Supporting B.C.'s expanding international education: The efficacy of academic reading strategy instruction among adult English-as-an-additional-language students

by

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Supervisory Committee

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## Abstract

The enrolment of international students at Canadian institutions of higher learning has tripled to 318,153 in 2018/2019 from 101,304 in 2008/2009 (Statistics Canada, 2020). Similarly, the number of international students in B.C.'s post-secondary institutions has significantly risen (BC Council on Admissions & Transfer, 2019). A significant proportion of these international students for whom English is an additional language first encounter Canadian higher education through their enrolment in English-for-academic-purposes (EAP) programs, which prepare students for English-language coursework and offer a path for enrolment at Canadian institutions without an institution's required documentation of English language proficiency. For international English-as-an-additional-language (EAL) students who initially enrol in EAP programs in order to later pursue higher studies in Canada, reading a variety of academic texts can be challenging, since reading comprehension "involves the ability to integrate various sources of information in order to construct" meaning (Li & D'Angelo, 2016, p. 159). To facilitate reading comprehension, second language (L2) researchers have identified a variety of reading strategies, and extensive research has been conducted to examine the efficacy of reading strategy instruction. However, the research on the effect of reading strategy instruction remains inconclusive due to the interplay of various contextual and individual variables (e.g., Cohen, 2011; Plonsky, 2011).

This study reports a mixed methods-action research project involving 52 intermediate-level EAP students conducted to investigate the efficacy of L2 reading strategy instruction at a post-secondary institution in Canada. Implemented through five phases: *diagnosing*, *reconnoitering*, *planning*, *acting*, and *evaluation* (Ivankova, 2015), the study used Mokhtari and Sheorey's (2002) Survey of Reading Strategies (SORS) to capture the participants' reading strategy use and a standardized reading comprehension test to measure the participants' reading comprehension abilities. Further, participants' weekly post-task verbal reflections and post-intervention interviews provided qualitative data about learners' use of reading strategies over time. Through both qualitative (i.e., content analysis) and quantitative data analyses (i.e., descriptive statistics, paired-sample *t*-test, Pearson's correlation, and MANOVA tests), the results showed higher awareness and use of reading strategies and reading performance among the participants after the intervention. In strategy use and reading comprehension, the experimental groups that received reading strategy instruction outperformed the comparison group that simply received regular instruction on reading with no instruction on strategy use. Statistically significant correlations were found between participants' overall strategy use and reading performance. The analysis of the qualitative data revealed that the participants used a wide variety of *global*, *problem-solving*, and *support* reading strategies depending on reading academic texts in English.

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## Dedication

I would like to dedicate this dissertation to my mother, Nandakala Bhim Bahadur Khatri, who continues to inspire me in many ways with her commitment to supporting education within Balewa of Baglung in Nepal.

# Chapter 1: Introduction

International education in Canada is rapidly growing, and the enrolment of international students in colleges and universities is increasing every year. The enrolment of international students at Canadian institutions of higher learning has tripled to 318,153 in 2018/2019 from 101,304 in 2008/2009 (Statistics Canada, 2020). Similarly, international education in the Province of British Columbia is rapidly growing, and the number of international students in B.C.'s post-secondary institutions has significantly risen (BC Council on Admissions & Transfer, 2019). International enrolments in BC institutions of higher learning have increased from around 30,621 in 2010/2011 to 80,380 in 2019/2020 (Heslop, 2021). The increase in the number of students from around the globe carries with it not only extraordinary learning opportunities for their instructor, but also challenges in supporting these students in their academic milieu (Ryan & Carroll, 2005). To support this growth that brings in both opportunities and challenges, it is essential that institutions of higher learning provide high-quality instruction that caters to the academic needs of these students. Doing so can have a huge impact on learner success in the Canadian context. In the context of Canada, a large number of institutions offer English for academic purposes (EAP) programs for international students from non-English speaking countries as a pathway to their disciplinary programs in Canadian colleges and universities (Douglas & Landry, 2021; Keefe & Shi, 2017). EAP programs offer credit or non-credit English language courses or English language and content integrated courses that provide international students for whom English is an additional language with the opportunity for admission at Canadian institutions of higher learning without the need to fulfil an institution's requirement for English language proficiency via official English language proficiency tests

(Charles, 2022; Corcoran, Williams, & Johnston, 2022). EAP programs, thus, support these international students in meeting their language requirements and preparing these students for their undergraduate and graduate studies in institutions of higher learning in Canada. As Urbanczyk (2019) expressed, every "language is a complex system" (p. 110), and English is no exception. Several institutions have "invested more heavily in language support services, such as skill centres, tutoring and workshops, to address academic difficulties experienced by students with lower English-language proficiency" (McQuarrie, 2019, p. 11). Among the many interconnected areas English language learners find challenging, one academic area where these students may need support is reading (e.g., Huang, 2010a). Reading ability involves not only helping students engage in reading and comprehending the text but also supporting students in their critical thinking and evaluation of the information in the text among many other tasks—the tasks that are associated with higher level processes of reading. International students coming from non-English speaking countries may find reading in English very challenging and demanding. In addition, students may find the amount of reading overwhelming and intimidating in their courses (Kelly et al., 2020). Kelly and her colleagues have encouraged students to engage in strategy use that may support students in their understanding of the difficult texts. The ability to "read efficiently is necessary for English for academic purposes EAP [English for academic purposes] students because second language reading is the most required academic skill" (Karimi & Dastgoshadeh, 2018, p. 2). In addition, Snow et al. (1998) emphasized that as a cognitive ability, reading plays an important role in academic performance. It is, thus, clear that reading is a critical skill for students to have when working with academic texts during their higher studies. In spite of the ample studies that underscore the importance of reading, reading is, according to Grabe (2012), "something many of us take for granted," and is done with "little effort and little

planning" (p. 5). Buehl (2011) expressed that, "as students become immersed in the daily pipeline of school expectations, they may come to regard academic reading as merely completing assignments…As a result many students do reading to get work done rather than engage in reading to understand" (p. 32). Therefore, it is necessary that students be supported in their reading academic texts in colleges and universities across Canada.

Many people, including students, around the world read in a language or languages other than their first language. In addition, students may also learn to read a second language at language schools, colleges or universities. Grabe (2012) argued that massive trends in migration and relocation as well as recognition of English as a global language have resulted in the demands for reading in a second language, including English-as-a-second-language (ESL) or English-as-a-foreign-language (EFL) around the world. It has impacted the context reading is carried out in academic settings. Providing English-as-an-additional-language (EAL) learners with support, especially in the context of BC, which shows the rising trend of the enrollment of international students in BC institutions of higher learning, may warrant the need for educators to carry out research in order to find out methods, techniques, and strategies that support EALs' reading in academic contexts. As Grabe explained, reading is a complex activity that involves the complex cognitive processes for reading comprehension to take place. Similarly, as Erler and Finkbeiner (2011) put it, "…reading comprehension has been seen increasingly to the result of complex interactions between text, setting, reader, reader background, reading strategies, the first language (L1) and L2, and reader decision making" (p. 188). As an EAP instructor and researcher who has specifically had concerns about teaching reading strategies and its efficacy on students' reading performance in my classes, I embraced researching reading strategy use as an opportunity to explore adult EAL students' reading in academic contexts in BC.

Since strategies are associated with successful learning and strategies can be taught to learners who can later develop more effective strategic behaviour (Cohen & Macaro, 2011), I considered investigating reading strategy use as an opportunity to learn about the efficacy of reading strategy instruction among my learners. Identifying this complex behaviour involved in reading and the importance of the development of the strategic reader, especially reading comprehension among second language readers in my own classrooms, I carried out the study in order to understand my EAP students' strategic behaviour and develop their reading comprehension.

As Grabe and Stoller (2011, p. xvii) aptly suggested, it is important for "all of us to develop our own investigative practices in our classrooms" as a result of the complex nature of reading. In addition, these scholars have encouraged teachers to conduct small-scale studies on reading in order to build on connections between research findings and effective instructional practices. In order to provide solutions to my personal classroom issues on the use of reading strategies among adult EAL students as well as offer suggestions to action researchers who may have similar pedagogical concerns on their future studies on second language (L2) reading strategies, I conducted the present mixed methods research project within an action research framework. At the same time, this study also attempts to contribute to the existing body of literature on the efficacy of reading strategy instruction among EAP students in the Canadian context.

The dissertation is organized in the following way: Chapter 2 reviews the most relevant and current literature on reading strategies and reading strategy use. The chapter starts with the most relevant research on L2 reading strategies (Section 2.1) and continues to provide definition of key terms (Section 2.2). It then discusses the importance of reading strategy use (Section 2.3)

and empirical studies on reading strategy use (Section 2.4) and ends with the research questions (Section 2.5).

The Methods chapter provides an overview of the study design for the present research project (Section 3.1). While describing the design, this section briefly explains the motivation behind using the mixed methods design within an action research framework. Then the chapter provides information on the participants (Section 3.2), the intervention (Section 3.3), the data collection instruments (Section 3.4), the data collection steps (Section 3.5), and the data analysis procedures (Section 3.6).

To present the results by triangulating quantitative and qualitative data in order to address the research questions from multiple perspectives, the Results chapter presents the results in detail from both quantitative and qualitative data collection and analyses. This chapter consists of the following sections, namely reading strategy use (Section 4.1), reading strategy use/reading comprehension (Section 4.2), reading strategy use vis-à-vis reading comprehension (Section 4.3), and differences among groups (Section 4.4). Each of these sections deals with an individual research question.

The Results chapter is then followed by the Discussion chapter, which first provides a summary of the key findings from the study (Section 5.1). Then it discusses the findings according to each of the research questions (Section 5.2). This discussion is then followed by implications (Section 5.3) on empirical, methodological, and pedagogical grounds. The limitations of the study (Section 5.4), the directions for future research (Section 5.5), and implementation recommendations (Section 5.6) are also included in this chapter.

Finally, the Conclusion chapter summarizes major points and concludes the dissertation.

# Chapter 2: Literature Review

This chapter reviews the literature on reading strategy use and reading strategy instruction among adult ESL and EFL students. The chapter first establishes the importance of reading and reading strategy use. Then it defines the key terms and operationalizes these terms within the context of this study. Some of these terms include strategies, metacognitive and cognitive strategies, reading comprehension, and strategic behaviours. Then the chapter briefly discusses the importance of reading strategy use, which is followed by a critical review of the literature on reading strategy use.

## 2.1 Second Language Reading Strategies

Among the many language skills that include reading, writing, listening, speaking, and grammar, reading is considered an essential skill in academically driven contexts (Carrell, 1988; Grabe, 1991; Hudson, 2011; Karimi & Dastgoshadeh, 2018). Reading among EAL students "continues to take on increasing importance" (Grabe & Stoller, 2011, p. xiv). Huang (2010b) discussed the support EAL students may need in the area of reading in academic settings. Mikulecky (1990) observed renewed interest in scholars' researching teaching reading and pointed out that, as the importance of reading instruction has been realized over time, researchers have constantly been looking for more effective and efficient ways to teach reading to EAL students.

According to Lei and Liu's (2018) investigation carried out using their bibliometric analysis, learner strategy use is one of the most extensively discussed and explored topics over the last 45 years. Specifically, their analysis demonstrated that research in the sphere of second

language reading strategy use and reading comprehension has stayed stable during the past four decades among second language scholars and researchers. Their study has clearly shown the ongoing research interest in the area of strategy development among L2 learners.

Some scholars, including Swan (2008), argued that teaching strategies is unnecessary. These scholars believed that reading strategies can be transferred by second language learners from their L1 to L2 and that there is no place for reading strategy instruction among second language learners. However, Oxford (2011) argued that strategy transfer from L1 to L2 does not occur automatically. Oxford's argument seems more persuasive, as Oxford added that L2 learners may be able to carry over some strategies from their L1 to L2, but for this to happen, certain conditions have to be met: "(a) learners' L1 literacy is high, (b) their metalinguistic awareness—ability to notice and understand linguistic details and make connections across languages—is strong, (c) background knowledge is high, and (d) the L1 and the L2 are in the same or a very close language family" (p. 247). In absence of these conditions, strategy transfer from the L1 to L2 cannot happen.

## 2.2 Key Terms and Definitions

Before discussing some specific terms used in this study, this section reviews some English-language teaching specific terms that are often used in the literature. Different terms, including ESL, EAL, EAP, and English language learners (ELL), which are used to refer to learners who do not speak English as their L1, exist in the literature. In Canadian context, EAL learners refer to those learners "whose primary language, or languages of the home, are other than English" and who may hence "require additional services in order to develop their individual potential" (British Columbia Ministry of Education, 2018, p. 9). In addition, EAP

learners are those EAL learners who are enrolled in English language programs or EAP programs, which support the learners in the development of academic language in order to pursue education in institutions of higher learning. For the purpose of this study, EAL or EAP refers to international students from non-English speaking countries who speak English as an additional language and are enrolled in EAP programs in order to join college or university for further education in Canada.

The present study acknowledges the presence of multiple factors and processes when reading an academic text and defines reading as a complex process that includes, among many other factors and processes, readers' reading strategy use in order to thoroughly comprehend the text that may involve, for example, readers' defining the purpose of their reading, and reading the text critically among several other reading strategies. Among studies, reading is defined in different ways, and as Erler and Finkbeiner (2011) pointed out, L2 reading, in fact, can not be defined easily. Some scholars (see, for example, Carrell, Devine, & Eskey, 1988; Hudelson, 1981) defined reading as a process of looking at the text and applying knowledge of word order, grammar, and meaning and background knowledge in order to predict and confirm the meaning of the text. These scholars maintained that the same process applies to both L1 and L2 settings. According to Urquhart and Weir (1998), reading is the "process of receiving and interpreting information encoded in language form" (p. 22). This definition of reading focuses on the understanding and interpretation of the text under discussion. However, it does not include the interplay of the factors (e.g., critical reading and inferencing) that successful or unsuccessful readers may engage in when reading a text, as Grabe (2012) pointed out. Grabe called reading a "complex combination of processes" (p. 14), including readers' comprehending, interactive, and strategic processes: readers read the text in order to comprehend its meaning; while doing so,

reading becomes an interactive process, as it involves several cognitive processes that simultaneously work together to make reading meaningful; at the same time, readers use different actions and strategies in the process of comprehending the text, making reading a strategic process. In addition, the multiple variables and conceptualizations, including an interactive nature of reading and involvement of various cognitive processes, play a crucial role during reading (Bernhardt, 2011; Grabe & Stoller, 2011). In an academic context, Mokhtari and Sheorey (2008) defined reading as an interaction between the reader, the text, and the context in which reading takes place. Reading, thus, involves many actions and behaviours among readers (e.g., interaction between the reader, the text, and the context; strategy use; application of the knowledge of grammar and background knowledge; etc.) in order for comprehension to take place.

As defined above, reading involves readers' use of multiple actions and behaviours in order to comprehend a text. Reading comprehension is the process that includes recognition and understanding of words, phrases, and sentences; it is also a complex integrative process wherein readers' language proficiency level, prior knowledge, and metacognition play a vital role (Hammadou, 1991). Thus, comprehending a text may suggest understanding what is presented in the text being read. However, comprehension of the text involves a series of actions on the part of the reader, including recognizing and processing words and sentences, using prior knowledge, and thinking about the text being read and the actions taken to understand the text. Reading comprehension involves readers' efforts for meaning from the text through thoughts, reflections, and associations (Block, 1986). Comprehending texts, thus, involves not only the recognition and understanding of words, phrases, clauses, and sentences, but also the inclusion of readers' prior knowledge and reflections on the context and readers; making connections between the

information received from the text and the readers' experience or background knowledge. Similarly, Neufeld (2005) defined reading comprehension as the conscious process that readers undertake to create a "supportable understanding of a text" (p. 302), during which readers construct meaning through an active and conscious thinking process (Alexander & Jetton, 2000) and their interpretations of texts vary based on the differences resulting from their background knowledge and experiences (Pressley, 2002). Phakiti (2006) defined reading comprehension as "highly complex, dynamic, multi-componential, and multi-dimensional" process (p. 19). Various factors, including L1 literacy and background, language proficiency level, pragmatic knowledge, strategy use and motivation, are highly engaged in comprehension process. Neufeld (2005) discussed that both readers' background knowledge and information in the text are crucial to comprehending the text. He further argued that several strategies are useful and are teachable. Therefore, he suggested that reading strategies be taught explicitly. Reading comprehension is defined for the present study as thorough understanding of academic texts that is possible through participants' conscious thoughts about the text being read, critical reading, and through actions, including notetaking and paraphrasing.

Regarding strategy use among L2 readers, strategies are defined as techniques that are used to make readers' learning process more effective and efficient (Oxford & Crookall, 1989). Strategies are cognitive actions that are deliberately taken to help oneself to acquire and store information so that it can be retrieved when consciously searched for (Paris, Lipson, & Wixson, 1983). Thus, strategies are conscious, mental plans that make learning easy to process and acquire, store, and retrieve. According to Grabe (2012), strategies are "cognitive processes that are open to conscious reflection" (p. 221). Grabe's definition of reading strategies includes cognitive processes and reflection on the part of readers. Reading strategies are "intentional or

deliberate mental plans, techniques, and actions that readers undertake while reading academic or school-related materials (Mokhtari & Sheorey, 2008, p. 6). In a similar manner, Cohen (2011) defined strategies as "thoughts and actions, consciously chosen and operationalized by language learners, to assist them in carrying out a multiplicity of tasks from the very onset of learning to the most advanced levels of target-language performance" (p. 7). For the present study, reading strategies are defined as thoughts or behaviours that participants deliberately undergo when attempting to comprehend academic texts in English.

O'Malley et al. (1985) divided strategies into three categories: *metacognitive*, *cognitive*, and *social/affective* strategies. In short, *metacognitive* strategies refer to executive actions that include planning, monitoring, and evaluating activities. While *cognitive* strategies are actions or behaviours that directly involve manipulation of language, *social/affective* strategies involve interaction with another language user.

Block (1992) defined *metacognitive* strategies as thinking and questioning processes about a reader's own actions when engaged in reading. The use of metacognitive strategies is about effective performance and learning. Mokhtari and Sheorey (2008) defined "metacognitive awareness and perceived use of reading strategies" as "mental plans, techniques, and actions taken" when reading academic materials, such as textbooks, journal articles, and class notes (p. 2). According to Oxford and Crookall (1989), *metacognitive* strategies are controlling behaviours associated with planning and evaluating one's learning process. Oxford and Crookall (1989) considered *cognitive* strategies as skills that are incorporated to manipulate language in "some direct way" through actions including note taking, reasoning and analysis (p. 404). In short, metacognitive strategies refer to the conscious thinking and actions participants undergo to plan, monitor and evaluate their comprehension when reading academic texts or journal articles.

However, cognitive strategies are considered as the actions or behaviours readers physically or mentally involve in the process of their comprehending texts.

Different scholars have explored reading and reading strategies in different ways. Some scholars identified reading as two different processes: lower-level and higher-level (e.g., Grabe, 2009; Nassaji, 2003). Grabe (2012) suggested that the lower-level and higher-order processes need to be combined effectively for comprehension to take place. The lower-level processes mean word recognition, syntactic parsing (using grammatical information), and semantic-proposition encoding (building clause-level meaning from word-meanings and grammatical information), whereas higher-order process—"text model information (what the text is about), situation-model building (how we decided to interpret the text), inferencing, executive-control processing (how we direct our attention, and strategic processing"—is chiefly associated with cognition (p. 21). Barnett (1988) placed reading strategies on two different levels: word-level and text-level. Guessing word meanings from the context and the references in the text and categorizing a word on the basis of its family and linguistic pattern are some of the word-level strategies. However, text level strategies involve skimming, scanning, accessing background knowledge, predicting, and setting a purpose that help readers for their comprehension of the text as a whole. According to Block (1986), strategies involve incorporating ways to comprehend reading texts, addressing textual information to make sense out of their reading and attending to activities when comprehension is not possible. In her study, Block distinguished general strategies from local strategies. For Block, general strategies are associated with comprehension-monitoring, and comprehension-gathering, which includes anticipating content, recognizing text structure, integrating information, monitoring comprehension, and reacting to the text; whereas local strategies deal with identifying specific linguistic units, such as paraphrasing, rereading, and resolving vocabulary issues. Hudson (2011) discussed bottom-up and top-down reading

approaches as the "two most paradigmatic approaches" (p. 33). He presented the bottom-up approach as a reading process wherein readers interact with small units, such as letters, words, phrases, and sentences, to construct the meaning of the text; however, during the top-down approach, readers comprehend a text with "conceptualizations above the text level already in operation" before they move down to the text from above (p. 33), similar to the way Goodman (1967) called reading a "psycholinguistic guessing game" (p.127).

Afflerbach et al. (2008) discussed that skills and strategies are "practically and theoretically" instrumental in all students' success in reading" (p. 11) and that providing instruction on how a particular strategy is used and why is also effective. They defined reading skills as "automatic actions that result in the decoding and comprehending of texts with speed, efficiency, and fluency, usually without the reader's awareness of the components or controls involved" (p. 15). On the contrary, reading strategies are "deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words, and construct meanings out of text" (p. 15). Afflerbach et al. further claimed that the major element that distinguishes skills from strategies is a reader's actions being under automatic or conscious control. As these scholars expressed, when a reading strategy becomes automatic, this strategy is considered to have become a skill.

In recent years, researchers have been employing Mokhtari and Sheorey's (2002) SORS (Survey of Reading Strategies) instrument to explore the reading strategy awareness among adult EAL students. *Global*, *problem-solving*, and *support* strategies are the three categories of reading strategies that the SORS measures. According to Mokhtari and Sheorey (2002), *global* strategies are the actions that readers carefully take to plan and monitor or manage their own reading. Reading with a purpose in mind, reviewing the text by noting its characteristics, such as length

and organization, and reading the important and skipping the unimportant are a few of the individual strategies in this category. *Problem-solving* strategies include strategies, such as actions and procedures which readers employ to support or repair their comprehension. These are local, problem-solving techniques that readers incorporate when they encounter difficulties while trying to understand textual information. Adjusting speed, trying to get back on track when concentration is lost, and pausing and thinking about what is being read are a few of the strategies in this category. *Support* strategies are the supportive tools that help readers in understanding the text. Taking notes while reading, underlining or circling information, and paraphrasing are a few of the strategies that belong to this category.

Strategic behaviours are defined as the consciously processed thoughts or performed actions that learners undertake to regulate their behaviours in language learning and language use (Huang, 2010; O'Malley & Chamot, 1990; Pkakiti, 2003). For the current study, strategic behaviours refer to EAL learners' conscious and semi-conscious thoughts or behaviours, such as thinking, predicting, translating, and taking notes, which they verbalized or demonstrated when reading academic texts or journal articles.

The present study also included reflection from the participants as a data collection method. Dewey (1933) defined reflection as "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends…" (p. 6). Huang (2010b) emphasized on the importance of reflection on students' learning and strategic behaviours. For this study, based on definitions from different scholars, reflection is defined as participants' active involvement in their thinking process, regarding the actions they would deliberately take when completing reading tasks and the actions they would incorporate if they would have to do such tasks again in future.

## 2.3 Importance of Reading Strategy Use

Several researchers have studied strategy instruction and its effects on learners' language learning in different contexts (Cohen & Macaro, 2011; Macaro, 2001; Plonsky, 2011; Yapp et al., 2021a, 2021b). The interest in developing the L2 use via strategy instruction has been increasing (Cohen, 2011). As Dörnyei (2005) pointed out, through strategy instruction language learners avail opportunities to be aware of and practice different strategies in their language learning process. In her study, Barnett (1988) found a positive relationship between the perceived strategy use and reading comprehension as well as the relationship between the actual strategy use and reading comprehension. Kern (1989) indicated that reading strategy instruction had a strong positive effect on students' reading comprehension scores and on their ability to infer the meanings of unfamiliar words from context. In a study conducted at a Turkish-medium technical university, Salataci and Akyel (2002) found a positive effect of reading strategy instruction on reading comprehension both in English and Turkish and English reading strategies. Based on her comparisons across several studies of reading strategy use, Abbott found that "reading comprehension is more likely to occur when individuals use strategies both actively and flexibly during reading" (2008, p. 30). Oyetunji (2013) studied the effect of reading strategy instruction on trainee teachers in the Botswana College of Education in Botswana and found that reading strategy instruction increases L2 learners' reading comprehension. In an action research study, Küçükoğlu (2013) implemented reading strategy instruction among 14 students enrolled in an intermediate level integrated skills course at a university in Turkey. As in previous studies, the results demonstrated that instruction on strategies (e.g., predicting, visualizing, making connection, questioning, inferring, and summarizing) played a crucial role in helping students improve their reading comprehension. Similarly, a recent meta-analysis conducted by Chaury

(2015) showed an overall positive effect of reading strategy instruction on students' reading comprehension, as the students who received reading strategy instruction performed better in reading comprehension tests than those who did not. Some scholars expressed that whether strategy instruction has actually improved learners' language performance is not without its criticism or uncertainty, however, as research on strategy instruction varies from one context to another (e.g., Cohen, 2011; Plonsky, 2011). In addition to confirming strategy instruction's medium to large effects on reading comprehension and strategy use, a meta-analysis carried out by Plonsky (2011) on the effectiveness of strategy instruction also found that strategy instruction provides the most benefits when the instruction focuses only on a few strategies at a time and when learners get opportunities to use and practice strategies over a long period of time.

There is a wide consensus that the application of a variety of reading strategies helps adult EAL students develop their strategy use and reading comprehension. Carrell (1998) posited that reading strategies play a vital role in reading comprehension. Similarly, Allen (2003) asserted that research consistently showed that using strategies greatly enhanced comprehension of the written word. In Evans' (2008) study that included 22 first-year students enrolled in an English language program found metacognitive strategies to be useful both for reading comprehension and reading-to-write activities. Proficient readers used both *cognitive* and *metacognitive* strategies (e.g., Mokhtari & Sheorey, 2008; Phakiti, 2006). Studies have also shown that reading improves a reader's vocabulary, grammar, and reading comprehension, and that using strategies when reading leads to improved reading comprehension (e.g., Anderson, 1991; Grabe & Stoller, 2011; Hudson, 20011; Mokhtari & Sheorey, 2008). Anderson (1991) stated that it is important for L2 readers not only to know what strategy they have to employ, but also to know how to employ these strategies and orchestrate their use with other strategies, which

is also clearly emphasized in Alhaqbani and Riazi's (2012) among others. When readers become aware of the reading strategies they have already identified, their conscious decision to use particular strategies helps in comprehending the text (Akkakoson, 2012). As stated above, findings from Oyetunji's study (2013) also suggested that reading strategy intervention supports L2 learners' reading comprehension.

### 2.4 Studies on Reading Strategy Use

Numerous studies have been undertaken in regard to L2 reading comprehension, and the areas of interest as well as methods vary from study to study. In this regard, Abbott (2008) expressed that a "variety of research methods and reading tasks have been used to explore reading strategies" (p. 14). The different ways reading comprehension has been studied and the many variables (e.g., several methods, population groups, and texts) that have been taken into account have made comparisons between the studies difficult (Brantmeier, 2002; Erler & Finkbeiner, 2011). Some of these studies have involved L2 reading strategies, especially in the context of reading strategies' role in developing reading comprehension abilities (Grabe & Stoller, 2011). The types of strategies used, the way these strategies are used, and the frequency of the use of particular strategies have also been investigated (e.g., Anderson, 1991; Hudson, 20011; Mokhtari & Sheorey, 2008). In addition, studies in languages other than English as well as learner ages have varied from one study to another (Erler, & Finkbeiner, 2011).

Recently, there has been a shift in L2 reading strategy studies. L2 reading strategies specifically drew scholars' attention in the late 1970s and early 1980s (Carrell, 1998). Initially, the scholars in the beginning stages of research on L2 reading strategies emphasized the exploration of "relationships on certain types of reading strategies, and successful and

unsuccessful second language reading" (Carrell, 1998, p. 2). Some strategies successful readers used included keeping the meaning of the passage in mind during reading, skipping unimportant words, and having a positive self-concept as readers, but those strategies used by unsuccessful readers were about losing the meaning of sentence as soon as those strategies were decoded, reading in short phrases, reading all important and unimportant words, and having a negative self-concept as a reader (Hosenfeld, 1977). However, as time went by, interests for the study of L2 reading strategy research started to vary, focusing on a variety of variables, including reading performance and language proficiency (e.g., Akkakoson, 2013; Al-Mekhlafi, 2018; André, 2018; Magogwe, 2013).

In the following paragraphs, I briefly review key studies carried out in the last four decades. This review may help provide an overview of individual studies that have employed different methodologies and methods of data collection. Then I provide a table that summarizes these studies before critically discussing their research designs, methods, and findings.

Carrell (1983) studied both English-as-a-first language and ESL speakers' individual and interactive effects of three components of background knowledge in reading comprehension: context (presence or absence of the context), transparency (presence or absence of specific lexical items that provides textual clues about the content), and familiarity (presence or absence of prior knowledge in the content area). Three groups of the participants took part in this study. The first group, a class of undergraduate students at Southern Illinois University at Carbondale (SIU-C), had 48 English-as-a-first-language speakers. There were 66 advanced learners of ESL in the second group. These students in the second group were a class of undergraduate foreign students, representing a variety of first language backgrounds, at SIU-C. The third group consisted of 42 ESL learners with high-intermediate proficiency at the Centre for English as a

Second Language. They were asked to read, try to understand, and recall information from two text passages. One of the texts was familiar while the other was novel. Participants rated the passage's comprehensibility on a 1-7 scale (1 = very hard, 7 = very easy). They were also asked to write down as much as they could recall from the text on the recall sheet, which was called a recall protocol. Results revealed that while for English as a first language speakers, all of the three components of background knowledge played a crucial part in their reading, understanding, and recalling of information, there was "virtually no significant effects of background knowledge" for ESL speakers (p. 183). In this study, Carrell studied ESL students' individual and interactive effects of prior knowledge in the content area, prior knowledge in a particular content area, and lexical items in the content area. However, according to Cohen (2007), strategies mostly occur in sequences and an investigator may find it difficult to differentiate the effect of one strategy from the effect of another or from the effect of the combination of several strategies due to the cumulative effect of strategies. Therefore, it may not be quite clear which of the strategies specifically Carrell studied impacted the reading comprehension and the recalling of the information.

Carrell (1985) investigated facilitation of ESL reading by explicitly teaching text structure of an expository text. A heterogeneous group of twenty-five ESL students with high-intermediate proficiency level participated in this study. The participants spoke different native L1s: Chinese ($n$ = 5), Arabic ($n$ = 5), Bahasa Malaysian ($n$ = 4), Japanese ($n$ = 3), Indonesian ($n$ = 3), Korean ($n$ = 2), Spanish ($n$ = 2), and Turkish ($n$ = 1). There were eleven students in the control group and 14 in the experimental group. Pre- and post-tests included two texts, with two discourse types—*comparison* and *collection of descriptions*. Participants were asked to read each text, write an immediate recall, and answer an open-ended question to identify the text's overall

organization. The results showed that when the participants were provided with "training on the top-level rhetorical organization of expository texts" (p. 727), this significantly enhanced ESL students' recalling of information. While this study was an interesting study, it is difficult to ignore the impact other factors may have played in students' recalling of information. Since the class was a heterogeneous group, it was not possible to identify culture-specific effect and effect of individual learner variables on the recalling of information among the participants.

Carrell (1987) studied both culture-specific content schemata and formal (formal, rhetorical organizational structures of texts) schemata's simultaneous effects on ESL reading comprehension and interaction between these two types of schemata. Two groups, group one with 28 students of Muslim background and group two with 24 students of Roman Catholic background, of high-intermediate level ESL students studying at the CESL at Southern Illinois University at Carbondale participated in this study. The study was conducted with these two groups for three terms: two terms in the fall of 1985 and one term in the spring of 1986. The recall of information was carried out via multiple choice questions on one text with culturally familiar content and the other with culturally unfamiliar content. Debriefing questionnaire provided several pieces of information, including participants' country, first language, religion, and degree of religiousness (on a 1-10 scale). The data analysis included quantitative and qualitative data. The results demonstrated that reading is relatively easy when both content and rhetorical forms are familiar to students and vice versa. However, reading becomes difficult when either content or form is unfamiliar to students. Carrell's (1983, 1985, and 1987) studies were early studies on L2 reading comprehension and were part of the studies that included successful and unsuccessful readers, as (Hosenfeld, 1977) expressed. Her studies did not include different variables, such as gender or language proficiency. However, her studies were dedicated

to finding solutions to L2 students' reading comprehension and recalling of information as part of L2 reading.

Barnett (1988) investigated the use of reading strategies and reading comprehension and their perceived use of reading strategies and comprehension. The experiments for this study were conducted in four phases, which were recall protocol, use of background knowledge, perceived and actual strategy use. The results revealed that students who "effectively considered and remembered context as they read" comprehended more of the text read than students who used such a strategy less (p. 156). Similarly, students who thought reading strategies would be effective and used those strategies read "through context" better than those who did not think they would use such strategies. Barnett's study included both perceived and actual use of reading strategies and reading performance. However, the readers may wonder if the methods of data collection used in the study were effective in the process of capturing participants' actual strategy use in the study.

In Anderson's (1991) study, 28 (18 male and 10 female) Spanish-speaking adult ESL students' individual difference in strategy use was studied when these learners were engaged in reading in two contexts: reading for a standardized reading comprehension test and reading academic texts. In this study, the range of time these participants had spent studying in the United States varied from nine weeks to nine months. Their age range was between 18 and 34 years. Reading comprehension tests and think-alouds were used for data collection. The results suggested that not a single set of processing strategies existed so as to significantly contribute to participant's success on two reading tests. The participants scoring high and those scoring low seemed to have used the same kind of strategies. The findings suggested that readers must know: what strategies to use and how. It is an important study, as it discussed how to use certain

strategies for a specific reading context; however, the study involved participants speaking one specific language—Spanish, which may not necessary capture the strategy use among participants from a heterogenous classroom that is common in the Canadian context.

Block (1992) examined the comprehension-monitoring process of 25 L1 and L2 readers of English studying as they read expository texts. The think-aloud protocols were used to elicit data from these college freshmen among whom 16 (L1: 8; L2: 8) were categorized as proficient while the rest (L1: 3; L2: 6) were considered less proficient. Only two language-based problems, a search for a referent and vocabulary, were studied during this comprehension-monitoring process in three phases: *evaluation* (problem recognition and problem source identification), *action* (strategic plan and action/solution attempt), and *checking* (check and revision) phases. Although the researcher found that proficient and less proficient L2 readers performed similarly to proficient and less proficient L1 readers respectively, he cautioned that attention be paid when applying the results of L1 research to the context of L2 readers. As think-alouds may provide the investigators with the opportunity to observe and listen to the reader when they are talking about their thought processes as they read (see Ericsson, 2002; Nunan & Bailey, 2009), it may allow the investigators to cross-check or validate the strategies the reader is using. Therefore, Block's study presents an important step toward measuring reading strategy use among participants. However, participants' reflection and interviews with them could have provided more insights into reading strategy use.

A qualitative investigation in Li and Munby's (1996) study on ESL students' use of metacognitive strategies in their academic reading at the graduate level showed that participants varied their strategies depending upon reading assignments and purposes. In-depth interviews, think-aloud sessions, and journals were incorporated in order to study two Chinese graduate

students at Queen's University for over two months. Findings revealed that as reading is a complex process, active and conscious use of various metacognitive strategies was essential for the participants to employ to "plan, monitor or control, evaluate, and remediate" reading comprehension (p. 209). It was confirmed that multiple strategies, such as employing context clues to predict, looking for purpose, locating key words, paraphrasing, repetition, self-questioning, visualizing, using background information, skimming, scanning, and looking for topic sentences, are customarily incorporated while reading academic texts (e.g., books, journals, and research papers). In addition to these strategies, as noticed in the study, the participants also varied their strategies depending upon reading assignments and purposes. The study even claimed that the participants' use of two strategies, such as "picking up key words" and "using L1 domain to compare and contrast what is read" were unique in the research (p. 204). The study also supported the findings from previous research in that the use of metacognitive strategies helped ESL students to advance in their reading performance. Previous studies that suggested that ESL students require a great deal more than English proficiency was also in line with Li and Munby's study.

In recent years, researchers have been employing Mokhtari and Sheorey's (2002) SORS (Survey of Reading Strategies) instrument to explore the reading strategy awareness among adult EAL students. *Global, problem-solving,* and *support* strategies are the three categories of reading strategies that the SORS measures. According to Mokhtari and Sheorey (2002), *global* strategies are the actions that readers carefully take to plan and monitor or manage their own reading. Reading with a purpose in mind, reviewing the text by noting its characteristics, such as length and organization, and reading the important and skipping the unimportant are a few of the individual strategies in this category. *Problem-solving* strategies include strategies, such as

actions and procedures which readers employ to support or repair their comprehension. These are local, problem-solving techniques that readers incorporate when they encounter difficulties while trying to understand textual information. Adjusting speed, trying to get back on track when concentration is lost, and pausing and thinking about what is being read are a few of the strategies in this category. *Support* strategies are the supportive tools that help readers in understanding the text. Taking notes while reading, underlining or circling information, and paraphrasing are a few of the strategies that belong to this category.

Nassaji (2003) studied the role that higher-level syntactic and semantic processes and lower-level word recognition and graphophonic processes play in adult ESL readers' reading comprehension. Sixty adult ESL graduate students from a university in Ontario participated in this study. All of these participants spoke Farsi as native language and had completed their bachelor's degree in Iran. Reading tasks were individually assigned to these participants in 2-hour long single sessions. The reading comprehension in the Nelson-Denny reading test was incorporated for the study. The findings showed that both lower-level processes, such as word recognition and graphophonic processes, and higher-level processes, such as syntactic and semantic processes, significantly distinguished less-skilled readers from skilled readers. The results suggested that the importance of lower-level processes even in advanced ESL readers not be ignored. This study focuses on ESL learners' reading processes, rather than their reading strategy use and subsequent reading performance.

In 2004, Baker and Boonkit studied the use of reading and writing strategies among undergraduate students taking EAP reading and writing courses at a Thai university. These researchers used the Strategy Inventory for Language Learning (SILL), learning diary, and interviews in order to find out the strategies that these students frequently used when reading

texts. The results showed that university-level EAP students most frequently used metacognitive, cognitive, and compensation strategies during their reading. The findings, thus, supported reading strategy instruction among EAP students, which many scholars (e.g., Kern, 1989; Macaro, 2001; Plonsky, 2011; Salataci & Akyel, 2002; Yapp et al., 2021a, 2021b) have emphasized.

In a study on reading strategies in 2005, Poole compared the academic reading strategies of 248 (male = 138, and female = 110) advanced college ESL students in the United States. Mokhtari and Sheorey's (2002) SORS instrument was used to measure adult participants' self-perceived academic reading strategies. The results revealed no significant gender difference in participants' use of reading strategies. As postulated by the researchers, other factors, such as task demands, may have affected advanced ESL students' use of reading strategies. Poole's study included a large sample and used the SORS as a data collection method. However, it did not involve reading strategy instruction or participants' reading performance as a variable in the study.

Yang (2006) discussed the relationship between reading strategies and comprehension monitoring strategies and their use in L2 reading comprehension. Twenty EFL readers were examined for their performance in reading texts, and their think-alouds and retrospective verbal reports were collected. Among the participants, ten were proficient readers, and the other ten were less-proficient readers according to their reading scores in the General English Proficiency Test in Taiwan. The think-aloud tasks were followed by the participants' retrospective verbal reports. Data analysis concluded that the participants adopted reading strategies (also referred as cognitive actions in Yang's study) to repair problems and aid their reading and interpretation within the text when the participants did not have sufficient language knowledge. According to

Yang, comprehension monitoring strategies were applied to monitor reading processes beyond the text and were crucial for readers to identify their unsuccessful reading and comprehend the text appropriately. Therefore, it was suggested that readers use these strategies under specific circumstances while reading particular texts. Similar to the study by Li and Munby (1996), Yang's study was a qualitative study. Yang's research involved different data collection methods in order to investigate the relation between reading strategy use and reading comprehension.

Riazi's (2008) study investigated 120 female Arabic students' pattern of language learning strategy use. These students were majoring in English at a university in Qatar. The Strategy Inventory for Language Learning (SILL, ESL/EFL Student Version, 1990) was the instrument used for this study. This research showed this particular group of participants were medium bordering on high strategy users. Metacognitive strategies were the first and the affective strategies were the last in the order of mean values of reading strategy category use based on the mean values: metacognitive, cognitive, compensation, social, memory and affective. Freshmen students reported the highest rate of the use of strategies, and no significant difference existed in strategy use among four educational levels (freshman, sophomore, junior, and senior), except for the use of compensation strategies. The result, regarding metacognitive strategies' being reported most, is consistent with other studies (e.g., Alsheikh &Mokhtari, 2011; Maasum & Maarof, 2012). However, Riazi's study involved the SILL instrument in order to measure reported strategy use, SILL, which was introduced by Rebecca Oxford in 1990, may not reflect the current trends in reading strategy use among EAP students.

In 2009, Malcolm investigated academic reading strategy use of 160 students at a medical university in Bahrain, using the SORS instrument. The results showed the students' overall reported strategy use was high, which aligned with several other studies, including Magogwe

(2013). Significant differences were found in the students' use of strategies and their use of translation from English to Arabic. Malcolm's study did not involve other methods of data collection other than the SORS, which may not reflect participants' actual strategy use. Mokhtari and Sheorey (2008) emphasized the importance of including different methods of data collection and triangulating the data in the process of capturing participants' strategy use.

Iwai (2009) employed mixed methods research in order to study the role of reading strategy awareness on academic reading among 98 adult ESL students of various academic levels studying at a university in the southeastern part of the United States of America. The researcher used the SORS instrument, a background information questionnaire and a semi-structured interview. The interview was carried out among six English language learners from an English language institute and two undergraduate and two graduate students. The findings showed that all participants were aware of reading strategies during their academic reading, which reflects the results from different studies (refer to Mokhtari & Sheorey, 2008). It was also found that participants from the English language institute reported the most frequent use of reading strategies, compared to the undergraduate and graduate participants. Iwai's study involved different methods of data collection, including semi-structured interviews. However, the reason behind selecting ten out of 98 participants for interview may be questionable. Additionally, interviews with a larger number of participants may have provided more data on reading strategy use, which may have affected the results.

In a case study, Alsheikh (2011) studied reading strategy use in English, French, and Hausa by three advanced proficient trilingual readers who spoke Hausa as their L1. The researcher used a background questionnaire, SORS, a set of three reading passages in three languages, and a think-aloud assessment. The findings showed that the three multilingual readers

demonstrated high awareness of reading strategies and that they applied more reading strategies in their second and third language than in their first language. The *problem-solving* strategy (actions and procedures which readers employ to support or repair their comprehension) category was the most frequently used category, and it was followed by the *global* and *support* strategy uses, respectively, which is also found in other studies (e.g., Alsheikh & Mokhtari, 2011; André, 2018; Jarernkit & Swatevacharkul, 2020; Maasum & Maarof, 2012; Mokhtari & Sheorey, 2008; Yüksel & Yüksel, 2012). It was also found that the most proficient readers employed a wider range of reading strategies than the least proficient readers who were mostly dependent on translation. Just as Iwai (2009) did, Alsheikh also involved different methods of data collection, including the SORS.

Using the SORS, Alhaqbani and Riazi (2012) conducted a study on undergraduate L2 Arabic students' use of reading strategies in Arabic academic texts. The study included 122 participants who were mostly from Africa and Asia. The results showed that *problem-solving* strategies were perceived to be more important compared with *global* and *support* strategies, which is also reflected in other studies (e.g., Jarernkit & Swatevacharku, 2020; Maasum & Maarof, 2012). The investigators found a statistically significant relationship between students' self-rated ability in Arabic reading and their use of *problem-solving strategies*, and *global* strategies and their strategy use overall. Additionally, students from Africa were discovered to have reported the use of more *global* strategies than students from Asia. Students' awareness of the use of reading strategies showed that none of the 30 reading strategies were used at a low-usage level, and this result is also consistent with previous studies (e.g., Alsheikh 2011; Mokhtari & Sheorey, 2008)

Maghsoudi (2012) studied effects of schema activation (activation of students' prior knowledge) on reading comprehension of culturally-loaded texts. Seventy-six sophomore students, divided into control and experimental groups, participated in this study. The participants in the experimental group were provided with pre-reading activities, and their schema was thus activated, whereas no treatment was provided to the participants in the control group. The results revealed that text comprehension improved as the participants in the experimental group received pre-reading activities. Maghsoudi's research is, thus, helpful in identifying the importance of pre-reading activities on reading comprehension. However, the research did not involve the activation of other strategies, which may have been useful in further determining the effect of strategies used in the study.

Magogwe (2013) studied metacognitive reading strategies in relation to language proficiency of 104 first-year students at the University of Botswana. Incorporating the SORS and the interviews, the researcher examined the students' self-reported reading strategy use. The results showed that the students reported high reading proficiency and high use of reading strategies. The researcher examined the self-reported reading proficiencies of the University of Botswana students, and students' awareness and use of metacognitive reading strategies. Magogwe incorporated the use of Mokhtari and Sheorey's (2002) SORS instrument and semi-structured interviews. Among 104 students in Magogwe's study, 26.2% were males, and the rest were all females. The selection of the participants for the study was carried out through convenient sampling. The researcher used triangulation to address the findings of the study. While the SORS provided the quantitative data, the semi-structured interviews, which involved nine students, provided the qualitative data. The results showed that students reported high use of metacognitive reading strategies and high reading proficiency. While Magogwe has used

triangulation of the data from different sources, the SORS and the interviews may not provide an accurate picture of the participants' strategy use. As Mokhtari and Sheorey (2008) pointed out, readers may simply indicate or state their awareness and use of reading strategies on the instrument or via their interviews, but their choice or statement may not capture their use of strategies in reality. Future research could benefit from data elicitation techniques, such as think-alouds and eye tracking, when it comes to capturing participants' actual strategy use while performing a reading task.

For her study on the effects of reading strategy instruction on 28 teacher trainees in a Botswana College of Education, Oyetunji (2013) provided a six-week reading strategy instruction, focusing on seven reading strategies (i.e., the use of self-questioning, background knowledge, inferencing, rereading, drawing conclusions, identifying main ideas, and summarizing). A reading comprehension test was administered in order to examine the effects of reading strategy instruction on the teacher trainees. The reading passage that was taken from a prescribed college text included nine paragraphs and 1,000 words in total. The test consisted of 23 questions in a combination of fill-in-the-blank, multiple choice, and open-ended questions. The results showed a statistically significant increase in the post-test reading comprehension test scores. It was concluded that the reading strategy instruction enhanced teacher trainees' reading performance. Oyetunji's is an interesting study that involved teacher trainees as participants. While the researcher used only a limited number of reading strategies for instruction, a reading comprehension test was the only method employed in order to measure the efficacy of reading strategy instruction on participants' reading performance.

Zhang and Seepho (2013) carried out a study, involving 33 third-year English major undergraduate students at a university in China. The researchers incorporated Metacognitive

Strategy Questionnaire (MSQ), a semi-structured interview, and a reading comprehension test in order to investigate the reading strategy use and its relationship with participants' reading performance. Results revealed a significant positive correlation between the participants' reading strategy use and their reading performance, which are consistent with some other studies as discussed in Grabe (2012). The study suggested that "the students who used more metacognitive strategies tended to score higher on the reading comprehension test, whereas the students who used fewer metacognitive strategies were likely to get low scores" (p. 60). It was concluded that the use and awareness of metacognitive reading strategies played a significant role in students' reading performance. Zhang and Seepho's study importantly showed positive correlations between the participants' strategy use and their reading performance. However, the study did not use other statistical methods to examine the effects of reading strategy use on the participants' reading comprehension.

Akkakoson (2013) studied 164 participants at a Thai university for 16 weeks in order to investigate the relationship between strategic reading instruction, the process of learning L2-based reading strategies and English reading achievement. There were 82 participants in the experimental cohort and 82 in the comparison cohort. The results showed that the experimental cohort outperformed the comparison cohort in the post-course standardized English test. It was also revealed that participants with higher-level reading proficiency performed more effectively than participants with low-level reading proficiency at using L2-based reading strategies. In comparison to many studies previously reviewed, Akkakoson used a larger sample size and compared the results between the experimental and comparison groups. However, in addition to a standardized English test, other methods of data collection, such as think-alouds and

interviews, could be used in order to measure the effect of strategic reading instruction on English reading achievement.

Pei (2014) studied 66 lower-intermediate level EFL learners in China for eight weeks in order to investigate the efficacy of reading strategy instruction on their metacognitive awareness and reading performance. The SORS and a self-developed reading comprehension test were used in order to measure metacognitive awareness and reading performance. According to the findings, there was no statistically significant difference in reported metacognitive strategy awareness or reading performance between the members of the experimental group and the comparison group. One important variable to note in this study is that the reading strategy instruction was provided only for about 15 minutes per session for eight weeks. The length of treatment may have affected the results in this case and merits further research.

Zare and Maftoon (2015) conducted a mixed-methods study in order to investigate reading strategy use among 82 students enrolled in three different Master of Arts programs—power engineering ($n$ = 27), physics ($n$ = 28), and communication ($n$ = 27), at two different institutions in Iran. The data collection methods included Mokhtari and Sheorey's (2020) SORS instrument and a think-aloud protocol. The results showed that *global* strategies were most frequently used, and the use of these strategies was followed by *problem-solving* and *support* strategies, respectively, and that participants from three different fields of study performed similarly in terms of their strategic behaviour. In contrast, many studies, including Alsheikh (2011), Alsheikh and Mokhtari (2011), Jarernkit and Swatevacharkul (2020), Maasum and Maarof (2012), and Yüksel and Yüksel (2012), found the *problem-solving* category to be the most reported. No relationship was thus found between the field of study and the reading strategy use among the participants.

Rastegar et al.'s (2017) study explored the relationship between metacognitive reading strategy use and reading performance among 120 EFL learners studying Bachelor of Arts at two universities in Iran. Data were collected, using Mokhtari and Sheorey's (2002) SORS and Educational Testing Service's (2003) TOEFL (Test of English as a Foreign Language) reading comprehension test. The findings revealed a significant positive relationship between participants' reading strategy use and their reading comprehension, which are consistent with several previous studies (e.g., Barnett, 1988; Kern, 1989; Salataci & Akyel, 2002; Yang, 2006).

Karimi and Dastgoshadeh (2018) investigated the efficacy of strategy-based instruction on 33 undergraduate students' reading performance and reading autonomy in an EAP context at a university in Iran. These participants were divided into two groups: the control and experimental groups. The experimental group received reading strategy instruction whereas the control group was provided with normal reading classes without strategy instruction. TOEFL reading comprehension tests and learner autonomy questionnaire were used in order to collect data in the study. The findings revealed that reading strategy instruction was instrumental in helping EAP students make progress in reading comprehension. Such strategy-based instruction supported EAP student awareness of reading strategies, thereby helping students "comprehend the reading texts more effectively" (p. 16). However, the effect of strategy-based instruction on the students' reading autonomy was not significant in this study. It examined the effect of reading strategy instruction on reading performance and has included TOEFL reading comprehension tests. However, no instrument has been used in order to measure reading strategy awareness, which may have critical in finding out the relationship between the reading strategy awareness and the reading comprehension.

In 2018, Al-Mekhlafi investigated reading strategy awareness among 74 EFL learners in an institution of higher learning in Oman. These 74 participants represented three categories of English language proficiency levels: elementary, intermediate, and advanced. The researcher incorporated Mokhtari and Reichard's (2002) Metacognitive Awareness of Reading Strategies Inventory (MARSI) and a think-aloud instrument as methods of data collection. The findings revealed that participants reported a high usage of the *global*, *problem-solving*, and *support* strategies and that no significant differences were found in the reading strategy use or reading strategy category use across learners representing three different proficiency levels. The results on the reporting of a high usage of three strategy categories are consistent with previous studies (e.g., Alhaqbani & Riazi, 2012; Alsheikh, 2011; Jarernkit and Swatevacharkul, 2020; Magogwe, 2013; Malcolm, 2009). Al-Mekhlafi's study has included MARSI in order to measure reported strategy use. However, as the developers of the MARSI and SORS instruments, Mokhtari and Sheorey (2002; 2008) discussed that while the MARSI measures L1 readers' reported strategy use, the SORS is designed to measure ESL readers' reported strategy use.

In her studies, André (2018) investigated reading strategy use among 36 adult English language learners enrolled in English language programs at Illinois State University and University of Illinois at Urbana-Champaign. A background questionnaire, SORS, retrospective miscue analysis ("an instructional strategy that invites readers to reflect on their own reading process" (Goodman, 1996, p. 600), and semi-structured interviews were employed for data collection. The results showed that *problem-solving* reading strategies were most frequently used across L2 learners from different language backgrounds: Spanish, Asian, Arabic, and Kazakh. Similarly, L2 learners with different English proficiency levels were also found to have reported *problem-solving* strategies as the most frequently used strategy category, which was followed by

*support* and *global* strategies respectively. These results are consistent with the findings from previous studies (e.g., Alsheikh 2011; Alsheikh & Mokhtari, 2011; Maasum & Maarof, 2012; Mokhtari & Sheorey, 2008; Yüksel & Yüksel, 2012).

Most recently, Jarernkit and Swatevacharkul (2020) investigated the level of reading strategy use among nine English teachers from three large private schools in Thailand. The researcher used the SORS and a semi-structured interview in order to measure reading strategy use among their participants. The results showed that participants reported high strategy use. Similarly, the *global, problem-solving,* and *support* strategy usages were also high among the participants. Again, the results, reporting a high usage of the three strategy categories are in line with several other studies (e.g., Alhaqbani & Riazi, 2012; Alsheikh, 2011).

A large-scale study, Yapp et al. (2021a) studied 801 first-year polytechnic students who received L2 reading strategy instruction on seven reading strategies (e.g., connecting new knowledge to what you already know, asking oneself questions while reading, making predictions while reading, visualization, paying attention to structure and signal words, skimming, and scanning) for seven weeks. During the intervention, students received reading strategy instruction on one reading strategy per week. Students completed one of the three reading tests of equal difficulty at the beginning and the end of the treatment. It was found that students performed significantly better in their reading comprehension after the intervention. The researchers acknowledged that students' prior education level contributed to this effect to some extent. Although Yapp et al.'s study included different reading strategies, the results are consistent with past studies (e.g., Chaury, 2015; Küçükoğlu, 2013; Oyetunji, 2013).

Al-Kiyumi et al. (2021) investigated the effects of metacognitive reading strategies on the reading performance and attitudes of Omani EFL foundation-level students. Forty-five students

were divided into two groups. While the experimental group received the instruction on metacognitive reading strategies, the comparison group received regular reading instruction. The investigators used a pre-post reading comprehension test in order to measure reading performance and an attitude questionnaire in order to study the participants' attitudes towards metacognitive reading strategy use. As in previous studies, including Chaury (2015), Küçükoğlu (2013), Oyetunji (2013), and Yapp et al. (2021a), the results in Al-Kiyumi et al.'s study also revealed that the experimental group scored statistically significantly higher in reading comprehension. In addition, it was found that the members of the experimental group had positive attitude towards metacognitive reading strategy use.

A meta-analysis of 46 L2 reading strategies carried out by Yapp et al. (2021b) demonstrated the effectiveness of L2 reading strategy intervention on reading comprehension. Participants in an intervention group outperformed participants in control groups. The study found a large effect size, with an overall mean effect size of *0.91*. However, Yapp et al. considered only the following ten strategies for their meta-analysis: activating background knowledge, guessing meanings from context, semantic mapping, making predictions while reading, visualization, skimming and scanning, looking for clues in headings, subheadings and pictures, connecting new knowledge to what is already known, asking questions while reading, and paying attention to text structure and signal words (pp. 163-164). Among these strategies, the reading strategy—connecting new knowledge to what is already known—was found the most effective reading strategy. The researchers also observed that the length of the intervention did not affect reading performance (cf. Plonsky, 2011).

The following table summarizes the studies in terms of the areas of inquiry, the methods of data collection, and key results. These studies are presented in chronological order.

Table 1

Summary of the Studies Related to Reading Strategy Use

| | Participants | Areas of Investigation | Methods of data collection | Results |
|---|---|---|---|---|
| Carrell (1983) | ESL students and English-as-first-language students (*N* = 156) | Three components of background knowledge: context, lexical items that provides textual clues about the content, and presence of prior knowledge in the content area | A recall protocol | All three components of background knowledge played were critical to reading, understanding, and recalling. |
| Carrell (1985) | ESL students (*N* = 25) | Text structure of expository texts | Pre- and post-tests, with recall of information | The training on text structure significantly improved the recalling of information. |
| Carrell (1987) | ESL students (*N* = 52) | Culture-specific content schemata and formal (formal, rhetorical organizational structures of texts) schemata | Recall of information via multiple choice questions on one text with culturally familiar content and the other with culturally unfamiliar content | Reading became relatively easy when both content and rhetorical forms were familiar. |
| Barnett (1988) | ESL students (*N* = 278) | Reading strategy use and reading comprehension | A recall protocol; reading strategy use questionnaire | Reading strategies supported reading comprehension. |
| Anderson (1991) | ESL students (*N* = 28) | Reading strategy use when reading for a standardized reading comprehension test and reading academic texts | Reading comprehension test; think-alouds in Spanish or English | Irrespective of their scores on the reading tests, participants used the same kind of reading strategies. Readers must know what strategies to use and how. |

| | Participants | Areas of Investigation | Methods of data collection | Results |
|---|---|---|---|---|
| Block (1992) | L1 and L2 speakers of English (*N* = 25) | Comprehension-monitoring process | Think-alouds | Proficient and less proficient L2 readers performed similarly to proficient and less proficient L1 readers. |
| Li and Munby (1996) | ESL students (*N* = 2) | Reading strategy use and reading comprehension | Interviews; think-alouds; journal entries | Reading strategy use supported reading performance. Participants varied their strategies based on reading assignments and purposes. |
| Nassaji (2003) | ESL students (*N* = 60) | Role of higher-level syntactic and semantic processes and lower-level word recognition and graphophonic processes in reading comprehension | Reading comprehension test | Lower-level word-recognition processes are critical to reading comprehension. |
| Baker and Boonkit (2004) | EAP students (*N* = 107) | Reading and writing strategy use | SILL; learning diary; interviews | The need to focus metacognitive, cognitive, and compensation strategies was suggested in academic English instruction. |
| Poole (2005) | ESL students (*N* = 248) | Reading strategy use | The SORS | No significant gender difference in reading strategy use was found. |
| Yang (2006) | EFL students (*N* = 20) | Reading strategy use and reading comprehension | Think-alouds; retrospective verbal reports | Reading strategy use supported reading comprehension. |
| Riazi (2008) | EFL (English as a foreign language) students (*N* = 120) | Reading strategy use | The Strategy Inventory for Language Learning (SILL) | A medium usage was reported level in their strategy use. |

| | Participants | Areas of Investigation | Methods of data collection | Results |
|---|---|---|---|---|
| Malcolm (2009) | EFL students (*N* = 160) | Reading strategy use | The SORS | The overall reported strategy was high. |
| Iwai (2009) | ESL students (*N* = 98) | Reading strategy use | The SORS; a background information questionnaire; a semi-structured interview | Participants studying English language reported more frequent use of reading strategies than participants from undergraduate and graduate programs. |
| Alsheikh (2011) | EFL students (*N* = 3) | Reading strategy use in English, French, and Hausa | The SORS; a background questionnaire; reading passages; think-alouds | Participants reported high reading strategy awareness. The *problem-solving* strategy use was the most frequently reported category. |
| Alhaqbani and Riazi (2012) | EFL students (*N* = 122) | Reading strategy use | The SORS | The *problem-solving strategy* use was the most frequently reported category. |
| Maghsoudi (2012) | EFL students (*N* = 76) | Schema activation and reading comprehension | Reading comprehension test | Pre-reading activities improved reading comprehension. |
| Magogwe (2013) | EFL students (*N* = 104) | Reading strategy use | The SORS; semi-structured interviews | Participants demonstrated high reading strategy awareness. |
| Oyetunji (2013) | EFL teacher trainees (*N* = 28) | Reading strategy use and reading comprehension | Reading comprehension test | Reading strategy instruction enhanced reading comprehension. |
| Zhang and Seepho (2013) | EFL students (*N* = 33) | Reading strategy use and reading comprehension | Metacognitive Strategy Questionnaire (MSQ); semi-structured interviews; reading comprehension test | Reading strategy use was critical to reading comprehension. |

| | Participants | Areas of Investigation | Methods of data collection | Results |
|---|---|---|---|---|
| Akkakoson (2013) | EFL students (*N* = 164) | Reading strategy instruction; reading achievement | A standardized English test; portfolio entry | Reading strategy instruction improved reading performance. |
| Pei (2014) | EFL students (*N* = 66) | Reading strategy instruction and its efficacy on reading awareness and reading performance | The SORS; self-developed reading comprehension test; interview | No statistically significant difference in reported strategy use and reading performance was found between experimental and comparison groups. |
| Zare and Maftoon (2015) | EFL students (*N* = 82) | Reading strategy use | The SORS; think-aloud protocol | *Global* strategies were most frequently reported and were followed by *problem-solving* and *support* strategies, respectively. |
| Rastegar et al. (2017) | EFL students (*N* = 120) | Reading strategy use and reading performance | The SORS; TOEFL reading comprehension test | A significant positive relationship between reading strategy use and reading comprehension was found. |
| Karimi and Dastgoshadeh (2018) | EAP students (*N* = 33) | Reading strategy instruction and its efficacy on reading performance | TOEFL reading comprehension test | Reading strategy instruction supported reading comprehension. |
| Al-Mekhlafi (2018) | EFL students (*N* = 74) | Reading strategy use | Metacognitive Awareness of Reading Strategies Inventory (MARSI) | A high usage of *global*, *problem-solving*, and *support* strategies was found. |
| André (2018) | ESL students (*N* = 36) | Reading strategy use | A background questionnaire; the SORS; a retrospective miscue analysis; semi-structured interviews | *Problem-solving* strategies were most frequently used, which was followed by *support* and *global* strategies. |

| | Participants | Areas of Investigation | Methods of data collection | Results |
|---|---|---|---|---|
| Jarernkit and Swatevacharkul (2020) | EFL teachers (*N* = 9) | Reading strategy use | The SORS; a semi-structured interview | A high usage of *global*, *problem-solving*, and *support* strategies was found. |
| Yapp et al. (2021a) | ESL students (*N* = 801) | Reading strategy instruction and reading comprehension | Reading comprehension test | Reading comprehension statistically significantly improved after the intervention. |
| Al-Kiyumi et al. (2021) | EFL students (*N* = 45) | Reading strategy use and reading comprehension | Reading comprehension test | The experimental group statistically significantly outperformed the comparison group in reported strategy use and reading performance. |

The studies summarized in Table 1 show the variability (such as in the consideration of the variables and the methods of data collection used) that exists in the L2 reading strategy use literature, especially in the context of adult English language learners. While some of the studies have been carried out in English-speaking countries, such as Canada and the United States (e.g., Carrell, 1983, 1985, 1987; Iwai, 2009; Li & Munby, 1996; Nassaji, 2003), many of them have been conducted in other countries, including Qatar, Taiwan, and China, where English is used as a foreign language (e.g., Riazi, 2008; Yang, 2006; Al-Kiyumi et al., 2021). In addition to country-specific learning contexts, studies presented in Table 1 also vary in their use of variables for the study. Besides reading strategy use and reading performance, these studies have also examined other or additional variables, such as background knowledge (e.g., Carrell, 1983), recalling of information (e.g., Carrell, 1983, 1985, 1987), gender (e.g., Poole, 2005),

comprehension monitoring process (e.g., Block, 1992), higher-level and lower-level reading processes (e.g., Nassaji, 2003), and schema activation (e.g., Maghsoudi, 2012).

A variety of methodological approaches have been used in the L2 reading strategy use literature. Quantitative studies that have included survey questionnaires or instruments in order to investigate reading strategy use among adult ESL and EFL learners seem to have constituted the most frequently used design in L2 reading strategy use (e.g., Alhaqbani & Riazi, 2012; Al-Mekhlafi, 2018; Alsheikh, 2011; Barnett, 1988; Carrell, 1985; Malcolm, 2009; Poole, 2005; Riazi, 2008). Some quantitative studies have used reading comprehension tests to assess the effect of readers' strategy use on their reading performance (e.g., Al-Kiyumi et al, 2021; Karimi & Dastgoshadeh, 2018; Maghsoudi, 2012; Nassaji, 2003; Oyetunji, 2013; Yapp et al., 2021). Some studies are both quantitative and qualitative in their methodological approach and have triangulated the data in order to investigate reading strategy use among L2 readers (e.g., Anderson, 1991; Magogwe, 2013; Zhang & Seepho, 2013). However, only a few studies have specifically called their research design a mixed-methods approach (e.g., Iwai, 2009; Zare & Maftoon, 2015). Mixed-methods research offers the opportunity for triangulation, is complementary in nature, as the results from one method may help elaborate and clarify the results from the other method and helps extend the range and scope of investigation through the use of different methods (Green, Caracelli, & Graham, 1989). In addition, mixed methods studies can help investigate research objectives via multiple research methods and phases (Creswell & Plano Clark, 2011). Given its methodological benefits, I used a mixed-methods approach in order to investigate the efficacy of reading strategy use on reading performance.

Moreover, many of these studies also differ in their methods of data collection. While some studies, including Poole (2005) and Malcolm (2009), have used the SORS instrument in

order to measure reported reading strategy use, other studies have, in addition to the SORS, included semi-structured interviews (e.g., Iwai, 2009; Jarernkit & Swatevacharkul, 2020; Magogwe, 2013) and think-alouds (e.g., Alsheikh, 2011). Some others have incorporated the MARSI (e.g., Al-Mekhlafi, 2018), and still others have included the SILL (e.g., Riazi, 2008). While the MARSI, which was developed by Mokhtari and Reichard (2002), is an instrument to measure L1 speakers' reading strategy use and awareness, the SORS helps assess L2 speakers' reading strategy use and awareness (Mokhtari & Sheorey, 2002, 2008; Mokhtari, Dimitrov, & Reichard (2018). Oxford's (1990) SILL may need a "modern touch, for instance, in the form of adaptation or combination with other research methods and the inclusion of strategies" (Amerstorfer, 2018, p. 497). In order to measure reading performance, several studies have also used reading comprehension tests, including IELTS and TOEFL reading tests (e.g., Al-Kiyumi et al., 2021; Anderson, 1991; Karimi & Dastgoshadeh, 2018; Maghsoudi, 2012; Nassaji, 2003; Oyetunji, 2013; Pei, 2014; Rastegar et al. 2017; Yapp et al., 2021a; Zhang & Seepho, 2013), while other studies have included recall protocols (Carrell, 1983, 1985, 1987; Barnett, 1988), journal entries (e.g., Li & Munby, 1996), Strategy Inventory for Language Learning (SILL) (e.g., Baker & Boonkit, 2004; Riazi, 2008), and Metacognitive Awareness of Reading Strategies Inventory (MARSI) (e.g., Al-Mekhlafi, 2018). As presented above, the learning context (teaching of English as a second vs. foreign language) in which studies have taken place may differ from an English-speaking country to a non-English speaking country and may affect how students read academic texts and use reading strategies. The contextual variables, including students' backgrounds and the instructional setting, may affect reading strategy use and its effectiveness (Oxford, 2011), and successful or effective strategy use may depend on contexts (Carrell, 1998). Moreover, some readers may find some strategies useful while others may not

find the strategies helpful (Sarig, 1987). EAP practitioners in English-speaking countries, including Canada, might also not find studies carried out in a country where English is used a foreign language beneficial to their students and these EAP practitioners may turn to researching studies conducted in the context that best reflects their teaching circumstances. While it is important that different variables be considered in order to examine the effects of these variables during reading strategy use and reading performance, researchers (see Brantmeier, 2002; Erler & Finkbeiner, 2011) expressed that these variables have made it difficult to compare studies, thereby making it difficult to measure the efficacy of reading strategy use. It may suggest that we need to continue to carry out further studies on reading strategy use, using specific variables that contribute to investigating the efficacy of reading strategy use. However, at the same time, when deciding on the variables for the study, it is important to understand what Erler and Finkbeiner (2011) said—"while it is acknowledged that there are myriad variables involved in L2 reading, there is a danger both in trying to take too many variables into account and also in inadvertently ignoring variables" (p. 202). Again, the use of these different methods of data collection, which, according to scholars (see Brantmeier, 2002; Erler & Finkbeiner, 2011), has made comparisons between studies difficult, demonstrated the need for further research in reading strategy use.

The findings on reading strategy use among adult EAP readers seem to vary, depending on different contexts or factors. Most studies have shown that reading strategy use contributes to the development of adult EAP learners' reading performance (see Al-Kiyumi et al., 2021; Baker & Boonkit, 2004; Barnett, 1988; Karimi & Dastgoshadeh, 2018; Li & Munby, 1996; Oyetunji, 2013; Yang, 2006; Yapp et al. (2021a); Zhang & Seepho, 2013). However, in the EAP context, Pei (2014) did not find statistically significant difference in reading strategy use and reading performance between the experimental and comparison groups. In addition, while many studies

have reported high strategy use (see Al-Mekhlafi, 2018; Alsheikh, 2011; Jarernkit & Swatevacharkul, 2020; Malcolm, 2009; Megogwe, 2013), Riazi (2008) reported a medium-usage level of reading strategy use among participants. In a similar research context, while some researchers reported the *problem-solving* strategy as the most frequently reported strategy category (see Alhaqbani & Riazi, 2012; André, 2018), Zare and Maftoon (2015) found the *global* strategy as the most frequently reported strategy category. Overall, different studies have shown different results in reading strategy use and reading performance, and as a consequence, results are, thus, still inconclusive or indefinite. While many of these studies supported reading strategy use (e.g., Barnett, 1988; Karimi & Dastgoshadeh, 2018; Li & Munby, 1996; Oyntunji, 2013; Yang, 2012; Yapp et al., 2021a; 2021b), studies, including Pei (2014), have not been able to provide evidence in favour of reading strategy use. Although the studies that have shown that reading strategy use improves reading performance, these studies have not been carried out in the same context, using the same variables. Moreover, none of these studies have been carried out, using an action research framework which allows the instructor-researcher to investigate their own students' learning, including reading strategy use, in the process of supporting student learning. Therefore, it is essential that further research be carried out, considering different methodological approaches, including action research, and data collection methods, such as surveys, interviews, think-alouds, and reflections and triangulation of these data, which contribute to the body of L2 reading strategy use literature and help compare the results between studies easy and possible.

While the studies reviewed in this chapter involved different methodological approaches and methods of data collection, none of them examined participants' strategy use through their verbal reflections within a mixed-methods action research framework. The present study

integrated the element of participants' reflections on their strategy use during and after their reading performance. As discussed above, John Dewey (1933) is, historically, acknowledged as the originator of the concept of reflection in learning, and he considered reflection as "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends…" (p. 6). Huang's (2010b) study indicated that reflection process in their learning helped students to strengthen their awareness in order for them to be more focused on their learning process and strategic behaviours. In addition, by engaging in reflective practice, learners are not only able to monitor the process of their learning but are also able to assess further actions they can take in order to further enhance their learning (see Huang, 2021). The qualitative data derived from participants' reflective entries in the present study aims to provide a fuller picture of their strategy use.

Further, few studies involving L2 reading strategies have included triangulation of data from multiple sources (Erler & Finkbeiner, 2011). Research on metacognition and L2 reading still needs more attention although studies on metacognition and L1 reading have received greater attention in the literature (Brantmeier & Dragiyski, 2009). Carrell's (1989) study called for more research on metacognition and L2 reading ability and on "the most effective instructional means for teaching reading strategies" (p. 128) remains valid three decades later. While L2 reading research has evidenced that readers' awareness of strategy use is associated with reading performance, limited research has addressed the efficacy of reading strategy instruction among adult EAL students' reading strategy use and their reading performance, especially in the Canadian context. The present action research project is designed to fill this void through different data collection methods, as participants had opportunities to receive

reading strategy instruction, experiment with different reading strategies while reading academic materials in class, respond to comprehension questions, and report on their reading strategy use.

## 2.5 Research Questions

The present research study aims to address the following research questions:

1. What are the strategies EAL students use when reading academic texts, as reported through the Survey of Reading Strategies (SORS) instrument and students' post-task reflections and post-intervention interviews?
2. What are the differences in pre- and post-intervention reading comprehension test scores and reported reading strategy use between the experimental and comparison groups, as measured through the SORS instrument?
3. What are the relationships between students' reported reading strategy use and their reading comprehension test scores before and after receiving reading strategy instruction?
4. Does reading strategy instruction help enhance reading strategy use and reading comprehension performance among participants in the experimental groups, in relation to the comparison group?

# Chapter 3: Methods

This chapter first describes the research design—mixed methods action research (MMAR)—which is applied to the present study in order to determine the efficacy of reading strategy instruction among adult EAP students. Then the chapter introduces participant characteristics, followed by the intervention—reading strategy instruction. In addition, I describe data collection instruments as well as data collection and data analysis procedures in the remaining sub-sections of the chapter in order to answer the research questions.

## 3.1 Research Design

This section provides an overview of the study design used. To answer the research questions, MMAR (Ivankova, 2015) was implemented in this study. The following sub-sections first describe, explain, and justify the MMAR methodological framework and then the stages which the present inquiry follows.

### 3.1.1 Mixed Methods Action Research (MMAR):

Before defining and describing MMAR in the context of this study, the use of action research is briefly explained. Within the MMAR methodology, action research allows practitioners to reflect on their practices and act for change. As O'Leary (2014) expressed, action research is a research methodology that can empower researchers to "improve their own professional practice" (p. 167), by providing the opportunity to plan, act, observe, and reflect, and then repeat this cycle as necessary. She stressed that as the instruction does not come down from high-level or outside experts, practitioners can support their own learning and professional

growth through action research. Grounded in "real problems and real-life situations" (O'Leary, 2014, p. 168) through a cyclical process, an action-research study engages in a "local focus and addresses specific practical issues that have value for a specific community and a professional setting" (Ivankova, 2015, p. 29). Action research helps investigators find "effective solutions to problems they confront in their everyday lives" (Stringer, 2014, p. 1).

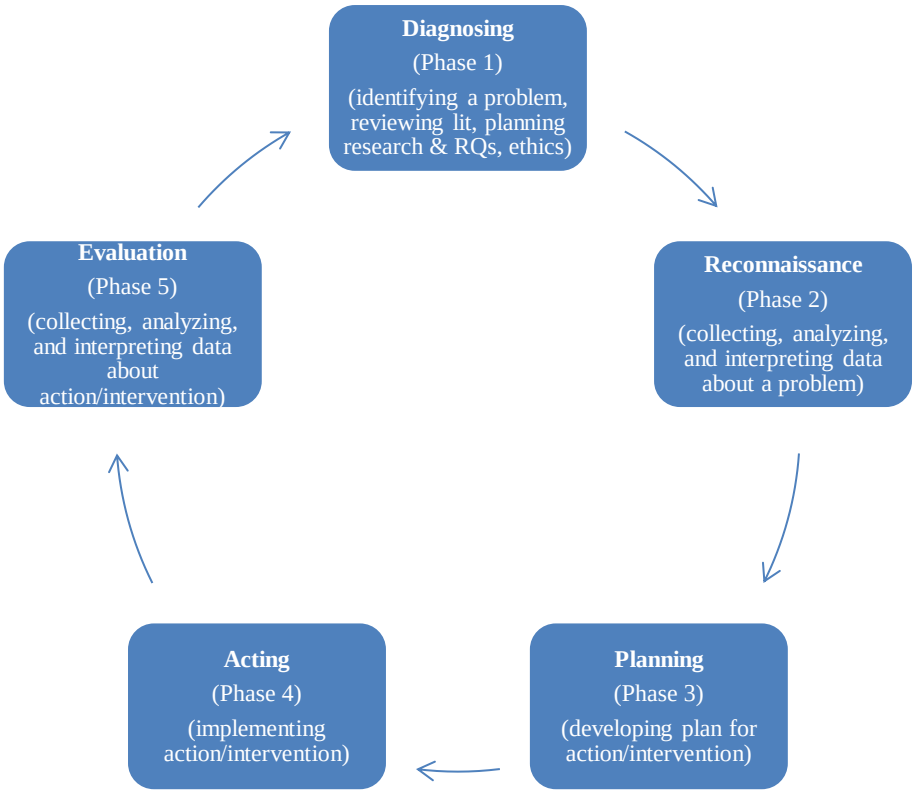
Action research in this study is thus a viable method for me as a practitioner-researcher to implement plans in phases and to find out the efficacy of intervention. It is a cyclical process wherein I get engaged in addressing classroom issues, applying intervention strategies, reflecting on and monitoring the process, and finding solutions to the issues in an iterative process. Conducted in a cyclical process, action research enables practitioners to intervene deliberately in the area that needs attention and to generate changes and solutions in practice (Burns, 2010). Such research helps teachers learn about their own teaching practices and enhance student learning (Grabe & Stoller, 2011). Action research supports teachers in their professional development through the systematic collection and analysis of data and the findings of the study that teachers can use in order to improve their teaching practices and enhance student learning (Bailey, 2001; Burns, 2010; Edge, 2001). Similarly, Nunan and Bailey (2009) called action research an approach to inquiry that helps collect data systematically and understand the meanings involved in a context that is local. As Reason and Bradbury (2008) discussed, action research is about "working toward practical outcomes" and seeks to develop "practical knowing…and bring together action and reflection, theory and practice, in participation with others individuals" (p. 4), whose main purpose is to construct "new forms of understanding, since action without reflection and understanding is blind" (p. 2). Classroom teachers, thus, carry out action research in order to investigate their personal or local concerns taking place in their

own classrooms so that they can implement what enhances learner success and improve their own instructional practices. It means action research is grounded in real classroom problems and issues. A teacher-researcher can continue to carry out their action research and repeat their cyclical process until they arrive at solutions to their problem. Reflection is a major component in action research, and it may help determine the repetition of the cyclical process when carrying out action research.

According to Ivankova and Wingo (2018), applying "mixed methods procedures into an action research cycle helps secure an effective and scientifically sound approach to action/intervention planning, implementation, and monitoring" (p. 986). Using MMAR, the present study involved triangulation of quantitative and qualitative data in order to "gain a better understanding of a complex phenomenon by converging numeric trends from quantitative data and specific details from qualitative data and to produce evidence for the validity of research outcomes through the convergence and corroboration of the findings" (Dörnyei, 2016, p. 45). MMAR is a research methodological framework that includes the following stages in the action research cycle and integrate both qualitative and quantitative data in the interpretation and evaluation of the study results: *diagnosing*, *reconnaissance*, *planning*, *acting*, and *evaluating* (Ivankova, 2015). Figure 1 illustrates these stages. Each of these stages include specific action steps and influence change-actions for the following stage in the study cycle.

**Figure 1**

*Mixed-Methods Action Research Cycle*




The first *diagnosing* phase involves specific logical steps that might often be iterative. These steps include identification of a problem, review of the literature on the topic and existing practices and theories, development of a general research study plan, consideration of ethical issues, and articulation of the overall study purpose, outcomes, research questions, and research design, and identification of the study sample and types of data collection. In the present study, participants' background information, reported strategy use through a reading inventory, and responses to the pre-intervention reading comprehension test were collected during the *diagnosing* stage.

In the *reconnaissance* phase, the problem or issue found in the *diagnosing* phase is assessed in order to identify the areas for improvement or change and inform the following

*planning* phase of the action or intervention plan to address the problem. The phase includes clarifying specific purpose and research questions and preparing meta-inferences (inferences obtained through interpretation of qualitative and or quantitative data) from the *diagnosing* phase. In the current study, the data received from participants' background information, reported strategy use through a reading inventory, and responses to the pre-intervention RC test were analyzed, and a preliminary assessment of participants' strategy use was generated in the *reconnaissance* stage.

The next step in the action research cycle is to plan. In the *planning* phase, as Ivankova (2015) proposed, the intervention is planned as per the preliminary assessment from the *reconnaissance* phase. Therefore, in the *planning* stage of the present study, an intervention plan is developed, using the preliminary assessment.

The *acting* phase involves carrying out of the intervention plan designed in the *planning* phase. The intervention study was implemented over nine sessions during the *acting* stage for the current project. Participants' weekly post-task verbal reflections were collected during sessions in this stage.

In the final *evaluating* phase, evidence is gathered through both qualitative and quantitative data analysis in order to examine the efficacy of the intervention. For the present study, participants' post-intervention reported strategy use through SORS and their responses to the post-intervention reading comprehension (RC) test and the interviews were gathered. Data were analyzed quantitatively and qualitatively.

In this cyclical process, the number of groups and the duration of reading strategy instruction need some clarification at this time. There were three groups in the present study—Experimental Group A (EGA), Experimental Group B (EGB), and Comparison Group (CG).

During the *planning* stage, an intervention was designed for EGA and EGB, but as CG received no reading strategy instruction, no intervention was planned for this (CG) group. During the *acting* stage, while both EGA and EGB groups received reading strategy instruction, CG received regular reading instruction without explicit instruction on reading strategy use. Regarding the duration of the intervention, reading strategy instruction classes were held once a week for nine weeks for EGA and twice a week for six weeks for EGB. Each of these sessions lasted for 90 minutes.

In order to address the research questions within the MMAR framework, action researchers may include participant performance scores or grades and reflective entries and other sources of qualitative data. The use of different sources of data warrants the triangulation or synthesis of multiple sources of data to achieve rigour (James et al., 2008; Koshy et al., 2011; Mills, 2011). Integrating mixed-methods and action research, practitioner-researchers can develop "a new appreciation for a data-driven decision-making process" and enhance their existing practices (Lyons & DeFranco, 2010, p. 149 as cited in Ivankova, 2015, p. 58). Mixed methods research is an approach to inquiry that involves gathering and integrating quantitative and qualitative data in a single study (Dörnyei, 2016). This approach helps to achieve the "broad purposes of breadth and depth of understanding and corroboration" (Johnson et al., 2007, p. 123), answer questions that quantitative or qualitative designs can not answer alone (Creswell & Plano Clark, 2011), and provide a "more complete understanding of a research problem than either approach alone" (Creswell, 2014, p. 4). The purpose of applying the mixed methods action research design was thus to address the research questions from multiple perspectives in order to draw conclusions (Ivankova & Kawamura, 2010). Being a mixed methods study, this study, thus, offers the opportunity to integrate both quantitative and qualitative data analyses that include

participants' narratives in the telling of their experiences on reading strategy use during their post-task verbal reflections and post-intervention interviews. These narratives that have "a unique power to resonate with many people" help enhance "the transferability of research findings" (Johnston, Wildy, & Shand, 2021, p. 2).

Some practitioner-researchers from different disciplines, including education, nursing, and social work, may use MMAR as their methodology based on their research questions (Ivankova, 2015). In the post-secondary context, some practitioner-researchers use the scholarship of teaching and learning (SoTL) methodology to implement classroom-oriented inquiries (Huang, 2021). Working with EAP students in the process of developing their language skills in Canada, I initially carried out research, using MMAR. As I have now started to work at a post-secondary institution in my capacity as EAP-SoTL Professor, I find it important for me to discuss SoTL methodology to some extent, as my research area now expands from purely an EAP context to a transitional EAP program where both language courses and research skills are taught in order to help students transition to college level programs—programs in which SoTL, rather than action research, is widely used.

### 3.1.2 Scholarship of Teaching and Learning (SoTL)

In the areas of post-secondary education, scholars apply the term *Scholarship of Teaching and Learning* (SoTL) in the similar vein as practitioner-researchers in the context of education, including the field of TESOL and applied linguistics (Huang, 2021). A large number of classroom research projects are conducted in education, which includes different approaches that may be of value to SoTL (Miller-Young & Yeo, 2015).

Hubball and Clarke (2010) considered SoTL a "distinctive form of practice-based research within higher education" (p. 1). In fact, there are several ways that SoTL has been defined, which has led scholars and institutions to respect diversity and moving "beyond the search for a common definition or a unifying conceptualisation" within SoTL's purpose of enhancing "students' experience of learning" (Trigwell, 2013, p. 95). SoTL is the "systematic study of teaching and learning and the public sharing and review of such work through live or virtual presentations, performances, or publications…SoTL work focuses on teaching and learning at the college level and is primarily classroom and disciplinary based" (McKinney, 2006, p. 39). Similarly, Potter and Kustra (2011) defined as the "systematic study of teaching and learning, using established or validated criteria of scholarship, to understand how teaching (beliefs, behaviours, attitudes, and values) can maximize learning, and/or develop a more accurate understanding of learning, resulting in products that are publicly shared for critique and use by an appropriate community" (p. 2). Educators at institutions of higher learning carry out SoTL projects in their classrooms to support student learning, and SoTL has, thus, started to gain attention at institutions across Canada, which is evident via funding provided to faculty members in order to carry out SoTL projects (Newton, Miller-Young, & Sanago, 2019). When carrying out SoTL research, instructors have to reflect on their teaching, explore information to further develop their knowledge and expertise, and apply their research skills in order to investigate their teaching and learning practices in their own classrooms (Gayle et al., 2013).

Felten (2013) discussed principles for good practice in SoTL: inquiry focused on student learning, grounded in context, methodologically sound, conducted in partnership with students, and appropriately public. According to the first principle—inquiry focused on student learning, it is important for practitioner researchers to understand student learning and engage in the

development of "disciplinary knowledge and skill" as well as attitudes that "connect to learning" (p. 122). The second principle–grounded in context—establishes the importance of scholarly context, including relevant literature, and local context, such as classroom and institution, when carrying out SoTL works. The third principle pertains to the use of rigorous research methods based on SoTL research. As the fourth principle—conducted in partnership with students – suggests, research should engage learners in inquiry process as an integral part of the study**.** The fifth principle—appropriately public—concerns the dissemination of study results via professional and scholarly presentations and publications. As an EAP-SoTL professor, I follow these principles when carrying out my present research and conducting research in my department, where EAP students bring unique and diverse perspectives to our classrooms. Therefore, these principles are relevant and help develop and guide SoTL works that are contextually grounded and are geared toward supporting student learning and course design and re-design (deBraga et al., 2015; Huang, 2021).

Whether it is action research or SoTL research, it is important that research be conducted using sound practice, which contributes to establishing and incorporating an evidence-based approach to teaching in classrooms (Huang, 2021).

### 3.2 Participants

As provided in Table 2, participants in this study belonged to either intermediate or advanced level of English language proficiency based on their self-reported data. During the recruitment process, it was not possible for me to recruit participants from one particular level of proficiency as in the real-world EAP classrooms where participants are recruited for the present study, students from both levels of proficiency may study together.

The study involved 21 male participants (40.38%) and 31 female participants (59.62%), with a mean age of 34.5 years. The average length of participants' English language learning was 10.5 years. Participants were from ten different L1 backgrounds, the most common L1 being Mandarin (*n* = 17), followed by Japanese (*n* = 11), Spanish (*n* = 5), Korean (*n* = 5), Vietnamese (*n* = 4), Thai (*n* = 3), Portuguese (*n* = 3), Nepali (n = 2), and then one speaker each of Hindi (*n* = 1) and Russian (*n* = 1). Participants had the opportunity to share their past language learning experiences. Only one participant mentioned that they took the IELTS test once. This student took the test a long time ago and did not remember their scores. The rest of the participants also said that they did not take any IELTS test-preparation test and did not know the content or types of items in the test. None of the participants reported that they had received explicit reading strategy instruction or taken any IELTS preparation classes. While 29 participants (55.77%) self-reported the intermediate level as their English language proficiency, 23 (44.23%) of the participants self-reported the advanced level. Participants were assigned into three different groups in the order that they signed up for the study: Experimental Group B (*n* = 16), Experimental Group A (*n* = 17), and Comparison Group (*n* = 19).

**Table 2**

*Participant Characteristics*

| | | |
|---|---|---|
| Gender | Male | 21 (40.38%) |
| | Female | 31 (59.62%) |
| First languages | Mandarin (17), Japanese (11), Spanish (5) Korean (5), Nepali (2), Vietnamese (4), Thai (3), Portuguese (3) Hindi (1), Russian (1) | |
| Reported English proficiency | Intermediate (29), Advanced (23) | |
| Age | Mean | 34.50 |
| | Range | 21 - 48 |
| English language learning | Mean | 10.50 years |
| | Range | 2 – 19 years |
| Time spent per week in reading academic texts in English | Mean | 6.60 hours |
| | Range | 1 – 30 hours |

### 3.3 Intervention

Reading strategy instruction classes were held once a week for EGA and twice a week for EGB. Each of these groups received six sessions of reading strategy instruction, and each session lasted for 90 minutes. The reason behind having two experimental groups—EGA and EGB—was to examine the difference in reading strategy use and reading performance between EGA, which received reading strategy instruction over a regular period, and EGB, which received reading strategy instruction within a shorter, more intense period. In addition, I included a comparison group—CG. Having a comparison group could help me to compare reading strategy use and reading performance among members of two experimental groups that received reading strategy instruction with one comparison group that did not receive the reading strategy instruction.

The topics covered during the intervention included reading strategies, international students and their challenges, noise and its causes and effects, crop-growing skyscrapers, languages and their importance, transport in the past and the present, cigarette smoking and its

risks. These topics were chosen in order to factor in different fields of study. While all groups—EGA, EGB and CG—studied these topics, only the two experimental groups received explicit instruction on 30 reading strategies from the SORS on the first day of class and continued to receive such instruction over the rest of the intervention period.

On the first day of the intervention, I explicitly taught reading strategies from the SORS (refer to Appendix B) to all EGA and EGB members. Participants from both groups—EGA and EGB—discussed these strategies, and I facilitated reading strategy instruction in the same way for both groups. I introduced and raised awareness of each of the strategies in the order of how they are presented in the SORS and answered any questions participants had, regarding the use of any of these strategies. Initially, when we read a text, I modeled reading strategy use through read-alouds and think-alouds and guided all participants through the process of applying reading strategies, such as having a purpose when reading the text, taking an overall view of the text before reading it in order to understand what the text might be about, taking notes, and thinking about our own knowledge, experience and expertise that might assist us in understanding the text being read. For instance, before we began to read the text called *Noise and its Effects*, we thought about the purpose of reading the text (GLOB1). One of the purposes we discussed was to identify the effects of noise and answer the comprehension questions that followed the text. Then we began to think about what we knew about noise pollution to help us understand what we were going to read (GLOB3). Before we read the text, we also discussed questions that we could find answers to in the text (SUP26). In addition, I also taught participants how to perform think-alouds and verbalize thinking. We also discussed the *why* and *how* of the reading strategies. All participants had the opportunity to practice all reading strategies when reading academic texts in class, and they were asked to apply reading strategies during the rest of the intervention period.

As their teacher, I was there to support their strategy use and help them classify strategies as per the SORS.

### 3.4 Data Collection Instruments

The following sub-sections describe data collection instruments used in the present study.

**3.4.1 Background Information Sheet** (Appendix A): This instrument elicited from participants some specific information, including their educational background, age, L1, English language proficiency, and time spent in English language learning (refer to Table 2). All participants from all three groups—EGA, EGB, and CG—completed this form as part of the *diagnosing* phase of the study, after they signed the informed consent form, approved by the University of Victoria's Human Ethics Board. The information collected through the sheet was later used in the *reconnaissance* phase in order to inform the *planning* phase during the MMAR cycle.

**3.4.2 The Survey of Reading Strategies (SORS):** According to Macaro (2001), in order to measure the strategies used, strategy-based instruction involves the use of different methods and tools to measure the strategy use among the participants. One such method is the use of "self-report" as an introspective measure that "taps participants' reflections on mental processes" and help the researcher elicit the strategy use among the participants (Mackey & Gass, 2016, p. 86). Therefore, I used Mokhtari and Sheorey's (2002) SORS instrument (refer to Appendix B), which was designed to measure adult EAL students' awareness of reading strategies when reading academic texts, in this study. The SORS is divided into three categories: *global* (GLOBs), *problem-solving* (PROBs), and *support* (SUPs) strategies. The 30 reading strategies from the

SORS instrument that were incorporated to facilitate the reading strategy instruction for EGA and EGB participants are listed below. These reading strategies are placed by strategy category.

**Global Strategies (GLOB)**

I have a purpose in mind when I read.

I think about what I know to help me understand what I read.

I take an overall view of the text to see what it is about before reading it.

I think about whether the content of the text fits my reading purpose.

I review the text first by noting its characteristics like length and organization.

When reading, I decide what to read closely and what to ignore.

I use tables, figures, and pictures in text to increase my understanding.

I use context clues to help me better understand what I am reading.

I use typographical features like bold face and italics to identify key information.

I critically analyze and evaluate the information presented in the text.

I check my understanding when I come across new information.

I try to guess what the content of the text is about when I read.

I check to see if my guesses about the text are right or wrong.

**Problem-Solving Strategies (PROB)**

I read slowly and carefully to make sure I understand what I am reading.

I try to get back on track when I lose concentration.

I adjust my reading speed according to what I am reading.

When text becomes difficult, I pay closer attention to what I am reading.

I stop from time to time and think about what I am reading.

I try to picture or visualize information to help remember what I read.

When text becomes difficult, I re-read it to increase my understanding.

When I read, I guess the meaning of unknown words or phrases.

**Support Strategies (SUP)**

I take notes while reading to help me understand what I read.

When text becomes difficult, I read aloud to help me understand what I read.

I underline or circle information in the text to help me remember it.

I use reference materials (e.g. a dictionary) to help me understand what I read.

I paraphrase (restate ideas in my own words) to better understand what I read.

I go back and forth in the text to find relationships among ideas in it.

I ask myself questions I like to have answered in the text.

When reading, I translate from English into my native language.

When reading, I think about information in both English and my mother tongue.

As can be seen above, the SORS instrument has 30 items in total: the GLOBs has 13 items; the PROBs has eight items; and the SUPs has nine items. Each item is rated based on a 5-point Likert scale that ranges from 1 to 5 (1 = never or almost never used; 2 = occasionally used; 3 = used sometimes or about 50% of the time; 4 = usually used; and 5 = always or almost always used). According to Mokhtari and Sheorey (2002), scoring a mean of 3.50 or higher means a high usage of strategies; mean scores of 2.50 to 3.49 indicate a medium usage; and a mean score of 2.49 and below denotes a low usage. Mokhtari and Sheorey reported the SORS with a reliability score Cronbach's alpha of 0.89. According to Mokhtari et al. (2018), substantial research has used this instrument in order to determine the efficacy and awareness of reading strategy use among adult EAL students (e.g., see Alhaqbani & Riazi, 2012; Al-Mekhlafi, 2018; Chen & Chen, 2015; Khaokaew, 2012; Kutluturk & Yumru, 2017; Magogwe, 2013; Miller, 2017; Munro, 2011; Poole, 2005; Rastegar et al., 2017; Tavakoli, 2014; Tavakoli & Koosha, 2016). In addition, in her study, Thuy (2014) found the SORS useful in that both teachers and students can use this instrument in order to measure the reading strategy use and help students become aware of different reading strategies for their use when reading academic texts.

The SORS instrument was completed twice by all participants in the study. Participants completed the SORS was initially in the pre-intervention stage. The data received from the use of the instrument at this time provided me with participants' awareness of the reading strategies they might have used in the past or they might use during the study in order to facilitate their reading. This information also informed my planning in order to implement the intervention. Participants again completed the SORS instrument in the post-intervention. This instrument then provided quantitative data on the reading strategy use reported by all groups. The data received through the SORS in the post-intervention was compared with the data collected through this instrument during the pre-intervention in order to measure the change in reading strategy use and the efficacy of the strategy instruction.

**3.4.3 Reading Comprehension (RC) Tests** (Appendices C & D): The study included two sets of RC Tests: Set A (passage 1: 868 words; passage 2: 825 words) and Set B (passage 1: 1,029 words; passage 2: 889 words). Those passages were taken from the past official, academic IELTS examination papers published by the University of Cambridge Examinations (University of Cambridge, 2012, 2016). Despite some scholars' criticisms, the IELTS Academic version is an internationally recognized standardized test that reliably assesses English language learners' language proficiency in academic settings (O'Sullivan, 2018). While IELTS may not be the most accurate assessment of reading abilities among EAL students in higher education, may not capture the level of academic reading that are assigned in higher education, or may not represent the reading assignments in Canadian institutions of higher learning, it is one of the few widely accepted proficiency tests and has face validity perceived by learners. Since creating a

completely new reading test and validating the new test is outside the scope of this study, I decided to use IELTS reading components.

The purpose of including an additional set was to ensure that if a participant had previously used one set of RC test, another set of the test could be used. As it was found that no participant had read or used Set A before, Set A was used for all participants. The identical set of RC test was used as the pre- and post-intervention reading comprehension test to measure participants' reading performance. Reading passages contained a variety of questions that included a number of question types, such as multiple choice, identifying the writer's views or claims, matching information, matching headings, sentence completion and short-answer questions. To avoid practice effect, none of the participants were provided with all of the types of questions at the same time in the same order as presented in the RC tests**.** Participants answered comprehension questions during their reading strategy instruction sessions, but question patterns or question types, such as multiple choice, matching information, sentence completion, and short-answer questions, discussed during the sessions did not entirely resemble question patterns or types in the same order as asked in the RC tests.

**3.4.4 Post-task Guided Verbal Reflections**: This instrument included six questions (see Table 3) based on the revised Bloom's taxonomy for learning by Anderson et al. (2001). As a framework for educational objectives to organize levels of expertise and help students achieve measurable outcomes, Bloom's taxonomy originally included knowledge, comprehension, application, analysis, synthesis, and evaluation; however, a revision of Bloom's taxonomy involves these verbs: remember, understand, apply, analyze, evaluate and create (Anderson et al., 2001; refer to Bloom, 1953). As there are multiple ways, including reflective journal entries and

peer observations that reflection can be promoted (Alemi & Tajeddin, 2020; Tajeddin & Aghababazadeh, 2018), I incorporated guided verbal reflections through specific questions (Table 3). These questions were further adapted from Huang (2013a) to elicit participants' thinking as well as their use and awareness of reading strategies when reading academic texts. At the end of each class, each of the participants from EGA and EGB was provided with a digital voice recorder. All of them had ten minutes to audio-record their answers in response to the reflection questions. This process allowed participants to provide information on the reading strategies that they just used during their reading in class. During the first lesson, I modeled the process, using a pseudonym and an ID number, and recorded myself on the digital voice recorder, mentioning the reading strategies I used and explaining the use during my reading the text in class. Then participants followed the model and practiced recording themselves before they finally recorded and provided their own reflective entries.

**Table 3**

*Post-Task Guided Verbal Reflection Questions*

| | |
|---|---|
| **Remembering** | What did I do before I began to read the text today? |
| **Understanding** | What challenges did I find while reading the text? |
| **Applying** | Which strategies did I use? Will I use them again in my future reading? |
| **Analyzing** | Among the strategies I used today, what worked and what didn't? |
| **Evaluating** | What will I do differently when reading the text next time? |
| **Creating** | What other reading strategies can I experiment with to overcome my reading challenges? |

**3.4.5 Post-intervention Interviews** (Appendix E): Interviews are an essential part of this study both from emic perspectives (participants' perspectives) and etic perspectives (researcher's perspectives). The interviews provided the opportunities for participants to express their experiences on the reading strategy use and for me to verify participants' reported strategy use.

A week after the post-intervention RC test was administered to participants from all three groups, a semi-structured interview was conducted with each of the participants from EGA and EGB. A semi-structured interview is flexible in nature and includes a set of pre-determined guiding questions that the researcher uses in conjunction with additional relevant issues or questions that emerge during the interview (Dörnyei, 2016; Mackey & Gass, 2016; Nunan & Bailey, 2009; Saving-Baden & Major, 2013). A semi-structured interview was the most appropriate in this study, as it "allows the researcher to decide how best to use the limited time available and keeps interaction focused" (Saving-Baden, & Major, 2013, p. 359), when

> …the researcher has a good enough overview of the phenomenon or domain in question and is able to develop broad questions about the topic in advance but does not want to use ready-made response categories that would limit the depth and breadth of the respondent's story (Dörnyei, 2016, p. 136).

The semi-structured interview used in the current study was conducted face-to-face and enabled me to obtain an in-depth understanding of their reading processes, as the participants read. The interview consisted of a reading task with six questions and follow-up questions based on participants' responses (Appendix E). I wanted to ensure that participants freely shared their experience on their reading strategy use, with their own words without any imposition, as Charmaz (2014) suggested. In order to do that, I used follow-up questions to seek clarification or elaboration from the participants. The interviews helped me to know about the participants'

reading strategy use. As Charmaz suggested, use of follow-up questions in the interviews helped "explore and to discern research participants' viewpoints…" (2014, p. 60).

For the reading part of the interview, participants were also asked to read the first two paragraphs from an academic text (paragraph 1: 107 words; paragraph 2: 80 words) on film sounds. They were then asked to perform think-alouds, as I wanted to cross-check two sources of data–one from participant's post-task reflections and the other from their post-intervention interviews. Think-alouds allow participants to talk about their thought processes when they are engaged in performing some tasks (Dörnyei, 2016; Ericsson, 2002; Mackey & Gass, 2016; Nunan & Bailey, 2009). Mackey and Gass (2016) called the think-aloud "self-revelation," an introspective method of eliciting data from participants (p. 87). Participants "verbalize the information they attend to while generating the answer" (Ericsson & Simon, 1993, p. xiii). During this process, participants verbalized their thinking process, and they were encouraged to perform the reading task as they would normally do. The think-aloud process was not new to participants, as they went through this process a few times during the sessions as part of the reading strategy instruction. When learners employ strategies and demonstrate their employment of strategies via think-alouds, they verbalize their strategy use, i.e., "deliberate thoughts and behaviours" and learners engage in to complete tasks (Huang, 2013b, p. 5). And, I could observe their behaviours through their think-alouds in order to cross-check different sources of data. Think-alouds thus helped me to identify reading strategies that the participants reported to have applied during their reading.

### 3.5 Data Collection Procedures

MMAR includes cycles of actions during the data collection process (Ivankova, 2015). For recruitment of the participants, EAP co-ordinators and directors were provided with email invitations (Appendix F) as well as information about the study. Recruitment posters (Appendix G) were also posted at the buildings on campus. I briefly met with EAP students who were interested in participating in the study in order to explain to them the nature of the study, to answer any questions, and to check their availability. The data collection procedures are described as follows:

#### 3.5.1 Pre-intervention

In week 1, participants were first informed of the nature, the purpose, and the procedure of the study. The study followed the established institutional ethical protocol approved by the University of Victoria's Human Ethics Board (Protocol Number was: 17-064). During the first session, participants were asked to complete the consent form (Appendix H) and hence provide their informed consent to participate in the study. Afterwards, each participant was assigned a code to safeguard their anonymity and confidentiality. All participants were then asked to complete the Background Information Sheet, which took approximately ten minutes. Afterwards, they filled out the SORS, which took nearly 20 minutes. Finally, for the next 40 minutes, participants took the pre-intervention RC test. Table 4 summarizes the data collection procedures.

**Table 4**

*Data Collection Procedures*

| Week | Focus of Data Collection |
|---|---|
| 1 | Informed Consent, Background Information Sheet, Pre-intervention SORS, and RC Tests |
| 2-7 | Post-task Guided Verbal Reflections |
| 8 | Post-intervention SORS and RC Tests |
| 9 | Post-intervention Interviews |

*Note*: SORS = Survey of Reading Strategies; RC = reading comprehension

### 3.5.2 Weekly Post-Task Guided Verbal Reflections

During the next 6 sessions from week 2 to week 7, reading strategy instruction was implemented. While reading academic texts, participants were asked to use reading strategies from the SORS instrument. For ten minutes towards the end of each of the six sessions, EGA and EGB participants were asked to audio-record their responses to the post-task guided verbal reflection questions.

### 3.5.3 Post-intervention

In week 8, participants again completed the SORS and the post-intervention RC test. In the final week, each of the participants from the two experimental groups were interviewed for approximately 15 minutes. All interviews took place in an office at the Department of Linguistics of the University of Victoria.

## 3.6 Data Analysis

The recordings from participants' post-task guided verbal reflections and post-intervention interviews were renamed, organized, and fully transcribed for analysis. All

transcripts that consisted of verbal reflections and post-intervention interviews of members of EGA ($n$ = 17) and EGB ($n$ = 16) groups were coded, combing through the "data several times looking for patterns, or themes, or categories" (Brown, 2014, p. 49) as illustrated in Mokhtari and Sheorey (2002). Meticulous attention to detail was paid during this stage**.** All transcripts were then carefully analyzed, using content analysis as illustrated in Huang (2019). All meaningful data related to reading strategy use were identified (Nunan & Bailey, 2009) drawing on Mokhtari and Sheorey's (2002) strategy classification. In addition to the 30 strategies in the SORS, 14 additional strategies were identified in the post-task verbal reflections and post-intervention interviews. These strategies included predicting the text, using think-alouds, skimming, scanning, brainstorming, locating topic sentences, determining the thesis statement, making inferences, reflecting, summarizing, drawing pictures or structures, reading comprehension questions before beginning to read the text, using graphic organizers, and evaluating where the reader stands with respect to time and task. Six months after the first coding was completed, all of the transcripts were coded again to establish intra-coder reliability. For the sample coding scheme, refer to Table 5.

As stated above, all transcripts were coded twice in a random order to measure intra-coder reliability (Revesz, 2012). The coding categories were mainly based on the SORS instrument, and intra-coding reliability was evaluated, using the Spearman correlation coefficient (Lund, 2013), one of the most common measures researchers in the field of applied linguistics and education use in order to establish coder reliability (Revesz, 2012). In the present study, disagreements in the coding performed at two different times were resolved by meticulously re-examining participants' utterances. There was a statistically significant, strong positive

correlation, $r_s$ (15) = .898, $p$ < .001. A strong agreement was, thus, found in the coding carried out between two occasions.

Table 5 provides the sample coding scheme used in order to code the data from participants' post-task verbal reflections and post-intervention interviews. The sample coding scheme provides instances from all strategy categories—*global*, *problem-solving*, and *support*.

**Table 5**

*Sample Coding Scheme*

| | Individual Strategies | Participant Statements |
|---|---|---|
| | Global Strategies | |
| 1 | I have a purpose in mind when I read. (GLOB1) | "I have to answer these questions. I am also participating in our discussion later. That's my reason to read. That's why I am reading these paragraphs." (RSS22) |
| 2 | I think about what I know to help me understand what I read. (GLOB3) | "My past experience is always supporting! So, I think about my past experience. My knowledge from the past and my thinking about it when I'm reading is helpful." (RSS48) |
| 3 | I take an overall view of the text to see what it is about before reading it. (GLOB4) | "I take a look at the text overall and try to know about the content and subject." (RSS12) |
| 4 | I think about whether the content of the text fits my reading purpose. (GLOB6) | "When I find articles in the library, I have to think if my article and matter inside is good for me to read. Why I am reading this – is this support my purpose?" (RSS2) |
| 5 | I review the text first by noting its characteristics like length and organization. (GLOB 8) | "I first review the full text quickly, such as I see its length, its structure." (RSS12) |
| 6 | When reading, I decide what to read closely and what to ignore. (GLOB12) | "… I read only some and not all paragraphs because I know it is important and some parts in the text I don't read because it is not important." (RSS38) |
| 7 | I use tables, figures, and pictures in text to increase my understanding. (GLOB15) | "All the time I try to find tables and pictures and any graphs and any numbers in between reading. I catch them very fast! I can understand article better." (RSS51) |

| | Individual Strategies | Participant Statements |
|---|---|---|
| | **Global Strategies** | |
| 8 | I use context clues to help me better understand what I am reading. (GLOB17) | "To understand reading the text today, I don't have time! So, I look for hints and ideas in the text, you know like something in the bracket after and before. Maybe some examples sometimes!" (RSS13) |
| 9 | I use typographical features like bold face and italics to identify key information. (GLOB20) | "When I am reading, I see any bold words and different sizes words and shapes for main idea. They help me read understand and answer later." (RSS16) |
| 10 | I critically analyze and evaluate the information presented in the text. (GLOB21) | "Sometimes simple words bring many meanings. Hence, I am very critical, if the writer is biased for more analysis! Perhaps information is just not good!" (RSS30) |
| 11 | I check my understanding when I come across new information. (GLOB23) | "…I try to see if I am understanding my reading, especially there is critical information and very new I am not sure about." (RSS51) |
| 12 | I try to guess what the content of the text is about when I read. (GLOB24) | "I read and read, but I also guess what is my reading about. What is the subject matter?" (RSS41) |
| 13 | I check to see if my guesses about the text are right or wrong. (GLOB27) | "Later I check I am right or wrong! My guesses are sometimes good and sometimes not." (RSS41) |
| | **Problem-Solving Strategies** | |
| 1 | I read slowly and carefully to make sure I understand what I am reading. (PROB7) | "I read slow and carefully reading. Then understanding is good for my reading, so I keep doing this." (RSS11) |
| 2 | I try to get back on track when I lose concentration. (PROB9) | "When it is too long my reading, I forget things. But I try … to connect and figure out where I am." (RSS39) |
| 3 | I adjust my reading speed according to what I am reading. (PROB11) | "Surely I control my reading if I am reading fast or slow because it depends I am reading article here or story in the library." (RSS17) |
| 4 | When text becomes difficult, I pay closer attention to what I am reading. (PROB14) | "It was difficult today's reading. When reading it becomes more difficult, I have to be more careful and pay more and more attention." (RSS52) |
| 5 | I stop from time to time and think about what I am reading. (PROB16) | "It was easy topic today, but I did not finish all same time. I read and then stopped. I reflected about my reading. I read and then stopped again! Again, I thought. It help me a lot to understand what I am reading." (RSS15) |

| | Individual Strategies | Participant Statements |
|---|---|---|
| | Problem-Solving Strategies | |
| 6 | I try to picture or visualize information to help remember what I read. (PROB19) | "I most of the time picture what I read…it helps to remember my reading part." (RSS14) |
| 7 | When text becomes difficult, I re-read it to increase my understanding. (PROB 25) | "I first didn't understand the text on noise today, so I read some paragraphs 3 times for better understand the text." (RSS39) |
| 8 | When I read, I guess the meaning of unknown words or phrases. (PROB28) | "…But I also try to guess the meanings of some unfamiliar words and sentences." (RSS48) |
| | Support Strategies | |
| 1 | I take notes while reading to help me understand what I read. (SUP 2) | "I took notes. When I write answers later, it's helpful." (RSS14) |
| 2 | When text becomes difficult, I read aloud to help me understand what I read. (SUP5) | "I have learned thinking aloud in this class, so I use [think aloud]." (RSS17) |
| 3 | I underline or circle information in the text to help me remember it. (SUP10) | "I used underling strategy. I easily forget things. I can come back and read this again because it's underline." (RSS7) |
| 4 | I use reference materials (e.g., a dictionary) to help me understand what I read. (SUP13) | "Sometimes I use dictionary, too! It is helpful when I am reading." (RSS11) |
| 5 | I paraphrase (restate ideas in my own words) to better understand what I read. (SUP18) | "It was difficult today, but I try to say the same thing in simple English few times and it is helping me to understand my reading." (RSS50) |
| 6 | I go back and forth in the text to find relationships among ideas in it. (SUP22) | "Sure, there are many things I do. When my reading is hard, I go back and read again and try make connections between pieces of my reading." (RSS38) |
| 7 | I ask myself questions I like to have answered in the text. (SUP26) | "When I am reading about crop growing, I asked questions in my mind. But I didn't get the answers for all." (RSS9) |
| 8 | When reading, I translate from English into my native language. (SUP29) | "I sometimes translate from English into my mother tongue, so I am able to understand." (RSS40) |
| 9 | When reading, I think about information in both English and my mother tongue. (SUP30) | "So I can compare and think about the information in my mother tongue also, not only in English." (RSS40) |

During the coding period, it was found that some participants explicitly and specifically mentioned the reading strategies they used. However, at other times, it was not easy to code and

classify participants' reading strategy use based on what participants have stated, as they did not clearly specify strategies used, which resulted in an initial disagreement between the first and second rounds of coding. In this case, I identified important, relevant features in participants' statements or data that were related to some particular reading strategies. In order to do this, the same wordings or data were closely examined multiple times in order to identify the reading strategies that participants employed. I also tried to identify a process that would represent a particular aspect of certain reading strategies. For instance, when asked the same question about the strategy used when approaching an EAP text, RSS2 stated:

> …It's difficult to say! I sometimes read very slow! Sometimes I even read more and more slow. I have to adjust. Some texts are very difficult -no meaning! Understand is hard. So, I have to be careful too for my understanding.

This participant did not specifically state which strategies she used in order to comprehend information in the text. Therefore, initially, it was coded as a strategy that read: "I adjust my reading speed according to what I am reading" (PROB11). However, closer and repeated examinations of the wordings and some clue words and phrases during the second coding period, such as "sometimes read very slow," "…I have to be careful," and "for my understanding" helped me to identify the reading strategies, which are both PROB7 and PROB11 in this case ("I read slowly and carefully to make sure I understand what I am reading"). Similarly, When RSS46 stated this: " I read past paragraphs again and again and this paragraph too because it is important because I can see the connections in the paragraphs and it helps my understanding," I initially coded this strategy as PROB25 ("When text becomes difficult, I re-read it to increase my understanding"); however, upon examining the statement closely during the second coding, it was coded as both PROB25 and SUP22 ("I go back and forth in the text to find relationships

among ideas in it"). During the second coding, I realized that this participant was referring to his attempts to understand the text by going back and forth between paragraphs and reading these paragraphs again, with an intention to identify relationships among the ideas in the paragraphs.

The frequency counts of all reading strategies identified from the SORS, the post-task verbal reflections, and post-intervention interviews were prepared for SPSS analysis; the data were closely checked for any missing data entry or accuracy. Afterwards, I began the process of calculating descriptive statistics (means and standard deviations), exploring the nature of the variables in the data and testing assumptions prior to performing MANOVA, as suggested in various studies (e.g., Field, 2013; Pallant, 2010; Tabachnick & Fidell, 2013).

**3.6.1 Reading Strategy Use Among Participants.** To answer the first research question, the data from the SORS were analyzed, and descriptive statistics were calculated, using *IBM SPSS Statistics,* Version 27.

Descriptive statistics were conducted for EGA and EGB in pre-intervention and post-intervention and for CG in pre-instruction and post-instruction, as CG members did not receive reading strategy instruction. In addition, EGA and EGB participants' post-task guided verbal reflections and their post-intervention interviews were also examined. After reading strategies from different data sources were identified, descriptive statistics were calculated, and individual strategy use, strategy category use, and the total frequency of the strategy use were analyzed.

**3.6.2 Effect of Reading Strategy Instruction.** To answer the second research question, paired-sample *t*-tests were used. To conduct paired-sample *t*-tests, assumptions regarding normal distribution and outliers must be met (Field, 2013). Dependent variables (*global*, *problem*-

*solving*, and *support* strategies) should be normally distributed and there should be no significant outliers. Table 6 shows deviations from normality, using Kolmogorov-Smirnov (*K-S*) statistics.

**Table 6**

*Tests for Normality for Three Dependent Variables*

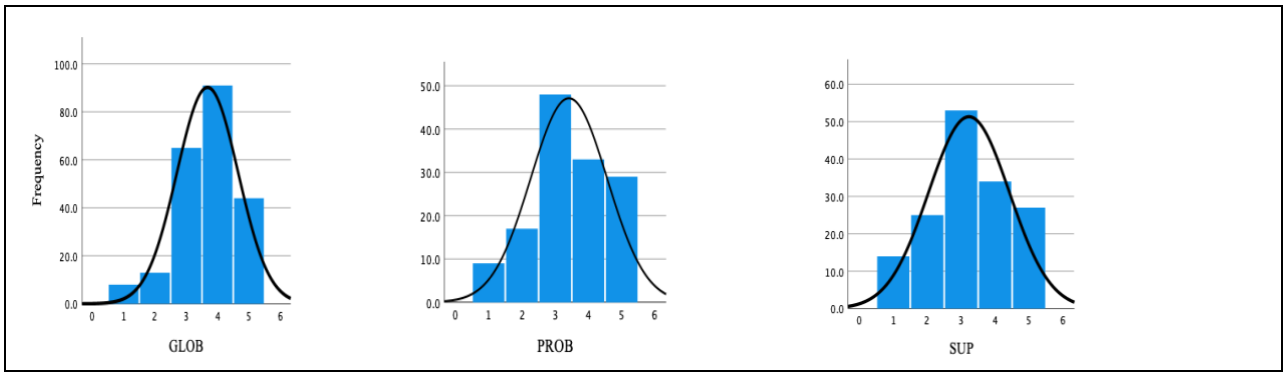
| Kolmogorov-Smirnov Test | Variables | | |
|---|---|---|---|
| | Global Strategies | Problem-Solving Strategies | Support Strategies |
| *n* | 52 | 52 | 52 |
| *K-S* | .131 | .132 | .129 |
| *p* | .094 | .037 | .061 |

*Note*. * Significant deviation from normality at $\alpha = .005$

Figure 2 presents the distribution of the three variables after combining the frequency counts for the participant groups. When compared to theoretical bell-curve or normal distribution, the distributions of *global*, *problem-solving*, and *support* strategies are not perfectly normal. However, they are sufficiently close to normality to permit the use of parametric tests (Pallant, 2010). In Figure 2, while the vertical line shows frequency distribution, the horizontal line indicates the numbers from 1 to 5 from the SORS' Likert scale that participants chose in order to report their strategy use.

**Figure 2**

*Frequency Distribution Histograms of the Dependent Variables (Global, Problem-solving, and Support Strategies)*




*Note*. GLOB = global strategies; PROB = problem-solving strategies; SUP = support strategies

As extremely small or large values that do not represent the sample, outliers cause "more bias in parametric statistics than departures from normality" (Huang, 2013, p. 13). In this study, the *Z* scores were computed in order to identify outliers. As no *Z* scores were found beyond the standardized normal limits of ±3.29 (Tabachnik & Fidell, 2013, p. 73), there were no outliers in *global*, *problem-solving*, and *support* strategies (see Table 7).

**Table 7**

*Test Results for Outliers*

| Variables | Minimum Z Score | Maximum Z Score |
|---|---|---|
| Global Strategies | -1.743 | 2.343 |
| Problem-solving Strategies | -2.130 | 1.708 |
| Support Strategies | -1.970 | 2.687 |

**3.6.3 Reading Strategy Use and Reading Comprehension.** To answer the third research question, I conducted Pearson's correlation, which helped examine the relationship between the

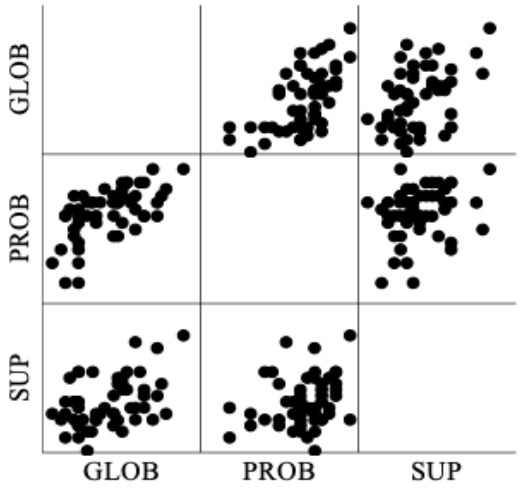
RC test scores vis-à-vis and the reading strategy use obtained from the post-intervention SORS scores and the reading strategy use derived from participants' post-task verbal reflections and post-intervention interviews.

**3.6.4 Group Differences.** To answer the fourth research question, I conducted the one-way multivariate analysis of variance (MANOVA) among the three independent—two experimental and a comparison—groups in relation to group participants' overall strategy use and three strategy categories as dependable variables: *global* (GLOB), *problem-solving* (PROB), and *support* (SUP) strategies.

In order to conduct MANOVA, the dependent variables should, in theory, be multi-collinear (Huang, 2013; Tabachnik & Fidell, 2013). Figure 3 shows a matrix plot with linear relationships between the three variables (*global*, *problem-solving* and *support* strategies). Positive Pearson's correlation coefficients ($r$ = .075 to $r$ = .618) (Table 8) indicated that the variables could be combined in order to run MANOVA.

**Figure 3**

*Matrix Plot Between Three Dependent Variables*




*Note*. GLOB = global strategies; PROB = problem-solving strategies; SUP = support strategies

**Table 8**

*Matrix of Correlation Coefficients Between Three Dependent Variables (n = 52)*

| Variables | Global Strategies | Problem-solving Strategies | Support Strategies |
|---|---|---|---|
| Global Strategies | 1 | | |
| Problem-solving Strategies | .118 | 1 | |
| Support Strategies | .075 | .618** | 1 |

*Note*. Significant at ** = .001

In addition, the variances of all dependent variables should be homogeneous across the groups in order to conduct MANOVA (Huang, 2013; Tabachnik & Fidell, 2013). To identify homogeneity across the three dependent variables, I used Levene's test. Table 9 presents homogeneity of variance across the variables. Meeting these assumptions justifies the use of MANOVA in the study.

**Table 9**

*Levene's Test for Homogeneity of Variance (n = 52)*

| Variables | Levene's *F* | *df*1 | *df*2 | *p* |
|---|---|---|---|---|
| Global Strategies | 2.831 | 2 | 49 | .069 |
| Problem-solving Strategies | 2.554 | 2 | 49 | .088 |
| Support Strategies | 1.065 | 2 | 49 | .353 |

# Chapter 4: Results

To answer the research questions, quantitative and qualitative data were analyzed and triangulated; triangulation "involves using multiple research techniques and multiple sources of data in order to explore issues from all feasible perspectives" (Mackey & Gass, 2016, p. 233). Specifically, as part of mixed-methods research, I integrated the results from the analysis of the quantitative data obtained from the SORS and the reading comprehension tests and the results from the analysis of the qualitative data obtained from the post-task guided verbal reflections and the post-intervention interviews for a better understanding of participants' use of reading strategies and efficacy of reading strategy instruction, i.e., the analysis of the quantitative data was useful when presenting and interpreting the results from the analysis of the qualitative data in the study. To answer the research questions, I present the results from the two experimental groups—Experimental Group A (EGA) and Experimental Group B (EGB)—first and then the results obtained from the third group—the Comparison Group (CG).

## 4.1 Reading Strategy Use

This section addresses the first research question: *What are the strategies EAL students use when reading academic texts, as reported through the Survey of Reading Strategies (SORS) instrument and students' post-task reflections and post-intervention interviews?* To address this research question 1, descriptive statistics were calculated on strategy use by three groups—EGA, EGB, and CG. In order to determine the usage (high, medium, or low) level of the strategy use, Mokhtari and Sheorey's (2002) calculations were used—that is, mean scores of 3.50 or higher indicate a high usage of strategies; mean scores between 2.50 and 3.49 denote a medium usage; and a mean score of 2.49 and below means a low usage of reading strategies.

### 4.1.1 Experimental Group A (EGA)

As presented in Table 10, in the pre-intervention SORS scores, the overall strategy use (OVERALL) ($M$ = 3.11, $SD$ = 0.34) was reported in the medium usage category ($2.50 \leq M \leq 3.49$). Category-wise, PROB strategies ($M$ = 3.58, $SD$ = 0.37) were reported in the high usage category ($M \geq 3.50$) whereas GLOB strategies ($M$ = 2.76, $SD$ = 0.39) and SUP strategies ($M$ = 3.19, $SD$ = 0.42) were in the medium usage ($2.50 \leq M \leq 3.49$).

**Table 10**

*Descriptive Statistics for Reported Strategies: Overall and by Category (EGA)*

| Category | SORS | | | | | | Reflections and post-intervention interviews | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pre-Intervention | | | Post-Intervention | | | Post-Intervention | | |
| | *M* | *SD* | Rank | *M* | *SD* | Rank | *M* | *SD* | Rank |
| OVERALL | 3.11 | 0.34 | | 3.79 | 0.29 | | 3.09 | 0.22 | |
| GLOB | 2.76 | 0.39 | 3 | 3.65 | 0.37 | 2 | 2.96 | 0.43 | 2 |
| PROB | 3.58 | 0.37 | **1** | 4.44 | 0.26 | **1** | 3.60 | 0.17 | **1** |
| SUP | 3.19 | 0.42 | 2 | 3.42 | 0.35 | 3 | 2.82 | 0.41 | 3 |

*Note*. EGA = Experimental Group A; OVRALL = Overall strategy; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

Regarding the post-intervention reported strategy use (Table 10), the overall strategy use ($M$ = 3.79, $SD$ = 0.29) as well as the GLOB ($M$ = 3.65, $SD$ = 0.37) and the PROB ($M$ = 4.44, $SD$ = 0.26) strategy use are in the high usage category. It is important to note that the PROB was the only high usage category in the pre-intervention SORS scores, and the SUP strategy use ($M$ = 3.42, $SD$ = 0.35) was in the medium usage category in the post-intervention SORS scores. The overall reported strategy use increased from the pre-intervention ($M$ = 3.16, $SD$ = 0.33) to the

post-intervention (*M* = 3.79, *SD* = 0.29). Likewise, the GLOB, the PROB, and the SUP strategy categories have increased in the post-intervention SORS.

The descriptive statistics of participants' strategy use in the post-task verbal reflections and post-intervention interviews identified 44 different individual strategies, with the total frequency of 1,576. The total frequency for the GLOB, the PROB, and the SUP strategy were 655 (41.56%), 490 (31.09%), and 431 (27.35%), respectively.

Table 11 presents all 30 reading strategies from the SORS in the order of mean values (from high to low) of reading strategies reported by EGA during the post-intervention period. For brevity, pre-intervention period is referred to as *Pre-InV* and post-intervention period is referred to as *Post-InV*. This table also shows all 30 strategies from the post-task verbal reflections and post-intervention interviews, under the *Ref-IV* column. Among the 30 strategies, PROB 9 (*I try to get back on track when I lose concentration*) is the most reported in the post-intervention SORS (*M* = 4.71, *SD* = 0.48), which is also one of the five most reported strategies in the pre-intervention SORS scores. Reading strategies, such as *I underline or circle information in the text to help me remember it* (SUP10), *When text becomes difficult, I pay closer attention to what I am reading* (PROB14), *I read slowly and carefully to make sure I understand what I am reading* (PROB7), and *I stop from time to time and think about what I am reading* (PROB16) are other four most reported strategies in the post-intervention SORS.

Among the five most reported strategies in the post-intervention SORS, PROB9, SUP10, and PROB7 were also three of the five most reported strategies by EGA in the pre-intervention SORS. However, SUP10 and PROB7 were the two most reported strategies in the post-task verbal reflections and post-intervention interviews. This means SUP10 and PROB7 were the two strategies that were among the top-five reported strategies across the pre- and post-intervention

SORSs, the post-task verbal reflections, and post-intervention interviews. Among the five most reported strategies in the post-intervention SORS scores, four are *problem-solving* strategies (PROB9, PROB14, PROB7, and PROB16) and one is in the support strategy category (SUP10).

**Table 11**

*Reported Strategies in the Order of Mean Values in the Post-Intervention (EGA)*

| Strategy Item | Strategies | Pre-InV | | **Post-InV** | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| PROB 9 | I try to get back on track when I lose concentration. | 4.06 | 0.83 | 4.71 | 0.48 | 4.35 | 1.00 |
| SUP10 | I underline or circle information in the text to help me remember it. | 4.35 | 0.70 | 4.71 | 0.59 | 5.41 | 1.06 |
| PROB14 | When text becomes difficult, I pay closer attention to what I am reading. | 3.82 | 0.93 | 4.59 | 0.51 | 4.29 | 1.05 |
| PROB7 | I read slowly and carefully to make sure I understand what I am reading. | 4.06 | 0.75 | 4.59 | 0.51 | 4.41 | 1.18 |
| PROB16 | I stop from time to time and think about what I am reading. | 3.24 | 0.90 | 4.29 | 0.69 | 1.65 | 0.86 |
| SUP22 | I go back and forth in the text to find relationships among ideas in it. | 3.88 | 0.93 | 4.29 | 0.69 | 3.53 | 1.29 |
| GLOB17 | I use context clues to help me better understand what I am reading. | 3.35 | 0.86 | 4.29 | 0.69 | 3.47 | 1.74 |
| PROB19 | I try to picture or visualize information to help remember what I read. | 3.59 | 0.71 | 4.24 | 0.67 | 2.96 | 0.90 |
| SUP2 | I take notes while reading to help me understand what I read. | 3.53 | 0.94 | 4.24 | 0.66 | 3.59 | 1.06 |
| GLOB 21 | I critically analyze and evaluate the information presented in the text. | 2.82 | 0.95 | 4.12 | 0.78 | 2.94 | 1.60 |
| PROB 25 | When text becomes difficult, I re-read it to increase my understanding. | 4.00 | 0.71 | 4.12 | 0.49 | 3.82 | 0.81 |
| PROB28 | When I read, I guess the meaning of unknown words or phrases. | 3.00 | 0.50 | 4.12 | 0.49 | 3.53 | 0.80 |
| PROB 11 | I adjust my reading speed according to what I am reading. | 2.88 | 0.49 | 3.94 | 0.56 | 4.00 | 0.61 |
| GLOB12 | When reading, I decide what to read closely and what to ignore. | 2.65 | 0.70 | 3.88 | 0.70 | 2.24 | 1.30 |
| GLOB8 | I review the text first by noting its characteristics like length and organization. | 2.76 | 0.90 | 3.82 | 0.64 | 4.35 | 0.93 |

| Strategy Item | Strategies | Pre-InV | | **Post-InV** | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| GLOB1 | I have a purpose in mind when I read | 2.76 | 0.56 | 3.76 | 0.66 | 4.94 | 0.97 |
| GLOB3 | I think about what I know to help me understand what I read. | 2.53 | 0.72 | 3.76 | 0.66 | 3.59 | 1.00 |
| GLOB23 | I check my understanding when I come across new information. | 2.65 | 0.49 | 3.76 | 0.66 | 3.29 | 1.10 |
| SUP 13 | I use reference materials (e.g., a dictionary) to help me understand what I read. | 3.94 | 0.56 | 3.65 | 0.86 | 1.59 | 1.50 |
| GLOB24 | I try to guess what the content of the text is about when I read. | 2.76 | 0.66 | 3.65 | 0.70 | 3.41 | 1.06 |
| GLOB20 | I use typographical features like bold face and italics to identify key information. | 3.35 | 0.61 | 3.59 | 0.71 | 1.35 | 0.86 |
| GLOB15 | I use tables, figures, and pictures in text to increase my understanding. | 3.59 | 0.87 | 3.47 | 0.80 | 1.65 | 0.93 |
| GLOB4 | I take an overall view of the text to see what it is about before reading it | 2.24 | 0.56 | 3.18 | 0.66 | 4.47 | 1.00 |
| SUP18 | I paraphrase (restate ideas in my own words) to better understand what I read | 2.35 | 0.79 | 3.18 | 0.53 | 2.35 | 1.32 |
| GLOB 27 | I check to see if my guesses about the text are right or wrong. | 2.00 | 0.61 | 3.12 | 0.49 | 1.18 | 0.64 |
| GLOB6 | I think about whether the content of the text fits my reading purpose | 3.27 | 0.71 | 3.06 | 0.97 | 1.65 | 0.79 |
| SUP 26 | I ask myself questions I like to have answered in the text. | 2.06 | 0.83 | 2.94 | 0.56 | 1.29 | 0.92 |
| SUP29 | When reading, I translate from English into my native language | 3.71 | 0.85 | 2.94 | 0.56 | 3.29 | 1.04 |
| SUP5 | When text becomes difficult, I read aloud to help me understand what I read. | 3.00 | 0.79 | 2.41 | 0.80 | 2.24 | 1.09 |
| SUP30 | When reading, I think about information in both English and my mother tongue. | 3.47 | 0.87 | 2.35 | 0.70 | 2.06 | 1.03 |

*Note*. Pre-InV = Pre-Intervention; Post-InV = Post-Intervention; Ref-IV: Post-task verbal reflections and post-intervention interviews; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

Tables 12 and 13 present the same data as in Table 11. However, these tables are organized in the order of mean values (from high to low) of reading strategies by EGA in the pre-intervention (Pre-InV) and the post-task verbal reflections and post-intervention interviews among EGA participants (Ref-IV) respectively.

**Table 12**

*Reported Strategies in the Order of Mean Values in the Pre-Intervention (EGA)*

| Strategy Item | Strategies | **Pre-InV** | | Post-InV | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| SUP10 | I underline or circle information in the text to help me remember it. | 4.35 | 0.70 | 4.71 | 0.59 | 5.41 | 1.06 |
| PROB 9 | I try to get back on track when I lose concentration. | 4.06 | 0.83 | 4.71 | 0.48 | 4.35 | 1.00 |
| PROB7 | I read slowly and carefully to make sure I understand what I am reading. | 4.06 | 0.75 | 4.59 | 0.51 | 4.41 | 1.18 |
| PROB 25 | When text becomes difficult, I re-read it to increase my understanding. | 4.00 | 0.71 | 4.12 | 0.49 | 3.82 | 0.81 |
| SUP 13 | I use reference materials (e.g., a dictionary) to help me understand what I read. | 3.94 | 0.56 | 3.65 | 0.86 | 1.59 | 1.50 |
| SUP22 | I go back and forth in the text to find relationships among ideas in it. | 3.88 | 0.93 | 4.29 | 0.69 | 3.53 | 1.29 |
| PROB14 | When text becomes difficult, I pay closer attention to what I am reading. | 3.82 | 0.93 | 4.59 | 0.51 | 4.29 | 1.05 |
| SUP29 | When reading, I translate from English into my native language | 3.71 | 0.85 | 2.94 | 0.56 | 3.29 | 1.04 |
| PROB19 | I try to picture or visualize information to help remember what I read. | 3.59 | 0.71 | 4.24 | 0.67 | 2.96 | 0.90 |
| GLOB15 | I use tables, figures, and pictures in text to increase my understanding. | 3.59 | 0.87 | 3.47 | 0.80 | 1.65 | 0.93 |
| SUP2 | I take notes while reading to help me understand what I read. | 3.53 | 0.94 | 4.24 | 0.66 | 3.59 | 1.06 |
| SUP30 | When reading, I think about information in both English and my mother tongue. | 3.47 | 0.87 | 2.35 | 0.70 | 2.06 | 1.03 |
| GLOB17 | I use context clues to help me better understand what I am reading. | 3.35 | 0.86 | 4.29 | 0.69 | 3.47 | 1.74 |
| GLOB20 | I use typographical features like bold face and italics to identify key information. | 3.35 | 0.61 | 3.59 | 0.71 | 1.35 | 0.86 |
| GLOB6 | I think about whether the content of the text fits my reading purpose | 3.27 | 0.71 | 3.06 | 0.97 | 1.65 | 0.79 |
| PROB16 | I stop from time to time and think about what I am reading. | 3.24 | 0.90 | 4.29 | 0.69 | 1.65 | 0.86 |
| PROB28 | When I read, I guess the meaning of unknown words or phrases. | 3.00 | 0.50 | 4.12 | 0.49 | 3.53 | 0.80 |
| SUP5 | When text becomes difficult, I read aloud to help me understand what I read. | 3.00 | 0.79 | 2.41 | 0.80 | 2.24 | 1.09 |
| PROB 11 | I adjust my reading speed according to what I am reading. | 2.88 | 0.49 | 3.94 | 0.56 | 4.00 | 0.61 |

| Strategy Item | Strategies | **Pre-InV** | | Post-InV | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| GLOB 21 | I critically analyze and evaluate the information presented in the text. | 2.82 | 0.95 | 4.12 | 0.78 | 2.94 | 1.60 |
| GLOB8 | I review the text first by noting its characteristics like length and organization. | 2.76 | 0.90 | 3.82 | 0.64 | 4.35 | 0.93 |
| GLOB1 | I have a purpose in mind when I read | 2.76 | 0.56 | 3.76 | 0.66 | 4.94 | 0.97 |
| GLOB24 | I try to guess what the content of the text is about when I read. | 2.76 | 0.66 | 3.65 | 0.70 | 3.41 | 1.06 |
| GLOB12 | When reading, I decide what to read closely and what to ignore. | 2.65 | 0.70 | 3.88 | 0.70 | 2.24 | 1.30 |
| GLOB23 | I check my understanding when I come across new information. | 2.65 | 0.49 | 3.76 | 0.66 | 3.29 | 1.10 |
| GLOB3 | I think about what I know to help me understand what I read. | 2.53 | 0.72 | 3.76 | 0.66 | 3.59 | 1.00 |
| SUP18 | I paraphrase (restate ideas in my own words) to better understand what I read | 2.35 | 0.79 | 3.18 | 0.53 | 2.35 | 1.32 |
| GLOB4 | I take an overall view of the text to see what it is about before reading it | 2.24 | 0.56 | 3.18 | 0.66 | 4.47 | 1.00 |
| SUP 26 | I ask myself questions I like to have answered in the text. | 2.06 | 0.83 | 2.94 | 0.56 | 1.29 | 0.92 |
| GLOB 27 | I check to see if my guesses about the text are right or wrong. | 2.00 | 0.61 | 3.12 | 0.49 | 1.18 | 0.64 |

*Note*. Pre-InV = Pre-Intervention; Post-InV = Post-Intervention; Ref-IV: Post-task verbal reflections and post-intervention interviews; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

**Table 13**

*Reported Strategies in the Order of Mean Values in the Reflections and Interviews (EGA)*

| Strategy Item | Strategies | Pre-InV | | Post-InV | | **Ref-IV** | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| SUP10 | I underline or circle information in the text to help me remember it. | 4.35 | 0.70 | 4.71 | 0.59 | 5.41 | 1.06 |
| GLOB1 | I have a purpose in mind when I read | 2.76 | 0.56 | 3.76 | 0.66 | 4.94 | 0.97 |
| GLOB4 | I take an overall view of the text to see what it is about before reading it | 2.24 | 0.56 | 3.18 | 0.66 | 4.47 | 1.00 |
| PROB7 | I read slowly and carefully to make sure I understand what I am reading. | 4.06 | 0.75 | 4.59 | 0.51 | 4.41 | 1.18 |
| PROB 9 | I try to get back on track when I lose concentration. | 4.06 | 0.83 | 4.71 | 0.48 | 4.35 | 1.00 |
| GLOB8 | I review the text first by noting its characteristics like length and organization. | 2.76 | 0.90 | 3.82 | 0.64 | 4.35 | 0.93 |
| PROB14 | When text becomes difficult, I pay closer attention to what I am reading. | 3.82 | 0.93 | 4.59 | 0.51 | 4.29 | 1.05 |
| PROB 11 | I adjust my reading speed according to what I am reading. | 2.88 | 0.49 | 3.94 | 0.56 | 4.00 | 0.61 |
| PROB 25 | When text becomes difficult, I re-read it to increase my understanding. | 4.00 | 0.71 | 4.12 | 0.49 | 3.82 | 0.81 |
| SUP2 | I take notes while reading to help me understand what I read. | 3.53 | 0.94 | 4.24 | 0.66 | 3.59 | 1.06 |
| GLOB3 | I think about what I know to help me understand what I read. | 2.53 | 0.72 | 3.76 | 0.66 | 3.59 | 1.00 |
| SUP22 | I go back and forth in the text to find relationships among ideas in it. | 3.88 | 0.93 | 4.29 | 0.69 | 3.53 | 1.29 |
| PROB28 | When I read, I guess the meaning of unknown words or phrases. | 3.00 | 0.50 | 4.12 | 0.49 | 3.53 | 0.80 |
| GLOB17 | I use context clues to help me better understand what I am reading. | 3.35 | 0.86 | 4.29 | 0.69 | 3.47 | 1.74 |
| GLOB24 | I try to guess what the content of the text is about when I read. | 2.76 | 0.66 | 3.65 | 0.70 | 3.41 | 1.06 |
| GLOB23 | I check my understanding when I come across new information. | 2.65 | 0.49 | 3.76 | 0.66 | 3.29 | 1.10 |
| SUP29 | When reading, I translate from English into my native language | 3.71 | 0.85 | 2.94 | 0.56 | 3.29 | 1.04 |
| PROB19 | I try to picture or visualize information to help remember what I read. | 3.59 | 0.71 | 4.24 | 0.67 | 2.96 | 0.90 |
| GLOB 21 | I critically analyze and evaluate the information presented in the text. | 2.82 | 0.95 | 4.12 | 0.78 | 2.94 | 1.60 |
| SUP18 | I paraphrase (restate ideas in my own words) to better understand what I read | 2.35 | 0.79 | 3.18 | 0.53 | 2.35 | 1.32 |

| Strategy Item | Strategies | Pre-InV | | Post-InV | | **Ref-IV** | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| GLOB12 | When reading, I decide what to read closely and what to ignore. | 2.65 | 0.70 | 3.88 | 0.70 | 2.24 | 1.30 |
| SUP5 | When text becomes difficult, I read aloud to help me understand what I read. | 3.00 | 0.79 | 2.41 | 0.80 | 2.24 | 1.09 |
| SUP30 | When reading, I think about information in both English and my mother tongue. | 3.47 | 0.87 | 2.35 | 0.70 | 2.06 | 1.03 |
| PROB16 | I stop from time to time and think about what I am reading. | 3.24 | 0.90 | 4.29 | 0.69 | 1.65 | 0.86 |
| GLOB15 | I use tables, figures, and pictures in text to increase my understanding. | 3.59 | 0.87 | 3.47 | 0.80 | 1.65 | 0.93 |
| GLOB6 | I think about whether the content of the text fits my reading purpose | 3.27 | 0.71 | 3.06 | 0.97 | 1.65 | 0.79 |
| SUP 13 | I use reference materials (e.g., a dictionary) to help me understand what I read. | 3.94 | 0.56 | 3.65 | 0.86 | 1.59 | 1.50 |
| GLOB20 | I use typographical features like bold face and italics to identify key information. | 3.35 | 0.61 | 3.59 | 0.71 | 1.35 | 0.86 |
| SUP 26 | I ask myself questions I like to have answered in the text. | 2.06 | 0.83 | 2.94 | 0.56 | 1.29 | 0.92 |
| GLOB 27 | I check to see if my guesses about the text are right or wrong. | 2.00 | 0.61 | 3.12 | 0.49 | 1.18 | 0.64 |

*Note*. Pre-InV = Pre-Intervention; Post-InV = Post-Intervention; Ref-IV: Post-task verbal reflections and post-intervention interviews; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

At the same time, SUP30 (*when reading, I think about information in both English and my mother tongue*) (*M* = 2.35, *SD* = 0.70) is the least reported in the post-intervention SORS (see Table 11). In addition, SUP29 (*when reading, I translate from English into my native language*) (*M* = 2.94, *SD* = 0.56) is another among the five least reported strategies in the post-intervention SORS. These two strategies, SUP29 and SUP30, appear as the eighth and the twelfth most reported strategies in pre-intervention SORS and the seventeenth and the twenty third most reported strategies in the post-task verbal reflections and post-intervention interviews, however.

While the strategy—*I have a purpose in mind when I read* (GLOB1)—is the sixteenth most reported strategy in the post-intervention SORS scores and the twentieth most reported strategy in the pre-intervention SORS scores, it has occupied the second most reported strategy according to participants' post-task verbal reflections and post-intervention interviews (see Tables 11, 12, & 13). Similarly, while the strategy—*I take an overall view of the text to see what it is about before reading it* (GLOB4)—is in the twenty-third position in the post-intervention SORS scores and in the twenty-eighth position in the pre-intervention SORS, it is the third most reported strategy in the post-task verbal reflections and post-intervention interviews. Likewise, the strategy—*I review the text first by noting its characteristics like length and organization* (GLOB8)—is in the fifteenth position in the post-intervention SORS and in the twenty-second position in the pre-intervention SORS scores, but the same strategy is the fifth most reported strategy in the post-task verbal reflections and post-intervention interviews.

As per their data in the post-task verbal reflections and post-intervention interviews in Table 13, participants have frequently used reading strategies as they have reported in the SORS.

During their post-task verbal reflections and post-intervention interviews, twelve participants (70.59%) mentioned the importance of *having a purpose in mind when reading academic texts* (GLOB 1) and 13 participants (76.47%) mentioned *underlining and circling key words* (SUP 10) five or more times. For example, one of the participants emphasized that as she attended these lessons on reading strategies every week, she became accustomed to questioning herself about why she was reading the text and reported that she would not like to start her reading without considering the very purpose of the reading text. Seven participants (41.18%) claimed that they would repeatedly go back to their underlined or circled words or phrases and confirm their understanding. The following excerpt from participant RS30 illustrates this:

> **Excerpt 1**: I like underlining and circling very much! But I am different I think – I underline phrases and parts of the sentences – I mean those that are longer than single words, but I circle words only. Then I am back and forth to think about meanings and understand my reading.

RS35, however, claimed that she would both underline and circle important information in the text but would also ensure at the same time that she would not confuse herself by doing so frequently. "If I have to circle many times, I paused and tried to find context clues and understand my reading (GLOB17). That is good."

SUP26 (*I ask myself questions I like to have answered in the text*) is among the five least reported in the post-intervention SORS as well as in the post-task verbal reflections and post-intervention interviews. In addition, while these strategies SUP29 (*When reading, I translate from English into my native language*) and SUP30 (*When reading, I think about information in both English and my mother tongue*) are among the five least reported strategies in the post-intervention SORS, they are in the medium and low usage category in the post-task verbal reflections and post-intervention interviews. When asked, three participants (17.65%) shared that the reading strategy instruction sessions helped them to become aware of and engage in the use of reading strategies, and they increasingly used less L1 in their reading, which they thought was more effective in this particular context.

During their reflection process and post-intervention interviews, participants reiterated that they had a *purpose in their mind before they started to read their text* (GLOB1). As RS28 repeatedly stated:

> **Excerpt 2**: I always have reasons why I am reading or even doing anything in fact, so I

> bring that into my reading from other tasks. These reading strategy classes have made me more aware of different strategies and I use them now so much. Reading here I begin with a purpose – maybe I have to understand the text, discuss with my friends and answer questions at the end after my reading.

Having *a purpose in mind* (GLOB1) may have attributed to all participants' repeatedly reiterating the benefits of using GLOB4 (*I take an overall view of the text to see what it is about before reading it*) in their post-task verbal reflections and post-intervention interviews. The application of GLOB1 may include the use of reading comprehension questions in advance of their reading the text. Along with GLOB8 (*I review the text first by nothing its characteristics like length and organization*), GLOB1 helps learners to predict the text and answer the questions during or after reading, as explained by RS30. These strategies, GLOB4 and GLOB8, as expressed by fourteen participants (82.35%), including RS25, RS26, and RS37, have helped them understand the text to some extent even before reading it. These participants added that the use of strategies, such as GLOB4 and GLOB8, has contributed to their prediction of the text content before reading. For example, RS26 stated:

> **Excerpt 3**: I always guess before reading the text. I quickly skim and scan the text. I read the title and subtitles of the text; I quickly read questions; I overall look at the text (GLOB4). Then I brainstorm many ideas. They give me lots of ideas about the text. I do a lot of these strategies nowadays after these strategy classes.

Further, RS37 added the following:

> **Excerpt 4**: I also read first and last sentences of each paragraph sometimes; I sure skim

the first and last paragraph. Then I know much about the topic and text. It is taking a lot of time but it's good!"

During their post-task verbal reflections and post-intervention interviews, each of nine participants (52.94%) also acknowledged five or more times that they carefully and slowly read the assigned text to ensure their understanding of the text (PROB7). In the interview, this strategy use during their reading was also noted. For instance, RS21's idea is provided in the following excerpt:

> **Excerpt 5**: In the beginning, title, questions (for comprehension), numbers, some key words helped me (GLOB4). I knew some about the text. Later when I started reading my text on noise and its effect, it was difficult. I was slow but I read very carefully and in detail (PROB7). I even lost what I was reading. So, I have to go back and read again and keep making my understanding where I am now (SUP22 and PROB25).

RS32 also showed a similar approach, as described in the following excerpt:

> **Excerpt 6**: I like to take notes a lot (SUP2) since I start this class. It helped me understand reading. When it is difficult to understand, I read it again (PROB25), but I slow my reading in this time (PROB11). I keep reading and thinking and pay attention for my understanding (PROB14). This solves my reading problem!

Regarding their strategy use, three participants (17.65%) repeatedly indicated that they kept going back and forth in the text (SUP22). When asked why they did so, they all emphasized

that they looked for the meaning (GLOB17) and relationships among ideas and thoughts in the text for their comprehension (SUP22). For instance, in Excerpt 7, RS13 shared the following:

> **Excerpt 7**: When I am reading, I like to guess what's coming next. It is helpful because my mind is busy thinking and guessing (GLOB24). After that I also check my guess I am right or wrong. These classes also help me guess some meanings of the words when I am reading (PROB28). There are many things in the text; that help me the meanings.

While reflecting on their reading experiences in their post-task verbal reflections and interviews, participants stressed that they also critically analyzed the information in the text and evaluated it based on their prior knowledge. RS27 specifically mentioned the following excerpt:

> **Excerpt 8**: I was also thinking critically today. It was difficult. I tried to see information was right or wrong (GLOB21). I reflected my past Korean language learning. I thought about how languages make me powerful. I tried to see the pictures from the past in mind (PROB19). It helped.

In response to a reading text on languages as a powerful invention, RS27 read the text critically and reflected on his past language learning experience in order to evaluate the text at hand. Eleven participants (64.71%) mentioned that they used think-alouds during their reading the text and that they also paraphrased some sentences. However, these participants expressed the need for additional time for paraphrasing parts of the text. As they reported in their reflections and post-intervention interviews, the participants sometimes stopped their reading for a while in order to think about what they have read in order to facilitate their understanding of the current reading (PROB16).

In addition to the 30 strategies in the SORS, 14 additional strategies were identified in the post-task verbal reflections and post-intervention interviews. The total frequency for these strategies was 289. These strategies included predicting the text (PREDICT, *n* = 39), thinking-alouds (THINK-ALOUD, *n* = 37) scanning (SCAN, *n* = 34), brainstorming (BRAINSTORM, *n* = 33), locating topic sentences (TOPIC, *n* = 30), skimming (SKIM, *n* = 28), determining the thesis statement (THESIS, *n* = 23), making inferences (INFER, *n* = 19), reflecting (REFLECT, *n* = 13), summarizing (SUM, *n* = 9), drawing pictures or structures (PIC, *n* = 7), reading comprehension questions before beginning to read the text (QUESTION, *n* = 7), using graphic organizers (GRAPH, *n* = 7), and evaluating where the reader stands with respect to time and task (TTASK, *n* = 3). Fourteen participants (82.35%) from EGA repeatedly reported that they looked for thesis statements and topic sentences in order to identify main ideas in the text they were reading. About 43 percent of these participants said they initially skimmed parts of the text, especially the first and the last paragraphs in addition to the first sentences of the rest of the paragraphs in order to learn about the text in the beginning.

Five participants (29.41%) asserted that they resorted to the use of their L1s only when they exhausted all other strategies in the process of their attempts to understand the text. These participants acknowledged that they used to rely on translation strategies initially, but they began to stop using it when they started using various reading strategies frequently.

While all participants claimed that they used a variety of strategies in order to comprehend their reading, three participants (17.65%) specifically described that they used several strategies during their reading and that in their using these strategies, they quickly moved from the use of one strategy to another when they found that the strategy they previously applied was not thoroughly helpful for their complex reading comprehension or that they used a

combination of strategies in order to understand the text. Five participants (35.29%) mentioned that they used a few strategies initially, as the reading passages were easy to work on. However, they started using many strategies as the vocabulary and information in the passages became more complex session after session.

As the participants were asked to read and perform think-alouds during the post-intervention interview, I was able to validate some of the reading strategies used by participants. During their think-alouds, participants were observed to have used various strategies, such as underlining and circling key words (SUP10), writing marginal notes (SUP2), and re-visiting underlined phrases and clauses and thinking about the text (SUP22), re-reading sentences (PROB25), asking themselves questions on whether they really understood what they read (GLOB23), trying to guess the meaning from the context (PROB28), and going back and forth in the text (SUP22).

As given in Tables 11, 12, and 13, GLOB27 (*I check to see if my guesses about the text are right or wrong*) was one of the least reported strategies in the post-intervention SORS scores and the least reported strategy in the pre-intervention SORS and the post-task verbal reflections and post-intervention interviews. During the interview, RC23 said "I used guessing about the text because I read questions and I thought about the title. Then I know something about the text. But I don't see my guessing right or wrong." When asked why she did not confirm whether her guesses were right or wrong, she replied that she had no time left in order to answer the comprehension questions.

Similarly, SUP13, PROB16, GLOB20, and SUP26 are four other strategies that were among the five least reported strategies during participants' post-task verbal reflections and their post-intervention interviews. Participants did not often ask themselves questions that they would

like to have answered in the text (SUP26), use typographical features like bold face and italics to identify key information (GLOB20), or stop from time to time and think about what they were reading (PROB16). As expressed, participants did not use reference materials (e.g., a dictionary) to help them understand what they read (SUP13) either. However, they often used context clues (GLOB17) and guessed the meaning of unknown words or phrases (PROB28) instead.

Thirteen participants (76.47%) repeatedly mentioned that they were engaged in brainstorming ideas during reading strategy instruction. While 12 participants (70.59%) frequently performed both skimming and scanning in order to comprehend the text and answer the comprehension questions, only seven participants (41.18%) were involved in making references when reading the text. Five participants (29.41%) confirmed that they used to ask themselves questions and monitored their comprehension of the text. In this regard, RC30 said "When I read, I ask myself questions and I made sure if I understand what I was reading. Otherwise it's useless just reading and reading and not understanding it." Participant RC36 added, "I always check where I am when reading. I want to know how much time I have spent reading and how much I have. And, how much I have finished reading. This is constant."

### 4.1.2 Experimental Group B (EGB)

This section reports the results based on the data obtained from EGB participants. The section first presents the results obtained from the quantitative data analyses on participants' awareness of their strategy use based on the SORS and post-task verbal reflections and post-intervention interviews. Dependent variables include *global, problem-solving,* and *support* strategies. It is important to remember that EGA and EGB received reading strategy instruction on all 30 reading strategies from the SORS in the same way or order and that each of the sessions

for EGA and EGB participants lasted for 90 minutes. However, while EGA received reading strategy instruction over a regular period, EGB received reading strategy instruction within a shorter, more intense period.

In the pre-intervention SORS scores, the overall strategy use (OVERALL) was reported in the medium usage category ($2.50 \leq M \leq 3.49$) (Table 14). Category-wise, PROB strategies were reported in the high usage category ($M \geq 3.50$), whereas GLOB strategies and SUP strategies were in the medium usage ($2.50 \leq M \leq 3.49$).

Regarding the post-intervention SORS presented in Table 14, the overall strategy use as well as the GLOB, the PROB, and the SUP strategy use are in the high usage category (i.e., $M \geq 3.50$). The overall reported strategy use, as measured by the SORS scores, has increased from the pre-intervention SORS ($M = 3.43$, $SD = 0.53$) to the post-intervention SORS scores ($M = 4.00$, $SD = 0.34$). Likewise, the mean SORS values for the GLOB, the PROB, and the SUP strategy categories all increased in the post-intervention.

**Table 14**

*Descriptive Statistics for Reported Strategies: Overall and by Category (EGB)*

| Category | SORS | | | | | | Reflections and post-intervention interviews | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pre-Intervention | | | Post-Intervention | | | Post-Intervention | | |
| | *M* | *SD* | Rank | *M* | *SD* | Rank | *M* | *SD* | Rank |
| OVERALL | 3.43 | 0.53 | | 4.00 | 0.34 | | 2.73 | 0.19 | |
| GLOB | 3.33 | 0.65 | 2 | 4.08 | 0.35 | 2 | 2.03 | 0.26 | 3 |
| PROB | 3.91 | 0.54 | **1** | 4.30 | 0.39 | **1** | 3.67 | 0.37 | **1** |
| SUP | 3.11 | 0.60 | 3 | 3.63 | 0.58 | 3 | 2.88 | 0.35 | 2 |

*Note*. EGB = Experimental Group B: GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

The descriptive statistics for EGB participants' strategy use in the post-task verbal reflections and post-intervention interviews identified 38 individual strategies, with the total frequency of 1,308. The total frequency for the GLOB, the PROB, and the SUP strategy were 423 (32.34%), 470 (35.93%), and 415 (31.73%), respectively. The results from the post-task reflections and the interviews in Table 14 also show that PROBs were most highly used by the participants.

Table 15 presents all 30 reading strategies from the SORS in the order of mean values (from high to low) of reading strategies reported by EGB participants during post-intervention period. For brevity, pre-intervention period is referred to as *Pre-InV* and post-intervention period is referred to as *Post-InV*. This table also shows all 30 strategies from the post-task verbal reflections and post-intervention interviews, under the *Ref-IV* column. The table also shows all 38 strategies from the post-task verbal reflections and post-intervention interviews, under the *Ref-IV* columns.

**Table 15**

*Reported Strategies in the Order of Mean Values in Post-Intervention (EGB)*

| Strategy Item | Strategies | Pre-InV | | **Post-InV** | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| SUP 10 | I underline and circle information in the text to help me remember it. | 4.06 | 0.85 | 4.81 | 0.54 | 5.63 | 0.81 |
| PROB 14 | When text becomes difficult, I pay closer attention to what I am reading. | 4.19 | 1.05 | 4.75 | 0.58 | 4.56 | 1.09 |
| PROB 25 | When text becomes difficult, I re-read it to increase my understanding. | 4.44 | 0.81 | 4.69 | 0.48 | 4.00 | 0.89 |
| GLOB 1 | I have a purpose in mind when I read. | 3.88 | 0.89 | 4.63 | 0.62 | 4.81 | 0.91 |
| PROB 11 | I adjust my reading speed according to what I am reading. | 4.31 | 1.08 | 4.50 | 0.82 | 4.19 | 1.17 |
| PROB28 | When I read, I guess the meaning of unknown words or phrases. | 3.88 | 1.02 | 4.50 | 0.73 | 3.31 | 0.79 |

| Strategy Item | Strategies | Pre-InV | | **Post-InV** | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| GLOB3 | I think about what I know to help me understand what I read. | 3.94 | 1.18 | 4.44 | 0.63 | 2.50 | 0.63 |
| GLOB4 | I take an overall view of the text to see what it is about before reading it. | 3.25 | 1.34 | 4.31 | 0.87 | 4.75 | 1.07 |
| PROB7 | I read slowly and carefully to make sure I understand what I am reading. | 4.19 | 1.05 | 4.31 | 0.70 | 4.56 | 1.09 |
| GLOB17 | I use context clues to help me better understand what I am reading. | 3.63 | 0.96 | 4.31 | 0.60 | 1.94 | 0.68 |
| GLOB24 | I try to guess what the content of the text is about when I read. | 3.94 | 1.00 | 4.31 | 0.79 | 1.50 | 0.73 |
| PROB9 | I try to get back on track when I lose concentration. | 4.44 | 0.73 | 4.25 | 0.58 | 4.63 | 1.41 |
| GLOB8 | I review the text first by noting its characteristics like length and organization. | 2.75 | 1.24 | 4.13 | 0.81 | 4.69 | 1.08 |
| GLOB20 | I use typographical features like bold face and italics to identify key information. | 3.19 | 1.22 | 4.13 | 0.81 | 0.69 | 0.60 |
| SUP22 | I go back and forth in the text to find relationships among ideas in it. | 3.19 | 0.91 | 4.06 | 0.85 | 3.06 | 0.85 |
| GLOB23 | I check my understanding when I come across new information | 3.63 | 1.09 | 4.06 | 0.68 | 0.81 | 0.75 |
| SUP18 | I paraphrase (restate ideas in my own words) to better understand what I read | 2.81 | 1.22 | 4.00 | 0.97 | 2.00 | 0.73 |
| GLOB 27 | I check to see if my guesses about the text are right or wrong. | 2.69 | 1.14 | 4.00 | 0.97 | 0.69 | 0.60 |
| SUP13 | I use reference materials (e.g., a dictionary) to help me understand what I read. | 4.25 | 1.00 | 3.94 | 1.24 | 2.00 | 0.97 |
| SUP2 | I take notes while reading to help me understand what I read. | 3.31 | 1.01 | 3.88 | 1.26 | 3.75 | 1.13 |
| GLOB15 | I use tables, figures, and pictures in text to increase my understanding | 2.81 | 1.22 | 3.75 | 1.18 | 1.87 | 0.62 |
| PROB19 | I try to picture or visualize information to help remember what I read. | 2.88 | 1.36 | 3.75 | 1.07 | 1.94 | 1.00 |
| GLOB12 | When reading, I decide what to read closely and what to ignore. | 3.38 | 0.96 | 3.69 | 0.87 | 1.06 | 0.77 |
| PROB16 | I stop from time to time and think about what I am reading. | 2.93 | 1.18 | 3.69 | 0.87 | 2.19 | 0.75 |
| GLOB21 | I critically analyze and evaluate the information presented in the text. | 2.75 | 1.13 | 3.63 | 0.89 | 0.75 | 0.58 |
| GLOB6 | I think about whether the content of the text fits my reading purpose | 3.44 | 1.36 | 3.63 | 0.96 | 0.38 | 0.62 |

| Strategy Item | Strategies | Pre-InV | | **Post-InV** | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| SUP 26 | I ask myself questions I like to have answered in the text. | 2.06 | 1.06 | 3.44 | 1.15 | 1.81 | 0.75 |
| SUP5 | When text becomes difficult, I read aloud to help me understand what I read. | 2.06 | 1.12 | 3.06 | 1.24 | 1.88 | 1.89 |
| SUP30 | When reading, I think about information in both English and my mother tongue | 3.19 | 1.39 | 2.94 | 1.39 | 2.22 | 0.96 |
| SUP29 | When reading, I translate from English into my native language. | 3.06 | 1.39 | 2.75 | 1.34 | 3.38 | 1.03 |

*Note*. Pre-InV = Pre-Intervention; Post-InV = Post-Intervention; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

Tables 16 and 17 present the same data as above in Table 15. However, these tables are organized in the order of mean values (from high to low) of reading strategies reported by EGB in the pre-intervention (Table 16; *Pre-InV*) and the post-task verbal reflections and post-intervention interviews (Table 17; *Ref-IV*).

**Table 16**

*Reported Strategies in the Order of Mean Values in the Pre-Intervention (EGB)*

| Strategy Item | Strategies | **Pre-InV** | | Post-InV | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| PROB 25 | When text becomes difficult, I re-read it to increase my understanding. | 4.44 | 0.81 | 4.69 | 0.48 | 4.00 | 0.89 |
| PROB9 | I try to get back on track when I lose concentration. | 4.44 | 0.73 | 4.25 | 0.58 | 4.63 | 1.41 |
| PROB 11 | I adjust my reading speed according to what I am reading. | 4.31 | 1.08 | 4.50 | 0.82 | 4.19 | 1.17 |
| SUP13 | I use reference materials (e.g., a dictionary) to help me understand what I read. | 4.25 | 1.00 | 3.94 | 1.24 | 2.00 | 0.97 |
| PROB 14 | When text becomes difficult, I pay closer attention to what I am reading. | 4.19 | 1.05 | 4.75 | 0.58 | 4.56 | 1.09 |

| Strategy Item | Strategies | **Pre-InV** | | Post-InV | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| PROB7 | I read slowly and carefully to make sure I understand what I am reading. | 4.19 | 1.05 | 4.31 | 0.70 | 4.56 | 1.09 |
| SUP 10 | I underline and circle information in the text to help me remember it. | 4.06 | 0.85 | 4.81 | 0.54 | 5.63 | 0.81 |
| GLOB3 | I think about what I know to help me understand what I read. | 3.94 | 1.18 | 4.44 | 0.63 | 2.50 | 0.63 |
| GLOB24 | I try to guess what the content of the text is about when I read. | 3.94 | 1.00 | 4.31 | 0.79 | 1.50 | 0.73 |
| GLOB 1 | I have a purpose in mind when I read. | 3.88 | 0.89 | 4.63 | 0.62 | 4.81 | 0.91 |
| PROB28 | When I read, I guess the meaning of unknown words or phrases. | 3.88 | 1.02 | 4.50 | 0.73 | 3.31 | 0.79 |
| GLOB17 | I use context clues to help me better understand what I am reading. | 3.63 | 0.96 | 4.31 | 0.60 | 1.94 | 0.68 |
| GLOB23 | I check my understanding when I come across new information | 3.63 | 1.09 | 4.06 | 0.68 | 0.81 | 0.75 |
| GLOB6 | I think about whether the content of the text fits my reading purpose | 3.44 | 1.36 | 3.63 | 0.96 | 0.38 | 0.62 |
| GLOB12 | When reading, I decide what to read closely and what to ignore. | 3.38 | 0.96 | 3.69 | 0.87 | 1.06 | 0.77 |
| SUP2 | I take notes while reading to help me understand what I read. | 3.31 | 1.01 | 3.88 | 1.26 | 3.75 | 1.13 |
| GLOB4 | I take an overall view of the text to see what it is about before reading it. | 3.25 | 1.34 | 4.31 | 0.87 | 4.75 | 1.07 |
| GLOB20 | I use typographical features like bold face and italics to identify key information. | 3.19 | 1.22 | 4.13 | 0.81 | 0.69 | 0.60 |
| SUP22 | I go back and forth in the text to find relationships among ideas in it. | 3.19 | 0.91 | 4.06 | 0.85 | 3.06 | 0.85 |
| SUP30 | When reading, I think about information in both English and my mother tongue | 3.19 | 1.39 | 2.94 | 1.39 | 2.22 | 0.96 |
| SUP29 | When reading, I translate from English into my native language. | 3.06 | 1.39 | 2.75 | 1.34 | 3.38 | 1.03 |
| PROB16 | I stop from time to time and think about what I am reading. | 2.93 | 1.18 | 3.69 | 0.87 | 2.19 | 0.75 |
| PROB19 | I try to picture or visualize information to help remember what I read. | 2.88 | 1.36 | 3.75 | 1.07 | 1.94 | 1.00 |
| SUP18 | I paraphrase (restate ideas in my own words) to better understand what I read | 2.81 | 1.22 | 4.00 | 0.97 | 2.00 | 0.73 |
| GLOB15 | I use tables, figures, and pictures in text to increase my understanding | 2.81 | 1.22 | 3.75 | 1.18 | 1.87 | 0.62 |
| GLOB8 | I review the text first by noting its characteristics like length and organization. | 2.75 | 1.24 | 4.13 | 0.81 | 4.69 | 1.08 |

| Strategy Item | Strategies | **Pre-InV** | | Post-InV | | Ref-IV | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| GLOB21 | I critically analyze and evaluate the information presented in the text. | 2.75 | 1.13 | 3.63 | 0.89 | 0.75 | 0.58 |
| GLOB 27 | I check to see if my guesses about the text are right or wrong. | 2.69 | 1.14 | 4.00 | 0.97 | 0.69 | 0.60 |
| SUP 26 | I ask myself questions I like to have answered in the text. | 2.06 | 1.06 | 3.44 | 1.15 | 1.81 | 0.75 |
| SUP5 | When text becomes difficult, I read aloud to help me understand what I read. | 2.06 | 1.12 | 3.06 | 1.24 | 1.88 | 1.89 |

*Note*. Pre-InV = Pre-Intervention; Post-InV = Post-Intervention; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

**Table 17**

*Reported Strategies in the Order of Mean Values in the Reflections and Interview (EGB)*

| Strategy Item | Strategies | Pre-InV | | Post-InV | | **Ref-IV** | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| SUP 10 | I underline and circle information in the text to help me remember it. | 4.06 | 0.85 | 4.81 | 0.54 | 5.63 | 0.81 |
| GLOB 1 | I have a purpose in mind when I read. | 3.88 | 0.89 | 4.63 | 0.62 | 4.81 | 0.91 |
| GLOB4 | I take an overall view of the text to see what it is about before reading it. | 3.25 | 1.34 | 4.31 | 0.87 | 4.75 | 1.07 |
| GLOB8 | I review the text first by noting its characteristics like length and organization. | 2.75 | 1.24 | 4.13 | 0.81 | 4.69 | 1.08 |
| PROB9 | I try to get back on track when I lose concentration. | 4.44 | 0.73 | 4.25 | 0.58 | 4.63 | 1.41 |
| PROB 14 | When text becomes difficult, I pay closer attention to what I am reading. | 4.19 | 1.05 | 4.75 | 0.58 | 4.56 | 1.09 |
| PROB7 | I read slowly and carefully to make sure I understand what I am reading. | 4.19 | 1.05 | 4.31 | 0.70 | 4.56 | 1.09 |
| PROB 11 | I adjust my reading speed according to what I am reading. | 4.31 | 1.08 | 4.50 | 0.82 | 4.19 | 1.17 |
| PROB 25 | When text becomes difficult, I re-read it to increase my understanding. | 4.44 | 0.81 | 4.69 | 0.48 | 4.00 | 0.89 |
| SUP2 | I take notes while reading to help me understand what I read. | 3.31 | 1.01 | 3.88 | 1.26 | 3.75 | 1.13 |
| SUP29 | When reading, I translate from English into my native language. | 3.06 | 1.39 | 2.75 | 1.34 | 3.38 | 1.03 |

| Strategy Item | Strategies | Pre-InV | | Post-InV | | **Ref-IV** | |
|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| PROB28 | When I read, I guess the meaning of unknown words or phrases. | 3.88 | 1.02 | 4.50 | 0.73 | 3.31 | 0.79 |
| SUP22 | I go back and forth in the text to find relationships among ideas in it. | 3.19 | 0.91 | 4.06 | 0.85 | 3.06 | 0.85 |
| GLOB3 | I think about what I know to help me understand what I read. | 3.94 | 1.18 | 4.44 | 0.63 | 2.50 | 0.63 |
| SUP30 | When reading, I think about information in both English and my mother tongue | 3.19 | 1.39 | 2.94 | 1.39 | 2.22 | 0.96 |
| PROB16 | I stop from time to time and think about what I am reading. | 2.93 | 1.18 | 3.69 | 0.87 | 2.19 | 0.75 |
| SUP18 | I paraphrase (restate ideas in my own words) to better understand what I read | 2.81 | 1.22 | 4.00 | 0.97 | 2.00 | 0.73 |
| SUP13 | I use reference materials (e.g., a dictionary) to help me understand what I read. | 4.25 | 1.00 | 3.94 | 1.24 | 2.00 | 0.97 |
| GLOB17 | I use context clues to help me better understand what I am reading. | 3.63 | 0.96 | 4.31 | 0.60 | 1.94 | 0.68 |
| PROB19 | I try to picture or visualize information to help remember what I read. | 2.88 | 1.36 | 3.75 | 1.07 | 1.94 | 1.00 |
| SUP5 | When text becomes difficult, I read aloud to help me understand what I read. | 2.06 | 1.12 | 3.06 | 1.24 | 1.88 | 1.89 |
| GLOB15 | I use tables, figures, and pictures in text to increase my understanding | 2.81 | 1.22 | 3.75 | 1.18 | 1.87 | 0.62 |
| SUP 26 | I ask myself questions I like to have answered in the text. | 2.06 | 1.06 | 3.44 | 1.15 | 1.81 | 0.75 |
| GLOB24 | I try to guess what the content of the text is about when I read. | 3.94 | 1.00 | 4.31 | 0.79 | 1.50 | 0.73 |
| GLOB12 | When reading, I decide what to read closely and what to ignore. | 3.38 | 0.96 | 3.69 | 0.87 | 1.06 | 0.77 |
| GLOB23 | I check my understanding when I come across new information | 3.63 | 1.09 | 4.06 | 0.68 | 0.81 | 0.75 |
| GLOB21 | I critically analyze and evaluate the information presented in the text. | 2.75 | 1.13 | 3.63 | 0.89 | 0.75 | 0.58 |
| GLOB 27 | I check to see if my guesses about the text are right or wrong. | 2.69 | 1.14 | 4.00 | 0.97 | 0.69 | 0.60 |
| GLOB20 | I use typographical features like bold face and italics to identify key information. | 3.19 | 1.22 | 4.13 | 0.81 | 0.69 | 0.60 |
| GLOB6 | I think about whether the content of the text fits my reading purpose | 3.44 | 1.36 | 3.63 | 0.96 | 0.38 | 0.62 |

*Note*. Pre-InV = Pre-Intervention; Post-InV = Post-Intervention; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

SUP10 (*I underline and circle information in the text to help me remember it*) was the most reported strategy in the post-intervention SORS scores as well as in the post-task verbal reflections and post-intervention interviews, while it occupied the seventh position in the pre-intervention SORS. When they lost concentration in the midst of reading academic materials, participants tried to get back on track (PROB9), which was the most reported strategy among these participants in the pre-intervention SORS. This strategy remained the fifth most reported strategy in the post-task verbal reflections and post-interventions interviews and occupied the twelfth position in the post-intervention SORS scores.

As participants also asserted in their interviews, they re-read the text to enhance their understanding of the textual information (PROB25), and they were very careful about their reading speed (PROB11). These two strategies—PROB25 and PROB11—were the two of the five most reported strategies in the pre- and post-intervention SORSs and the two of the nine most reported strategies in the post-task verbal reflections and post-intervention interviews. While PROB14 (*When text becomes difficult, I pay closer attention to what I am reading*) has occupied the second most reported strategy in the post-intervention SORS, it is in the seventh position in the post-task verbal reflections and post-intervention interviews and in the sixth position in the pre-intervention SORS scores. GLOB 1(*I have a purpose in mind when I read*) is the fourth most reported strategy in the post-intervention SORS; this strategy has occupied the second position in the most reported strategies in the post-task verbal reflections and post-intervention interviews while it was in the tenth position in the pre-intervention SORS.

As participants became aware of more strategies, they became less dependent on certain strategies. The two reading strategies—SUP29 (*When reading, I translate from English into my native language*) and SUP30 (*When reading, I think about information in both English and my mother tongue*)—were in the twenty-first and twentieth positions, respectively, in the pre-intervention SORS. However, these strategies became the least reported strategies in the post-intervention SORS, as participants became less dependent on these reading strategies.

During their reflections and post-intervention interviews, participants repeatedly mentioned the importance of having a purpose in mind when reading academic texts (GLOB 1) as well as that of underlining and circling key words (SUP 10). For example, one of the participants acknowledged that she underlined some words that she thought would be somewhat important and circled the ones that she thought would express key ideas in the text central to her understanding of the text. Participants also expressed that they noted the overall viewpoint of the text (GLOB 4) as well as the length and structure of the text before they began to read the text (GLOB 8).

In addition, participants stated they used a wide range of reading strategies as they read the text. They reiterated that they used not only strategies, such as skimming the comprehension questions and the first and the last paragraphs (GLOB 4; GLOB 24), but also attempted to predict the content in the text, based on the title and sub-title of the text. Fourteen participants (87.50%) asserted that they tried to locate the main idea or thesis statement of the text as well as topic sentences to know more about the given text. When participants did not understand the text or lost concentration, they re-read part of the text (PROB 25) and thus tried to get back on track (PROB 9). Participants also talked about brainstorming and linking key words from the text with their life experiences. The use of those strategies can be illustrated by RS08, for example:

> **Excerpt 9**: I read the title of the text and I briefly glanced at questions and exercises after the text. And, I tried to estimate the level of the difficulty and the text and the length and vocabulary. I used different strategies for easy text.

The same participant in response to a question with regard to a different text reported the following:

> **Excerpt 10**: First of all, I scanned the text. I read twice the title. Then I went through sub-titles, reading them with attention. Then I was trying to understand the main idea based on the sub-title and the structure. And, then I started reading. But my previous knowledge of the story helped to understand the text well.

Some participants claimed that they did not have any challenges when the text was very easy to read, so they did not have to use strategies to comprehend complex texts. However, when they encountered complex texts, they incorporated different strategies. For eight participants (50%), being able to identify the context in the text made the text easy to comprehend, but they found texts with long, complex sentences and new vocabulary items very difficult to understand. In the case of such difficult-to-understand texts, EGB participants reported that they relied on various strategies, such as drawing pictures or structures to represent the text content, guessing the meaning from the context or from the use of conjunctions or adverbials in context. Although some complex sentences made it difficult for participants to comprehend a particular paragraph, the use of conjunctions, as participants claimed, helped them at least to distinguish, according to the context, which clause was a cause or effect (e.g., the use of ‘because’) or which sentences consisted of opposing views (e.g., the use of ‘however’).

As expressed in their post-task verbal reflections and post-intervention interviews, EGB participants also demonstrated awareness and use of different reading strategies. Some participants reported that they experimented with a variety of reading strategies until they were able to figure out the meanings of the text and respond to the comprehension questions at the end of the text. As they claimed, participants also critically read the text and evaluated the information. In this context, RS13 stated the following:

> **Excerpt 11**: I now do more than reading simply... I think that I already know about the text (GLOB3). I read the text critically; I am now encouraged evaluate content (GLOB21). I reflect what I did yesterday or maybe the past about this topic (REFLECT). I don't read only – I read and do more than reading like critical (GLOB21).

In their post-task verbal reflections and post-intervention interviews, participants demonstrated their strategic behaviours. As they shared, participants strategically switched between reading strategies and used different strategies, depending on the complexity of the text. Sometimes they read the text very slowly and carefully and at some other times, they read the text quickly without wasting much time. For instance, in his post-task reflection, participant RS04 mentioned this:

> **Excerpt 12**: Today I scanned text. I underlined key ideas and topics (SUP 10). I also re-read several paragraphs when I realized that it is difficult to get main idea (PROB 25)… When the text was getting more difficult I was paying more attention (PROB 14). And I was reading more carefully (PROB 7)…When there were several examples for the same idea, I read one example and skipped the other (GLOB 12). But I read and read the idea carefully (PROB 7).

In the same manner, the following excerpt captures participant RS03's approach strategy use:

> **Excerpt 13**: I kept reading the same paragraph about crops many times (PROB 25) because it was too difficult. But later I found that this didn't work. But I don't know when I started reading to myself loudly (SUP 5) and thinking about the text (GLOB 6). Then I think I tried to make connections between what I was reading and what I already know about the text from the title and topic sentences overall (GLOB 4). But I did this in my own language (SUP 29). My grandfather was a farmer. I used to visit him far away. I knew farming from him. Words were difficult, but I knew from the context (PROB 28) mostly. I didn't look at the dictionary much at this time.

During their interviews, participants expressed their heightened awareness and use of a variety of reading strategies. The following excerpt from RS01 illustrates the increase in the awareness and use of reading strategies:

> **Excerpt 14**: I don't know maybe the more I read the more strategies I will be able to discover…I use strategies more than I did. Now I try to draw some pictures of the main idea of the text before I read (GLOB 24).

As the participants were asked to read and perform think-alouds during the interview, I was able to validate some of the reading strategies used by participants. During their think-alouds, participants were observed to have used various strategies, such as underlining and circling key words, writing marginal notes, using question marks and re-visiting underlined phrases, re-reading sentences, asking themselves questions on whether they really understood

what they read, trying to guess the meaning from the context, and going back and forth in the text.

In their post-task verbal reflections and post-intervention interviews, participants identified eight additional strategies. The total frequency for these strategies was 92. These strategies included brainstorming (BRAINSTROM, $n = 5$), skimming (SKIM, $n = 15$), scanning (SCAN, $n = 23$), making inferences (INFER, $n = 4$), drawing pictures or structures (PIC, $n = 2$), reading comprehension questions before beginning to read the text (QUESTION, $n = 11$), determining the thesis statement (THESIS, $n = 14$), and locating topic sentences (TOPIC, $n = 18$). While all of the 16 participants reported that they used the scanning strategy to determine the specific information in the text, twelve of them mentioned they tried to identify the main ideas of the text by locating the thesis statement or topic sentence. One of the participants mentioned that she drew pictures and structures to comprehend what she was reading, which helped her to remember the particular parts of the text when answering the comprehension questions.

### 4.1.3 Comparison Group (CG)

In the pre-instruction period, the overall strategy use (OVERALL) ($M = 3.19$, $SD = 0.32$) reported by CG was in the medium usage category ($2.50 \leq M \leq 3.49$), as presented in Table 18. Since members of CG did not receive reading strategy instruction, terms, such as pre- and post-instruction, are used instead of pre- and post-intervention here. Category-wise, PROB strategies ($M = 3.76$, $SD = 0.41$) were reported in the high usage category ($M \geq 3.50$), whereas GLOB strategies ($M = 2.76$, $SD = 0.40$) and SUP strategies ($M = 3.29$, $SD = 0.29$) were in the medium usage ($2.50 \leq M \leq 3.49$).

**Table 18**

*Descriptive Statistics for Reported Strategies: Overall and by Category (CG)*

| Category | SORS | | | | | |
|---|---|---|---|---|---|---|
| | Pre-Instruction | | | Post-Instruction | | |
| | *M* | *SD* | Rank | *M* | *SD* | Rank |
| OVERALL | 3.19 | 0.32 | | 3.31 | 0.28 | |
| GLOB | 2.76 | 0.40 | 3 | 2.97 | 0.25 | 3 |
| PROB | 3.76 | 0.41 | **1** | 3.86 | 0.53 | **1** |
| SUP | 3.29 | 0.29 | 2 | 3.32 | 0.52 | 2 |

*Note.* CG = Comparison Group; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

Students in the control group reported similar patterns of reading strategy use in pre- and post-instruction. The overall strategy use ($M$ = 3.31, $SD$ = 0.28) as well as the GLOB ($M$ = 2.97, $SD$ = 0.25) and the SUP strategy use ($M$ = 3.32, $SD$ = 0.52) were in the medium usage category, whereas the PROB strategy use ($M$ = 3.86, $SD$ = 0.53) was in the high usage category. Although reading strategy instruction was not provided to CG participants, the overall reported strategy use also increased from the pre-instruction ($M$ = 3.19, $SD$ = 0.32) to the post-intervention SORS results ($M$ = 3.31, $SD$ = 0.28). Likewise, the GLOB, the PROB, and the SUP strategy categories all increased in the post-instruction SORS results. The order of the strategy use for CG remained the same as in the pre-instruction SORS results among CG participants.

Table 19 presents 30 reading strategies from the SORS in the order of mean values (from high to low) of reading strategies reported by the CG participants during the pre-instruction SORS, referred to as *Pre-Ins*, and post-instruction SORS, referred to as *Post-Ins*. In the post-instruction SORS, SUP10, SUP2, SUP22, PROB7, and PROB14 have occupied the top-five most reported strategies. However, PROB9, PROB25, SUP10, PROB14, and SUP13 were the five most reported strategies in the pre-instruction SORS. SUP10 and PROB14 were the most reported strategies common to both the pre-instruction and post-instruction results.

GLOB26, SUP5, GLOB27, SUP30, and GLOB15 were the least reported strategies in the post-instruction SORS scores whereas SUP18, SUP26, GLOB27, GLOB6, and SUP5 were least reported in the pre-instruction SORS scores. SUP5 and GLOB27 were the two common strategies that were among the five least reported strategies in the pre- and post-instruction SORS scores.

**Table 19**

*Reported Strategies in the Order of Frequency: Post-Instruction (CG)*

| Strategy Item | Strategies | Pre-Ins | | **Post-Ins** | |
|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* |
| SUP10 | I underline or circle information in the text to help me remember it. | 4.26 | 0.65 | 4.63 | 0.68 |
| SUP2 | I take notes while reading to help me understand what I read. | 3.74 | 0.81 | 4.37 | 0.68 |
| SUP22 | I go back and forth in the text to find relationships among ideas in it. | 3.47 | 0.84 | 4.37 | 0.60 |
| PROB7 | I read slowly and carefully to make sure I understand what I am reading. | 4.11 | 0.66 | 4.21 | 0.86 |
| PROB14 | When text becomes difficult, I pay closer attention to what I am reading. | 4.26 | 0.65 | 4.11 | 0.74 |
| PROB 25 | When text becomes difficult, I re-read it to increase my understanding. | 4.42 | 0.77 | 4.05 | 0.91 |
| PROB28 | When I read, I guess the meaning of unknown words or phrases | 3.47 | 0.70 | 3.95 | 0.62 |
| GLOB17 | I use context clues to help me better understand what I am reading. | 3.11 | 1.69 | 3.89 | 0.66 |
| PROB9 | I try to get back on track when I lose concentration. | 4.47 | 0.61 | 3.79 | 0.98 |
| PROB11 | I adjust my reading speed according to what I am reading. | 3.26 | 0.45 | 3.74 | 0.87 |
| PROB19 | I try to picture or visualize information to help remember what I read. | 3.00 | 0.47 | 3.63 | 0.68 |
| SUP 13 | I use reference materials (e.g., a dictionary) to help me understand what I read. | 4.16 | 0.60 | 3.63 | 0.96 |

| Strategy Item | Strategies | Pre-Ins | | Post-Ins | |
|---|---|---|---|---|---|
| | | *M* | *SD* | *M* | *SD* |
| GLOB21 | I critically analyze and evaluate the information presented in the text. | 2.53 | 0.84 | 3.47 | 0.84 |
| GLOB24 | I try to guess what the content of the text is about when I read | 3.05 | 0.85 | 3.42 | 0.90 |
| PROB16 | I stop from time to time and think about what I am reading. | 3.11 | 0.81 | 3.37 | 0.90 |
| GLOB1 | I have a purpose in mind when I read. | 3.05 | 0.71 | 3.32 | 0.89 |
| SUP18 | I paraphrase (restate ideas in my own words) to better understand what I read | 1.89 | 0.57 | 3.32 | 0.75 |
| GLOB3 | I think about what I know to help me understand what I read. | 2.79 | 0.71 | 3.26 | 0.99 |
| GLOB8 | I review the text first by noting its characteristics like length and organization. | 2.68 | 0.48 | 3.21 | 0.86 |
| GLOB12 | When reading, I decide what to read closely and what to ignore. | 2.86 | 0.60 | 3.21 | 0.86 |
| GLOB4 | I take an overall view of the text to see what it is about before reading it. | 2.74 | 0.56 | 2.95 | 0.71 |
| GLOB23 | I check my understanding when I come across new information. | 2.42 | 0.61 | 2.89 | 0.57 |
| SUP29 | When reading, I translate from English into my native language. | 4.11 | 0.50 | 2.84 | 0.83 |
| GLOB20 | I use typographical features like bold face and italics to identify key information. | 3.42 | 0.84 | 2.68 | 0.67 |
| SUP 26 | I ask myself questions I like to have answered in the text. | 1.95 | 0.62 | 2.58 | 1.17 |
| GLOB15 | I use tables, figures, and pictures in text to increase my understanding. | 3.11 | 0.66 | 2.47 | 0.84 |
| SUP30 | When reading, I think about information in both English and my mother tongue. | 3.89 | 0.57 | 2.47 | 0.70 |
| GLOB27 | When reading, I translate from English into my native language. | 2.05 | 0.52 | 2.11 | 0.88 |
| SUP5 | When text becomes difficult, I read aloud to help me understand what I read. | 2.16 | 0.38 | 1.84 | 1.02 |
| GLOB6 | I think about whether the content of the text fits my reading purpose. | 2.11 | 0.57 | 1.68 | 0.67 |

*Note*. GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy; Pre-Ins = Pre-Instruction; Post-Ins = Post-Instruction

### 4.2 Effect of Reading Strategy Instruction

This section addresses the second research question: *What are the differences in pre- and post-intervention reading comprehension test scores and reported reading strategy use between the experimental and comparison groups, as measured by the SORS instrument?* To answer this question, I conducted a paired-sample *t*-test to determine the differences in pre- and post-intervention RC test scores as well as the differences in pre- and post-intervention reported reading strategy use measured through the SORS within and across the EGA, EGB, and CG participants. The paired-sample *t*-tests are conducted in order to determine the mean difference between paired observations (Lund, 2022). In this analysis, paired observations are reading strategies (the *global*, *problem-solving*, *suppor*t, and overall strategies) and reading comprehension test scores.

#### 4.2.1 Experimental Group A (EGA)

A paired-sample *t*-test was conducted to determine the differences in pre- and post-intervention RC (reading comprehension) test scores and reported reading strategy use measured through the SORS completed by EGA. There was a statistically significant difference between the post-intervention RC test scores ($M = 15.41$, $SD = 4.32$) and the pre-intervention RC test scores ($M = 13.12$, $SD = 3.90$), $t(16) = 4.90$, $p < .0001$. In terms of the overall strategy use, it was statistically significantly higher for the post-intervention ($M = 3.79$, $SD = 0.29$) than for the pre-intervention SORS ($M = 3.11$, $SD = 0.34$), $t(16) = 13.49$, $p < .0001$ (Table 20). Category-wise, participants reported higher use of GLOBs, PROBs, and SUPs in the post-intervention SORS. These participants' use of GLOBs also increased statistically significantly in the post-intervention SORS ($M = 3.65$, $SD = 0.37$) from their pre-intervention SORS, ($M = 2.76$, $SD =$

0.39), $t(16) = 13.04$, $p < .0001$. Similarly, the PROB strategy use among these participants was statistically significantly higher for the post-intervention SORS ($M = 4.44$, $SD = 0.26$) than for the pre-intervention SORS ($M = 3.58$, $SD = 0.37$), $t(16) = 20.46$, $p < .0001$. The SUP strategy use was statistically significantly higher for the post-intervention SORS ($M = 3.42$, $SD = 0.35$) than for the pre-intervention SORS ($M = 3.19$, $SD = 0.42$), $t(16) = 3.11$, $p = .007$.

**Table 20**

*Descriptive Statistics and t-test Results for Reading Strategy Use (EGA)*

| | Pre-intervention | | Post-intervention | | *n* | 95% CI for Mean Difference | *t* | *df* | *p* |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | | | | | |
| RC Test | 13.12 | 3.90 | 15.41 | 4.32 | 17 | 1.30, 3.29 | 4.90 | 16 | .000* |
| Strategies (SORS) | | | | | | | | | |
| OVERALL | 3.11 | 0.34 | 3.79 | 0.29 | 17 | 0.58, 0.79 | 13.49 | 16 | .000* |
| GLOB | 2.76 | 0.39 | 3.65 | 0.37 | 17 | 0.74, 1.03 | 13.04 | 16 | .000* |
| PROB | 3.58 | 0.37 | 4.44 | 0.26 | 17 | 0.77, 0.95 | 20.46 | 16 | .000* |
| SUP | 3.19 | 0.42 | 3.42 | 0.35 | 17 | 0.07, 0.39 | 3.11 | 16 | .007* |

*Note*. EGA = Experimental Group A; *$p < .05$, 2-tailed; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

Overall, EGA participants performed statistically significantly better in the post-intervention RC test and the reported strategy use in the post-intervention SORS. Statistically significance was also shown in the use of GLOBs, PROBs, and SUPs, as measured through the pre- and post-intervention SORS results. Finally, the results from the post-task verbal reflections and post-intervention interviews revealed that participants' increased awareness and use of a variety of reading strategies in performing the reading tasks.

### 4.2.2 Experimental Group B (EGB)

A paired-sample *t*-test was conducted to determine the differences in pre- and post-intervention RC test scores and reported reading strategy use measured by the SORS. There was a significant difference between the pre-intervention RC test scores ($M = 53.37$, $SD = 17.14$), $t(15) = 5.87$, $p < .0005$ and the post-intervention RC test scores ($M = 72.60$, $SD = 11.49$). The overall strategy use was statistically significantly higher for the post-intervention SORS ($M = 4.00$, $SD = 0.34$) than for the pre-intervention SORS ($M = 3.43$, $SD = 0.53$), $t(15) = 5.26$, $p < .005$. Category-wise, participants reported higher use of GLOBs, PROBs, and SUPs in the post-intervention SORS scores, and these increases were also statistically significant (Table 21).

**Table 21**

*Descriptive Statistics and t-test Results for Reading Strategy Use (EGB)*

| | Pre-intervention | | Post-intervention | | *n* | 95% CI for Mean Difference | *t* | *df* | *p* |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | | | | | |
| RC Test | 13.88 | 4.45 | 18.88 | 2.99 | 16 | 3.19, 6.82 | 5.87 | 15 | .00* |
| Strategies (SORS) | | | | | | | | | |
| OVERALL | 3.43 | 0.53 | 4.00 | 0.34 | 16 | 0.35, 0.83 | 5.26 | 15 | .00* |
| GLOB | 3.33 | 0.65 | 4.08 | 0.35 | 16 | 0.47, 1.03 | 5.66 | 15 | .00* |
| PROB | 3.91 | 0.54 | 4.30 | 0.39 | 16 | 0.11, 0.69 | 2.93 | 15 | .01* |
| SUP | 3.11 | 0.60 | 3.63 | 0.58 | 16 | 0.28, 0.77 | 4.51 | 15 | .00* |

*Note*. EGB = Experimental Group B; *$p < .05$, 2-tailed; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

### 4.2.3 Comparison Group (CG)

Similar to EGA and EGB, a paired-sample *t*-test was also conducted to determine the differences in pre- and post-instruction RC test scores and reported reading strategy use by CG

group measured through the SORS. As previously reported, although no reading strategy instruction was provided to CG, there was a statistically significant difference between the post-instruction RC test scores ($M$ = 13.26, $SD$ = 3.81) and the pre-instruction RC test scores ($M$ = 11.74, $SD$ = 4.39), $t(18) = 2.96$, $p = .008$ (Table 22). The overall strategy use was statistically significantly higher for the post-instruction ($M$ = 3.31, $SD$ = 0.28) than for the pre-instruction SORS scores ($M$ = 3.19, $SD$ = 0.32), $t(18) = 2.45$, $p = .025$. Category-wise, CG participants reported statistically significantly higher use of GLOBs in the post-instruction ($M$ = 2.97, $SD$ = 0.25) than in the pre-instruction SORS ($M$ = 2.76, $SD$ = 0.40), $t(18) = 3.06$, $p = .007$. However, the PROB strategy use among these participants was not statistically significantly higher for the post-instruction ($M$ = 3.86, $SD$ = 0.53) than for the pre-instruction SORS ($M$ = 3.76, $SD$ = 0.41), $t(18) = 1.00$, $p < .05$. The SUP strategy use also was not statistically significantly higher for the post-innstruction ($M$ = 3.33, $SD$ = 0.52) than for the pre-instruction SORS scores ($M$ = 3.29, $SD$ = 0.29), $t(18) = 0.33$, $p < .05$.

**Table 22**

*Descriptive Statistics and t-test Results for Reading Strategy Use (CG)*

| | Pre-intervention | | Post-intervention | | *n* | 95% CI for Mean Difference | *t* | *df* | *p* |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | | | | | |
| RC Test | 11.74 | 4.39 | 13.26 | 3.81 | 19 | 0.44, 2.61 | 2.96 | 18 | .008* |
| Strategies (SORS) | | | | | | | | | |
| OVERALL | 3.19 | 0.32 | 3.31 | 0.28 | 19 | 0.17, 0.23 | 2.45 | 18 | .025* |
| GLOB | 2.76 | 0.40 | 2.97 | 0.25 | 19 | 0.06, 0.35 | 3.06 | 18 | .007* |
| PROB | 3.76 | 0.41 | 3.86 | 0.53 | 19 | -0.11, 0.31 | 1.00 | 18 | .333 |
| SUP | 3.29 | 0.29 | 3.33 | 0.52 | 19 | -0.19, 0.27 | 0.33 | 18 | .749 |

*Note*. CG = Comparison Group; * = Significant at $p < .05$, 2-tailed; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

### 4.3 Reading Strategy Use vis-à-vis Reading Comprehension

The third research question is addressed in this section: *What are the relationships between students' reported reading strategy use and their reading comprehension test scores before and after receiving reading strategy instruction?* In order to answer this research question, a Pearson's correlation test was performed. The Pearson correlation is used to determine the relationship between two variables (Lund, 2022). In the analysis, while reading strategy use is an independent variable, reading comprehension is a dependent variable. The relationships between participants' reported reading strategy use and their reading comprehension test scores related to EGA, EGB, and CG are presented below.

#### 4.3.1 Experimental Group A (EGA)

In this section, the relationship between (a) the RC test scores and the reported strategy use from the SORS in the pre- and post-intervention results and (b) the RC test scores and the strategy use from participants' post-task reflections and post-intervention interviews are presented (Table 22). In the pre-intervention results, a statistically positive correlation was found between the overall strategy use and the RC test scores, $r = .51$, $p = .04$. Category-wise, there was also a positive correlation between the GLOB strategy use and the RC test scores, $r = .50$, $p = .04$, between the PROB strategy use and the RC test scores, $r = .49$, $p = .05$, and between the SUP strategy use and the RC test scores, $r = .31$, $p = .23$. However, However, only the correlation between GLOB strategy use and RC test scores was statistically significant.

In the post-intervention results, statistically significant positive correlations were found between the overall strategy use and the RC test scores, $r = .68$, $p = .00$, the GLOB strategy use and the RC test scores, $r = .66$, $p = .00$, and the SUP strategy use and the RC test scores, $r = .60$,

$p$ = .01. While the correlation between the PROB strategy use and the RC test scores, $r$ = .43, $p$ = .09 was positive, it was not statistically significant.

Similarly, according to participants' post-task verbal reflections and post-intervention interviews, as presented in Table 23, there are statistically significant correlations between the overall strategy use and the RC test scores, $r$ = .59, $p$ = .01 and between the GLOB strategy use and the RC test scores, $r$ = .52, $p$ = .03. Correlations between the PROB strategy use and the RC test scores, $r$ = .18, $p$ = .49, and between the SUP strategy use and the RC test scores, $r$ = .19, $p$ = .46, were also found positive, although these correlations are not statistically significant.

**Table 23**

*Pearson's Correlation between Reading Comprehension Test and Strategy Use (EGA)*

| SORS | | | | OVERALL | GLOB | PROB | SUP |
|---|---|---|---|---|---|---|---|
| Reflections and Interviews | Pre-intervention | RC Test | Correlation Coefficient | .51* | .50* | .49 | .31 |
| | | | Sig. (2 - tailed) | .04 | .04 | .05 | .23 |
| | | | *N* | 17 | 17 | 17 | 17 |
| | Post-intervention | RC Test | Correlation Coefficient | .68** | .66** | .43 | .60* |
| | | | Sig. (2 - tailed) | .00 | .00 | .09 | .01 |
| | | | *N* | 17 | 17 | 17 | 17 |
| | Post-task/-intervention | RC Test | Correlation Coefficient | .59* | .52* | .18 | .19 |
| | | | Sig. (2 - tailed) | .01 | .03 | .49 | .46 |
| | | | *N* | 17 | 17 | 17 | 17 |

*Note*. ** = Significant at $p$ < .01, 2-tailed; EGA = Experimental Group A; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

### 4.3.2 Experimental Group B (EGB)

As presented in Table 24, the relationship between (a) the RC test scores and the reported strategy use from the SORS in the pre- and post-intervention results and (b) the RC test scores and the strategy use from EGB participants' post-task verbal reflections and post-intervention interviews were assessed. In the pre-intervention results, a negative correlation was found between the overall strategy use and the RC test scores, $r$ = -.09, $p$ = .74. However, there was a positive correlation between the GLOB strategy use and the RC test scores, $r$ = .90, $p$ = .01, between the PROB strategy use and the RC test scores, $r$ = .88, $p$ = .01, and between the SUP strategy use and the RC test scores, $r$ = .84, $p$ = .01, and all of these correlations were statistically significant.

In the post-intervention results, there was a positive correlation only between the PROB strategy use and the RC test scores, $r$ = .06. This correlation was not statistically significant ($p$ = .81), however. A negative correlation was found between the overall reported strategy use and the RC test scores, $r$ = - .47, $p$ = .07, between the GLOB reading strategy use and the RC test scores, $r$ = - .35, $p$ = .19, and between the SUP strategy use and the RC test scores, $r$ = - .67, $p$ = .01.

The results from Pearson's correlation test demonstrate that the RC test scores had a positive correlation with the overall strategy use, $r$ = .38, $p$ = .14, the GLOB strategy use, $r$ = .16, $p$ = .54, the PROB strategy use, $r$ = .38, $p$ = .15 and the SUP strategy use, $r$ = .16, $p$ = .55.

**Table 24**

*Pearson's Correlation between Reading Comprehension Test and Strategy Use (EGB)*

| SORS | | | | OVERALL | GLOB | PROB | SUP |
|---|---|---|---|---|---|---|---|
| | Pre-intervention | RC Test | Correlation Coefficient | -.09 | .90** | .88** | .84** |
| | | | Sig. (2 - tailed) | .74 | .00 | .00 | .00 |
| | | | *N* | 16 | 16 | 16 | 16 |
| | Post-intervention | RC Test | Correlation Coefficient | - .47 | - .35 | .06 | - .67 |
| | | | Sig. (2 - tailed) | .07 | .19 | .81 | .00** |
| | | | *N* | 16 | 16 | 16 | 16 |
| Reflections and Interviews | Post-intervention | RC Test | Correlation Coefficient | .38 | .16 | .38 | .16 |
| | | | Sig. (2 - tailed) | .14 | .54 | .15 | .55 |
| | | | *N* | 16 | 16 | 16 | 16 |

*Note*. ** = Significant at p < .01, 2-tailed; EGB = Experimental Group B; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

### 4.3.3 Comparison Group (CG)

Table 25 presents the analyses of the relationship between CG's RC test scores and the reported strategy use from the SORS in the pre- and post-instruction results. Both in the pre- and post-instruction results, the correlations between the overall strategy use and the RC test scores as well as the GLOB, the PROB, and the SUP strategy uses and the RC test scores are positive. While in the pre-instruction, the correlations between the overall strategy use and the RC test scores, $r = .64$, $p = .00$, the GLOB strategy use and the RC test scores, $r = .68$, $p = .00$, and the PROB strategy uses and the RC test scores, $r = .54$, $p = .02$, are statistically significant, the correlation between the SUP strategy use and the RC test scores, $r = .26$, $p = .26$, is not statistically significant.

Similarly, in the post-instruction, the correlations between the overall strategy use and the RC test scores, $r = .68$, $p = .00$, the GLOB strategy use and the RC test scores, $r = .67$, $p = .00$, and the SUP strategy use and the RC test scores, $r = .59$, $p = .04$, are positive and statistically significant. However, while the correlation between the PROB strategy use and the RC test scores, $r = .32$, $p = .18$, is positive, it is not statistically significant. Even though the CG participants were not provided with reading strategy instruction, there is a positive correlation between the strategies that participants reported using and their reading performance.

**Table 25**

*Pearson's Correlation between Reading Comprehension Test and Strategy Use (CG)*

| SORS | | | OVERALL | GLOB | PROB | SUP |
|---|---|---|---|---|---|---|
| Pre-instruction | RC Test | Correlation Coefficient | .64** | .68** | .54* | .27 |
| | | Sig. (2 - tailed) | .00 | .00 | .02 | .26 |
| | | *N* | 19 | 19 | 19 | 19 |
| Post-instruction | RC Test | Correlation Coefficient | .68** | .67** | .32 | .59* |
| | | Sig. (2 - tailed) | .00 | .00 | .18 | .04 |
| | | *N* | 19 | 19 | 19 | 19 |

*Note*. ** = Significant at p < .01, 2-tailed; CG = Comparison group; OVERALL = Overall strategy use; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

### 4.4 Differences Among Groups

This section addresses the fourth research question: *Does reading strategy instruction help enhance reading strategy use and reading comprehension performance among participants in the experimental groups, in relation to the comparison group?* To answer this question, the

one-way multivariate analysis of variance (MANOVA) was conducted. There were three independent groups (EGA, EGB, and CG) in the study, and the investigation involved overall strategy use (OVERALL), three strategy categories—*Global* (GLOB), *Problem-solving* (PROB), and *Support* (SUP) strategies—as well as reading comprehension (RC) test as dependable variables.

Table 26 displays the mean, standard deviation and number of participants for all the dependent variables that include RC test and the overall strategy use (OVERALL) as well as strategy use by category: GLOB, PROB, and SUP. It shows that EGA's overall strategy use (OVERALL) mean value is higher than CG's overall strategy use mean value. Similarly, EGA's GLOB, PROB, and SUP strategy use mean values are higher than CG's GLOB, PROB, and SUP strategy use mean values. EGA's RC test mean value is also higher than CG's RC test mean value.

However, when compared across the three groups, EGB's mean values are higher than EGA and CG's mean values in all dependent variables (the RC test score, the overall strategy use, and the GLOB and the SUP strategy use) except in the PROB strategy use. It might be important to recognize that EGA received reading strategy instruction over a regular period, and EGB received reading strategy instruction within a shorter, more intense period. I explicitly provided reading strategy instruction to All EGA and EGB participants in the same manner, and each of the sessions for EGA and EGB participants lasted for 90 minutes. Before readers make any conclusions, it is important to note that EGB's overall, GLOB and PROB category mean values and RC test scores are already higher than EGA and CG's overall, GLOB and PROB category use mean values and RC test scores in the pre-intervention results (refer to Tables 20, 21, & 22).

**Table 26**

*Descriptive Statistics for Reading Strategy Use Across Groups*

| RC Test/ Strategies | Groups | *M* | *SD* | *n* |
|---|---|---|---|---|
| RC Test | EGA | 15.41 | *4.32* | *17* |
| | EGB | 18.88 | 2.99 | 16 |
| | CG | 13.26 | 3.81 | 19 |
| Strategies | | | | |
| OVERALL | EGA | 3.79 | 0.29 | 17 |
| | EGB | 4.00 | 0.34 | 16 |
| | CG | 3.31 | 0.28 | 19 |
| GLOB | EGA | 3.65 | 0.37 | 17 |
| | EGB | 4.08 | 0.35 | 16 |
| | CG | 2.97 | 0.25 | 19 |
| PROB | EGA | 4.44 | 0.26 | 17 |
| | EGB | 4.30 | 0.39 | 16 |
| | CG | 3.86 | 0.53 | 19 |
| SUP | EGA | 3.42 | 0.35 | 17 |
| | EGB | 3.63 | 0.58 | 16 |
| | CG | 3.33 | 0.52 | 19 |

*Note*. OVERALL = Overall strategy use; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

According to the *Multivariate Tests* obtained from one-way MANOVA (Table 27), there was a statistically significant difference across the groups on the combined dependent variables, $F(10, 90) = 9.34$, $p < .0001$; Wilks'$\Lambda = .24$; partial $\eta^2 = .51$.

**Table 27**

*Multivariate Tests*

| Effect | | Value | F | Hypothesis df | Error df | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|---|
| Group | Wilks' Lambda | 0.24 | 9.34 | 10 | 90.00 | .00 | 0.51 |

This study examined one-way ANOVA results to determine the dependent variables that contributed to the statistically significant MANOVA. Table 28 illustrates that there was a statistically significant difference in the overall strategy use across EGA, EGB and CG, $F(2, 49) = 23.70$, $p < .0001$; partial $\eta^2 = .49$. A statistically significant difference was also found in all the category-wise strategy use—the GLOB and the PROB categories and the RC test scores across EGA, EGB, and CG.

**Table 28**

*Tests of Between-Subjects Effects*

| Source | Dependent Variable | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|---|
| Group | OVERALL | 4.47 | 2 | 2.23 | 23.70 | .00 | .49 |
| Error | OVERALL | 4.62 | 49 | 0.09 | | | |
| Group | GLOB | 11.05 | 2 | 5.53 | 52.18 | .00 | .68 |
| Error | GLOB | 5.19 | 49 | .11 | | | |
| Group | PROB | 3.33 | 2 | 1.66 | 9.67 | .00 | .28 |
| Error | PROB | 8.43 | 49 | 0.17 | | | |
| Group | SUP | 0.83 | 2 | 0.41 | 1.69 | .20 | .06 |
| Error | SUP | 11.96 | 49 | 0.24 | | | |
| Group | RC Test | 275.53 | 2 | 137.76 | 9.73 | .00 | .28 |
| Error | RC Test | 693.17 | 49 | 14.15 | | | |

*Note*. OVERALL = Overall Strategy Use; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

Since there was not an equal number of participants in these three groups, the Tukey-Kramer post-hoc test was used to follow up for the univariate ANOVAs that were statistically significant. Via a one-way multivariate analysis of variance conducted in order to determine the effect of reading strategy instruction on participants' reading strategy use and their reading performance,

the overall strategy use (OVERALL) and the GLOB, the PROB, and the SUP strategy use as well as the reading comprehension (RC test) were assessed. As presented in Table 29, EGA reported higher use of reading strategy in the overall strategy use (EGA: *M* = 3.79, *SD* = 0.29 vs. CG: *M* = 3.31, *SD* = 0.28), and the GLOB (EGA: *M* = 3.65, *SD* = 0.37 vs. CG: *M* = 2.97, *SD* = 0.25), the PROB (EGA: *M* = 4.44, *SD* = 0.26 vs. CG: *M* = 3.86, *SD* = 0.53), and the SUP (EGA: *M* = 3.42, *SD* = 0.35 vs. CG: *M* = 3.33, *SD* = 0.52) strategy use. EGA's RC test score (*M* = 15.41, *SD* = 4.32) was also higher than CG's RC test score (*M* = 13.26, *SD* = 3.81). As well, EGB participants reported higher use of reading strategy in the overall strategy use (EGB: *M* = 4, *SD* = 0.34 vs. CG: *M* = 3.31, *SD* = 0.28), and the GLOB (EGB: *M* = 4.08, *SD* = 0.35 vs. CG: *M* = 2.97, *SD* = 0.25), the PROB (EGB: *M* = 4.30, *SD* = 0.39 vs. CG: *M* = 3.86, *SD* = 0.53), and the SUP (EGB: *M* = 3.63, *SD* = 0.58 vs. CG: *M* = 3.33, *SD* = 0.52) strategy use than CG participants. The RC test score (*M* = 18.88, *SD* = 2.99) of EGB participants was also higher than the RC test score (*M* = 13.26, *SD* = 3.81) of CG participants. In fact, EGB's overall, GLOB and SUP strategy uses were higher than CG and lower than EGA. EGB's RC test score was also higher than EGA and CG.

The Tukey-Kramer post hoc in Table 29 shows that EGA participants scored statistically significantly higher mean scores than CG participants in the overall strategy use ($p < .0001$), the GLOB ($p < .0001$) and the PROB ($p < .0001$) strategy uses, but not in the SUP strategy use ($p = .83$) or the RC test ($p = .21$). Similarly, EGB participants scored significantly higher mean values than CG participants in the overall strategy use ($p < .0001$), the GLOB ($p < .0001$), the PROB ($p < .0001$), and the RC test ($p < .0001$), but not in the SUP strategy use ($p = .18$). Likewise, EGB participants scored significantly higher mean values than EGA participants in the GLOB ($p <$

.0001) strategy use and the RC test ($p < .0001$), but not in the overall strategy use ($p = .13$) or the SUP strategy use ($p = .45$).

**Table 29**

*Multiple Comparisons: Tukey HSD*

| Dependent Variable | (I) Group | (J) Group | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| OVERALL | EGA | CG | 0.48* | 0.10 | .00 | 0.23 | 0.73 |
| | EGB | EGA | 0.21 | 0.11 | .13 | -0.05 | 0.47 |
| | | CG | 0.69* | 0.10 | .00 | 0.44 | 0.94 |
| GLOB | EGA | CG | 0.69* | 0.11 | .00 | 0.42 | 0.95 |
| | EGB | EGA | 0.42* | 0.11 | .00 | 0.15 | 0.70 |
| | | CG | 1.11* | 0.11 | .00 | 0.84 | 1.38 |
| PROB | EGA | CG | 0.58* | 0.14 | .00 | 0.25 | 0.91 |
| | | EGB | 0.14 | 0.14 | .60 | -0.21 | 0.49 |
| | EGB | CG | 0.44* | 0.14 | .00 | 0.10 | 0.78 |
| SUP | EGA | CG | 0.09 | 0.16 | .83 | -0.30 | 0.49 |
| | EGB | EGA | 0.21 | 0.17 | .45 | -0.21 | 0.62 |
| | | CG | 0.30 | 0.17 | .18 | -0.10 | 0.71 |
| RC TEST | EGA | CG | 2.15 | 1.26 | .211 | -0.89 | 5.18 |
| | EGB | EGA | 3.46* | 1.31 | .02 | 0.29 | 6.63 |
| | | CG | 5.61* | 1.27 | .00 | 2.53 | 8.70 |

*Note*. * = Significant at $p < .05$; OVERALL = Overall Strategy Use; GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy

# Chapter 5: Discussions

In this chapter, the main findings as per the results presented in Chapter 4 are interpreted and discussed. First, a summary of key findings is presented. It is then followed by the discussion of the results. The section then includes implications and limitations. Future research directions and implementation recommendations are discussed toward the end of the chapter.

## 5.1 Summary of Key Findings

The results demonstrated that EAL students in EGA and EGB became more aware of a variety of reading strategies after the reading strategy intervention. As reported through the SORS and the post-task verbal reflections and post-intervention interviews, they engaged in a variety of reading strategies in order to comprehend what they read when reading academic texts in English (see Tables 11 and 15), and this change resulted from the reading strategy instruction participants in the experimental groups (EGA and EGB) received during the intervention. The SORS include 30 different individual reading strategies divided into three reading strategy categories: *global*, *problem-solving* and *support* strategies. Participants were found to have applied these strategies during their reading of academic texts, as per the results from their post-task verbal reflections and post-intervention interviews. In addition to the *global, problem-solving*, and *support* strategies as listed in the SORS, both EGA and EGB in this study frequently used additional strategies, such as predicting the text; thinking-alouds; skimming; scanning; brainstorming; locating topic sentences; determining the thesis statement; making inferences; reflecting; summarizing; drawing pictures or structures; reading comprehension questions before beginning to read the text; using graphic organizers; and evaluating where the reader stands with

respect to time and task or checking to see if the reader is on time when completing their reading task. The key results are summarized below.

1. **Experimental Group A (EGA):**

a. There was a statistically significant increase in the post-intervention SORS results among participants.

b. Category-wise, participants reported statistically significantly higher use of *global*, *problem-solving*, and *support* strategies in the post-intervention SORS results.

c. EGA participants' reading performance was statistically significantly higher post-intervention.

d. There was a statistically significantly positive correlation between overall strategy use and reading performance in the post-intervention SORS results as well as in the post-task verbal reflections and post-intervention interviews among participants.

e. As measured through the SORS, there was a statistically significant positive correlation between the use of *global* and *support* strategies vis-à-vis reading performance in the post-intervention results. Although the correlation between the *problem-solving* strategy use and the reading performance in the post-intervention results was positive, it was not statistically significant.

f. According to the post-task verbal reflections and post-intervention interviews, there were statistically significant positive correlations between *global* strategy use and reading performance. Although correlations between the reported use of *problem-solving* and *support* strategies vis-à-vis reading performance by the EGA in the post-intervention results were positive, they were not statistically significant.

g. According to the SORS results, EGA participants reported higher overall reading strategy

use and reading performance than CG participants. However, only the reading strategy use, not the reading performance, was statistically significant.

h. As measured through the SORS, EGA reported statistically significantly higher *global* and *problem-solving* strategy usage than the CG. The *support* strategy use was also higher among EGA participants than CG participants, but the difference was not statically significant.

2. **Experimental Group B (EGB):**

a. There was a statistically significant increase in overall strategy use in the post-intervention SORS results.

b. Category-wise, participants reported statistically significantly higher use of *global*, *problem-solving*, and *support* strategies in the post-intervention SORS results.

c. EGB participants' reading performance was statistically significantly higher post-intervention.

d. A negative correlation was found between EGB's overall strategy use and reading performance in the post-intervention results. Although there was a positive correlation between the group's overall strategy use and reading performance in the post-task verbal reflections and post-interventions interviews, this correlation was not statistically significant.

e. As measured through the SORS, there was a positive correlation between the use of *problem-solving* strategies and reading performance in the post-intervention results, but it was not statistically significant. Negative correlations were found between the use of

*global* and *problem-solving* strategies vis-à-vis the reading performance in the post-intervention results.

f. Positive correlations were found between the reading performance and the use of the three strategy categories—the *global*, *problem-solving,* and *support* strategies—derived from the post-task verbal reflections and the post-intervention interviews. However, these correlations were not statistically significant.

g. According to the SORS results, EGB participants reported statistically significant higher overall reading strategy use and achieved higher reading performance test scores than CG participants

h. As measured through the SORS, EGB participants reported statistically significant higher *global* and *problem-solving* strategy use than the CG participants. Although the *support* strategy use was higher among EGB participants than CG participants, the difference was not statistically significant.

3. **Comparing across the three groups**: When the post-intervention SORS results were compared across the three groups (i.e., EGA, EGB, and CG), EGB participants were found to have reported the highest in overall, *global* and *support* strategy use and to have scored highest in the reading test. Only the *global* strategy use and the reading comprehension were found to be statistically significantly higher in the post-intervention SORS. EGB participants reported the highest-level *problem-solving* strategy use across three groups in the post-intervention SORS, however. It is important to note here that although EGB participants reported the highest among the three groups in overall, *global* and *support* strategy use and performed highest in the post-intervention reading test,

participants were already more aware of reading strategies and had performed better than EGA participants in the pre-intervention SORS results and the reading comprehension test (refer to Tables 20, 21, & 22). Therefore, one may argue that EGB's prior awareness of the reading strategies may have contributed to their higher achievement in the post-intervention SORS. In addition, there was a negative correlation between the use of EGB's overall, and *global*, and *support* strategies vis-à-vis the reading performance in the post-intervention results. As reported above, there was a negative correlation between EGB's overall strategy use and the reading performance in the post-intervention results, which may demonstrate that although EGB participants were able to achieve the highest scores among the three groups in the reading performance, it does not necessarily mean that the reading strategy instruction contributed to their reading performance. In addition, mean values of the EGB group's overall strategy use as well as the *global*, *problem-solving*, and *support* strategy use in the pre-intervention SORS were already higher than those of the EGA participants. CG participants also showed higher reading performance and strategy use in their post-instruction period compared to their pre-instruction period in spite of the fact that CG was not provided reading strategy instruction.

Table 30 summarizes the findings pertaining to EGA, EGB, and CG participants' reported strategy use and reading comprehension test scores across EGA, EGB, and CG.

**Table 30**

*Summary of Results*

| Analysis | Results | | | |
|---|---|---|---|---|
| | *t*-test | Pearson's | | |
| **Experimental Group A** | | | | |
| SORS Overall (pre- vs. post-intervention) | $p < 0.05$ | Post-SORS | RC Test | $p < 0.01$ |
| Strategy Category (pre- vs. post-intervention) | | | | |
| GLOB | $p < 0.05$ | Post-GLOB | | $p < 0.01$ |
| PROB | $p < 0.05$ | Post-PROB | RC Test | *n.s.* |
| SUP | $p < 0.05$ | Post-SUP | | $p < 0.01$ |
| RC Test (pre- vs. post-intervention) | $p < 0.05$ | | | |
| Reflections & Interviews Overall (Post-intervention) | | | | $p < 0.01$ |
| GLOB | | | | $p < 0.01$ |
| PROB | | | | *n.s.* |
| SUP | | | | *n.s.* |
| **Experimental Group B** | | | | |
| SORS Overall (pre- vs. post-intervention) | $p < 0.05$ | Post-SORS | RC Test | *neg.* |
| Strategy Category (pre- vs. post-intervention) | | | | |
| GLOB | $p < 0.05$ | Post-GLOB | | *neg.* |
| PROB | $p < 0.05$ | Post-PROB | RC Test | *n.s.* |
| SUP | $p < 0.05$ | Post-SUP | | *neg.* |
| RC Test (pre- vs. post-intervention) | $p < 0.05$ | | | |
| Reflections & Interviews Overall (Post-intervention) | | | | *n.s.* |
| GLOB | | | | *n.s.* |
| PROB | | | | *n.s.* |
| SUP | | | | *n.s.* |
| **Comparison Group** | | | | |
| SORS Overall (pre- vs. post-instruction) | $p < 0.05$ | Post-SORS | RC Test | $p < 0.01$ |
| Strategy Category (pre- vs. post-instruction) | | | | |
| GLOB | $p < 0.05$ | Post-GLOB | | $p < 0.01$ |
| PROB | *n. s.* | Post-PROB | RC Test | *n.s.* |
| SUP | *n. s.* | Post-SUP | | $p < 0.01$ |
| RC Test (pre- vs. post-instruction) | $p < 0.05$ | | | |

*Note*. GLOB = Global strategy; PROB = Problem-solving strategy; SUP = Support strategy; *n.s.* = non-significant; *neg*. = negative correlation

The results obtained from EGA and EGB participants' post-task verbal reflections and post-intervention interviews corroborate the findings from the analyses of quantitative data obtained from the use of the SORS and the reading comprehension tests. Based on the results obtained from the integration of both quantitative and qualitative results, it can be concluded that reading strategy instruction may have positively contributed to the enhancement of EGA and EGB participants' reading strategy use and reading performance. In addition to their becoming more aware of a variety of reading strategies, EGA and EGB participants reported and demonstrated higher usage of reading strategies, as obtained from the SORS and the post-task verbal reflections and post-intervention results and performed better in their reading comprehension.

Among EGB participants, although the results obtained from the quantitative data analyses did not show the reading comprehension test scores' positive correlations with the overall, the *global,* or the *support* strategy use, positive correlations were found between the overall strategy use and the reading comprehension test scores as well as between each of the category strategy uses—*global*, *problem-solving*, and *support*—and the reading comprehension test scores derived from EGB participants' post-task verbal reflections and post-intervention interviews. In addition, participants expressed their gratitude during their post-task verbal reflections and post-intervention interviews for the opportunity to take reading strategy classes helped them become more aware of the wide range of reading strategies at their disposal. Participants reiterated the importance of the reading strategy instructions in their reading academic texts in English. They added that strategy use has not only helped them comprehend the text but has also enabled them to remember the information given in the text—the finding

that is line with Grabe (2012), which emphasized that reading strategy use supports readers' remembering information from the text.

Overall, the results from both the SORS and the post-task verbal reflections and post-intervention interviews show that reading strategy instruction has supported participants' growth in reading strategy use and reading performance. As a result of the intervention, participants have become aware of a variety of reading strategies and have been able to strategically deploy reading strategies in the process of comprehending a text or repairing their comprehension. They have been able to employ *global* reading strategies, which means that they are able to plan and monitor and regulate reading strategies and their own reading as per the complexity of the text being read. Participants have also been able to use *problem-solving* strategies when reading the text and repair their comprehension when they fail to understand. In addition, they have also used *support* strategies, which have facilitated their comprehension of the text during their reading of academic texts.

The following sections discuss the results in terms of the four research questions.

## 5.2 Discussion of the Results

The following subsections discuss the results in terms of specific research questions.

### 5.2.1 Reading Strategy Use*: What are the strategies EAL students use when reading academic texts, as reported through the Survey of Reading Strategies (SORS) instrument and students' post-task reflections and post-intervention interviews?*

**Increased Awareness and Use of Reading Strategies**: Participants in EGA and EGB demonstrated high awareness and use of a variety of reading strategies when reading academic

texts in English, as measured through their use of the SORS instrument and their post-task verbal reflections and post-intervention interviews. Specifically, participants in both experimental groups reported higher overall strategy use as well as higher *global*, *problem-solving* and *support* strategy use in the post-intervention results, compared to their pre-intervention results (see Tables 10, 14, 20, and 21). These higher usages were statistically significant among participants from both experimental groups. The overall strategy use and the use of all strategy categories—*global, problem-solving,* and *support*—were in the high usage category among participants in both groups. These results are consistent with the finding in several other studies (e.g., Alhaqbani & Riazi, 2012; Alsheikh, 2011; Magogwe, 2013; Malcolm, 2009). Categorically, the increase in EGA and EGB's *global, problem-solving,* and *support* strategy use was statistically significant in the post-intervention SORS. This means that these participants became aware of different reading strategies to a greater extent after the intervention.

The strategy use among these participants has, thus, increased over the course of reading strategy instruction period. Referring to EGA's strategy usage, the overall strategy use and the *global* and *problem-solving* strategy use moved from their medium usage in the pre-intervention results to the high usage range in the post-intervention results (see Table 10). In terms of EGB participants' strategy use, the use of overall, *global,* and *support* strategies has reached their high usage in the post-intervention results. This clearly shows the increased usage of reading strategies by both experimental groups. These findings may suggest that EGA and EGB participants became highly aware of strategies from the SORS and used these strategies when reading academic texts, as also reflected in their post-task verbal reflections and post-intervention interviews.

In CG's post-instruction SORS, the overall as well as the *global* and *support* strategy uses were in the medium usage category and the *problem-solving* strategy use was reported in the high usage category. In spite of the fact that reading strategy instruction was not provided to this group of participants, the overall reported strategy use as well as the use of *global, problem-solving,* and *support* strategies all have increased in the post-instruction SORS. The order of the most reported strategy use based on their mean values also remains the same as in the pre-instruction SORS results, which is consistent with some previous studies (e.g., Alsheikh & Mokhtari, 2011; Maasum & Maarof, 2012; Mokhtari & Sheorey, 2008). When investigating the efficacy of reading strategy instruction among 66 EFL learners in China, Pei (2014) found no statistically significant difference in reported metacognitive strategy awareness or reading performance between the members of the experimental group and the comparison group. The comparison group, in Pei's study, reported high strategy use. In the present study as well, although no reading strategy instruction was provided to CG, members of CG also have reported high strategy use.

Although CG was not provided with reading strategy instruction, they reported in the post-instruction higher use of different reading strategies. It is important to note here that there was no direct instruction on reading strategy use for these participants; however, as instructor-researcher, I sometimes had to use certain strategies, without naming those strategies specifically. For example, I sometimes had to ask participants to write some notes or mark certain vocabulary items or information (SUP2/ SUP10), without informing participants of these specific strategies as reading strategies at the same time. Participants were sometimes encouraged to connect between the past learning or knowledge and the present reading (GLOB3). When I helped participants discuss responses to some comprehension questions,

participants were encouraged to read slowly and carefully in order to ensure their understanding of the text (PROB7), or re-read the text to enhance their reading (GLOB23). The point here is the dilemma I faced on ethical grounds–how could I not help my students comprehend a text with some tips when they struggled to understand?

The high usage of the overall strategies and the *global* and *problem-solving* strategies in the post-intervention SORS, as presented in Tables 10 and 14, aligns with several previous studies (e.g., Iwai 2009; Jarernkit & Swatevacharkul, 2020; Malcolm, 2009; Mokhtari & Sheorey, 2002; Magogwe, 2013), although few studies showed the medium usage of the overall as well as the *global*, *problem-solving* and *support* strategies (e.g., Zare & Maftoon, 2015). In fact, in Zare and Maftoon (2014), which involved graduate students at two different universities in Iran, the participants from power engineering field of study demonstrated high usage of *global* strategies and *problem-solving* strategies while participants from physics and communication fields of study showed high usage in the *problem-solving* strategy use. Participants, in Iwai's (2009) and Alhaqbani and Riazi's (2012) studies, also reported a high usage in the overall strategy use as well as all three strategy categories—*global*, *problem-solving*, and *support*. Likewise, in the present study, both EGA and EGB achieved higher overall strategy use and higher *global* and *problem-solving* strategy use in the post-intervention SORS. For the use of *support* strategies, EGA was in the medium usage category, while EGB achieved a higher usage. EGB participants reported higher overall strategy than EGA participants in the pre-intervention as well, meaning that EGB participants were already aware of various reading strategies, which may have contributed to their reporting higher *support* strategy use.

**Most and Least Reported Strategy Category:** The order of mean values (from high to low) of strategy category in the post-intervention SORS results (see Tables 10 and 14) (i.e., the *problem-solving* category was the most reported, which was followed by the *global* and the *support* category) is in line with several other studies (e.g., Alsheikh 2011; Alsheikh & Mokhtari, 2011; André, 2018; Jarernkit & Swatevacharkul, 2020; Maasum & Maarof, 2012; Mokhtari & Sheorey, 2008; Yüksel & Yüksel, 2012). However, in Al-Mekhlafi (2018), *support* strategies are most frequently used, and these strategies are followed by the *problem-solving* and *global* strategy uses. The order of mean values (from high to low) of strategy category in EGA participants' post-task verbal reflections and post-intervention interviews also reflect the same pattern as in EGA (see Table 10): *problem-solving* strategies were most frequently, followed by the use of the *global* and *support* strategies, respectively. According to the study by André (2018), participants from each of the four different language backgrounds—Spanish, Asian, Arabic, and Kazakh—reported *problem-solving* reading strategies as the most frequently used strategy category. In fact, participants speaking Asian, Arabic, and Kazakh languages as their first languages also reported a high reading strategy usage and showed a preference for *problem-solving*, *global* strategies, and *support* strategies. As well, L2 learners from each of the three English language proficiency levels—elementary, intermediate, and advanced—also demonstrate the *problem-solving* strategy use as the most reported strategy category in the study.

According to Mokhtari and Sheorey (2002), *problem-solving* strategies help readers in supporting or repairing their reading comprehension via a variety of actions and procedures that are local and are geared toward helping learners solve reading issues or difficulties. As in other studies (e.g., Alsheikh 2011; Alsheikh & Mokhtari, 2011; André, 2018; Jarernkit & Swatevacharkul, 2020; Maasum & Maarof, 2012; Yüksel & Yüksel, 2012), participants'

preference for the *problem-solving* strategy use in this study revealed that they might be most highly engaged in *problem-solving* strategies, such as reading slowly and carefully, paying closer attention to their reading, picturing or visualizing information, re-reading parts of the text, and guessing the meaning of unfamiliar words. Participants' reported use of *global* strategies demonstrate that they might have been engaged in carefully planning and monitoring their own reading via reading strategies, such as reading with a purpose in mind, and reading the important and skipping the unimportant are a few of the individual strategies in this category. Throughout the use of *support* strategies, including taking notes while reading, underlining or circling information, and paraphrasing, EGA and EGB participants have been involved in using supportive tools in order to help themselves understand the text.

However, among EGB participants, while *problem-solving* strategies are most highly reported, *problem-solving* strategy use is followed by the reported use of *support* and *global* strategies. This usage, as in several other studies (e.g., Al-Mekhlafi 2018; Alsheikh 2011; Alsheikh & Mokhtari, 2011; André, 2018; Maasum & Maarof, 2012; Mokhtari & Sheorey, 2008; Yüksel & Yüksel, 2012; Zare & Maftoon, 2015), demonstrates that EGB has also used various *problem-solving* reading strategies most in the process of comprehending their text and repairing their text for better understanding. Among the three different strategy categories, the *problem-solving* strategy category, which is the most reported strategy category in this study, includes strategies such as *reading slowly and carefully to make sure readers understand what they are reading* (PROB7), *trying to get back on track when readers lose concentration* (PROB9), *adjusting their reading speed according to what they are reading* (PROB11), *paying closer attention to what they are reading when text becomes difficult* (PROB14), *stopping from time to time and thinking about what they are reading* (PROB16), *trying to picture or visualize*

*information to help remember what they read* (PROB19), *re-reading text to increase their understanding when text becomes difficult* (PROB25), and *guessing the meaning of unknown words or phrases when they read* (PROB28). Participants in several other studies (e.g., Al-Mekhlafi 2018; Mokhtari & Sheorey, 2008) have also incorporated these *problem-solving* strategies when they find the text difficult or when they lose concentration and when there is a break-down in reading comprehension.

**Most Reported Individual Strategies**: Reading strategies, such as *I have a purpose in mind when I read* (GLOB1), *I read slowly and carefully to make sure I understand what I am reading* (PROB7), *I try to get back on track when I lose concentration* (PROB9), *I underline or circle information in the text to help me remember it* (SUP10), *When text becomes difficult, I pay closer attention to what I am reading* (PROB14), and *I stop from time to time and think about what I am reading* (PROB16), are some of the most reported strategies among EGA and EGB participants in the post-intervention results. This finding may suggest that participants have been highly engaged in applying supportive tools in understanding their text or repairing their comprehension. Strategies, such as *when reading, I translate from English into my native language* (SUP29), and *when reading, I think about information in both English and my mother tongue* (SUP30) are two of the least reported strategies among participants across the experimental groups in the post-intervention results. This change may suggest that participants have become less dependent on the use of their L1s or translation, as they progress on their journey to comprehending the text or to repairing their comprehension.

For EGA, PROB 9 (*I try to get back on track when I lose concentration*) is the most reported in the post-intervention SORS results; PROB9 is also one of the five most reported

strategies in the pre-intervention SORS results. Reading strategies, such as *I underline or circle information in the text to help me remember it* (SUP10), *When text becomes difficult, I pay closer attention to what I am reading* (PROB14), *I read slowly and carefully to make sure I understand what I am reading* (PROB7), and *I stop from time to time and think about what I am reading* (PROB16) are the other four most reported strategies in the post-intervention SORS results. Among these top-five reported strategies in the post-intervention SORS, PROB9, SUP10, and PROB7 are also the three of the five most reported strategies by EGA in the pre-intervention SORS results (see Table 11 & 12). The three of these five most reported strategies—*I try to get back on track when I lose concentration* (PROB9), *I underline or circle information in the text to help me remember it* (SUP10), and *When text becomes difficult, I pay closer attention to what I am reading* (PROB14) are also included as among the five most reported strategies in Alsheikh (2011).

Among the five most reported strategies by EGA in the post-intervention SORS results within EGA, four were *problem-solving* strategies and the remaining was a *support* strategy. This reported use suggests that these participants may often engage in solving reading problems that may have hindered their reading by using strategies, such as *reading slowly and carefully to make sure they understand what they are reading* (PROB7), *trying to get back on track when losing concentration* (PROB9), and *paying closer attention to what they are reading* (PROB14) and *stopping from time to time and thinking about what is being read* (PROB16). However, these participants also used *support* and *global* strategies when they thought it was important for them to use, as reflected in their SORS results.

Among the five most reported strategies as above, two are also included in Al-Mekhlafi (2018), which, among its five most reported strategies, include *using reference materials, such*

*as a dictionary, to help me understand what I read* (SUP13), *underlining or circling information in the text to help me remember it* (SUP10), *reading slowly and carefully to make sure I understand what I am reading* (PROB7), *having a purpose in mind when I read* (GLOB1), and *thinking about what I know to help me understand what I read* (GLOB3). Such usage suggests that strategy use may depend on the context of its use, including the type of academic text being read and the purpose of reading.

However, among EGB participants, SUP10 (*I underline and circle information in the text to help me remember it*) was the most reported strategy in the post-intervention SORS results as well as in the post-task verbal reflections and post-intervention interviews. SUP10 was in the second most reported strategy among EGA participants according to the SORS results, but it was the most frequently used strategy in the post-task verbal reflections and post-intervention interviews. It shows that participants in both groups EGA and EGB most frequently used SUP10 while their reading academic texts. In both experimental groups, in their post-task verbal reflections and post-interventions, participants stressed the importance of marking certain parts of the text with an underline or circle. Participants had the opportunity to read comprehension questions before they read the text. The need to respond to the comprehension questions may have influenced participants to use SUP10 in order for them to remember possible responses to the comprehension questions or better understand the text being read.

When they lost concentration in the midst of reading academic materials, EGB participants tried to get back on track (PROB9), which was the most reported strategy by EGB in the pre-intervention SORS. PROB9 moved to the twelfth position in the post-intervention SORS results. However, this strategy occupied the fifth most reported strategy in the post-task verbal reflections and post-interventions interviews. It is clear that participants reported PROB9 less

frequently in the post-intervention SORS compared to their use of this strategy during their reading the text in class, which they reported in their post-task verbal reflections and post-intervention interviews. The less frequent use of PROB9 in the post-intervention SORS and the more frequent use of PROB9 in the post-task verbal reflections and post-intervention interviews may suggest that the context has influenced participants' reported strategy use in the post-intervention SORS and actual strategy use the post-task verbal reflections and post-intervention interviews. Participants may have been engaged in the actual use of PROB9 throughout their reading tasks, which was reflected in their post-task reflections and post-intervention interviews. That is why PROB9 is in the fifth most used strategy in the post-task verbal reflections and post-intervention interviews.

EGB participants not only reported several strategies but also applied them to their reading as asserted in their interviews. For examples, two strategies—PROB25 (*when text becomes difficult, I re-read it to increase my understanding*) and PROB11 (*I adjust my reading speed according to what I am reading*)—were among the five most reported strategies in the pre- and post-intervention SORS. These two strategies were also among the nine most reported strategies in the post-task verbal reflections and post-intervention interviews. As participants stated in their interviews, they re-read the text to enhance their understanding of the textual information (PROB25), and they were very careful about their reading speed (PROB11).

While PROB14 (*when text becomes difficult, I pay closer attention to what I am reading*) has occupied the third most reported strategy in the post-intervention SORS results among EGA participants, it is in the seventh position in the post-task verbal reflections and post-intervention interviews and in the sixth position in the pre-intervention SORS results among participants in EGA. While participants' reading strategy awareness as per their SORS results shows that

PROB14 is one of the most reported reading strategies, it continues to occupy the similar position (the seventh most reported) as per participants' post-task verbal reflections and post-interviews.

Among EGB participants, GLOB 1(*I have a purpose in mind when I read*) is the fourth most reported strategy in the post-intervention SORS results, and this strategy has occupied the second position in the most reported strategies in the post-task verbal reflections and post-intervention interviews while it was in the tenth position in the pre-intervention SORS results. This may suggest that EGB participants became more aware of attending to the purpose for reading.

**Least Reported Strategy Category and Individual Strategies**: EGB participants made less use of their L1, as they practiced reading strategy during the reading strategy instruction. SUP29 (*when reading, I translate from English into my native language*) and SUP30 (*when reading, I think about information in both English and my mother tongue*) had occupied the twenty-first and twentieth positions, respectively, in the pre-intervention SORS results. However, as participants explored more reading strategies, they seemed to become less dependent on these strategies. Similarly, EGA participants' use of SUP29 and SUP30 were ranked the twenty-eighth and thirtieth position, respectively, in the post-intervention SORS results.

While both EGA and EGB reported higher *support* strategy use than CG, the differences are not statistically significant. The result may have been due to low usage of certain individual supporting strategies, such as *reading aloud to help the readers understand what they read when the text becomes difficult* (SUP5), *using reference materials (e.g., a dictionary) to help the readers understand what they read* (SUP13), and *thinking about information in both English and*

*the readers' mother tongue when reading the text* (SUP30), which have been some of the least reported strategies in participants' post-task reflections and interviews. The low usage may be due to the context of how the reading task was carried out (e.g., reading out loud and avoiding using dictionaries.

As given in Tables 11 and 12, among the other least reported strategies by EGA include SUP5 (*reading aloud to help themselves understand what they read*). SUP5 was also among the least reported strategies in several studies (e.g., Alsheikh, 2011; Iwai, 2009). As Iwai (2009) stated, "there was a consensus when it comes to the least used reading strategy being…reading aloud when text becomes difficult to support better understanding" (p. 89). Although participants had the opportunity to read the text individually and in groups, they reported this strategy least. Many factors, including participants' reluctance to disturb their fellow classmates by reading aloud, may have influenced participants' choice of strategies, in this case.

As given in Tables 11, 12, and 13, GLOB27 (*I check to see if my guesses about the text are right or wrong*) was the least reported strategy by EGA in the pre-intervention SORS results and the post-task verbal reflections and post-intervention interviews and one of the least reported strategies in the post-intervention SORS results. During the interview, RS23 reported that "I used guessing about the text because I read questions and I thought about the title. Then I know something about the text. But I don't see my guessing right or wrong." When asked why she did not confirm whether her guesses were right or wrong, she replied that she had no time left, as she had to answer comprehension questions. This may mean that while participants initially may guess or predict the content of the text, they may not necessarily check to see whether their prediction went right or wrong due to various factors. That is why GLOB27 may have been the least reported strategy. Similarly, GLOB6, SUP 13, GLOB 20, and SUP26 are the other four

strategies were among the five least reported strategies reported during participants' post-task verbal reflections and post-intervention interviews. Participants did not often ask themselves questions that they would like to have answered in the text (SUP26), or use typographical features like bold face and italics to identify key information (GLOB20), or think about whether the content of the text fits their reading purpose (GLOB6), or use reference materials (e.g., a dictionary) to help them understand what they read (SUP13). However, they reported frequent use of context clues (GLOB17) and guessed the meaning of unknown words or phrases (PROB28) instead. While these strategies—SUP26 and GLOB20—seem to be important reading strategies, participants did not often report the use of these reading strategies. In this case, their time allotment for answering their comprehension questions could be an issue. Regarding participants' low usage of GLOB6 (*I think about whether the content of the text fits my reading purpose*) may be related to the fact that the participants had no choice but to read the text given and provide responses to the comprehension questions that followed the text. As such, the applicability of GLOB6 is limited.

**Most and Least Used Strategies from Participants' Reflections and Interviews**: In addition to the quantitative data obtained through the SORS as well as the frequency counts performed for the data obtained through the post-task verbal reflections and post-intervention interviews, EGA and EGB participants' narratives also reflected their use of various reading strategies during their reading of academic texts. Participants have frequently used several reading strategies as indicated in their post-task verbal reflections and post-intervention interviews. Some participants also expressed the opportunity to learn some strategies, such as using context clues to help better understand the texts, critically analyzing and evaluating information presented in the text, and

asking questions that the reader would like to have answered in the text, for the first time. They claimed that due to repeated use of these strategies, they were able to spontaneously use these strategies during their reading, which has contributed to their development of strategic behaviours and reading comprehension. This finding suggests that reading strategies can be taught and these strategies are very helpful (Brown, 2007; Neufeld, 2005).

During EGA and EGB participants' interviews, I had the opportunity to observe participants' think-alounds, which helped me to cross-check and validate their strategy use. I was able to validate reading strategies, such as *writing marginal notes* (SUP2), *underlining and circling key words* (SUP10), *re-visiting underlined phrases and clauses and thinking about the text* (SUP22). I was also able to cross check their *re-reading sentences* (PROB25), *asking themselves questions on whether they really understood what they read* (GLOB23), *trying to guess the meaning from the context* (PROB28), and *going back and forth in the text* (SUP22).

Comparing the reported strategy awareness in the post-intervention SORS results and the strategy use as in the post-task verbal reflections and the post-intervention interviews among EGA participants (see Tables 11, 12, & 13), two strategies PROB7 (*I read slowly and carefully to make sure I understand what I am reading*) and SUP10 (*I underline or circle information in the text to help me remember it*) appear most reported, whereas PROB9 (*I try to get back on track when I lose concentration*) and PROB14 (*When text becomes difficult, I pay closer attention to what I am reading*), which appear in the five most reported strategies in the post-intervention SORS results, also appear within the first seven most reported strategies in participants' post-task verbal reflections and post-intervention interviews. This may suggest that EGA and EGB participants have actually used reading strategies as they have reported in the SORS instrument.

Participants were found to have differed in their reported strategy use and their actual use of certain reading strategies. While the strategy—*I have a purpose in mind when I read* (GLOB1)—is the twentieth most reported strategy by EGA in the pre-intervention SORS and the sixteenth most reported strategy in the post-intervention SORS results, it has occupied the second most reported strategy position according to participants' post-task verbal reflections and post-intervention interviews (see Tables 10, 11, & 12). It shows that the use of this *global* reading strategy increased after participants received their reading strategy instruction. Although in the post-intervention SORS, the reported use of GLOB1 has slightly increased, EGA participants have, in fact, used this strategy more often, as shown in their post-task verbal reflections. In addition, it is important to note that participants were required to answer comprehension questions immediately after they read the text, which may have encouraged participants to determine their purpose. Similar patterns were noticed in EGA's use of these strategies—*I take an overall view of the text to see what it is about before reading it* (GLOB4) and *I review the text first by noting its characteristics like length and organization* (GLOB8) among EGA participants. GLOB4 was in the twenty-eighth position in the pre-intervention SORS and the twenty-third position in the post-intervention SORS results. However, it occupied the third most reported strategy position in the post-task verbal reflections and post-intervention interviews. Similarly, GLOB8 was in the twenty-second position in the pre-intervention SORS and the fifteenth position in the post-intervention SORS, but the same strategy was the fifth most reported strategy in the post-task verbal reflections and post-intervention interviews. In addition, the strategy—*I have a purpose in mind when I read* (GLOB1)—was the twentieth most reported strategy and the sixteenth most reported strategy in the pre-intervention SORS and the post-intervention SORS, respectively. However, it occupied the second most reported strategy in

participants' post-task verbal reflections and post-intervention interviews (see Tables 11, 12, & 13). In their post-task verbal reflections and post-intervention interviews, twelve participants (70.59%) mentioned the importance of *having a purpose in mind when reading academic texts* (GLOB 1). For example, one of the participants emphasized that as she attended these lessons on reading strategies every week, she developed the habit of questioning herself about why she was reading the text and reported that she would not prefer to start her reading without considering the purpose of her reading the text first. Such strategy usage among these participants demonstrates that reading strategy instruction may have influenced their use of reading strategies. Their actual use of reading strategies differed from their reported strategy use. It may depend on their context, such as if they were simply reporting reading strategies or they were actually reading the text and using reading strategies at the same time in order to facilitate their reading.

In both EGA and EGB, participants repeatedly stated the importance of having a *purpose in their mind before they started to read their text* (GLOB1). Participant RS28 demonstrated a purpose several times before reading the text (refer to Excerpt 2). Such an application of GLOB1 to reading academic texts might have led participants to repeatedly using GLOB4 (*I take an overall view of the text to see what it is about before reading it*), as reiterated in their post-task verbal reflections and post-intervention interviews. In addition, reading comprehension questions in advance of their reading the text may have been influenced by participants' use of GLOB1. In addition to GLOB8 (*I review the text first by nothing its characteristics like length and organization*), GLOB1 may help learners to predict the text and answer the questions during or after reading, as explained by RS30. These strategies, GLOB4 and GLOB8, as expressed by fourteen participants (82.35%), including RS25, RS26, and RS33, may have helped participants

understand the text to some extent even before reading it. These participants added that the use of strategies, such as GLOB4 and GLOB8, has helped them predict the text contents before they actually read it. For example, participant RS26 stated the value of reading strategy in predicting the content of the text (see Excerpt 3). Additionally, participant RS33 showed his use of reading strategies in the process of guessing the content of the text in advance of his reading (refer to Excerpt 4).

Participants in this study employed different strategies, depending on the context of their reading. Some EGB participants claimed that they did not have any challenges when the text was very easy to read, so they did not have to use strategies to comprehend easy texts. They also incorporated different strategies when they encountered complex texts. It is evident that depending on the texts they read, they used different reading strategies. It means these participants varied their reading strategies as perceived complexity of the text, which was one of the findings Li and Munby (1996) reported in their study. For eight participants (50%), being able to identify contexts in the text made the text easy to read, but they found texts with long, complex sentences and new vocabulary items very difficult to understand. When faced with such difficult-to-understand texts, these participants reported that they looked for different or additional strategies in order to comprehend the text. They resorted to strategies, such as drawing pictures or structures to represent the text content, guessing the meaning from the context or from the use of conjunctions or adverbials in context. Participants found some sentences or paragraphs complex, they looked for different clues, including the use of conjunctions that supported participants in distinguishing a clause with a cause from a clause with an effect (because of the use of ‘because’) or identifying opposing views in sentences, with help of adverbials, such as ‘however,’ which connects two opposing views.

Some participants were very strategic or unique when using reading strategies. Both EGA and EGB participants stressed the value of underlining and circling key words (SUP 10). For example, one of the participants acknowledged that she underlined some words that she thought would be somewhat important and circled the ones that she thought would express key ideas in the text central to her understanding of the text. Thirteen participants (76.47%) in EGA mentioned *underlining and circling key words* (SUP 10) five or more times. Participants not only underlined or circled key words but also returned to these underlined or circled words in order to comprehend the text they were reading. Seven participants (41.18%) claimed that they would repeatedly go back to their underlined or circled words or phrases and confirm their understanding. For instance, participant RS30 discussed her behaviour of both underlining and circling information only to re-visit these underlines and circles in order to comprehend the meaning of the text (refer to Excerpt 1). RS31, however, claimed that she would both underline and circle but would also ensure at the same time that she would not confuse herself by doing so frequently. “If I have to circle many times, I paused and tried to find context clues and understand my reading (GLOB17). That is good.” Participants expressed that they took note of the overall viewpoint of the text (GLOB 4) as well as the length and structure of the text before they began to read the text (GLOB 8). Although it may seem that underling or circling information is an easy and often-used strategy, participants in this study applied this strategy uniquely to their reading.

Participants did not use some strategies frequently in the study due to various reasons. SUP26 (*I ask myself questions I like to have answered in the text*) is among the five least reported in the post-intervention SORS results as well as in the post-task verbal reflections and post-intervention interviews in EGA. It suggests these participants were not engaged in thinking

about or making questions during their pre-reading time—the questions that they could find answers to in the text when they begin to read. The reason for such a strategic behaviour could be that participants already had comprehension questions that followed the reading text. Their attention might be on finding answers to the comprehension questions. In addition, while these strategies SUP29 (*When reading, I translate from English into my native language*) and SUP30 (*When reading, I think about information in both English and my mother tongue*) are among the five least reported strategies in the post-intervention SORS scores, they are in the medium and low usage category in the post-task verbal reflections and post-intervention interviews in EGA. This suggests that these participants did not heavily engage in translating their reading into their L1. When asked, three participants (17.65%) specifically said that the reading strategy instruction sessions helped them to become aware of and engage in the use of reading strategies, and they increasingly used less L1 in their reading.

Participants seemed to emphasize, during their post-intervention interviews, on what they had reported on the SORS instrument. For instance, nine participants (52.94%) acknowledged five or more times that they carefully and slowly read the assigned text, as they wanted to make sure they understood the text (PROB7). During the post-intervention interview, participants confirmed the use of this strategy. Another participant (RS21) clearly demonstrated the use of GLOB4, PROB7, SUP22 and PROB25 (refer to Excerpt 6). Similarly, participant RS32 demonstrated the use of several reading strategies, including taking notes (SUP2), reading the text again (PROB25), slowing down the reading (PROB11), and paying attention for understanding (PROB14) (refer to Excerpt 6).

During the reading strategy instruction period, it was found that participants were engaged in the use of various reading strategies. In order to look for the meaning (GLOB17) and

relationships among ideas and thoughts in the text for their comprehension (SUP22), three participants (17.65%) repeatedly indicated that they kept going back and forth in the text (SUP22). For instance, participant RS13 showed his use of reading strategies for different purposes, including guessing and evaluating his guesses (refer to Excerpt 7).

In addition to the reading strategies as described above, participants were involved in critically analyzing the information given in the reading texts and evaluating the information based on their prior knowledge. For example, participant RS27 engaged in critically thinking about the information presented in the text by reflecting on his Korean language learning (refer to Excerpt 8).

EGA and EGB participants were also engaged in using the think-aloud strategy. Eleven participants (64.71%) stated that they used think-alouds during their reading and that they also paraphrased some sentences. However, they stressed the need for additional time in order to paraphrase the text. When reading, participants, as they mentioned in their post-task verbal reflections and post-intervention interviews, sometimes paused their reading in order to think about what they have read and to ensure they understood the text and were able to make connections between the sentences or parts of the paragraph to facilitate their comprehension of the text (PROB16).

Participants discussed the use of different reading strategies, depending upon the context of their reading. While all participants claimed that they used a variety of strategies in order to comprehend their reading, three participants (17.65%) specifically described that they used several strategies during their reading and that, they quickly moved from the use of one strategy to another when they found that the strategy they previously applied was not particularly helpful for their complex reading or that they used a combination of strategies in order to understand the

text. This signals that these participants may be on their way to becoming strategic readers, since strategic learners, as Oxford and Amerstorfer (2019, p. xxvi) defined, "tend to use strategies with flexibility and fluidity" when they are experienced in strategy use. Five participants (35.29%) mentioned that they used a few strategies initially, as the reading passages were easy to comprehend. However, they started using many strategies as the passages became more complex in their vocabulary and content. This kind of strategic behaviour among participants was also previously reported in some studies (e.g., Li & Munby, 1996). The use of strategies depending on the context or the complexity of the text is a key metacognitive skill that is crucial to participants' understanding of the text (Anderson, 2002). For instance, RS24 illustrated, "When I was reading the text about risks of smoking today, there were so many difficult words in the text. It was not possible to look up all words in the dictionary although I tried it initially (SUP13). Then I tried to read and understand closely only the key part of the text, ignoring others (GLOB12). I went back and forth (SUP22) and re-read some parts of the text to increase my comprehension (PROB25)." It shows that this participant used strategies wisely. When he thought that he was not able to consult a dictionary due to various reasons, such as his time limit, he did not pay attention to less important parts of the text and increased his focus on reading and comprehending the text with major ideas. When there were many difficult words in the text and translation strategies (SUP29; SUP30) or context clues (GLOB17) did not help them much, three participants (17.65%) said that they paraphrased the part of the text at the end to enhance their comprehension of the text. Yet, RS24 explained that she used the combination of strategies in order to confirm her understanding. She said, "When I don't know the meaning of the word 'proponent' initially, I looked up in the dictionary. And, I knew that it meant a person who favours and likes something. But I was unsure whether it is something about person's favouring

or disliking something! Because I was not sure yet, I looked around for context clues around this word and in the sentence. The presence of words such as ‘successfully,’ ‘promise,’ ‘renewal,’ ‘sustainable production,’ and ‘safe’ sounded good, positive, and favourable for me. It was then easy for me to conclude and confirm the meaning of the word. I spent a lot of time, but it was worth at the end.” These instances show that participants were strategic when it came to using reading strategies for their comprehension of the text.

**Additional Reading Strategies**: Both EGA and EGB identified, in their post-task verbal reflections and post-intervention interviews, additional strategies beyond the 30 individual strategies covered in the SORS. Fourteen participants (82.35%) repeatedly mentioned that they looked for thesis statement and topic sentences in order to identify main ideas in the text they were reading. About 43 percent of these participants said they initially skimmed part of the text, especially the first and last paragraphs in addition to the first sentences of the rest of the paragraphs in order to learn about the text in the beginning. Such use of strategies aligns with other studies (e.g., Li & Munby, 1996).

EGA and EGB participants were aware of these additional strategies, and they used these strategies as they found them important to apply when reading the text. Thirteen participants (76.47%) in EGA repeatedly mentioned that they were engaged in brainstorming ideas during reading strategy instruction. While 12 participants (70.59%) frequently performed both skimming and scanning in order to comprehend the text and answer the comprehension questions, only seven participants (41.18%) reported making references when reading the text. Five participants (29.41%) confirmed that they used to ask themselves questions and monitored their comprehension of the text. In this regard, RC30 said “When I read, I ask myself questions

and I made sure I understand what I was reading. Otherwise, it's useless just reading and reading and not understanding it." Participant RC36 added, "I always check where I am when reading. I want to know how much time have I spent reading and how much I have. And, how much I have finished reading. This is constant." Such strategic behaviours of the participants may suggest that these participants are not only aware of the many reading strategies, but they were also very strategic in their use of reading strategies when reading the text.

Similarly, participants demonstrated different purposes for their use of particular reading strategies. Sixteen EGB participants claimed they used the scanning strategy to determine the specific information in the text. Twelve of these participants mentioned they tried to identify the main ideas of the unit or paragraph by locating the thesis statement or topic sentence. One of the participants mentioned that she drew pictures and structures to comprehend what she was reading, which, she added, would help her remember the particular part of the text when answering the comprehension questions later.

Participants repeatedly used some strategies in their post-task verbal reflections and post-intervention interviews and utilized these strategies when trying to understand the text. EGB participants reiterated that they attempted to predict the content in the text, based on the title and sub-title of the text, in addition to skimming the comprehension questions and the first and the last paragraphs (GLOB 4; GLOB 24). Fourteen participants (87.50%) asserted that they tried to locate the main idea or thesis statement of the text as well as topic sentences to know more about the given text. When participants did not understand the text or lost concentration, they re-read part of the text (PROB 25) and thus tried to get back on track (PROB 9). Participants also talked about brainstorming and linking key words from the text with their life experiences. For example, participant RS08 quickly read the title of the text and the questions at the end of the

text. In addition, she tried to determine the level of the complexity of the text. She added that she used different strategies for the texts that were easy for her to read and understand (refer to Excerpt 9). The same participant in response to a question with regard to a different text stated that she scanned the text, read the title twice, quickly went through the sub-titles in order to understand the main idea. Afterwards, she began to read the text. She added that her previous knowledge of the story also contributed to her understanding of the text (refer to Excerpt 10). This shows that this participant used pre-reading strategies and attempted to activate her schemata by making connections between her past knowledge and her reading.

As reflected in the SORS results and the post-task verbal reflections and post-intervention interviews, all participants from EGA and EGB have shown both awareness and use of a number of reading strategies as a result of the reading strategy instruction although their level of awareness and frequencies of use differed. This study has demonstrated that participants have not only increased their awareness of a wide range of reading strategies, but they have also used these strategies when reading academic texts in English. Their reflections revealed that the reading strategy instruction has supported their reading performance and that they have appreciated the opportunity to become aware of various reading strategies and to use these strategies when they thought it was important for them to use during their reading academic texts. Reading strategy instruction has helped participants in this study to have access to a wide variety of reading strategies and practice those strategies during their reading. EGA and EGB have not only achieved higher reading comprehension, but they have also attributed their recall of information from the text to the reading strategy instruction they received (Grabe, 2012).

**5.2.2 Effect of Reading Strategy Instruction**: *What are the differences in pre- and post-intervention reading comprehension test scores and reported reading strategy across the experimental and comparison groups, as measured by the SORS instrument?*

#### 5.2.2.1 Experimental Group A (EGA)

Participants performed statistically significantly better in the post-intervention reading comprehension test scores. As per the paired-sample *t*-test conducted, a statistically significant difference was found in the post-intervention reading comprehension test scores and the pre-intervention reading comprehension test scores (Pre-intervention: $M = 13.12$, $SD = 3.90$ vs. Post-intervention: $M = 15.41$, $SD = 4.32$) (see Table 20). This result is in line with several previous studies (see Akkakoson, 2013; Al-Kiyumi et al., 2020; Oyetunji, 2013; Yapp et al., 2021). In their study, Al-Kiyumi et al. (2021) not only found that the experimental group scored statistically significantly higher in reading comprehension but also noticed that the experimental group members held positive attitudes towards the use of reading strategies. As in previous studies, reading strategy instruction contributed to participants' growth in reported strategy use and reading performance in this study. Specifically, participants reported higher usage of the overall reading strategy use as well as GLOBs, PROBs, and SUPs, as measured through the SORS. Statistically significance performance was found in the use of the overall strategy use, GLOBs, PROBs, and SUPs, as measured through the SORS. As indicated in these results, participants not only showed a greater awareness of reading strategies but also achieved higher scores in their reading comprehension. Through the SORS, EGA participants reported high strategy use—both the overall and by the strategy category, which indicates that these participants became aware of a wide variety of reading strategies to a high degree and is in line

with previous studies (e.g., Alhaqbani & Riazi, 2012; Alsheikh, 2011; Magogwe, 2013; Malcolm, 2009). The increase in their reading comprehension test scores from the pre-intervention to the post-intervention RC test results was statistically significant. This increase may suggest that these participants were also able to put into practice their awareness of reading strategies by deploying those reading strategies to their academic reading.

Qualitatively, as reported in the post-task verbal reflections and post-intervention interviews, EGA also displayed awareness and use of a variety of reading strategies in performing the reading tasks. For example, participant RS13's reflections and interview indicated that she repeatedly used a variety of strategies when reading academic texts during the reading strategy instruction sessions. She mentioned that while she did not know whether she improved much in her reading performance, she wanted to share that the reading strategy use helped her actively experiment with different strategies during the course of the intervention. Initially, she reported she would simply read or look up difficult words and phrases in the dictionary and would then move on and answer comprehension questions or complete her assignments based on her reading. Subsequently, she shared that she became motivated to actively explore reading strategies (refer to Excerpt 11). Another participant (RS19) stated during the interview that receiving reading strategy instruction has helped him to remember how he previously used some of these strategies in his L1 in high school. He added, "I don't remember these techniques [strategies] now which I used to use in my own language in my high school, but your teaching reminds past strategies like picturing information in my mind and practising paraphrases to remember. It's so helpful." Similarly, during one of her post-task verbal reflections, RS23 said: "I also use some strategies like this in my mother language, but I forget use those strategies in English because I am lost in my mind in understanding English than using

strategies." She added, "When you in our classes taught them [the reading strategies] many times many days, I remembered and started apply [ing] them now."

#### 5.2.2.2 Experimental Group B (EGB)

EGB participants' performance in the post-intervention RC test was statistically significantly higher than their performance in the pre-intervention results (refer to Table 21). In terms of strategy use, EGB also reported statistically significantly higher usage of the overall strategy as well as the use of GLOBs, PROBs, and SUPs in the post-intervention SORS. There were significant differences in the post-intervention SORS results and the pre-intervention SORS results.

In addition to the SORS and the RC test results, qualitative data obtained from participants' post-task verbal reflections and post-intervention interviews also suggest that EGB participants benefitted from the reading strategy instruction. For example, RS08's post-task verbal reflections revealed that she incorporated different strategies, depending on the complexity of the text. Such a finding was also reported in Li and Munby (1996). During her post-task weekly reflections as well as the post-intervention interview, she expressed that she was able to enhance her ability to consciously think, reflect on, and make logical inferences from her reading. Reflecting on their reading speed, five participants (31.25%) repeatedly claimed that they modified their reading speed based on what they were reading using PROB11 (adjusting reading speed) and PROB7 (reading slowly and carefully). When there were several examples to support the main idea in a paragraph, four participants (25%) reiterated that they went over the examples very quickly but engaged in reading (PROB 11 and PROB 14) or re-reading the main idea (PROB 25).

When they were unable to comprehend the text using selected strategies, EGB participants reported applying other strategies. Among the nine participants who mentioned that they looked for words in bold and *italics*, even though four of them did not find any information in bold or *italics*. As a result, they quickly turned to other strategies that might work and switched to, for example, scanning the text in order to comprehend the reading and answer the associated questions. Such use of task-specific strategies is a key metacognitive skill (Anderson, 2002). In addition, 13 of the participants (81.25%) repeatedly found it helpful to guess the meaning from the context (PROB28) in the beginning, rather than using dictionaries (SUP 13) right away. Three participants (18.75%) also mentioned that depending upon the difficulty level of the texts, their reading strategies varied. Seven participants (43.75%) expressed that they started using more strategies than they had in the past. Participant RS01 stressed that he began to use more reading strategies (refer to Excerpt 14). In this way, EGB participants used a variety of reading strategies in order to comprehend the text.

#### 5.2.2.3 Comparison Group (CG)

No reading strategy instruction was provided to members of the comparison group. However, there was a statistically significant difference in the post-instruction RC test scores and the pre-instruction RC test scores (pre-instruction: $M = 11.74$, $SD = 4.39$ vs. post-instruction: $M = 13.26$, $SD = 3.81$) (refer to Table 22). Similarly, the overall strategy use was statistically significantly higher for the post-instruction than for the pre-instruction SORS scores (pre-instruction: $M = 3.19$, $SD = 0.32$ vs. post-instruction: $M = 3.31$, $SD = 0.28$). Category-wise, participants reported statistically significantly higher use of *global* strategies in the post-instruction than in the pre-instruction SORS scores (pre-instruction: $M = 2.76$, $SD = 0.40$ vs.

post-instruction: $M = 2.97$, $SD = 0.25$). However, CG's use of *problem-solving* and *support* strategies was not statistically significantly higher for the post-instruction than for the pre-instruction SORS.

Although I did not specifically teach this group reading strategies, there were times when we used some strategies, such as underlining or circling. Even though I did not explicitly teach reading strategies, I helped these participants comprehend the text as needed, and it may have influenced these participants' awareness and use of reading strategies and, in turn, their reading performance.

**5.2.3 Reading Strategy Use vis-à-vis Reading Comprehension**: *What are the relationships between students' reported reading strategy use and their reading comprehension test scores before and after receiving reading strategy instruction?*

**5.2.3.1 Experimental Group A (EGA)**

As per Pearson's correlation test, in the post-intervention results, there were statistically significant positive correlations between the overall strategy use and the reading comprehension test scores, $r = .68$, $p = .00$. This result mirrors what several other studies, including Kermani and Khabir (2017) and Zhang and Seepho (2013), found. Statistically significant positive correlations were also found between EGA's use of GLOB and SUP strategies and their reading comprehension test scores, but the positive correlation between the use of PROB strategies and the reading comprehension test scores was statistically non-significant. This positive correlation means higher awareness and use of reading strategies, including *global*, *problem-solving*, and *support* strategies, was associated with better reading comprehension. These results suggest that

higher awareness and use of reading strategies, including *global* reading strategy, *problem-solving* strategy and *support* strategy uses, were associated with better reading comprehension. The improvement of reading strategy awareness and use may be related to the reading strategy instruction that EGA received, which, in turn, may have contributed to EGA's performance in reading comprehension. Although the positive correlation between the reading comprehension test scores and the *problem-solving* strategy use obtained from the SORS was not statistically significant, the positive correlation between them obtained from EGA's post-task verbal reflections and post-intervention interviews was statistically significantly positive (see Table 23).

According to participants' post-task verbal reflections and post-intervention interviews in the post-intervention results, as presented in Table 23, statistically significant correlations were found between the overall strategy use and the reading comprehension test scores, $r = .59$, $p = .01$ and between the GLOB strategy use and the reading comprehension test scores, $r = .52$, $p = .03$. Correlations between the PROB strategy use and the reading comprehension test scores, $r = .18$, $p = .49$, and between the SUP strategy use and the reading comprehension test scores, $r = .19$, $p = .46$, were also found positive, although these correlations are not statistically significant. This trend, which is reflected in both results—the SORS and the post-task verbal reflections and post-intervention interviews—indicates the positive relationship between participants' strategy use and their reading performance. As the overall strategy use increased in the post-intervention SORS results among participants in this particular group, so did participants' reading comprehension test scores. Similarly, as the GLOB, the PROB, and the SUP strategy uses increased in the post-intervention, their reading comprehension test scores also went up. These data seem to support that participants' increased reading performance in the post-intervention is related to their strategy use. The increase in participants' reading performance is thus attributed

to the reading strategy instruction which they were engaged in in order to develop their reading strategy awareness and application of a wide range of reading strategies to their reading in academic contexts.

#### 5.2.3.2 Experimental Group B (EGB)

In the post-intervention results, a positive correlation was found only between the *problem-solving* strategy use and the reading comprehension test scores, $r = .06$. This correlation was not statistically significant ($p = .81$). There was a negative correlation between the overall reported strategy use and the reading comprehension test scores, $r = -.47$, $p = .07$, between the *global* reading strategy use and the reading comprehension test scores, $r = -.35$, $p = .19$, and between the *support* strategy use and the reading comprehension test scores, $r = -.67$, $p = .01$. A few studies have reported no significant difference between the strategy use and the reading comprehension (e.g., Pei, 2014), but none of them have found negative correlations. In the present study, negative correlations suggest that as EGB's reading strategy awareness went up, their reading performance lowered, which is surprising to me.

In their work, Mokhtari and Sheorey (2002) emphasized triangulation of data, as "…SORS is a self-measure instrument, one cannot say with absolute certainty from the instrument alone whether students actually engage in the strategies they report using" (p. 6). Therefore, data from participants' post-task verbal reflections and post-interviews that included the use of think-alouds were integrated in the present study. In line with previous studies (e.g., Barnet, 1988; Salataci & Akyel, 2002), the findings from the present study also indicated that the reading comprehension test scores and the reading strategy use are positively, though non-

statistically significantly, correlated. As pointed out by Alderson (2004), an absence of significance in any analysis does not mean that significance is absent (cited in Huang, 2013).

Both in their post-task verbal reflections and post-intervention interviews, EGB participants provided positive feedback and appreciated the opportunities to become aware of and use different reading strategies. Previous studies (Al-Kiyumi et al.'s 2021; Jarernkit & Swatevacharkul, 2020) also revealed learners' positive attitudes towards reading strategy use. Reading strategy instruction has provided EGB participants in this study with the opportunity to familiarize themselves with a broad range of reading strategies and practice those strategies during their reading sessions. For example, although the use of GLOB21 (*I critically analyze and evaluate the information presented in the text*) significantly increased from the pre-intervention to the post-intervention as measured through the SORS, five participants (31.25%) did not use this strategy at all based on the data from their reflections and post-intervention interviews. During the interview, two of these participants acknowledged that they were not even aware of this strategy, so they were appreciative of the opportunities to become aware of and be able to apply such strategies, which, they emphasized, have helped them to become active, strategic readers (Grabe, 2012; Oxford and Amerstorfer, 2019). After practising several times, they were able to automatically use a reading strategy or a combination of different reading strategies on several occasions, depending on their purpose as well as the complexity of the assigned reading and its associated tasks.

The main goal of this study was to evaluate the efficacy of reading strategy instruction among adult EAL students. Overall, the study suggests that as reading academic texts is a complex task, it is important that, for comprehension to be effective, students be aware of

different reading strategies and are provided with frequent opportunities to practice those strategies (Li & Munby, 1996).

#### 5.2.3.3 Comparison Group (CG)

CG participants were not provided with reading strategy instruction. However, the relationship between the reading strategies they have used during the sessions and the reading performance they have achieved through their reading comprehension test scores are positively, though non-significantly, correlated. CG participants' reading comprehension scores increased as did their reading strategy use. The results still show that reading strategy use may have positively influenced participants' reading comprehension

As discussed in section 5.2.3, participants in this group did not receive reading strategy instruction. However, CG participants were aware of a variety of reading strategies and may have reported these reading strategies. However, the results may also suggest that participants' reading strategy use may have contributed to their improvement in their reading performance.

**5.2.4 Differences Among Groups**: *Does reading strategy instruction help enhance reading strategy use and reading comprehension performance among participants in the experimental groups, in relation to the comparison group?*

When comparing EGA, EGB, and CG, EGA's overall strategy use mean score of EGA participants is higher than that of CG's (see Table 26). Similarly, the mean scores in the *global, problem-solving,* and *support* strategy use among EGA participants is higher than those of CG's. The mean reading comprehension test score among EGA participants is also higher than the reading comprehension test mean score among CG participants.

As given in Table 29, EGA participants scored statistically significantly higher mean scores than CG participants in the overall strategy use ($p < .0001$), the *global* ($p < .0001$) and the *problem-solving* ($p < .0001$) strategy uses, but not in the *support* strategy use ($p = .83$) or the reading comprehension test ($p = .21$).

There was a statistically significant difference between the groups on the combined dependent variables (see Table 27). As well, there was a statistically significant difference in the overall strategy use between participants from different (EGA, EGB, and CG) groups, $F(2, 49) = 23.70$, $p < .0001$; partial $\eta^2 = .49$. Similarly, a statistically significant difference was found in the use of the *global* and the *problem-solving* strategies and the reading comprehension test scores.

As illustrated in Table 26, EGA participants reported higher overall strategy use, and the use of *global*, *problem-solving*, and *support* strategies than CG participants. Similarly, EGA's reading comprehension test score among EGA participants was also higher than CG's reading comprehension test score. As well, EGB participants reported higher overall use of reading strategy in the overall strategy use, and the *global*, *problem-solving*, and *support* strategy use than CG participants in the overall strategy use and the *global*, *problem-solving*, and *support* strategy use respectively. Similarly, the reading comprehension test score among EGB participants was also higher than the reading comprehension test score among CG participants.

Similarly, EGB participants scored significantly higher mean scores than CG participants in the overall strategy use ($p < .0001$), the *global* strategy use ($p < .0001$), the *problem-solving* strategy use ($p < .0001$), and the reading comprehension test ($p < .0001$), but not in the *support* strategy use ($p = .18$). Likewise, EGB participants scored significantly higher mean scores than EGA participants in the *global* strategy use ($p < .0001$) and the reading comprehension test ($p < .0001$), but not in the overall strategy use ($p = .13$) or the *support* strategy use ($p = .45$).

When compared across the three groups (EGA, EGB, and CG), the mean score of EGB participants is higher than the mean score of EGA and CG participants in almost all dependent variables (i.e., the reading comprehension test score, and the overall strategy use, as well as the *global* and *support* strategy use) except in the *problem-solving* strategy use. A quick review of these results may suggest that EGB, which received reading strategy instruction over a shorter, more intense period, performed better than EGA and CG, but it is also important to note at the same time that the mean scores of the overall and *global* and *problem-solving* strategy use obtained from EGB in the pre-intervention SORS were already higher than EGA's and CG's mean scores of the overall and *global* and *problem-solving* strategy use obtained in the pre-intervention SORS (see Tables 20, 21, and 22). Similarly, the mean score of EGB's reading comprehension test in the pre-intervention reading comprehension test results was already higher than those of EGA's and CG's in the pre-intervention. This suggests that EGB participants were already more aware of a wide variety of reading strategies than EGA and CG participants and also had achieved a higher reading comprehension test score in the pre-intervention. One may postulate that EGB's prior awareness of the reading strategies may have contributed to participants' higher achievement in the post-intervention.

Through different elicitation methods, EGA and EGB participants reported their heightened awareness and use of various reading strategies. In addition to the 30 individual strategies, participants from both groups reported additional strategies, such as brainstorming, locating topic sentences, making inferences, and summarizing. Such findings on heightened awareness and use of reading strategies have been consistent with the results from many studies on reading strategy use among adult English language learners (i.e., Alhaqbani & Riazi, 2012; Al-Mekhlafi, 2018; Alsheikh, 2011; Baker & Boonkit, 2004; Iwai, 2009; Magogwe, 2013; Malcolm, 2009).

In their post-task verbal reflections and post-intervention interviews, most EGA and EGB participants reiterated that their awareness of reading strategies increased, which is connected to their increased use of reading strategies. Reading strategy instruction in the present study has helped participants to become more aware of various available reading strategies and to learn to apply these strategies. The results obtained from the quantitative and qualitative data analyses show that participants have been able to become familiar with the reading strategies they need to use and recognize when and how to use these strategies to aid their reading comprehension (see Anderson, 1991; Alhaqbani & Riazi, 2012). The findings also show that reading strategy instructions have enhanced their reading strategy use as well as their reading performance (Karimi & Dastgoshadeh, 2018). Both the results and participants' voices demonstrate that participants were able to effectively engage in the 'higher-level' reading process (see Grabe 2012; Grabe & Stoller, 2011) through the use of different reading strategies, including having a purpose, inferencing, and applying their background knowledge. The participants were also engaged in incorporating reading strategies in the process of comprehending the texts. Findings also suggest that students receive instruction in reading strategy use and that they be provided with frequent opportunities to practice various reading strategies.

The present study, thus, empirically evaluated the efficacy of reading strategy instruction among adult EAP students. In short, according to the SORS results, participants in both experimental groups reported the awareness and use of a variety of reading strategies during their reading. Participants reported an increase in the overall strategy use and achieved higher reading comprehension scores in the post-intervention, and this increase was statistically significant. The correlation between participants' overall strategy use and their reading performance as well as the correlation between their use of *global* and *support* strategies and their reading performance

were positive. Findings also showed that participants in the experimental group reported higher overall strategy use than participants in the comparison group. Similarly, participants in the experimental group demonstrated higher reading performance than participants in the comparison group; however, the difference in participants' reading performance between the experimental group and the comparison group was not statistically significant.

## 5.3 Implications

This section explores empirical, methodological, and pedagogical implications of this study on reading strategy instruction and its efficacy on EAL learner's reading strategy use and reading comprehension in academic contexts.

### 5.3.1 Empirical Implications:

Members of Experimental Group B (EGB), who received reading strategy instruction over nine sessions during a six-week period, reported statistically significantly higher overall strategy use as well as higher *global*, *problem-solving*, and *support* strategy use in the post-intervention as measured through the SORS. However, a negative correlation was found between the reading performance and each of these strategy uses—the overall strategy use, the *global* strategy use, and the *problem-solving* strategy use—in the post intervention. These negative correlations among EGB participants were unexpected. I must add here that the correlations obtained in respect to participants' post-task verbal reflections and post-intervention interviews (qualitative analyses) provided a different picture from the correlations obtained in respect to the SORS results (quantitative analyses). When the post-task verbal reflections and the post-intervention interviews were considered among EGB participants, there was a positive, though

non-significant, correlation between the use of overall, *global*, *problem-solving* and *support* strategies vis-à-vis reading performance.

Negative correlations between EGB's strategy use and the reading performance is interesting, and, to the best of my knowledge, no other studies have reported negative correlations. Reading strategy use may not have positively influenced EGB's reading performance as per the data obtained from the SORS. However, according to the data obtained from participants' post-task verbal reflections and post-intervention interviews, a positive correlation was found between the reading performance and the use of *global*, *problem-solving*, and *support* strategies, and overall, although these correlations were not statistically significant. In addition, participants expressed both in their post-task verbal reflections and post-intervention interviews that the increased awareness of various reading strategies supported them in their understanding of the text. These findings seem to suggest that reading strategy instruction supports adult EAP students in their awareness and use of reading strategies to academic reading, which, in turn, enhances their reading comprehension.

The present study included two treatment or intervention lengths. While EGA participants received reading strategy instruction over a 9-week intervention, EGB participants were provided with the same instruction over a 6-week period. The purpose behind having two experimental groups with two different intervention lengths was to compare the efficacy of reading strategy on reading comprehension during a regular or longer and shorter intervention periods. As Plonsky (2011) found, long strategy treatment periods are more effective. The results from the present study may support Plonksy's finding. However, due to time constraints and unavailability of the same participants, the second cycle of this action research project for EGB could not be carried out in order to validate the findings.

**5.3.2 Methodological Implications**: This mixed-methods action research (MMAR), which followed Ivankova's (2015) MMAR approach, is novel in several aspects. According to my search of current literature on reading strategy instruction, this study is the first of its kind to use MMAR to examine participants' reported strategy use as measured through the SORS and their actual use as demonstrated through participants' post-task verbal reflections and post-intervention interviews. Using this methodology has offered me the opportunity to more fully answer, via the integration of both quantitative and qualitative data analyses, the research questions with regard to the implementation of reading strategy instruction among EAP learners and its efficacy. In this specialized field of research, questionnaires, strategy inventory lists, interviews, or a combination of these data collection methods have generally been used in order to measure participants' strategy use (e.g., Anderson, 1991; Baker & Boonkit, 2004; Barnett, 1988; Block, 1992; Chaury, 2015; Kern, 1989; Küçükoğlu, 2013; Maghsoudi, 2012; Riazi, 2008; Salataci & Akyel, 2002; and Yapp et al., 2021a). To the best of my knowledge, none of the studies in L2 reading strategies have incorporated participants' verbal reflections as part of methods of data collection. As Huang (2010b) argued, reflection process supports learners in their heightening the awareness and application of strategies in the process of their task performance. Further, as Zhou and Huang (2018) pointed out, "…relying solely on perceived strategy use elicited through general self-report measures of strategies and using non-task-, non-learner, and non-context-specific instruments deserve serious consideration" (pp. 17-18). Through reflections, participants had the opportunity to share their reading process and to focus on reading strategies they used during their in-class reading and at the end of each of their

reading strategy instruction classes. Their reflective entries also enable the elicitation of task-specific strategy use that the SORS cannot capture.

**5.3.3 Pedagogical Implications**: The results have demonstrated that reading strategy instruction enhances EAP learners' awareness and use of a wide variety of reading strategies and helps learners with their reading strategy use and reading comprehension. Since there were 30 different individual strategies in the SORS within the three broad categories of reading strategies (*global*, *problem-solving*, and *support* strategies) that I chose to teach, I could not simply select a few out of the 30 individual strategies. Therefore, the present study cannot demonstrate if teaching only a few reading strategies at a time would be more beneficial, as Plonsky (2011) concluded in his meta-analysis. Further, Plonsky has found an "advantage for longer interventions" (2011, p. 1010). As Mokhtari and Sheorey (2008) also pointed out, "skilled readers don't get that way overnight. They learn how to become metacognitively competent and strategic by engaging in reading over long periods of time…" (p. 224). In the present study, the results from EGA, participants of which received reading strategy instruction over a 9-week period compared to EGB participants, who received the same instruction over a 6-week period, show that reading strategy instruction has positively affected participants' reading performance, whereas as the results obtained from EGB participants demonstrate, reading strategy instruction may not have affected participants' reading performance. Therefore, it may be argued that longer interventions are advantageous when it comes to the efficacy of reading strategy instruction on reading performance. It seems that the facilitation of reading strategy instruction over a longer period of time may be advantageous to EAP learners for them to become aware of a wide range of reading strategies and to practice using different reading strategies.

It was also noticed that readers tended to switch to alternative reading strategies when the strategies they encountered difficulties when trying to comprehend the text (refer to Excerpt 12); the strategies may need to be practised over an extended period of time in order to expand their strategic repertoires (e.g., Mokhtari & Sheorey, 2008). It is important that instructors allow their EAL learners to become familiarized with and practice various reading strategies for a long period of time (Plonsky, 2011). As Amerstorfer (2019) noted, strategies should be integrated within a specific L2 curriculum for learners to fully identify and engage in the strategy use.

As reading is a complex activity that may require the use of one or a combination of several reading strategies in order for reading comprehension to take place, EAL learners may not be able to use reading strategies instantly. Learners may need some time to experiment with new or different strategies before they can effectively use them when reading texts (Veloo, Rani, & Hashim, 2015). Therefore, it is important that learners have ample opportunities to practice reading and using reading strategies. Based on my own learning and use of reading strategies during this study, it may be necessary that EAP instructors themselves model reading strategy use in the beginning and guide their students to use and experiment with reading strategies.

Similarly, the study also suggests that as the complexity of the text changes so do the strategic behaviours of the readers and their use of reading strategies. In line with Li and Munby (1996), EGA and EGB participants in the present study also varied their reading strategies, depending on the nature of the complexity of the texts. Participants were critical and strategic in their selection of reading strategies. Reading academic texts is "purpose-driven and requires specialized skills to successfully negotiate the demands of completing a given task" (Hill, 2015. p. 102). Therefore, instructors teaching reading to their learners should be mindful of the complex nature of L2 reading. To support their learners' reading comprehension, EAL

instructors may consider modelling the selection and use of reading strategies read-alouds and think-alouds when facilitating reading strategy instructions. It is essential that instructors gradually remove scaffolding during the reading strategy instruction to help learners take ownership of the process. As Oxford (2011) expressed, it is crucial for instructors to identify the application of a particular strategy to a particular context, model the strategy within L2 tasks, provide sufficient time for practice, and help learners evaluate the effect of the strategies used when reading. At the same time, this study recommends that students reflect on their strategy use and their comprehension of the text resulting from their strategy use, as examined in the present study. As Hill (2015) suggested, when providing reading strategy instruction, EAL instructors should, in the beginning, guide their learners through the process of the reading strategy use as needed, continuously observe learners' strategic behaviours and subsequent progress and reading performance, identify what successful or effective readers do in order for reading comprehension to take place, and assess the impact of reading strategy use in order to ensure the development of their learners' reading strategy awareness and use and their reading performance.

As a few participants voiced, it is critical that EAL instructors not assume that their learners are already aware of reading strategies and that their learners may have already used certain reading strategies when reading in their L1s. In this study, some participants appreciated the opportunity to revisit a wide range of reading strategies during reading strategy instruction sessions, as they were not thinking, during the reading strategy instructions, about using reading strategies that they used when reading texts in their L1s. EGA participants added that they never thought about applying already-known reading strategies, as they were more focused on trying to understand the text in English. These voices from participants reflect what Oxford (2011) argued

regarding the transfer of L1 and L2 strategies. Oxford asserted that strategy transfer among L2 learners does not happen automatically.

While implementing reading strategy instructions, it is important that EAL instructors consider following the "practice what you preach" principle. As an instructor-researcher, I soon realized how crticial it was for me to become aware of different reading strategies and extensively practice applying reading strategies before teaching. I discovered that my confidence in reading strategy use grew with each reading strategy session and that I was able to facilitate learners' use of reading strategies in class. Practising reading strategies has not only helped me to anticipate which reading strategies my students might use for reading a given text, but has also helped me to model reading strategy use.

This work contributes to the existing body of literature on reading strategy instruction to help EAP practitioners to make informed decisions about applying research-based pedagogies to facilitate the development of L2 reading. As Mokhtari and Sheorey (2002) suggested, it is important that reading strategy instruction be included in the reading curriculum to develop students' awareness of the process and the strategies involved in reading. It is crucial that adult EAL students be guided to develop their awareness of reading strategies. Then students can make decisions to use appropriate strategies, which may help them in their reading comprehension (Akkakoson, 2012).

## 5.4 Limitations

The following limitations, which may warrant further discussion, need to be taken into account when interpreting the findings derived from the study.

**Capturing Strategy Use** One of the limitations in the present study is the use of self-reported data. Reading strategy use involves complex, mental processes (e.g., Erler & Finkbeiner, 2011; Grabe, 2012; Grabe & Stoller, 2011). As observed during the present study, reading strategy use varied for the same reader from one occasion to another, and the readers' reported use of strategies may not match the reader's actual use of reading strategies when reading an academic text. In addition, reading strategy use may differ across readers reading the same text either at the same time or different occasions. Further, as Nunan (2009) also pointed out, self-reporting of strategies could be a "potential problem" (p. 153). He expressed the concern that it is a "natural human tendency to represent oneself in a good light, so sometimes people leave out or downplay negative factors, and increase or emphasize positive factors" (p. 153). Therefore, when self-reporting the strategy use, participants may claim to have used strategies they actually did not use during their reading or may fail to report strategies that they, in fact, used while reading (White, Schramm, & Chamot, 2011). In this study, participants were asked to report their use of reading strategies, using the SORS instrument as well as during their weekly post-task verbal reflections and post-intervention interviews. The post-task verbal reflections and the post-intervention interviews identified that participants used particular strategies when they were actually reading. However, since there was a time lapse between their reading the text and their reporting their strategy use during the post-intervention interviews, it cannot be claimed that the participants reported during the interviews the same strategies that they used in their reading. It is thus important to note that "With self-report…, when the time between the event being reported and the reporting itself is short, there is a greater likelihood that the reporting will be accurate" (Mackey & Gass, 2016, p. 87). To mitigate non-task-specific reporting of strategy use and the time lapse between participants' strategy use and their reporting

of it, one of the questions in the interview was to have participants read a passage and verbalize their strategic behaviours through their think-alouds. However, only one passage was used during the interview. The use of a few reading passages may have helped me to capture a fuller picture of the participants' strategic repertoires.

**Reading Strategy Instruction** I must acknowledge the limitation regarding my facilitation of reading strategy instruction. As I started facilitating reading strategy instruction classes, I began to learn more and more about the reading strategy use though teaching and engagement with the participants' learning process. When I began to teach the comparison group, I had already learned a great deal about the reading strategy use and reading strategy instruction. While the design of the study was not to provide the comparison group with reading strategy instruction, as their teacher, my role is to help them understand the text under discussion. I needed to navigate the ethical dilemma involving the provision of instruction on reading strategies to two experimental groups and withholding instruction of reading strategies to the comparison group. Although the comparison group did not receive reading strategy instruction and reading strategies were never explicitly identified or named, there were occasions when we used reading strategies, such as underling (SUP10), taking notes (SUP2), using dictionaries (SUP13), and reading slowly and carefully (PROB7), when reading academic texts. While CG participants were engaged in using such strategies, the process may have influenced their strategy use and reading comprehension. Furthermore, as I had been more proficient in teaching reading or reading strategy use, it might have also positively affected the reading performance of the members of the comparison group. Therefore, I acknowledge that my improved knowledge of reading strategy use as well as my unintentional engagement in reading

strategy use may have affected reading instruction among the members of the comparison group and have thus affected the results.

**Intervention Period** One of the major limitations of this study was my inability to continue the reading strategy instruction for a longer period of time to engage the same or different groups of learners in another cycle of action research. By a longer period of time, I mean that the length or duration of reading strategy instruction for the same group could be extended, but it was not possible due to the time constraints and the availability of the same participants for an extended time period. Within an action research project that is cyclical in nature, one phase leads to another and can be repeated multiple times in a "continual improvement process" (Hinchey, 2008, p. 5). The continuation of the study would have allowed "more mixed methods evaluation of the intervention outcomes, which may lead to further refinement of the intervention plan" (Ivankova, 2015, p. 62). The extended cycle or longer time for a group may also have produced different results, if I was able to return to initial phases to understand the problems, to re-assess the plan, and to carry out reading strategy instruction to replicate my own study.

**Coder Reliability Checks** I coded the data obtained from participants' post-task verbal reflections and post-intervention interviews in a six-month interval to establish intra-coder reliability. While conducting intra-coder reliability checks may help strengthen the trustworthiness of the research, as the coder is the same individual coding the same data for the second time, there is a possibility that the coder may make the same errors twice (Green, 1998). Although I coded the data systematically and carefully, and disagreements between two coding

cycles were resolved, the establishment of inter-coder reliability would have further strengthened the study.

**Preferred Languages in the Post-task Guided Verbal Reflections** Participants' post-task verbal reflection was instrumental in identifying the reading strategies they thought they used during their reading in class. They had to audio-record their reflections in English so that I could understand it. While they were proficient in English, I later realized that they could have been offered the opportunity to freely express their use of reading strategies in their first or preferred language(s) (Huang, 2014).

**Assessment of Reading Comprehension** The final limitation pertains to the use of IELTS Academic Reading test components to measure reading comprehension in this study. Recently, Ihlenfeldt and Rios (2022) have cautioned the use of standardized English-language proficiency tests, such as IELTS, in order to determine student admissions. In addition, "little research is available on the relationship between the IELTS Academic Reading and academic reading in situ" (Weir, Hawkey, Green, & Devi, 2012, p. 212). Passages in the IELTS Academic Reading components include comprehension questions that students may start to read before they read and work through their passage. In this sense, educators may argue that IELTS Academic Reading passages may not be representative of the process students are required to go through, although Green, Unaldi, and Weir (2010) found, in the IELTS Academic Reading, many of the text features represent the kinds of texts first year undergraduates are required to read. In colleges and universities, not all reading texts in colleges and universities may be followed by reading comprehension questions. In addition, the average word count of IELTS Academic Reading passages is much shorter than reading text lengths in colleges. The IELTS Academic Reading test, as used in this study, is one way of measuring the participants' changes in their

reading comprehension and the choice is by no means without problems. While there are standardized reading tests, including TOEFL, IELTS, and other self-developed reading tests, the present study has used the IELTS Academic Reading components in order to examine the changes in the participants' reading comprehension. While the test may not capture academic materials used in an academic context, the reading passages and format are representatives of what learners encounter in the testing context. Further, the present study makes no claim about the IELTS Academic Reading test components in relation to the participants' GPA or their undergraduate- or graduate-level academic performance.

In spite of these limitations, the study still offers important insights into the area of L2 reading strategy instruction and contributes to the body of literature in this specialized area. As many researchers (e.g., Burns, 2010) have argued, findings from any single action research study are not meant for generalization beyond the instructor-researcher's specific research context, since the purpose of such action research lies in addressing issues pertaining to the particular instructor-researcher's own teaching context.

### 5.5 Future Research Directions

This study may be applicable to EAP practitioners or SoTL researchers facing challenges related to L2 reading instruction in their work supporting adult EAL students in improving reading comprehension. In terms of future research directions, there are several key aspects of the study for researchers to consider. First, as reading strategy use involves a complex, mental process (e.g., Erler & Finkbeiner, 2011; Grabe, 2012; Grabe & Stoller, 2011), it is important that future research includes different data collection methods, including eye-tracking, that involves non-self-reporting measures, in order to capture participants' actual strategy use. Eye tracking is a

promising data collection method that enables researchers to observe the reading process in real-time (Catrysse, Gijbels , Donche, Maeyer, Lesterhuis, & Van den Bossche, 2018; Hyona & Lorch, 2004). The use of different methods in future studies will allow researchers to determine readers' strategic behaviours and strategy use in more effective ways.

Second, the present study included 52 EAP participants divided into three different groups: EGA (*n* = 17), EGB (*n* = 16), and CG (*n* = 19). As O'Leary (2014) stated: "The larger the sample, the more likely it is to be representative, hence, generalizable" (p. 185). A researcher has to determine the adequate sample size in order to conduct meaningful statistical analysis and determine the power of the effects (Huang, 2013). As Nunan and Bailey (2009) also reiterated, "Most statistical procedures based on the normal distribution work better with large data sets" (p. 129). Therefore, future studies involving a larger sample size would enable researchers to validate the findings and generate new empirical insights.

Third, future research should consider the implementation of different intervention durations. As highlighted in Huang (2021b), one of the key questions that research has been carried out to address adequately is "What is the optimal length of instruction, factoring in the cost-benefit ratio?" (p. 220). Having different treatment durations will enable researchers to investigate the efficacy of reading strategy instructions over time and compare the efficacy of reading strategy instruction between durations. It will eventually help researchers to better determine the efficacy of reading strategy instruction over time and compare the efficacy of reading strategy instruction across durations.

Fourth, Erler and Finkbeinber (2011) pointed out that researchers need to use caution when taking variables into account. Factoring key individual variables (e.g., proficiency levels)

would enable researchers to examine the interaction between/among these variables vis-a-via reading strategy use and reading performance.

Fifth, instead of teaching 30 reading strategies at a time, selecting only a few strategies for reading strategy instruction (Plonsky, 2011) merits empirical work. As Huang (2021b) underscored, the other question that research has yet to tackle empirically is: "Which strategies should be selected for instruction, given the wide range identified in the literature?" (p. 220).

### 5.6 Some Further Thoughts on Implementation

Through this action-research process, I have learned that motivation for learners to participate, work collaboratively, learn and share, and contribute to the study is critical (Mills, 2011; Savin-Baden & Major, 2013). In the beginning, some participants hesitated to take part in pair or group work or share their reflections. However, it did not take long for them to realize that their participation and sharing of their thoughts on the reading strategy use not only helped them in their reading performance, but they were also able to contribute to their peer's success.

Through my own reflection, I also learned that sometimes I planned the lessons on reading strategy instruction, without realizing that students may use different strategies for the same reading text. I was initially unaware of the idea that "Strategies are often applied in combination with one or several other strategies" (Amerstorfer, 2019, p. 137). I planned to teach certain strategies useful for a particular text; however, students came up with different other reading strategies from the SORS that were helpful for their understanding of the text being discussed. For instance, when preparing the lesson on the effects of noise, I planned how we would discuss the beginning of the reading passage, starting with: "In general, it is plausible to suppose that we should prefer peace and quiet to noise" (University of Cambridge Examinations, 2016, p. 96). I included in my lesson plan the strategy GLOB17 (*I use context clues to help me*

*better understand what I am reading*.) and SUP22 (*I go back and forth in the text to find relationships among ideas in it*.) to illustrate strategy use in class. However, to my surprise, the participants in fact, used several different strategies in order to understand this statement and the text follows. For example, the participants reported that they relied on taking notes while reading to help them understand what they read (SUP2), thought about what they knew to help them understand what they read (GLOB3), read the statements slowly and carefully to make sure they understand what they were reading (PROB7), underlined and circled information in the text (SUP10), used dictionaries (SUP13), critically analyzed the information presented in the text (GLOB21), re-read the text to increase their understanding (PROB25), guessed the meaning of the unknown words (GLOB24), and thought about information in both English and their first language (SUP30). This process was an eye-opener for me. I came to broaden my understanding that different students may use different reading strategies in order to comprehend the text or repair their comprehension and that students may use several strategies at the same time in order to comprehend the text. This experience helped me to learn that I needed to be more open and flexible in understanding the dynamic nature of students' use of reading strategies.

The lack of time and research training are among some of the major challenges faced by practitioner-researchers (e.g., Huang, 2021a; Nunan, 2009). As Nunan (2009) articulated: "Completing action research is a little like completing a marathon at the same time as you carry out a wide range of other tasks" (p. 248). Managing time and receiving adequate training support before and during the implementation of their action research projects are critical (Huang, 2021a). Learning to collaboratively engage in the systematic exploration of reading strategy use is a slow process and "building [a] community of learners" (Mills, 2011, p. 7) is essential in that process.

# Chapter 6: Conclusion

This action research study empirically evaluated the efficacy of reading strategy instruction among adult EAL students' development of academic reading skills, strategy use, and reading performance. Fifty-two EAP learners enrolled at a post-secondary institution in British Columbia volunteered to participate in this study. These participants were divided into three different groups: Experimental Group A (EGA) ($n$ = 17), Experimental Group B (EGB) ($n$ = 16), and a Comparison Group (CG) ($n$ = 19). EGA and EGB participants received reading strategy instruction over nine sessions during a nine-week period and a six-week period respectively, and CG participants received reading instruction without strategy instruction over nine sessions during a nine-week period. CG participants read the texts and answered the comprehension questions, but EGA and EGB participants explicitly used reading strategies when reading the texts. Each of the sessions lasted for 90 minutes. Ivankova's (2015) mixed-methods action research framework was implemented to answer the research questions. In order to measure participants' reading strategy use, Mokhtari and Sheorey's (2002) Survey of Reading Strategies (SORS) instrument was used in the pre- and post-intervention. For measuring the participants' reading comprehension, an identical, standardized reading comprehension test was administered in the pre- and post-intervention. Finally, participants' weekly post-task guided verbal reflections and post-intervention interviews provided participants' strategy use.

As Grabe and Stoller (2011) stated, instructors can carry out research projects in order to learn and teach better. Such investigations "may not lead to major research breakthroughs, but it will certainly lead to a heightened awareness of teaching and learning practices in L2 reading classrooms" p. xix). The results suggested that EGA and EGB participants became aware of a

variety of reading strategies and used these strategies in order to understand their texts. Participants have reported higher overall strategy use and higher usage of *global, problem-solving,* and *support* strategies and have performed higher in the reading comprehension in the post-intervention stage. Participants have also carefully monitored and managed their reading and use of *global, problem-solving,* and *support* strategies. As some participants expressed, they were able to not only use reading strategies but also critically analyze and evaluate their reading and strategy use to improve their comprehension. Overall, the findings support the teachability and efficacy of reading strategies (Brown, 2007; Iwai, 2009; Malcolm, 2008; Mokhtari & Sheorey, 2002; Newfeld, 2005).

A further insight gained from the analysis of participants' post-task verbal reflections and post-intervention interviews revealed that EGA and EGB used a wide variety of reading strategies. This result is consistent with many other studies (Alsheikh & Mokhtari, 2011; Iwai, 2009; Maasum & Maarof, 2012; Magogwe, 2013; Malcolm, 2009; Mokhtari & Sheorey, 2002). In addition to the 30 individual strategies within the three broad reading strategy categories—*global, problem-solving,* and *support*—in the SORS, participants from both experimental groups also used other individual reading strategies (e.g., brainstorming, making inferences, reflecting, and summarizing). All participants expressed that their heightened awareness of the many reading strategies as well as their management of different reading strategies during their reading have helped them to become better and strategic readers. Participants also reiterated that re-learning of some strategies that they were already familiar with when reading texts in their L1, helped them transfer these reading strategies in an L2 context.

Table 26 shows that the picture pertaining to the lengths of the intervention vis-à-vis the development of strategy use and reading comprehension is less conclusive in the present study. It

may be argued that reading strategy instructions supported EGA participants, who received reading strategy instructions over a regular period of time, in their awareness and use of reading strategies and the development of their reading performance.

Mokhtari and Sheorey (2008) expressed the need for triangulating multiple sources of data, since the SORS helps participants self-report strategy use that may not reflect the real use of reading strategies. In the study, the participants from EGA and EGB were asked to reflect on their reading and their use of strategies at the end of every session. In addition, EGA and EGB participants in the experimental groups were also asked to read paragraphs from a text and perform think-alouds during their interviews so that their actual use of strategies could be captured to the extent possible. Therefore, data from multiple sources, such as the SORS instrument and participants' post-task verbal reflections and their post-intervention interviews, were triangulated in order to make conclusions on this particular reading strategy instruction. The triangulation of different data sources, including the reflective entries and interviews, helped me as an instructor-researcher identify 14 additional individual reading strategies, including making inferences, reflecting, and summarizing, beyond 30 individual strategies covered in the SORS. I was then able to go beyond the SORS and accurately capture the participants' strategy use. In addition, the data from the reflection and interviews also enabled me to learn about the participants' perspectives on reading strategy use and its efficacy on their reading performance.

The findings from this study suggest that reading strategy instruction enhances EAL learners' development of reading strategy use and reading comprehension. The intervention has helped the participants in this study to become strategic readers in that they were able to engage in the so-called "high-level" reading processes (see Grabe 2012; Grabe & Stoller, 2011) through the use of different individual reading strategies to aid their reading comprehension. This study's

results point to the recommendation that both instructors and curriculum designers consider integrating reading strategy instruction in their courses and monitoring learners' progress. In addition to offering pedagogical ideas to resolve issues related to the use of reading strategies by adult EAL students, the study also offers research ideas to action researchers who may face similar pedagogical concerns. Finally, this study contributes to the existing body of literature on the efficacy of reading strategy instruction among EAL students and to developing an evidence-approach to support EAL students' strategic behaviours and reading performance. This study supports EAL practitioners and curriculum developers in making informed decisions about their pedagogical practices aimed at developing the ever-growing number of EAL students' reading skills in the Canadian post-secondary context.

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# Appendices

**Appendix A** Background Information Sheet

## The Background Information Sheet

*(Your name and personal information will strictly be kept confidential*.)

1. Name:

2. Preferred pseudonym:

3. Gender: Male Female Prefer not to say

4. Age 15-20 _____21-25 _____26-30 _____31-35 _____36-40 _____41 + above

5. Where is your hometown?

6. What is the highest level of education you have completed?

7. What is your degree program?

8. Do you have any linguistic qualifications? Or, are you a translator or foreign language teacher?

9. What is your mother tongue (first language)?

10. What other languages do you speak?

11. How long have you been studying English formally and informally (years/ months)?

12. What is your English language proficiency level?

Beginner Intermediate Advanced Expert User

13. Have you taken any of the following language proficiency tests? If yes, please provide the score(s) and the year you took the test(s), and if not, please mark "N/A".

| Test | Score | Year |
|---|---|---|
| **TOEFL** (Test of English as a Foreign Language) | | |
| **IELTS** (International English Langauge Testing System) Test | | |
| **MELAB** (Michigan English Language Assessment Battery) | | |
| **LPI** (Language Proficiency Index) | | |
| Other | | |

14. How many hours per week do you think you spend in reading academic texts in English?

15. How do you generally approach an academic reading text?

16. What are the challenges you generally face when reading academic texts or articles?

17. Have you attended a course on reading strategies previously? If so, could you briefly describe it?

**Appendix B** Survey or Reading Strategies (SORS)

## Survey or Reading Strategies (SORS)

Kouider Mokhtari and Ravi Sheorey, 2002

The purpose of this survey is to collect information about the various strategies you use when you read school-related academic materials in ENGLISH (e.g., reading textbooks for homework or examinations, reading journal articles, etc.). Each statement is followed by five numbers, 1, 2, 3, 4, and 5, and each number means the following:

‘1’ means that ‘I never or almost never do this’.
‘2’ means that ‘I do this only occasionally’.
‘3’ means that ‘I sometimes do this’. (About 50% of the time.)
‘4’ means that ‘I usually do this’.
‘5’ means that ‘I always or almost always do this’.

After reading each statement, circle the number (1, 2, 3, 4, or 5) which applies to you. Note that there are no right or wrong responses to any of the items on this survey.

| | |
|---|---|
| 1. I have a purpose in mind when I read. | 1 2 3 4 5 |
| 2. I take notes while reading to help me understand what I read. | 1 2 3 4 5 |
| 3. I think about what I know to help me understand what I read. | 1 2 3 4 5 |
| 4. I take an overall view of the text to see what it is about before reading it. | 1 2 3 4 5 |
| 5. When text becomes difficult, I read aloud to help me understand what I read. | 1 2 3 4 5 |
| 6. I think about whether the content of the text fits my reading purpose. | 1 2 3 4 5 |
| 7. I read slowly and carefully to make sure I understand what I am reading. | 1 2 3 4 5 |
| 8. I review the text first by noting its characteristics like length and organization. | 1 2 3 4 5 |
| 9. I try to get back on track when I lose concentration. | 1 2 3 4 5 |
| 10. I underline or circle information in the text to help me remember it. | 1 2 3 4 5 |
| 11. I adjust my reading speed according to what I am reading. | 1 2 3 4 5 |
| 12. When reading, I decide what to read closely and what to ignore. | 1 2 3 4 5 |
| 13. I use reference materials (e.g. a dictionary) to help me understand what I read. | 1 2 3 4 5 |
| 14. When text becomes difficult, I pay closer attention to what I am reading. | 1 2 3 4 5 |
| 15. I use tables, figures, and pictures in text to increase my understanding. | 1 2 3 4 5 |
| 16. I stop from time to time and think about what I am reading. | 1 2 3 4 5 |
| 17. I use context clues to help me better understand what I am reading. | 1 2 3 4 5 |
| 18. I paraphrase (restate ideas in my own words) to better understand what I read. | 1 2 3 4 5 |
| 19. I try to picture or visualize information to help remember what I read. | 1 2 3 4 5 |
| 20. I use typographical features like bold face and italics to identify key information. | 1 2 3 4 5 |
| 21. I critically analyze and evaluate the information presented in the text. | 1 2 3 4 5 |
| 22. I go back and forth in the text to find relationships among ideas in it. | 1 2 3 4 5 |
| 23. I check my understanding when I come across new information. | 1 2 3 4 5 |
| 24. I try to guess what the content of the text is about when I read. | 1 2 3 4 5 |
| 25. When text becomes difficult, I re-read it to increase my understanding. | 1 2 3 4 5 |

| | |
|---|---|
| 26. I ask myself questions I like to have answered in the text. | 1 2 3 4 5 |
| 27. I check to see if my guesses about the text are right or wrong. | 1 2 3 4 5 |
| 28. When I read, I guess the meaning of unknown words or phrases. | 1 2 3 4 5 |
| 29. When reading, I translate from English into my native language. | 1 2 3 4 5 |
| 30. When reading, I think about information in both English and my mother tongue. | 1 2 3 4 5 |

**Appendix C** Reading Comprehension (RC) Test Set A

Source: Cambridge University Press, 2012

The Reading Comprehension Test contains two reading passages. Read both passages and answer the questions that follow.

**Reading Passage 1: Let's Go Bats**

**A**

Bats have a problem: how to find their way around in the dark they hunt at flight, and cannot use light to help them find prey and avoid obstacles. You might say that this is a problem of their own making one that they could avoid simply by changing their habits and hunting by day. But the daytime economy is already heavily exploited by other creatures such as birds. Given that there is a living to be made at night, and given that alternative daytime trades are thoroughly occupied, natural selection has favored bats that make a go of the night-hunting trade. It is probable that the nocturnal trades go way back in the ancestry of all mammals. In the time when the dinosaurs. dominated the daytime economy, our mammalian ancestors probably only managed to survive at all because they found ways of scraping a living at night. Only after the my stenos mass extinction of the dinosaurs about 65 million years ago were our ancestors able to emerge into the daylight in any substantial numbers.

**B**

Bats have an engineering problem: how to find their way and find their prey in the absence of light Bats are not the only creatures to face this difficulty today. Obviously, the nightflying insects that they prey on must find their way about somehow. Deep-sea fish and whales have little or no light by day or by night. Fish and dolphins that live in extremely muddy water cannot see because, although there is light, it is obstructed and scattered by the dirt in the water Plenty" of other modern animals make their living in conditions where seeing is difficult or impossible.

**C**

Given the questions of how to manoeuvre in the dark, what solutions might an engineer consider? The first one that might occur to him is to manufacture light, to use a lantern or a searchlight Fireflies and some fish (usually with the help of bacteria) have the power to – manufacture their own light but the process seems to consume a large amount of energy. Fireflies use their light for attracting mates. This doesn't require a prohibitive amount of energy: a male's tiny pinprick of light can be seen by a female from some distance on a dark night since her eyes are exposed directly to the light source itself. However, using light to find one's own way around requires vastly more energy, since the eyes have to detect the tiny fraction of the light that bounces off each part of the scene. The light source must, therefore, be immensely brighter if it is to be used as a headlight to illuminate the path, than if it is to be used as a signal to others. In any event, whether or not the reason is the energy expense, it seems to be the case that with the possible exception of some weird deep-sea fish, no animal apart from man uses manufactured light to find its way about

**D**
What else might the engineer think off Well, blind humans sometimes seem to have an uncanny sense of obstacles in their path, ft has been given the name' facial vision', because blind people have reported that Ft feels a bit like the sense of touch, on the face. One report tells of a totally blind boy who could and his tricycle at good speed round the block near his home, using facial vision. Experiments showed that, in fact, facial vision is nothing to do with touch or the front of the face, although the sensation may be referred to the front of the face, like the referred pain in a phantom limb The sensation of facial vision, it turns out really goes in through the ears. Blind people, without even being aware of the fact are actually using echoes of their own footsteps and of other sounds, to sense the presence of obstacles. Before this was discovered, engineers had already built instruments to exploit the principle, for example, to measure the depth of the sea under a ship. After this technique had been invented, it was only a matter of time before weapons designers adapted ft for the detection of submarines. Both sides in the Second World War relied heavily on these devices, under such code names as Asdic (British) and Sonar (American), as wall as Radar (American) or RDF (British), which uses radio echoes rather than sound echoes.

**E**
The Sonar and Radar pioneers Didn't know it then, but all the world now knows that bats, or rather natural selection working on bats, had perfected the system tens of millions of years earlier, and their radar'" achieves feats of detection and navigation that would strike an engineer dumb with admiration It is technically incorrect to talk about bat'radar1, since they do not use radio waves. It is sonar. But the underlying mathematical the ones of radar and sonar are very similar, and much of our scientific understanding of the details of what bats are doing has' come from applying radar theory to them. The American zoologist Donald Griffin, who was largely responsible for the discovery of sonar in bats, coined the term 'echolocation' to cover both sonar and radar, whether used' by animals or by human instruments.

**Questions 1-5**
Reading Passage 1 has five paragraphs, **A-E**. Which paragraph contains the following information? Write the correct letter, **A-E**, in boxes 1-5 on your answer sheet.

NB You may use any letter more than once.

1. examples of wildlife other than bats which do not rely on vision to navigate by
2. how early mammals avoided dying out
3. why bats hunt in the dark
4. how a particular discovery has helped our understanding of bats
5. early military uses of echolocation

**Questions 6-9**
Complete the summary below. Choose ONE WORD ONLY from the passage for each answer. Write your answers in boxes 6-9 on your answer sheet.

## Facial Vision

Blind people report that so-called ‘facial vision’ is comparable to the sensation of touch on the face. In fact, the sensation is more similar to the way in which pain from a 6…… arm or leg might be felt. The ability actually comes from perceiving 7…….. through the ears. However, even before this was understood, the principle had been applied in the design of instruments which calculated the 8 …….. of the seabed. This was followed by a wartime application in devices for finding 9…….. .

**Question 10-13**
Complete the sentences below. Choose NO MORE THAN TWO WORDS from the passage for each answer. Write your answers in boxes 10-13 on your answer sheet.

10 Long before the invention of radar, …… had resulted in a sophisticated radar-like system in bats.
11 Radar is an inaccurate term when referring to bats because …… are not used in their navigation system.
12 Radar and sonar are based on similar……
13 The word ‘echolocation’ was first used by someone.

**Reading Passage 2: Making Every Drop Count**

**A**
The history of human civilisation is entwined with the history of the ways we have learned to manipulate water resources. As towns gradually expanded, water was brought from increasingly remote sources, leading to sophisticated engineering efforts such as dams and aqueducts. At the height of the Roman Empire, nine major systems, with an innovative layout of pipes and well-built sewers, supplied the occupants of Rome with as much water per person as is provided in many parts of the industrial world today.

**B**
During the industrial revolution and population explosion of the 19th and 20th centuries, the demand for water rose dramatically. Unprecedented construction of tens of thousands of monumental engineering projects designed to control floods, protect clean water supplies, and provide water for irrigation and hydropower brought great benefits to hundreds of millions of people. Food production has kept pace with soaring populations mainly because of the expansion of artificial irrigation systems that make possible the growth of 40 % of the world’s food. Nearly one fifth of all the electricity generated worldwide is produced by turbines spun by the power of falling water.

**C**
Yet there is a dark side to this picture: despite our progress, half of the world’s population still suffers, with water services inferior to those available to the ancient Greeks and Romans. As the

United Nations report on access to water reiterated in November 2001, more than one billion people lack access to clean drinking water; some two and a half billion do not have adequate sanitation services. Preventable water-related diseases kill an estimated 10,000 to 20,000 children every day, and the latest evidence suggests that we are falling behind in efforts to solve these problems.

**D**

The consequences of our water policies extend beyond jeopardising human health. Tens of millions of people have been forced to move from their homes - often with little warning or compensation - to make way for the reservoirs behind dams. More than 20 % of all freshwater fish species are now threatened or endangered because dams and water withdrawals have destroyed the free-flowing river ecosystems where they thrive. Certain irrigation practices degrade soil quality and reduce agricultural productivity. Groundwater aquifers* are being pumped down faster than they are naturally replenished in parts of India, China, the USA and elsewhere. And disputes over shared water resources have led to violence and continue to raise local, national and even international tensions.

**E**

At the outset of the new millennium, however, the way resource planners think about water is beginning to change. The focus is slowly shifting back to the provision of basic human and environmental needs as top priority - ensuring ‘some for all,’ instead of ‘more for some’. Some water experts are now demanding that existing infrastructure be used in smarter ways rather than building new facilities, which is increasingly considered the option of last, not first, resort. This shift in philosophy has not been universally accepted, and it comes with strong opposition from some established water organisations. Nevertheless, it may be the only way to address successfully the pressing problems of providing everyone with clean water to drink, adequate water to grow food and a life free from preventable water-related illness.

**F**

Fortunately - and unexpectedly - the demand for water is not rising as rapidly as some predicted. As a result, the pressure to build new water infrastructures has diminished over the past two decades. Although population, industrial output and economic productivity have continued to soar in developed nations, the rate at which people withdraw water from aquifers, rivers and lakes has slowed. And in a few parts of the world, demand has actually fallen.

**G**

What explains this remarkable turn of events? Two factors: people have figured out how to use water more efficiently, and communities are rethinking their priorities for water use. Throughout the first three-quarters of the 20th century, the quantity of freshwater consumed per person doubled on average; in the USA, water withdrawals increased tenfold while the population quadrupled. But since 1980, the amount of water consumed per person has actually decreased, thanks to a range of new technologies that help to conserve water in homes and industry. In 1965, for instance, Japan used approximately 13 million gallons* of water to produce $1 million of commercial output; by 1989 this had dropped to 3.5 million gallons (even accounting for inflation) - almost a quadrupling of water productivity. In the USA, water withdrawals have fallen by more than 20 % from their peak in 1980.

**H**

On the other hand, dams, aqueducts and other kinds of infrastructure will still have to be built, particularly in developing countries where basic human needs have not been met. But such projects must be built to higher specifications and with more accountability to local people and their environment than in the past. And even in regions where new projects seem warranted, we must find ways to meet demands with fewer resources, respecting ecological criteria and to a smaller budget.

**Questions 14-20**

Reading Passage has seven paragraphs, **A-H**. Choose the correct heading for paragraphs **A** and **C-H** from the list of headings below. Write the correct number, i-xi, in boxes 14-20 on your answer sheet.

**List of Headings**

i. Scientists' call for a revision of policy
ii. An explanation for reduced water use
iii. How a global challenge was met
iv. Irrigation systems fall into disuse
v. Environmental effects
vi. The financial cost of recent technological improvements
vii. The relevance to health
viii. Addressing the concern over increasing populations
ix. A surprising downward trend in demand for water
x. The need to raise standards xi. A description of ancient water supplies

14 Paragraph **A**

| *Example* | *Answer* |
|---|---|
| Paragraph **B** | **iii** |

15 Paragraph **C**
16 Paragraph **D**
17 Paragraph **E**
18 Paragraph **F**
19 Paragraph **G**
20 Paragraph **H**

**Questions 21-26**

Do the following statements agree with the information given in Reading Passage 2? In boxes 21-26 on your answer sheet, write

YES if the statement agrees with the claims of the writer

NO if the statement contradicts the claims of the writer

NOT GIVEN if it is impossible to say what the writer thinks about this

21 ……Water use per person is higher in the industrial world than it was in Ancient Rome.

22 ……Feeding increasing populations is possible due primarily to improved irrigation systems.

23 ……Modern water systems imitate those of the ancient Greeks and Romans.

24 ……Industrial growth is increasing the overall demand for water.

25 ……Modern technologies have led to a reduction in domestic water consumption.

26 ……In the future, governments should maintain ownership of water infrastructures.

**Appendix D** Reading Comprehension (RC) Test Set B

Source: Cambridge University Press, 2012

The Reading Comprehension Test contains two reading passages. Read both passages and answer the questions that follow.

## Reading Passage 1: Why Pagodas don't Fall

**A**

In a land swept by typhoons and shaken by earthquakes, how have Japan's tallest and seemingly flimsiest old buildings - 500 or so wooden pagodas - remained standing for centuries? Records show that only two have collapsed during the past 1400 years. Those that have disappeared were destroyed by fire as a result of lightning or civil war. The disastrous Hanshin earthquake in 1995 killed 6,400 people, toppled elevated highways, flattened office blocks and devastated the port area of Kobe. Yet it left the magnificent five-storey pagoda at the Toji temple in nearby Kyoto unscathed, though it leveled a number of buildings in the neighborhood.

**B**

Japanese scholars have been mystified for ages about why these tall, slender buildings are so stable. It was only thirty years ago that the building industry felt confident enough to erect office blocks of steel and reinforced concrete that had more than a dozen floors. With its special shock absorbers to dampen the effect of sudden sideways movements from an earthquake, the thirty-six-storey Kasumigaseki building in central Tokyo - Japan's first skyscraper - was considered a masterpiece of modern engineering when it was built in 1968.

**C**

Yet in 826, with only pegs and wedges to keep his wooden structure upright, the master builder Kobodaishi had no hesitation in sending his majestic Toji pagoda soaring fifty-five meters into the sky - nearly half as high as the Kasumigaseki skyscraper built some eleven centuries later. Clearly, Japanese carpenters of the day knew a few tricks about allowing a building to sway and settle itself rather than fight nature's forces. But what sort of tricks?

**D**

The multi-storey pagoda came to Japan from China in the sixth century. As in China, they were first introduced with Buddhism and were attached to important temples. The Chinese built their pagodas in brick or stone, with inner staircases, and used them in later centuries mainly as watchtowers. When the pagoda reached Japan, however, its architecture was freely adapted to local conditions - they were built less high, typically five rather than nine storeys, made mainly of wood and the staircase was dispensed with because the Japanese pagoda did not have any practical use but became more of an art object. Because of the typhoons that batter Japan in the summer, Japanese builders learned to extend the eaves of buildings further beyond the walls. This prevents rainwater gushing down the walls. Pagodas in China and Korea have nothing like the overhang that is found on pagodas in Japan.

**E**
The roof of a Japanese temple building can be made to overhang the sides of the structure by fifty per cent or more of the building's overall width. For the same reason, the builders of Japanese pagodas seem to have further increased their weight by choosing to cover these extended eaves not with the porcelain tiles of many Chinese pagodas but with much heavier earthenware tiles.

**F**
But this does not totally explain the great resilience of Japanese pagodas. Is the answer that, like a tall pine tree, the Japanese pagoda - with its massive trunk-like central pillar known as shinbashira - simply flexes and sways during a typhoon or earthquake? For centuries, many thought so. But the answer is not so simple because the startling thing is that the shinbashira actually carries no load at all. In fact, in some pagoda designs, it does not even rest on the ground, but is suspended from the top of the pagoda - hanging loosely down through the middle of the building. The weight of the building is supported entirely by twelve outer and four inner columns.

**G**
And what is the role of the shinbashira, the central pillar? The best way to understand the shinbashira's role is to watch a video made by Shuzo Ishida, a structural engineer at Kyoto Institute of Technology. Mr Ishida, known to his students as 'Professor Pagoda' because of his passion to understand the pagoda, has built a series of models and tested them on a 'shake-table' in his laboratory. In short, the shinbashira was acting like an enormous stationary pendulum. The ancient craftsmen, apparently without the assistance of very advanced mathematics, seemed to grasp the principles that were, more than a thousand years later, applied in the construction of Japan's first skyscraper. What those early craftsmen had found by trial and error was that under pressure a pagoda's loose stack of floors could be made to slither to and fro independent of one another. Viewed from the side, the pagoda seemed to be doing a snake dance - with each consecutive floor moving in the opposite direction to its neighbors above and below. The shinbashira, running up through a hole in the center of the building, constrained individual storeys from moving too far because, after moving a certain distance, they banged into it, transmitting energy away along the column.

**H**
Another strange feature of the Japanese pagoda is that, because the building tapers, with each successive floor plan being smaller than the one below, none of the vertical pillars that carry the weight of the building is connected to its corresponding pillar above. In other words, a five-storey pagoda contains not even one pillar that travels right up through the building to carry the structural loads from the top to the bottom. More surprising is the fact that the individual stories of a Japanese pagoda, unlike their counterparts elsewhere, are not actually connected to each other. They are simply stacked one on top of another like a pile of hats. Interestingly, such a design would not be permitted under current Japanese building regulations.
And the extra-wide eaves? Think of them as a tightrope walker's balancing pole. The bigger the mass at each end of the pole, the easier it is for the tightrope walker to maintain his or her balance. The same holds true for a pagoda. 'With the eaves extending out on all sides like

balancing poles,' says Mr Ishida, 'the building responds to even the most powerful jolt of an earthquake with a graceful swaying, never an abrupt shaking.' Here again, Japanese master builders of a thousand years ago anticipated concepts of modern structural engineering.

**Questions 1-4**

Do the following statements agree with the claims of the writer in Reading Passage?
In boxes 1-4 on your answer sheet, write

YES if the statement agrees with the claims of the writer

NO if the statement contradicts the claims of the writer

NOT GIVEN if it is impossible to say what the writer thinks about this

1 Only two Japanese pagodas have collapsed in 1400 years.
2 The Hanshin earthquake of 1995 destroyed the pagoda at the Toji temple.
3 The other buildings near the Toji pagoda had been built in the last 30 years.
4 The builders of pagodas knew how to absorb some of the power produced by severe weather conditions.

**Questions 5-10**

Classify the following as typical of

**A** both Chinese and Japanese pagodas
**B** only Chinese pagodas
**C** only Japanese pagodas

Write the correct letter, **A**, **B** or **C**, in boxes 5-10 on your answer sheet.

5 easy interior access to top
6 tiles on eaves
7 use as observation post
8 size of eaves up to half the width of the building
9 original religious purpose
10 floors fitting loosely over each other

**Questions 11-13**

Choose the correct letter, A, B or C. Write the correct letter in boxes 11-13 on your answer sheet.

11 In a Japanese pagoda, the shinbashira

A bears the full weight of the building.
B bends under pressure like a tree.
C connects the floors with the foundations.
D stops the floors moving too far.

12 Shuzo Ishida performs experiments in order to

A improve skyscraper design.
B be able to build new pagodas.
C learn about the dynamics of pagodas.
D understand ancient mathematics.

13 The storeys of a Japanese pagoda are

A linked only by wood.
B fastened only to the central pillar.
C fitted loosely on top of each other.
D joined by special weights.

**Reading Passage 2: The True Cost of Food**

**A**
For more than forty years the cost of food has been rising. It has now reached a point where a growing number of people believe that it is far too high, and that bringing it down will be one of the great challenges of the twenty first century. That cost, however, is not in immediate cash. In the West at least, most food is now far cheaper to buy in relative terms than it was in 1960. The cost is in the collateral damage of the very methods of food production that have made the food cheaper: in the pollution of water, the enervation of soil, the destruction of wildlife, the harm to animal welfare and the threat to human health caused by modern industrial agriculture.

**B**
First mechanisation, then mass use of chemical fertilisers and pesticides, then monocultures, then battery rearing of livestock, and now genetic engineering - the onward march of intensive farming has seemed unstoppable in the last half-century, as the yields of produce have soared. But the damage it has caused has been colossal. In Britain, for example, many of our best-loved farmland birds, such as the skylark, the grey partridge, the lapwing and the corn bunting, have vanished from huge stretches of countryside, as have even more wild flowers and insects. This is a direct result of the way we have produced our food in the last four decades. Thousands of miles of hedgerows, thousands of ponds, have disappeared from the landscape. The faecal filth of salmon farming has driven wild salmon from many of the sea lochs and rivers of Scotland. Natural soil fertility is dropping in many areas because of continuous industrial fertiliser and pesticide use, while the growth of algae is increasing in lakes because of the fertiliser run-off.

**C**

Put it all together and it looks like a battlefield, but consumers rarely make the connection at the dinner table. That is mainly because the costs of all this damage are what economists refer to as externalities: they are outside the main transaction, which is for example producing and selling a field of wheat, and are borne directly by neither producers nor consumers. To many, the costs may not even appear to be financial at all, but merely aesthetic - a terrible shame, but nothing to do with money. And anyway they, as consumers of food, certainly aren't paying for it, are they?

**D**

But the costs to society can actually be quantified and, when added up, can amount to staggering sums. A remarkable exercise in doing this has been carried out by one of the world's leading thinkers on the future of agriculture, Professor Jules Pretty, Director of the Centre for Environment and Society at the University of Essex. Professor Pretty and his colleagues calculated the externalities of British agriculture for one particular year. They added up the costs of repairing the damage it caused, and came up with a total figure of £2,343m. This is equivalent to £208 for every hectare of arable land and permanent pasture, almost as much again as the total government and EU spend on British farming in that year. And according to Professor Pretty, it was a conservative estimate.

**E**

The costs included: £120m for removal of pesticides; £16m for removal of nitrates; £55m for removal of phosphates and soil; £23m for the removal of the bug Cryptosporidium from drinking water by water companies; £125m for damage to wildlife habitats, hedgerows and dry stone walls; £1,113m from emissions of gases likely to contribute to climate change; £106m from soil erosion and organic carbon losses; £169m from food poisoning; and £607m from cattle disease. Professor Pretty draws a simple but memorable conclusion from all this: our food bills are actually threefold. We are paying for our supposedly cheaper food in three separate ways: once over the counter, secondly through our taxes, which provide the enormous subsidies propping up modern intensive farming, and thirdly to clean up the mess that modern farming leaves behind.

**F**

So can the true cost of food be brought down? Breaking away from industrial agriculture as the solution to hunger may be very hard for some countries, but in Britain, where the immediate need to supply food is less urgent, and the costs and the damage of intensive farming have been clearly seen, it may be more feasible. The government needs to create sustainable, competitive and diverse farming and food sectors, which will contribute to a thriving and sustainable rural economy, and advance environmental, economic, health, and animal welfare goals.

**G**

But if industrial agriculture is to be replaced, what is a viable alternative? Professor Pretty feels that organic farming would be too big a jump in thinking and in practices for many farmers. Furthermore, the price premium would put the produce out of reach of many poorer consumers. He is recommending the immediate introduction of a'Greener Food Standard', which would push the market towards more sustainable environmental practices than the current norm, while not requiring the full commitment to organic production. Such a standard would comprise agreed practices for different kinds of farming, covering agrochemical use, soil health, land

management, water and energy use, food safety and animal health. It could go a long way, he says, to shifting consumers as well as farmers towards a more sustainable system of agriculture.

**Questions 14-17**

Reading Passage 2 has seven paragraphs, **A-G**. Which paragraph contains the following information? Write the correct letter, **A-G**, in boxes 14-17 on your answer sheet.

**NB** You may use any letter more than once.

14 a cost involved in purifying domestic water
15 the stages in the development of the farming industry
16 the term used to describe hidden costs
17 one effect of chemicals on water sources

**Questions 18-21**

Do the following statements agree with the claims of the writer in Reading Passage? In boxes 18-21 on your answer sheet, write

YES if the statement agrees with the claims of the writer

NO if the statement contradicts the claims of the writer

NOT GIVEN if it is impossible to say what the writer thinks about this

18 Several species of wildlife in the British countryside are declining.
19 The taste of food has deteriorated in recent years.
20 The financial costs of environmental damage are widely recognised.
21 One of the costs calculated by Professor Pretty was illness caused by

**Questions 22-26**

Complete the summary below. Choose NO MORE THAN THREE WORDS from the passage for each answer. Write your answers in boxes 22-26 on your answer sheet.

Professor Pretty concludes that our 22 ……are higher than most people realise, because me make three different types of payment. He feels it is realistic to suggest that Britain should reduce its reliance on 23 …… Although most farmers would be unable to adapt to 24 ……, Professor Pretty wants the government to initiate change by establishing what he refers to as a 25 …… . He feels this would help to change the attitudes of both 26 …… and …… .

**Appendix E** Post-Intervention Interview Questions

# Interview Questions

It's ……, 2019 today. Thank you for joining me for the post-intervention interview on reading strategy instruction among adult English-as-an-additional-language students! I would like to let you know that I am going to record this interview session. Your name and information, in addition to all data I receive from this interview, will strictly remain confidential. May I have your consent or permission to begin and record the interview now? Thank you.

1. How do you generally approach an English for academic purpose text?
2. Do you use strategies when you read academic texts in your native language? If you do, could you please explain it briefly?
3. Here's a reading passage from an academic textbook. Could you please read the first two paragraphs? Please make sure to perform 'think-alouds' when reading these paragraphs. As you read, feel free to use this pen if you need to.
    a. What challenges did you encounter while reading this text?
    b. Could you tell me which strategies did/would you use to overcome those challenges in order to understand the text?
4. Which strategies do you find most effective when reading academic texts in English?
5. Is there anything else you would like to add about your reading strategy use when reading academic texts in English?

Thank you again for your time and answers to the questions.

**Appendix F** Invitation to Participate [E-mail]

Dear Dr./ Mr./ Ms. [Name of the Head]

My name is Raj Khatri, and I am a PhD student working under the supervision of Dr. Li-Shih Huang in the Department of Linguistics at the University of Victoria. As part of my doctoral studies, I am conducting a research project titled Supporting B.C.'s expanding international education: The efficacy of academic reading strategy instruction among adult English-as-an-additional-language students. I have obtained ethics approval from the Human Research Ethics Board of the University of Victoria, and I am now seeking EAL students who may wish to volunteer to participate in this study. The purpose of this study is to evaluate the efficacy of reading strategy instruction in adult EAL students' development of academic reading skills and strategy use. The study aims to help EAL practitioners to make informed decisions about applying research-based pedagogies to facilitate the development of second language reading strategies and help adult EAL students become strategic readers.

I am wondering whether you can forward this email to EAP/ESL instructors who may either like to inform their students of this study or allow me to come to their classes and make a two-to-three-minute announcement to introduce my study and to elicit students' interest in the possibility of volunteering in this study. Instructors, as well as students interested in this study, can directly contact me by email or by phone.

Please feel free to contact me if you have any questions or queries with regard to this study. I am also attaching to this email a copy of the poster for your information.

Thank you very much for your time and support.

Sincerely,

Raj Khatri

**Appendix G** Recruitment Poster

**University of Victoria**
**Department of Linguistics**

# PARTICIPANTS NEEDED FOR STUDY OF READING STRATEGY USE AMONG ADULT ENGLISH-AS-AN-ADDITIONAL-LANGUAGE STUDENTS

We are looking for volunteers to take part in the study titled *Supporting B.C.'s expanding international education: The efficacy of academic reading strategy instruction among adult English-as-an-additional-language students.*

As a participant in this study, you will fill out a background questionnaire, receive, with no charge, six weekly one-and-a-half-hour-long lessons focusing on reading for academic purpose from an experienced, TESL Canada certified instructor, and complete two reading comprehension tests, a survey instrument, and weekly post-task reflections.

In addition to the free lessons, other benefits you can expect from your participation in this study include: (a) awareness of your academic reading strategies—an awareness that is needed to help you to become a strategic reader, and (b) a $15 Starbucks gift card.

For more information about this study or to participate in the upcoming lessons starting in **October 10**, please contact Raj Khatri no later than **October 5**.

**Appendix H** Consent Form

University of Victoria

## *Participant Consent Form*

### Supporting B.C.'s expanding international education: The efficacy of academic reading strategy instruction among adult English-as-an-additional-language students

You are invited to participate in a study entitled *Supporting B.C.'s expanding international education: The efficacy of academic reading strategy instruction among adult English-as-an-additional-language students*, which is being conducted by me, Raj Khatri. I am a doctoral student in the Department of Linguistics at the University of Victoria, and you may contact me if you have further questions.

As a graduate student, I am required to conduct research as part of the requirements for a degree in Doctor of Philosophy in Linguistics. It is being conducted under the supervision of Dr. Li-Shih Huang. You may contact my supervisor by email or by phone.

**Purpose and Objectives**
The purpose of this research project is to empirically evaluate the efficacy of reading strategy instruction in the process of helping to advance adult EAL students' development of academic reading skills and strategy use.

**Importance of this Research**
Research of this type is important because my work will help teachers to make informed decisions about applying research-based pedagogies to facilitate the development of academic language reading strategies and to help adult EAL students become strategic readers. In addition to the transferability of the study's results to other contexts and settings in EAL communities outside B.C., my study will also provide action researchers with directions for their future research in the sphere of second-language reading.

**Participants Selection**
You are being asked to participate in this study because you are an adult English-as-an-additional-language student enrolled in an English language program for the purpose of pursuing post-secondary education in B.C.

**What is involved**
If you consent to voluntarily participate in this research, your participation will include filling out a background questionnaire, taking part in the pre- and post-intervention SORS surveys, and taking pre- and post- intervention reading strategy comprehension tests. Additionally, if you belong to the Experimental group, you will participate in free, weekly one-and-a-half-hour-long reading-for-academic-purposes lessons with strategy instruction for nine weeks and engage in weekly post-task reflections and being interviewed. If you are a member of the Comparison group, you will also participate in free, weekly one-and-a-half-hour long reading-for-academic-purposes lessons for nine weeks and receive one additional week of reading strategy instruction.

**Inconvenience**
Participation in this study may cause some inconvenience to you, with regard to your time as specified above in 'What is involved'. You will spend 11 hours and 15 minutes if you belong to the Experimental group or 12 hours if you belong to the Comparison group.

**Risks**
There may be some potential risks related to possible physical fatigue and/or nervousness in completing the survey and the reading comprehension tests. Please know that you are free to take short breaks during your completion of those tasks, as needed.

**Benefits**
The potential benefits of your participation in this research include receiving free reading-for-academic-purposes lessons taught by a certified instructor. By participating in this study, you will receive free weekly one-and-a-half-hour long reading-for-academic-purposes lessons for 9 weeks. You will also have opportunities to identify a variety of reading strategies and apply them to your reading for academic purposes, which may help you develop your reading skills and become strategic readers.

**Voluntary Participation**
Your participation in this research must be completely voluntary. You may withdraw from the study at any time without any consequences or any explanation. If you withdraw from the study, your data will destroyed and will not be used for the analysis.

**The Researcher's Relationship with Participants**
There will be no undue influence on you to participate in the study. There is no disadvantage in not taking part in this study. You are free to participate, and if you do not participate or withdraw from the study, you will not be penalized in any way.

**On-going Consent**
To ensure that I have your on-going consent for your participation in this study, I will (a) remind you every week that you are free to withdraw, and (b) obtain your consent before each lesson.

**Anonymity and Confidentiality**
There are some limits to my ability to protect your confidentiality due to the nature of group activities. However, I will take every measure, to the extent possible, to safeguard your confidentiality in the group. A pseudonym will be used. The data collected will be kept completely confidential and used solely for the purpose of this research. Your identify and the name of your institution will remain undisclosed. Each participant will be identified by a code to ensure privacy, and the data collected during the course of the research will be coded only with a number corresponding to the participant's name.

**Dissemination of Results**
It is anticipated that the results of this study will be shared with others in a dissertation and in presentations at scholarly meetings.

**Disposal of Data**
Data from this study will be erased/destroyed 5 years after the completion of the study.

You may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

Your signature below indicates that you understand the above conditions of participation in this study, that you have had the opportunity to have your questions answered by the researchers, and that you consent to participate in this research project.

| _____ | _____ | _____ |
|---|---|---|
| *Name of Participant* | *Signature* | *Date* |

***A copy of this consent will be left with you, and a copy will be taken by the researcher.***