from 2.44 to 2.34. This difference in mean scores provides statistical evidence of a significant change in the frequency of strategy use before and after the treatment, highlighting the importance of appropriate instruction in reading comprehension strategies.

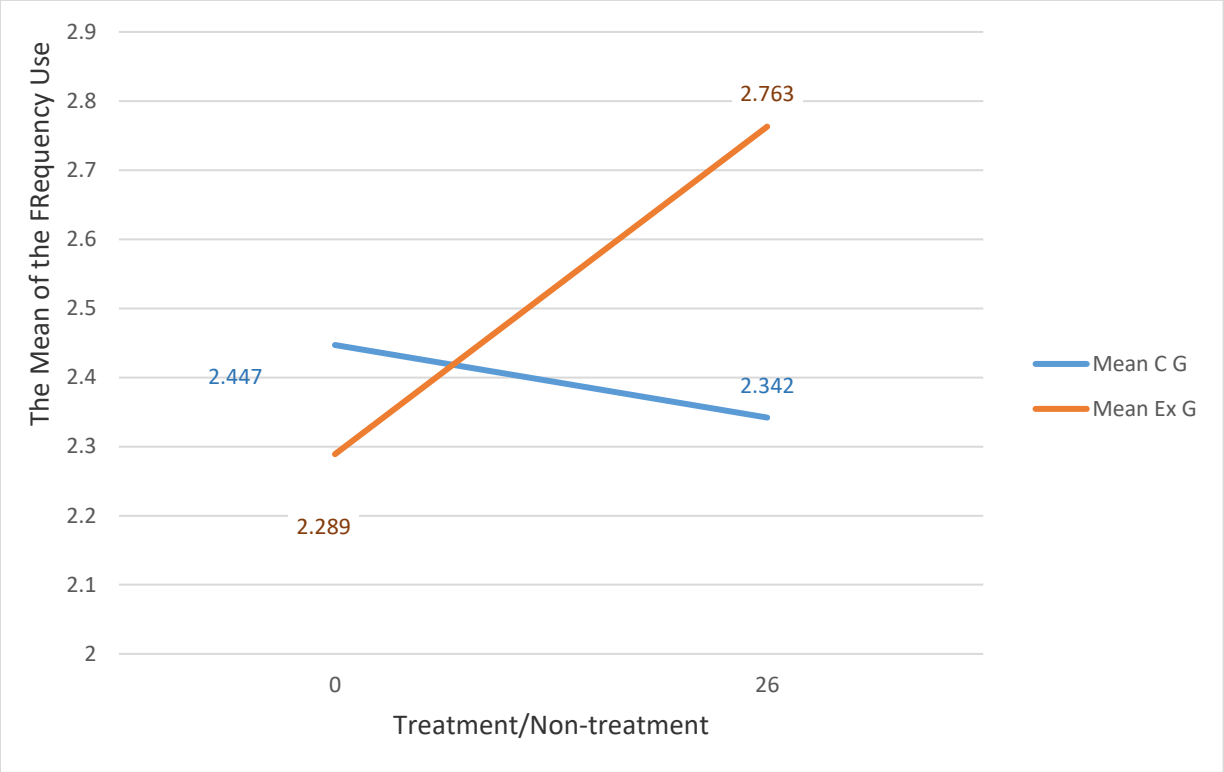


Figure 6 The Frequency Use of RCS by the C.G and EX.G during the Pre-Test and Post-Test

Hence, the explicit and integrated instruction of reading comprehension strategies has positively impacted S1 students, enabling them to use a variety of strategies while engaging with comprehension texts.

To further confirm the results presented in Tables 11, 12, and 13, Table 14 displays the T-test values that assess whether there is a statistically significant difference between the independent variable (frequency of strategy use) and the dependent variable (S1 students' TOEFL test scores).

Regarding the comparison of mean frequency use of reading comprehension strategies between the pre-test and post-test, the T-test value for the control group is 0.160, indicating no statistically significant difference in their frequency of strategy use.

In contrast, Table 14 shows that the experimental group's mean frequency increased from 2.28 in the pre-test to 2.76 in the post-test. This difference of 0.48 is statistically significant, as reflected by a T-test value of 0.000, demonstrating the effectiveness of the treatment.

Table 14 Paired Samples T-Test for Reading Strategies Frequency: EX.G/C.G

| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
|---|---|---|---|---|---|---|---|---|---|
| Control group | Pretest familiar with RCS / Post-test familiar with RCS | -.0263 | .2835 | .0460 | -.1195 | .0669 | -,572 | 37 | ,571 |
| Treatment group | Pretest familiar with RCS/ Post-test familiar with RCS | -.8158 | .3929 | .0637 | -.9449 | -.6867 | -12,80 | 37 | ,000 |

In brief, Tables 13 and 14 show that the control group's mean use of reading strategies was initially higher than that of the experimental group, suggesting that the two samples were not equal before the treatment.

However, the notable mean difference of 0.48 in frequency of reading comprehension strategy use during the post-test—2.76 for the experimental group versus 2.34 for the control group—along with the T-test value of 0.000, highlights the positive effect of the treatment. It is clear that the explicit and integrated instruction of reading comprehension strategies is an effective model for improving S1 students' competencies in reading comprehension tasks.

#### *4.3.2.2 Reading Comprehension Strategies Instruction: Familiarity and Performance*

The second aspect of reading comprehension strategies awareness is students' familiarity with these strategies. As shown in Table 15, the mean pre-test score for both the control and experimental groups is 1.13. This result indicates statistical evidence that the two groups were comparable in their familiarity with reading comprehension strategies before the treatment, as their pre-test means are identical.

Table 15 Paired Samples Statistics for being Familiar with Reading Comprehension Strategies while Taking both the Pre-Test and Post-Test and after Treatment: EX.G/C.G

| Treatment and Control Groups | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Control group | Pre-test Familiar with RCS | 1.132 | 38 | .3426 | .0556 |
| | Post-test Familiar with RCS | 1.158 | 38 | .3695 | .0599 |
| Treatment group | Pre-test Familiar with RCS | 1.132 | 38 | .3426 | .0556 |
| | Post-test Familiar with RCS | 1.947 | 38 | .2263 | .0367 |

Correspondingly, the mean familiarity score for the experimental group, as shown in Table 15, is statistically significant. Before the treatment, the mean familiarity with reading comprehension strategies was 1.13, which increased to 1.94 after the treatment, a substantial difference of 0.81.

Additionally, there is a significant difference between the control and experimental groups' post-test familiarity means—1.15 for the control group versus 1.94 for the experimental group—resulting in a difference of 0.79, as illustrated in Figure 7. The orange line in Figure 7 shows a strong upward trend, representing the experimental group's increased familiarity with reading strategies after 24 hours of explicit and integrated instruction. In contrast, the blue line for the control group shows only a slight, likely non-significant, upward trend.

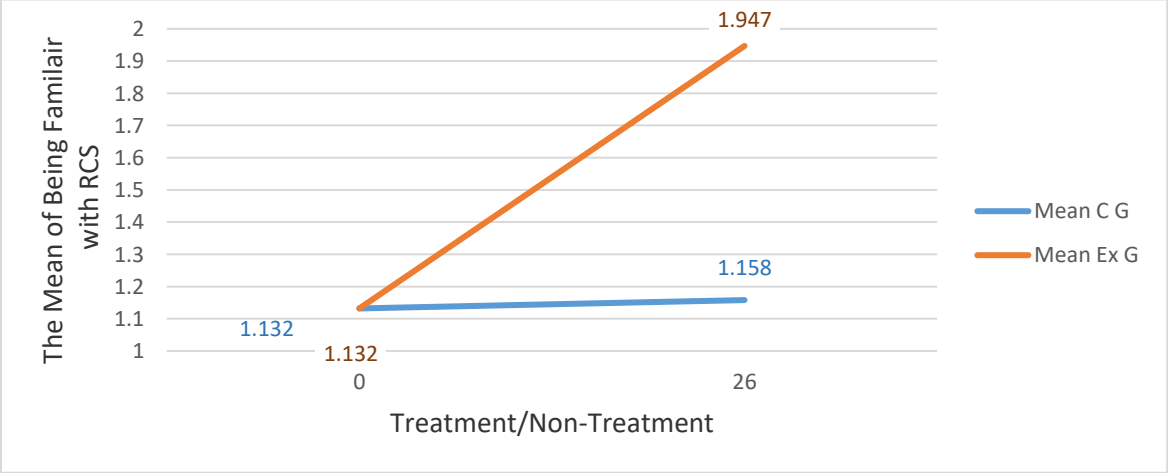


Figure 7 Being Familiar with RCS for both the C G and EX G during the Pre-Test and Post-Test

Furthermore, Table 16 compares the mean familiarity scores with reading comprehension strategies for both the control and experimental groups. The T-test result for the control group is 0.571, indicating no statistically significant difference between their pre-test and post-test scores. In contrast, the experimental group shows a statistically significant difference, with a T-test value of 0.000. This result highlights the positive effect of instruction on increasing S1 students' familiarity with reading strategies, as those who did not receive such treatment failed to improve their familiarity.

Table 16 Paired Samples T-Test for Being Familiar with Reading Comprehension Strategies while Taking the Pre-test and Post-test: EX.G/C.G

| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lower | Upper | | | |
| Control Group | Pre-test Familiar with RCS /Post-test Familiar with RCS | -.0263 | .2835 | .0460 | -.1195 | .0669 | -.572 | 37 | .571 |
| Treatment group | Pretest Familiar with RCS/Post-test Familiar with RCS | -.8158 | .3929 | .0637 | -.9449 | -.6867 | -12.801 | 37 | .000 |

Accordingly, Tables 15 and 16 indicate that the control and experimental groups were homogeneous, suggesting that both groups had equal familiarity with reading comprehension strategies before the treatment. However, the experimental group's familiarity increased significantly to 1.94 in the post-test, compared to a slight increase to 1.15 in the control group. The experimental group's T-test result of 0.000 clearly demonstrates the positive effect of the explicit and integrated instruction of reading comprehension strategies.

***4.3.3 Correlation between Familiarity and Frequency Use of Reading Comprehension Strategies with Tests Scores***

Since the p-value of 0.730 (> 0.05) reported in Table 17 is greater than 0.05, the correlation between the use of reading comprehension strategies and pre-test scores is not significant for the control group.

Similarly, for the experimental group, the correlation is also not significant, with a p-value of 0.384 (> 0.05). Therefore, the frequency of using reading comprehension strategies does not significantly correlate with pre-test scores in either group, confirming that a high frequency of strategy use does not necessarily lead to improved student performance in reading comprehension tasks.

Table 17 Correlation between Pre-test Scores and Frequency Use of Reading Comprehension Strategies: EX.G/C.G

| Treatment and Control Groups | | | Pre-test Score | While Pre-test R C S Freq Use |
|---|---|---|---|---|
| Control Group | Pre-test Score | Pearson Correlation | 1 | -.058 |
| | | Sig. (2-tailed) | | .730 |
| | | N | 38 | 38 |
| | While Pre-test R C S Freq Use | Pearson Correlation | -.058 | 1 |
| | | Sig. (2-tailed) | .730 | |
| | | N | 38 | 38 |
| Treatment Group | Pre-test Score | Pearson Correlation | 1 | .145 |
| | | Sig. (2-tailed) | | .384 |
| | | N | 38 | 38 |
| | While Pre-test R C S Freq Use | Pearson Correlation | .145 | 1 |
| | | Sig. (2-tailed) | .384 | |
| | | N | 38 | 38 |

Moreover, as shown in Table 18, the p-value of 0.390 (> 0.05) indicates no significant correlation between pre-test scores and the control group's familiarity with reading comprehension strategies. Similarly, the correlation between the experimental group's familiarity with these strategies and their pre-test scores is not significant, with a p-value of 0.505 (> 0.05).

Table 18 Correlation between Pre-test Scores and Familiarity with Reading Comprehension Strategies: EX.G/C.G

| Treatment and Control Groups | | | Pre-test Score | While Pre-test Familiar with RCS |
|---|---|---|---|---|
| Control Group | Pre-Test Score | Pearson Correlation | 1 | .144 |
| | | Sig. (2-tailed) | | .390 |
| | | N | 38 | 38 |
| | Pre-Test Familiar with RCS | Pearson Correlation | .144 | 1 |
| | | Sig. (2-tailed) | .390 | |
| | | N | 38 | 38 |
| Treatment Group | Pre-Test Score | Pearson Correlation | 1 | .112 |
| | | Sig. (2-tailed) | | .505 |
| | | N | 38 | 38 |
| | Pre-Test Familiar with RCS | Pearson Correlation | .112 | 1 |
| | | Sig. (2-tailed) | .505 | |
| | | N | 38 | 38 |

Similarly, Table 19 shows that the correlation between post-test scores and frequency of reading comprehension strategy use is non-significant for the control group, with a p-value of 0.677 (> 0.05). Likewise, the correlation for the experimental group is also non-significant, with a p-value of 0.648 (> 0.05).

Table 19 Correlation between post-test Scores and Frequency Use

| Treatment and Control Groups | | | Post-test Score | While Post-test R C S Freq Use |
|---|---|---|---|---|
| Control Group | Post-test Score | Pearson Correlation | 1 | -.070 |
| | | Sig. (2-tailed) | | .677 |
| | | N | 38 | 38 |
| | While Post-test R C S Freq Use | Pearson Correlation | -.070 | 1 |
| | | Sig. (2-tailed) | .677 | |
| | | N | 38 | 38 |
| Treatment Group | Post-test Score | Pearson Correlation | 1 | .077 |
| | | Sig. (2-tailed) | | .648 |
| | | N | 38 | 38 |
| | While Post-test R C S Freq Use | Pearson Correlation | .077 | 1 |
| | | Sig. (2-tailed) | .648 | |
| | | N | 38 | 38 |

Additionally, the correlation between the control group's post-test scores and their familiarity with reading comprehension strategies is not significant, with a p-value of 0.082 (> 0.05) as shown in Table 20. More importantly, however, the experimental group's results reveal a significant correlation. The SPSS correlation test indicates that the experimental group's familiarity with reading comprehension strategies during the post-test is highly significant. This finding demonstrates the effectiveness of the treatment, as their post-test scores correlate with increased familiarity with reading comprehension strategies.

Table 20 Correlation between Post-test Scores and Familiarity with Reading Comprehension Strategies: EX.G/C.G

| Treatment and Control Groups | | | Post-test Score | While Post-test Familiar with RCS |
|---|---|---|---|---|
| Control Group | Post test Score | Pearson Correlation | 1 | .286 |
| | | Sig. (2-tailed) | | .082 |
| | | N | 38 | 38 |
| | Post-test Familiar with RCS | Pearson Correlation | .286 | 1 |
| | | Sig. (2-tailed) | .082 | |
| | | N | 38 | 38 |
| Treatment Group | Post test Score | Pearson Correlation | 1 | .630** |
| | | Sig. (2-tailed) | | .000 |
| | | N | 38 | 38 |
| | Post-test Familiar with RCS | Pearson Correlation | .630** | 1 |
| | | Sig. (2-tailed) | .000 | |
| | | N | 38 | 38 |

**. Correlation is significant at the 0.01 level (2-tailed).

To conclude, the results presented in Tables 17, 18, 19, and 20 show no significant correlation between pre-test scores and learners' frequency of use or familiarity with reading comprehension strategies. However, post-test scores for the experimental group significantly correlate with their familiarity with these strategies, which they developed during the treatment phase. This suggests that students' performance in reading comprehension is influenced less by the frequency of strategy use and more by their familiarity with, and appropriate application of, these strategies—skills that were enhanced through explicit and integrated instruction in intensive treatment classes.

### *4.4 The Analysis of the Questionnaire Addressed to the Professors of S1 Reading Comprehension Course*

According to Clarke and Silberstein (1977), reading strategies help readers construct meaning through the interaction between background knowledge and strategy use. They strongly recommend teaching these strategies to help students engage effectively with texts and achieve comprehension. Therefore, this part of the research adopts a qualitative approach, focusing on analyzing professors' responses to a questionnaire designed to investigate how reading comprehension strategies are integrated into their syllabi.

The questionnaire was administered to five professors teaching reading comprehension to S1 students, but only three completed it. It consists of seven open-ended questions aimed at exploring whether university professors provide their S1 students with the necessary reading comprehension strategies to understand English texts, addressing the what, how, and why of instruction.

#### *4.4.1 The Presentation of the Professors' Answers*

Through the professors' responses, three key questions are addressed:

1. Are the reading comprehension professors aware of reading comprehension strategies?
2. Do they explicitly teach these strategies to S1 students?
3. Are they aware of the importance of these strategies for S1 students?

To address the objectives of the professors' questionnaire, Tables 21, 22, and 23 summarize the professors' responses, which are presented as follows:

Table 21 Professor I's Data Extraction and Analysis

| To Determine | Question Number | Content | Comment |
|---|---|---|---|
| WHAT | 1 | Knowledge of 4 strategies: skimming, scanning, visualizing, and summarizing | They are aware of certain reading comprehension strategies |
| | 2 | Teaching 3 important strategies: Questioning, summarizing and determining the main idea. | They are aware of certain reading comprehension strategies, but no description of the instruction of these strategies |
| | 5 | The text decides about what strategies to teach | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| HOW | 3 | -Telling to students that Reading strategies are helpful<br>-Just reading, explaining meaning, classifying ideas, paraphrasing and summarizing | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| | 4 | Students do not like reading a text more than once | No problems mentioned. No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| | 7 | Determining problems while reading: poor vocabulary and background knowledge. Students are not strategic. | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| WHY | 6 | Teaching reading strategies is important for other skills | Aware of the importance of teaching reading comprehension strategies, but not specified |

Table 22 Professor II's Data Extraction and Analysis

| To Determine | Question Number | Content | Comment |
|---|---|---|---|
| WHAT | 1 | Knowledge of some strategies: getting the essential information, finding the main idea, defining vocabulary in the text, finding an implied main idea, discovering the author's point of view. Other sub-skills as skimming, scanning, inferencing, and referencing. | They are aware of certain reading comprehension strategies |
| | 2 | Teaching all the above-mentioned ones. | They are aware of certain reading comprehension strategies, but no description of the instruction of these strategies |
| | 5 | The module description offered by the English department | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| HOW | 3 | - Asking questions, to talk, to answer the questions and correct them | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| | 4 | No enough time for practice | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| | 7 | No practice and disliking reading | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| WHY | 6 | Knowing how to read effectively, read various texts, critical thinking and facing no problems in reading | Aware of the importance of teaching reading comprehension strategies, but not specified |

Table 23 Professor III's Data Extraction and Analysis

| To Determine | Question Number | Content | Comment |
|---|---|---|---|
| | 1 | Knowledge of 5 strategies: monitoring, visualizing, questioning, summarizing and determining their importance | They are aware of certain reading comprehension strategies |
| | 2 | Teaching 3 important strategies: Questioning, summarizing and determining the main idea. | They are aware of certain reading comprehension strategies, but no description of the instruction of these strategies |
| | 5 | The text decides about what strategies to teach | They are aware of certain reading comprehension strategies, but no instruction of reading comprehension strategies |
| HOW | 3 | - Telling to students that Reading strategies are useful to understand<br>-Asking questions, looking for meaning, classifying ideas, paraphrasing and summarizing | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| | 4 | Students should not go to the questions, and they do not feel comfortable in reading a text many times | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| | 7 | Failure to read strategically because of poor vocabulary knowledge and inability to decode and use the background knowledge | No description of the instruction of reading comprehension strategies, so no instruction of these strategies |
| WHY | 6 | Reading strategies are important for S1 students. Helpful in other courses in English, especially in writing | Aware of the importance of teaching reading comprehension strategies, but not specified. |

***4.4.2 Findings: Professors' Questionnaire***

From Tables 21, 22, and 23, three key insights emerge. First, professors teaching the Reading Comprehension course are generally aware of reading comprehension strategies and recognize their importance for S1 students. However, they typically teach only two or three strategies, and do so neither explicitly nor metacognitively. As a result, students do not benefit from sufficient modeling or training to master these strategies. Even when students become aware of some strategies, they often neglect their proper use, focusing more on answering comprehension questions than on truly understanding the text.

In summary, as will be discussed below, the quantitative results are supported and explained by the qualitative findings presented in the comment columns of Tables 21, 22, and 23. The lack of explicit instruction in both cognitive and metacognitive reading strategies negatively impacts S1 students' awareness—in terms of familiarity and frequency of use—leading to their struggle to become skilled and independent readers. Conversely, S1 students who receive explicit instruction in these strategies—something often missing in regular academic reading comprehension classes—show improvements in proficiency, even if they are only familiar with and use a limited number of strategies, but use them appropriately.

### *4.5 Discussion*

#### *4.5.1 Introduction*

This research paper aims to contribute to the field of reading comprehension strategies. Its primary objective is to evaluate the awareness of S1 university students regarding reading comprehension strategies, focusing on their familiarity with and frequency of use of these strategies. Additionally, the study highlights the importance of explicit and integrative instruction of both cognitive and metacognitive reading comprehension strategies. Such instruction is expected to enhance students' awareness, increase their familiarity, and promote more frequent use of these strategies, ultimately leading to improved understanding of comprehension texts.

Accordingly, the findings of this study have answered the research questions, confirming some hypotheses while rejecting others. One key finding reveals that S1 English Studies students are not sufficiently exposed to reading comprehension strategies in their regular S1 reading classes. The current academic reading comprehension courses do not effectively enhance students' awareness of these strategies, as demonstrated by the statistical data presented earlier regarding their frequency of use and familiarity. Conversely, the explicit and integrated instruction of reading comprehension strategies significantly improved students' performance, increasing their familiarity with these strategies and enabling them to use them appropriately.

Correspondingly, most of the hypotheses in this study are confirmed. However, the hypothesis regarding the correlation between frequency of strategy use and reading performance is rejected, as the mere use of a maximum number of reading strategies does not necessarily lead to success in reading comprehension tasks. Instead, adopting an integrated approach that combines both cognitive and metacognitive strategies, along with enhancing students' familiarity with these strategies, is recommended to achieve better performance and mastery of reading comprehension skills.

##### *4.5.1.1 Reading Comprehension Strategies Awareness and Performance: The Experimental group vs the Control group*

The first exploratory part of this study examined the familiarity and frequency of use of reading comprehension strategies based on data from the pre-test and post-test, professors' questionnaire, and students' survey. The survey included the SORS, as well as a short questionnaire on familiarity with reading comprehension strategies and personal information.

The data in the first part of the study were analyzed using paired t-tests, correlation analysis, and qualitative analysis of the teachers' questionnaires. The findings reported in this paper indicate that the S1 students' scores did not improve by the end of the first semester, nor did their familiarity with or frequency of using reading comprehension strategies. Furthermore, the three teachers who responded to the questionnaire on reading comprehension strategy instruction were aware of these strategies and their importance; however, they only mentioned two or three strategies to their students and did not provide sufficient training through explicit or integrative instruction. This lack of comprehensive instruction negatively impacted the students' post-test performance and their awareness, as their frequency of use and familiarity with reading comprehension strategies remained the same or even declined compared to their pre-test results. In other words, insufficient exposure to explicit reading comprehension strategy instruction led to low post-test scores and a non-significant correlation between pre-test and post-test scores and RCS awareness. This result supports Nouri and Zerhouni's (2016) assertion that students in higher education often lack sufficient effective strategies to aid their reading processes.

In conclusion, as highlighted in the first and second parts of the analysis above, teaching reading comprehension strategies is essential because the conventional reading comprehension courses have proven ineffective, resulting in weak readers with low test scores. Moreover, these students are likely to encounter significant challenges throughout their university studies in the English department, especially as they face numerous subjects that require them to be strategic and proficient readers to succeed in their academic progress.

#### *4.5.2 The Instruction of Reading Comprehension Strategies, Frequency Use, Awareness and Performance*

From the above findings, it is evident that the instruction of reading comprehension strategies in S1—encompassing both cognitive and metacognitive strategies—has become a necessity in university English Studies programs. This issue will be examined in greater depth in the second part of this study.

According to Jarrar (2022), teaching "metacognitive skills at an early age will help in self-regulating learners' thoughts, a fact that will increase learners' academic achievements" (p. 44). This implies that teachers should equip students—such as the S1 learners in this study—with the ability to comprehend texts autonomously by knowing which reading strategies to use, as well as how and when to use them, in order to overcome difficulties encountered in reading comprehension. Likewise, English Studies students should be exposed to explicit and integrative instruction in reading comprehension strategies, combining modeling with the simultaneous use of both cognitive and metacognitive strategies, enabling them to effectively manage their comprehension of English texts.

This is supported by the findings of the second part of this research, which indicate a significant difference between the post-test scores of the control group and the experimental group. Specifically, the control group students showed no improvement in their post-test scores, whereas the experimental group—who received explicit and integrative instruction in both cognitive and metacognitive strategies—achieved significantly higher scores. These results underscore the importance of further investigating the effectiveness of teaching reading comprehension strategies both explicitly and metacognitively, as emphasized by El Aouri and Zerhouni (2017), who note that "metacognitive strategies are resorted to coordinate the learning process through organization, planning and regulation" (p. 65).

Furthermore, the statistical analysis from the t-test examining differences in participants' frequency of RCS use and their familiarity with these strategies shows that the control group's familiarity and usage did not improve by the time they took the post-test. In contrast, the experimental group, who benefited from explicit instruction in RCS, demonstrated greater development in both their familiarity and frequency of use. This suggests that teaching RCS helps S1 students enhance their knowledge and application of these strategies, ultimately enabling them to become more effective readers after mastering their appropriate use.

Moreover, the results of this study also show that the frequency of RCS use by the experimental group does not correlate with their post-test scores. Therefore, the hypothesis that "the more RCS students use, the higher they score in the post-test" is rejected. This can be explained by the findings in Table 30, which indicate a significant correlation between the experimental group's post-test scores and their familiarity with RCS. In other words, using a large number of strategies is not necessarily an indicator of high performance in reading comprehension tasks. To become good readers, students must first develop a solid familiarity with reading comprehension strategies and, more importantly, learn how to use them efficiently and appropriately. They should receive training not only in identifying these strategies but also in planning when to use them, controlling and regulating their application, and eventually developing their own personalized approach that they believe to be effective in specific contexts or reading situations. Overall, these findings suggest that successful readers are those who are well-acquainted with reading comprehension strategies and know how to apply them effectively, thereby achieving autonomy and efficiency in their reading.

Accordingly, the significant difference found between the experimental and control groups in the post-test scores highlights the necessity of teaching reading comprehension strategies. Such instruction "assists learners to adopt and apply effective strategies while coping with written texts" (Msaddek, 2016, p. 290). This conclusion is supported by a large body of surveys conducted in Morocco, which have shown that the explicit teaching of reading comprehension strategies is highly effective in helping learners manage, control, and adjust their reading comprehension process. In line with this, Msaddek (2016) further asserts that "the process of knowing what strategies to deploy in text reading and knowing 'how' to put them into action can make of EFL learners efficient, critical readers" (p. 289). Therefore, reading comprehension strategy instruction should be integrated into the S1 university curriculum to enhance students' reading abilities, ensuring better mastery of reading comprehension across all English Studies courses and throughout their university careers.

To conclude, the explicit and metacognitive instruction of reading strategies can equip learners with a deeper awareness of themselves as readers, strengthen their mastery of essential cognitive strategies, and enhance their ability to monitor and adjust these strategies for improved text comprehension. This approach also encourages a shift in teachers' pedagogical practices, fostering more effective reading comprehension instruction. In particular, the integration of metacognitive strategies with the think-aloud method for teaching cognitive reading comprehension strategies emerges as a key pathway to developing independent, successful readers—students who know what, which, when, where, and how to use specific strategies to achieve comprehension. The significant results demonstrated by the experimental group in this study align with findings from previous research, reinforcing the value of such an approach. The treatment provided to the experimental group combined metacognitive and cognitive strategies as complementary tools, facilitating the reading comprehension process and leading to measurable improvement. When teachers verbalize the application of these strategies, students can more readily internalize effective methods for processing texts, ultimately becoming autonomous, metacognitive readers capable of applying cognitive strategies purposefully and effectively.

Furthermore, the positive correlation between the post-test scores of the experimental group and their awareness of reading comprehension strategies (in terms of familiarity and frequency of use) aligns with the theoretical framework and the findings of other studies discussed in Part II of the literature review. For instance, Sheorey and Mokhtari (2001) found that students who score highly on reading tasks report greater use of both cognitive and metacognitive reading strategies than those with lower scores. In light of the results presented above, most participants in this study appear to have implemented some reading comprehension strategies without being fully aware of their appropriate use. Consequently, this awareness remains insufficient and ineffective, as S1 students lack explicit and metacognitive understanding of how to use these strategies appropriately.

This lack of training is common across Moroccan universities, as Zhiri (2019) notes: Moroccan university students "have never been trained to be autonomous learners before joining university" (p. 568). Therefore, reading comprehension strategies should be taught to S1 students to equip them with the necessary tools to become independent readers. They should acquire the appropriate skills and strategies and learn how to apply them effectively in order to make sense of the knowledge they receive throughout their academic career. Zhiri (2019) further emphasizes that good readers "use metacognitive strategies in their learning" (p. 570). Accordingly, the use of metacognitive strategies can help learners control and adjust their use of all types of reading strategies, making them strong and autonomous readers capable of facilitating and leading their own comprehension processes. Moreover, the explicit instruction of reading comprehension strategies can enable students to identify, address, and overcome the difficulties they encounter before, during, and after reading.

Thus, the explicit and metacognitive instruction of RCS is a viable approach for enhancing S1 students' reading comprehension abilities. Teaching RCS can benefit students in university English studies by making them aware of the strategies they frequently use, enabling them to apply those that enhance comprehension effectively, and equipping them to monitor, control, and adjust their strategy use. This process ultimately fosters autonomous and successful readers.

Anderson (2002) affirms that the instruction of reading comprehension strategies encourages students to reflect on their strategy use, enabling them to determine what, how, and when each strategy should be applied in order to improve their understanding of reading comprehension texts.

Accordingly, Woods (2020) states that explicit instruction helps learners become independent readers. Through adopting the think-aloud method, students become aware of their cognitive processes and reading strategies, as well as how to use them metacognitively. This method allows teachers to model how to monitor and control their thinking about specific reading comprehension strategies, thereby regulating their use to achieve better understanding. In her research, Woods investigates whether teachers' pedagogical instruction of reading strategies correlates with learners' reading performance. She concludes that metacognitive and cognitive theories in reading comprehension should be used simultaneously and complementarily to promote comprehension and develop autonomous readers. Learners must use cognitive reading comprehension strategies metacognitively in order to effectively monitor and control their understanding independently.

In a nutshell, EL Aouri and Zerhouni (2017) highlight that "there is even a need for a research study to develop a strategy training model" (p.69). This study was conducted to fill that gap and contribute to improving the teaching of reading comprehension strategies in order to cultivate more effective and autonomous readers.

In brief, the main finding of this research is that integrative teaching of both cognitive and metacognitive reading strategies leads to improved student reading performance—not necessarily to an increased frequency of strategy use. Moreover, the frequency of strategy use alone is not a reliable indicator of higher proficiency in reading comprehension. Instead, appropriate and effective use of a select number of strategies enhances learners' mastery, as students become more aware of when and how to apply these strategies to understand texts efficiently and successfully.

### *4.6 Conclusion*

This section of the paper focuses on answering the research questions and confirming or rejecting the hypotheses. The findings of the main study addressed all the research questions. First, the results reveal that the usual S1 reading classes do not adequately equip students with knowledge about reading comprehension strategies. The standard syllabus for the reading comprehension course fails to enhance students' awareness of these strategies, as indicated by the statistics related to frequency and familiarity of use. Second, explicit and integrated instruction of reading comprehension strategies helps students improve their proficiency by increasing their familiarity with these strategies, though not necessarily with all of them. Furthermore, the study highlights that explicit and integrative instruction is essential for developing efficient and autonomous readers.

To sum up, most hypotheses in this study are confirmed; however, the hypothesis concerning the correlation between frequency of strategy use and reading scores is rejected, as merely using a maximum number of strategies does not guarantee success in reading comprehension. Nonetheless, appropriate and effective use of reading strategies remains crucial for achieving successful reading proficiency.

## 5. The General Conclusion

### *5.1 Introduction*

The general conclusion of this paper provides a brief summary of the study by restating its purpose, answering the research questions, and confirming or rejecting the hypotheses. It also presents an overview of the adopted methodology and a synthesis

of the results discussed. The second part of this chapter is devoted to pedagogical implications, while the third part addresses the study's limitations. Finally, the last part presents suggestions and recommendations for further research.

### *5.1.1 A Brief Summary of the Study*

Similar to the studies discussed in the literature review, this research adopts both an exploratory and quasi-experimental approach. It aims to investigate first-year university students' frequency of use and awareness of reading comprehension strategies, as well as the impact of these strategies on their performance in reading comprehension tasks. Furthermore, it examines the effect of explicit and integrative instruction in both cognitive and metacognitive reading comprehension strategies on students' performance. The study also seeks to demonstrate how such instruction can enhance students' reading comprehension scores while increasing their familiarity with and frequency of strategy use.

Accordingly, to address the research questions and confirm or reject the hypotheses, the literature review chapter defined the key terms and reviewed previous contributions in the field of reading comprehension strategies, including the methodologies adopted and the findings obtained. The methodology chapter described the data collection instruments, namely the students' survey incorporating the SORS (Mokhtari & Sheorey, 2002), the professors' questionnaire, and the TOEFL tests, which served as pre- and post-tests. It also outlined the data analysis instruments used to answer the research questions and test the hypotheses. The collected data were analyzed quantitatively using SPSS 25, mainly through T-test and correlation techniques, and qualitatively through thematic classification of respondents' answers, which provided background elements for interpreting the quantitative results.

Keeping this in mind, it is worth noting that this research is divided into two parts. The first part involved a sample of 189 participants who attended regular classes without any treatment, took both the pre-test and post-test, and completed the SORS. The second part focused on seventy-two students divided into a control group and an experimental group. The latter received a specific treatment, as described in the methodology chapter, consisting of twenty-six hours of explicit and integrative instruction in both cognitive and metacognitive reading comprehension strategies.

In the treatment, Anderson's (2002) approach was adopted to enhance "thinking about thinking" and to make the participants in the experimental group metacognitively aware of what to do when they found themselves unable to understand an English text. In other words, they were encouraged to monitor and evaluate their use of reading comprehension strategies and to select the most appropriate strategy or combination of strategies to improve their understanding of a text. The ability to choose and evaluate strategies, in turn, can lead to better comprehension and improved scores in reading comprehension tasks. The simultaneous teaching of cognitive and metacognitive strategies was carried out interactively through explanation and modeling, as outlined in the templates developed for this purpose.

## *5.2. Implications*

This research has highlighted the importance of developing an efficient model for teaching reading comprehension strategies that can be effectively implemented to help Moroccan students learning English become autonomous and successful readers. Accordingly, the instruction of reading comprehension strategies should involve direct explanation, teacher modeling, guided practice, and gradual application to ensure EFL learners develop strong and independent reading skills.

In this respect, the instruction of reading comprehension strategies should be done explicitly, rather than the current practice where teachers focus mainly on reading texts and answering comprehension questions. Unfortunately, this approach does not encourage active interaction between readers and texts. Abdullah, Majdi, Ad-Heisat, Ahmad, Mohammed, Syakirah, Sharmella, K., Krishnasamy, Hariharan, and Issa, Jinan (2009) recommend organizing workshops for teachers to expose them to activities that effectively teach reading strategies during lessons. Furthermore, they call on curriculum planners and textbook writers to include activities that integrate reading strategies within the materials used with students. In other words, the explicit instruction of reading comprehension strategies should be a central goal for teachers, curriculum designers, textbook writers, academic researchers, and educational decision-makers in order to strengthen students' reading abilities and help them become effective and successful readers.

Furthermore, the inclusion of explicit and integrative instruction of both cognitive and metacognitive reading comprehension strategies at the S1 level, as well as in secondary or high schools, is an important step towards enhancing students' proficiency in reading comprehension. It equips them with the necessary tools and strategies to become autonomous and successful readers. In this regard, Figure 1 presents the Ten Rs Commandments—a model that both teachers and students should adopt to develop their own methods of teaching and learning reading comprehension strategies, aiming for smooth and continuous understanding of English texts. This model can be adapted to any proficiency level, provided that practice tasks are carefully selected and clearly explained by instructors.

Moreover, the ten lesson templates for teaching reading comprehension strategies serve as practical guides for explicit instruction. These templates are divided into four parts that outline the gradual teaching and implementation of each strategy. The first part defines, explains, and describes the strategy while highlighting its regulatory skills, which help control its successful use and avoid inappropriate application. The second part focuses on the instructor's modeling of the strategy using the Thinking-Aloud Protocol. The third part involves guided practice, starting with easy-to-read texts and collaborative work in pairs or small groups. Finally, the fourth part emphasizes self-practice, encouraging learners to independently apply the strategy using regular comprehension texts. This activity begins in the classroom and continues at home (see Templates 1 to 10).

### *5.3 Limitations of the Study*

Despite ongoing efforts to ensure objectivity in data collection, analysis, setting, and participant selection, certain limitations have been identified that should be considered in future research aiming to conduct more effective investigations on the teaching and learning of reading comprehension strategies. These limitations include the following:

First, regarding the students' English language proficiency, the survey did not include a question about whether the students had previously attended English courses at language centers. Although this omission may have some impact, it is expected to be minimal since the main variable—awareness of reading comprehension strategies—was controlled through the survey administered to the participants.

Second, the survey did not include any questions about the students' motivation to read, making it impossible to assess how motivation may have influenced the study's results.

Third, the students' motivation to participate in this research itself is another factor that could slightly affect the findings. It is challenging to accurately gauge participants' willingness to take part—some may have participated merely to please their professors present during data collection, out of sympathy for the researcher, or because they believe in the potential outcomes of the study. However, this intervening variable was somewhat controlled during data analysis by excluding any surveys or tests that were incomplete, as incomplete responses likely indicate a lack of motivation or interest in providing valid and reliable data.

Fourth, students' attendance in the treatment classes posed a significant limitation that could impact the study. Some participants did not reside in Kenitra at the time and had to commute six days a week for two weeks—much more frequently than the usual twice-weekly university schedule. To encourage regular attendance, the researcher spoke individually with students after classes and provided symbolic financial assistance to some to help cover commuting costs. Additionally, make-up classes were scheduled either from 4:30 p.m. to 6:30 p.m. or on Saturdays from 9 a.m. to 11 a.m. to accommodate students who missed sessions.

Fifth, the selection of materials used in the instructional treatment posed a challenge. At times, the texts did not fully capture the students' interest, whether due to the themes covered or the length of the passages. To mitigate this, a variety of themes were chosen to diversify the reading content. Moreover, instructional methods such as pair work and small or large group activities were implemented to help reduce student anxiety, ease apprehension toward unfamiliar topics, and sustain engagement, especially when some texts appeared uninteresting to certain participants.

Sixth, the teachers' motivation and engagement in teaching the reading comprehension strategies under investigation could be an intervening variable limiting the study's results. To control this factor, the treatment for the experimental group was delivered directly by the researcher, ensuring consistency and proper implementation. However, this also represents a limitation, as it restricts generalizability. Due to time constraints and the uncertain health situation related to COVID-19 in Morocco and worldwide, the researcher conducted the treatment over two consecutive weeks to avoid interruptions from any potential lockdowns.

Seventh, the difficulty level and themes of the texts used in both the pre-test and post-test could also limit the study. This variable was controlled by selecting three different comprehension texts for the pre-test and another three for the post-test. To maintain consistency and avoid excessive thematic diversity, the same three topics chosen for the pre-tests were also used in the post-tests.

Eighth, the sample population of this study is limited to S1 students from the Faculty of Languages, Letters, and Arts in Kenitra. This narrow focus was primarily due to the COVID-19 pandemic, which forced the researcher to concentrate on students from only one faculty instead of two. Originally, the study was planned to include both the Faculty of Letters and Human Sciences in Rabat and the Faculty of Languages, Letters, and Arts in Kenitra. However, pandemic-related restrictions on movement between cities and fieldwork activities led to the decision to focus solely on the faculty in Kenitra.

Another limitation to consider in future studies relates to the conditions under which the treatment was conducted. Due to COVID-19 restrictions, the treatment took place in small classes of 18 to 20 students, rather than the usual large university sessions, which often exceed one hundred students. Additionally, conducting the treatment in a large amphitheater would have required the researcher to be formally part of the teaching staff at the Faculty of Languages, Letters, and Arts. However, due to his permanent position in a governmental administration, this was not possible. To carry out the treatment—which constitutes the core of this fieldwork and the entire study—the researcher used part of his annual administrative leave to personally deliver the instruction.

Finally, time and setting factors also represent limitations of this research. The treatment could not be conducted at the university due to ongoing student strikes and the professors' inability to deliver the treatment, as the final winter exam was scheduled to be common for all six S1 groups, while only three groups participated in this study. Additionally, because of the COVID-19 pandemic, data collection was postponed for about a year. The second phase of data collection took place just before the last S1 class, rather than after the winter final exams when students would have been more relaxed and less stressed. Fortunately, during the post-test, the students perceived it as a useful practice for the final exam, showing eagerness to complete and review it. To support this, the researcher provided the professors with the post-test answers so they could correct the tests or conduct a collective review with their students during regular reading classes.

### *5.4 Recommendations*

The present study can be considered a step toward further investigations into the effective teaching and learning of reading comprehension strategies in the Moroccan university EFL context. Accordingly, specific recommendations are proposed to enhance the instruction of these strategies within the broader process of teaching English as a foreign language. First, teachers should receive training through workshops and seminars focused on teaching reading comprehension strategies to EFL students with varying proficiency levels. In addition, S1 students should benefit from guided strategy-based reading classes in small groups for targeted practice, offered in parallel with general reading comprehension classes.

Moreover, curriculum planners should design specific courses on reading comprehension strategies for EFL learners, particularly in S1 and S2. In parallel, textbook authors should incorporate tasks that progressively guide learners toward becoming successful and autonomous readers. These tasks should include clear definitions of reading comprehension strategies, explanations of their appropriate use, and guidance on the contexts in which each strategy is most effective.

Furthermore, computer science specialists should collaborate with educators to design interactive software and applications that support EFL learners in acquiring both fundamental and effective reading comprehension strategies. These tools should include simple, level-appropriate practice tasks for each strategy, accompanied by modeling and guided instruction to promote more effective practice.

Beyond the above recommendations, the findings of this research should be shared with other language departments to contribute to the development of a universal and comprehensive model for teaching and learning reading comprehension strategies. Such a model should promote and adopt the explicit, integrative, and simultaneous instruction of both cognitive and metacognitive strategies.

Moreover, to ensure the effectiveness of the treatment method adopted in this study, longitudinal research should be conducted to examine the ongoing development and proper application of reading comprehension strategies (RCS) across various English language proficiency levels among university students. Such research would validate the findings of this study and facilitate the development of tailored RCS models suitable for different proficiency levels of English learners across Moroccan universities.

In brief, the clear guidelines outlined above should be translated into practical actions to support English studies students in their process of acquiring any foreign language, not just English. These recommendations are comprehensive, encompassing students, teachers, textbook authors, language researchers, curriculum designers, and all foreign language departments.

**List of Abbreviations and Acronyms**

C.G: Control Group
Df: difference
EFL: English as a Foreign Language
ESL: English as a Second Language
EX.G: Control Group
FL: Foreign Language
Freq: Frequency

L2: A Second Language
N: Number
P.: page
P=: P- value (the probability of obtaining test result. It should be less than 0.05)
RC: Reading Comprehension
RCS: Reading Comprehension Strategies
RCSF: Reading Comprehension Strategies Frequency
RS: Reading Strategies
RSF: Reading Strategies Frequency
S 1: Semester 1
Sig: Significant
SILL: Strategy Inventory for Language Learning
SPSS: Statistical Package for the Social Sciences
SORS: Survey of Reading Comprehension Strategies
SQ3R: Survey, Question, Read, Recite and Review.
Std: Standard
T-test: A statistical test that check if the difference between the response of two groups is significant or not
TOEFL: Test of English as a Foreign Language
TOEFL iBT: Test of English as a Foreign Language (Internet-Based Test)

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