Reading Strategies in an EFL Context: A Mixed Methods Research Synthesis

Author: Steven Bedle

University of Glasgow

British Council ELT Master's Dissertation Awards 2018: Commendation

Reading Strategies in an EFL Context: A Mixed Methods Research Synthesis

By

Steve Bedle

A dissertation submitted in part requirement for the degree of MEd TESOL

Word Count: 16,327

August 2017

Abstract

As more and more students begin to learn English, the need to provide effective teaching methodologies to meet the growing needs of students increases. This is especially relevant for students who are learning English in a foreign country where their only exposure to English may be in the classroom. Reading strategies have been posited as being effective in assisting EFL students overcome gaps in linguistic knowledge such as vocabulary and grammar issues. Teaching reading strategies has been recommended as an effective means of providing a student-centered learning environment which promotes learner autonomy and improves development of target language proficiency. The aim of this study is to synthesize the existing research carried out on reading strategies in EFL contexts in order to ascertain if the evidence warrants classroom time use to teach reading strategies. Using a Mixed Methods Research Synthesis, which brings together qualitative and quantitative data and then analyzes it using both qualitative and quantitative methods, the finding of thirteen studies have been synthesized. The findings suggest that the evidence is unclear whether reading strategies are an effective means for EFL students to increase their reading comprehension; there is no clear link between the frequency of reading strategies use and proficiency level; and that there is a significant difference in the types of reading strategies that high proficiency readers use compared to low proficiency readers, but it remains unclear if some strategies are more effective than others. Because the findings do not point to a particular conclusion about the effectiveness of reading strategies, it is concluded that using valuable classroom time to teach reading strategies may not be beneficial to language proficiency development for EFL students.

Table of Contents

List of Tables

Section 1: Introduction

Reading is an essential skill because it allows access to knowledge and information in a consolidated medium, either through print or digital format (Sun, Shieh, & Huang, 2013), and is, therefore, seen as the most important skill for success in education (Alexander, Argent, & Spencer, 2008; Chen & Intaraprasert, 2014; Chirimbu & Barbu-Chirimbu, 2015; Ghahari & Basanjideh, 2017; Meniado, 2016; Nachmani, 2015). This pertains equally to learners of English language, who, in many cases, need to have a sufficient reading proficiency level to enter higher education in counties where instruction is in English (Akkakoson & Setabol, 2009; Grabe, 1991; Hong-Nam & Page, 2014; Jafari & Shokrpour, 2012; Oliver & Young, 2016; Yang, 2016). For English language learners (ELLs), whether learning in an English-speaking country (ESL) or in a country where English is a foreign language (EFL), reading is considered to be an important means for developing English language ability (Gorsuch & Taguchi, 2010, p.28). Unsurprisingly, however, reading remains problematic for many ELLs, especially EFL students who have limited input sources (Gorusch & Taguchi, 2010; Mehrpour & Rahimi, 2010).

Modern conceptions of reading comprehension view reading as a process in which meaning is constructed by the learner who brings prior knowledge to the text (Dole, Duffy, Roehler, & Pearson, 1991; Erler & Finkbeiner, 2007; Perfetti & Stafura, 2014). This prior knowledge may consist of their understanding of the language and how it is used within the text, or it may be their awareness about the subject which is covered by the text. The latter type of knowledge allows the reader to build inferences about the text and to make predictions about the text (Dole, *et al*., 1991, p.315); the former allows the reader to identify words and to process meaning based on their order within syntactical structures (Erler & Finkbeiner, 2007, p.188). For many theorists and researchers, the issues that EFL learners have with reading comprehension are directly related to these two types of knowledge, and have led some to believe that the problem has to do with lack of reading skills, while others believe that the problem is about lack of language knowledge (McDonough, 1995). Clarke (1978) proposed a theory that lack of language command in a second language (L2) '"short circuits" the good reader's system [used in effective reading in their first language], causing him to revert to "poor reader strategies"' (p.138). The

other theory posits that all readers require the use of reading strategies when reading, and that when faced with difficult texts 'the reader needs strategies that adjust to the very different constraints in literary materials' (Goodman, 1970, p.108).

Inspired by the notion that issues in L2 learning could be overcome by developing good learning behaviours, research has started comparing the differences in learning behaviours between good and poor L2 language learners. Rubin (1975), for instance, identified what she believed to be the defining differences between good and poor language learners were the 'little tricks' which the good language learner uses to increase their proficiency in the L2 (p.42-43). Further research found that good readers use strategies which poor readers either do not, or employ ineffectively (Block, 1986; Hosenfeld, 1979). Much of the focus in both L2 theory and L2 research since then has been on learning strategies. Learning strategies are intended to bridge the knowledge gaps that L2 learners face. In reading, because L2 instruction starts before the learner has built up a sufficient level of knowledge about the language, unlike early L1 learners, the gaps in linguistic knowledge are many (Koda, 2005, p.7). The use of reading strategies by ELLs, according to reading strategies proponents, can help them overcome linguistic barriers, become more aware about their comprehension and learning process, and develop autonomy in language learning (Mokhtari & Reichard, 2002; Oxford, 1990; O'Malley & Chamot, 1990). For EFLs who have little exposure to English outside of the classroom, methods which assist the learner with difficult aspects of reading in order to develop English language proficiency are especially important. Reading strategies offer a way of doing just that and it has been suggested that reading strategies instruction should be part of English language curriculums. However, with such few opportunities of practicing English outside of the classroom, it should be questioned whether valuable class time should be used to teach reading strategies to EFL students. Furthermore, because there has been a large number of reading strategies identified, to make use of any time devoted to teaching strategies, focus should be placed on the most effective reading strategies if they can be identified. Recent research into reading strategies has focused on the EFL context. The studies have used a variety of methods in conducting their research and analysis including think-aloud protocols where participants are asked to either verbalize or write down their reading process and which strategies they use; questionnaires on which strategies are used and the frequency in which they're used; experimental and quasi-experimental

studies which provide reading strategies instruction and compare pre-test and post-test reading comprehension test (RCT) scores; and interviews.

The aim of the current study is to synthesize the available research on reading strategies carried out in an EFL context to investigate their impact on reading comprehension and which reading strategies are the most effective. To do this, the following three questions will be attempted to answer:

1. Are reading strategies effective in increasing reading comprehension for higher education EFL students?

2. Does the frequency of reading strategies use correlate to reading comprehension level for higher education EFL students?

3. Are there difference in the types of reading strategies used by high proficiency readers and low proficiency readers, and, if so, do the differences provide insights into what may be the most effective reading strategies?

The current study will begin by providing background on reading and reading comprehension (Section 2.1-2.1.3) and on reading strategies (Section 2.2-2.2.3). Next, early research into reading strategies will be provided following current studies on reading strategies in an EFL context (Section 2.3). These will be followed by the methodology of the current study which includes the design, rationale, information on study selection, and data analysis (Section 3.1-3.4). The results will be given in the next part (Section 4.1) followed by a more in-depth discussion of the results and a interpretation of the findings (Section 5.1). Finally the study will conclude with some thoughts about the future studies and implications for the EFL classroom (6.1).

Section 2: Background

2.1   Reading and Reading Comprehension

To understand the place of reading strategies in an EFL context, it is important to understand some general ideas about reading. There are two opposing views of reading that can be used here to illustrate divergences in theories. The first is the Simple View of Reading (SVR) which states that reading is a combination of two distinct components: decoding and linguistic comprehension (Hoover & Gough, 1990, p.128). Decoding consists of phonological awareness and orthographic knowledge (Silverman, Speece, & Harring, 2013, p.108). Linguistic comprehension refers to deriving interpretations of sentences, paragraphs, and/or whole texts based on the word-level meanings (Hoover & Gough, 1990, p.131). SVR posits that these are both necessary, but not sufficient on their own to account for reading. It implies that understanding of a text requires only knowledge of vocabulary and syntax. Thus, in this model, readers passively receive information from the text; 'meaning resides in the text itself, and the goal of the reader is to reproduce that meaning' (Dole, *et al*., 1991, p.240). If a reader is able to understand the words of the text and can parse the grammar of the text, then the text's meaning would be apparent. A way of seeing the text in this view is as a product in which 'priority is given to the text and parts of the text with varying attention paid to form alone or the relationship between form and meaning' (Wallace, 2001, p.21). Here, knowledge of vocabulary and knowledge of grammar is paramount to understanding what an author is trying to convey.

This view is often opposed by other theories of reading, due, in part, to the rejection of the simplistic relation it gives between linguistic elements and meaning, but also because of the notion that the reader is a passive recipient of meaning. Rather than seeing all meaning residing within the text, some theories posit that reading is a selective process involving taking cues from known language (knowledge of both vocabulary and grammar in the text) upon which the reader makes decisions about the meaning of the text. As Goodman states:

> ...reading is a psycholinguistic guessing game. It involves an interaction between thought and language. Efficient reading does not result from precise perception and identification of all elements, but from skill in

> selecting the fewest, most productive cues necessary to produce guesses which are right the first time (1967, p.127).

Meaning, in this view, has two primary sources. The first is that of the text itself. The words and the syntax create context from which the reader is able to draw meaning. This is not just a matter of the meaning being within the words and their grammatical structures; it is a matter of the whole being more than the sum of its parts. This approach views meaning as something that doesn't derive merely from the pieces of lexis and syntax of which it is composed. Rather, it is derived from the text holistically. The second source of meaning is from the reader '[who] has available to him and brings to his reading the sum total of his experience and his language and thought development' (Goodman, 1967, p.130). Not only is it knowledge of the language which the reader brings to the text, but it is also their specific background knowledge about the topic of the text and knowledge in general which they bring (Dole, *et al*., 1991, 240). This is often referred to as prior knowledge or schema. This view of reading sees it not as product like the traditional view, but as a process, and, as can be seen, places the reader and their cognitive processes in a much more central role within the reading process.

Although the prevailing thought of reading tends to view comprehension as something co-constructed by the reader as in the psycholinguistic model, roughly speaking, these different views contain within them important ways of conceptualizing reading comprehension: bottom-up processing and top-down processing. Due to the importance that they each have to reading strategies, they will be discussed here along with reading fluency. It should be noted, despite their obvious contrary wording, that top-down and bottom-up processing need not be in opposition to one another or that comprehension processing happens in one way or the other. Most theories of reading comprehension acknowledge both, but give varying degrees of weight to each one.

2.1.2 Bottom-Up Processing

Bottom-up processing generally refers to deriving meaning from the lexis and syntax of a text. Included under this category is decoding which is the process of converting 'letters (graphemes) to sounds (phonemes) and, essentially to language'

(Jeon & Yamashita, 2014, p.163). It includes vocabulary and grammar knowledge. A strong view of SVR would include grammar under linguistic comprehension, however, traditionally it has been included under bottom-up processing. What bottom-up processing says about language comprehension is that meaning starts from small units and builds up piece by piece. After all, to understand a sentence, the words in that sentence must be understood (or some of them will need to be understood). It has been estimated that readers must know 95-99% of a text's words to be able to comprehend it depending on the purpose of reading (Mehrpour & Rahimi, 2010, p.294).

2.1.3   Top-Down Processing

Top-down processing refers to the way that comprehension is gained 'from the overall message and text structure to lower-ranked units' (Moskovsky, Jiang, Libert, & Fagan, 2010, p.257). It includes using background information outside of a text to help better understand the meaning of the text, bridging gaps in comprehension by relating parts of the text to each other, and to use the way that the text is set up (i.e., expository text or tabloid article) to gather meaning. Much of this, especially activating prior knowledge, can be seen in Goodman's psycholinguistic model. Meaning is filtered down from a larger picture view of the text to the smaller units. Words are within a context and unless the context is understood, the meaning of the words may be elusive. It has been found that top-down processing assists L2 readers in their formation of localized text meaning, and that it increases their recall of a text's structure (Horiba, van den Broek, & Fletcher, 1993).

2.1.4   Fluency

Fluency has commonly been associated with decoding. However, it has been argued that it should be seen as something separate because it may provide a bridge between bottom-up and top-down processing. Decoding is just one of the three basic processes which take place during reading. The others are comprehension and giving attention to the text (Samuels, 2002, p.169). According to Samuels, the amount of attention which fluent readers give to the decoding

process becomes automatic, thereby freeing up attention that can be given to comprehension. Silverman, *et al.* (2013) equate this automatic process to fluency by defining fluency as 'automaticity: speed and accuracy of reading nonwords, words, and connected text' (p.111). Fluency plays a role in reading comprehension because it has been found that accelerating reading rates resulted in higher levels of reading comprehension (Breznitz & Share, 1992). This reinforces the theory that only limited attention is possible during the process so that the rate at which reading is carried out determines how well a text is understood. It has been posited that to be a fluent reader, parts of comprehension processing must be automatized (Gorsuch & Taguchi, 2010, p.32). In other words, whether it is word recognition, syntax knowledge, phonological knowledge, inter-sentential concept formation, one or some of these must be automatic during the reader process to increase fluency and consequently increase reading comprehension.

2.2   Defining Reading Strategies

Among experts in the field of learning strategies there is no single accepted definition (Cohen, 2007; Oxford, 2017).   An early definition by O'Malley and Chamot (1990) stated that learning strategies are 'the special thoughts or behaviours that individuals use to help them comprehend, learn, or retain new information' (p.1).   While this definition captures a sense of learning strategies, it is too vague to really be considered as a sufficient definition.   A more comprehensive definition as offered by Oxford is a synthesis of existing definitions which have been presented by various experts previously:

> L2 learning strategies are complex, dynamic thoughts and actions, selected and used by learners with some degree of consciousness in specific contexts in order to regulate multiple aspects of themselves (such as cognitive, emotional, and social) for the purpose of (a) accomplishing language tasks; (b) improving language performance or use; and/or (c) enhancing long-term proficiency. Strategies are mentally guided but may also have physical and therefore observable manifestations.   Learners often use strategies flexibly and creatively; combine them in various ways, such as strategy clusters or strategy chains; and orchestrate them to meet learning needs.   Strategies are teachable.   Learners in their contexts decide which strategies to use. Appropriateness of strategies depends on multiple personal and contextual factors (2017, p.48).

For many, this definition will seem to be convoluted, but it does encapsulate the most important characteristics of language learning strategies which are helpful for our purposes here.   For one, the definition points out that learning strategies are actively and purposefully employed by the learner.   There has been an important distinction made between strategies and skills.   Skill, for Oxford, refers to 'ability, expertness, or proficiency...[and] are gained incrementally during the language development process' (1990, p.6).   In other words, skill is something that is *possessed* by a language learner through practice and experience.   Strategies, on the hand, are actions that are *performed* by the language learner.   Further, they are performed consciously, at least to some extent, by the language learner, which means that the language learner is aware of when they are using them.   A second characteristic of learning strategies is that they help to accomplish a task or goal, whether short-term or over a longer period of time.   In addition, Oxford's definition recognizes learner and context variability, meaning that they are not to be seen as a one-size-fits-all solution.   Another important characteristic of learning strategies is

that they can be taught. This requires that they can be identified, as well as demonstrated on how and when to use them. The purpose of learning strategies for L2 learners is to 'help build learner autonomy, which requires the learner to take conscious control of his or her own learning' (Hsiao & Oxford, 2002, p.369).

When these characteristics are applied to reading strategies, we can abridge the definition to: Reading strategies are actions consciously performed for the purpose of achieving a particular reading task or goal, which can be used in various ways according to context and learner. It is important to note that these actions may take place prior to reading, during the reading process, or following a reading task as will be made apparent when discussing the particular strategies which pertain to reading.

2.2.1   Classification of Reading Strategies

Classification is another point of contention among experts in the field. There have been several frameworks created over the past few decades among which there are many similarities between the identified strategies. For the most part, the largest deviation between the frameworks is how the strategies are categorized. These differences are important because they presuppose the purpose and the cognitive process of the individual strategies themselves as well as theories about L2 learning (Hsiao & Oxford, 2002, p.368). It is not possible in the scope of the current study to summarize each of the frameworks, however, I will give a brief summary of those frameworks which are most important to this study. Two classifications that have been widely used and which overlap are the classifications provided by the Oxford framework (1990) and the O'Malley and Chamot framework (1990). Their categories are close in nature and so allow for a good starting point.

The O'Malley and Chamot framework [hereafter OMCF] uses three categories to classify the types of strategies in their framework: cognitive strategies, metacognitive strategies, and social/affective strategies. Cognitive strategies are those that 'operate directly on incoming information, manipulating it in ways that enhance learning (1990, p.44). Example of strategies in this category would include summarizing and repeating information (rereading). The next category is metacognitive strategies. These strategies are focused on the learner's interaction

with the text and include such strategies as monitoring and evaluating. In the context of reading, monitoring and evaluation would most commonly refer to the reader's comprehension of the text (1990, p.44); for instance, having awareness of when comprehension is breaking down (monitoring) and if their strategy use and reading performance are successful (evaluation). The final category is social/affective and relates to interactions with others in relation to the learning task (discussing a text with teacher/other students) or reflecting upon one's mental state in order to 'assure oneself that a learning activity will be successful or to reduce anxiety' (1990, p.46).

The Oxford framework [hereafter OXF] categorizes learning strategies differently than OMCF, although there are many similarities in the definitions of the strategies themselves. For one, OXF splits social/affective strategies into two separate categories thus implying different motivations and processes for each. It also adds two other categories: memory strategies and compensation strategies. Memory strategies refer to strategies that assist the learner in making associations in order to mentally store information over a longer period of time (1990, p.38-39) Strategies in this category would include semantic mapping and grouping items together. Compensation strategies are used to help the learner bridge knowledge gaps such as lack of vocabulary or inadequate understanding of grammar (1990, p.47). In reading tasks, learners who come across unknown vocabulary might use context clues to help them understand the words, or use the dictionary to find definitions.

Whereas both OMCF and OXF provide comparable categorizations of strategies, Mokhtari and Sheorey's framework (2002)[1] departs dramatically from their structures and is built upon different assumptions. First of all, it should be noted that their framework only includes reading strategies, specifically reading for academic purposes. Mokhtari and Sheorey's framework [hereafter SORS[2]], then, is not intended to be generalized to language skills other than reading, whereas the strategy types in OMCF and OXF are, for the most part, general enough in their description that they can be applied to all four of the language skills. The other difference with the SORS is that metacognition presupposes the use of reading strategies. Their framework is designed on the premises that meaning of a text is co-

---

[1] This framework was adapted to include ESL/EFL learners from the Metacognitive Awareness of Reading Strategies Inventory (MARSI) developed by Mokhtari and Reichard (2002).
[2] This is the abbreviation for their questionnaire, The Survey of Reading Strategies.

constructed by the contents of the text and the reader of the text, and that 'constructing meaning from a text is an intentional, deliberate, and purposeful act' (Mokhtari & Reichard, 2002, p.250). It follows from this that employing reading strategies requires intentional, deliberate, and purposeful acts based on the reader's awareness of their cognitive state of comprehension. This adheres to a description of learning strategies in that they are 'selected and used by learners with some degree of consciousness in specific contexts in order to regulate multiple aspects of themselves...for the purpose of accomplishing [reading] tasks' (Oxford, 2017, p.48). Metacognition, therefore, precedes reading strategies use, and, as such, encompasses the entirety of reading strategies. For SORS, all reading strategies are metacognitive reading strategies. Further, the classification of reading strategies includes only three categories: global, problem-solving, and support reading strategies. Global reading strategies are those that are 'intentional reading strategies aimed at setting the stage for the reading act (Mokhtari & Reichard, 2002, p.252). These include strategies such as having a purpose in mind when reading and activating prior knowledge which corresponds to OMCF and OXF's metacognitive categories; but also includes strategies such as skimming and using tables and figures to increase understanding which corresponds to OMCF and OXF's cognitive category. The next category is problem-solving reading strategies which are 'localized, focused problem-solving or repair strategies used when problems develop in understanding textual information' (Mokhtari & Reichard, 2002, p.252). Reading slowly and carefully, trying to get back on track when concentration is lost, and paying closer attention when the text becomes difficult are included in this category. The last category is support reading strategies which 'provide the support mechanisms aimed at sustaining responses to reading' (Mokhtari & Reichard, 2002, p.253). This category includes using reference materials such as a dictionary and discussing with others what has been read to check understanding.

It is clear from just these three frameworks that categorization of learning/reading strategies diverges dramatically. There are important shared characteristics between each of the various learning/reading strategies frameworks that have already been mentioned but are worth expanding upon. These include the notions of learner autonomy and metacognition.

2.2.2   Learner Autonomy

Autonomy in learning has been defined as an 'ability to take charge of one's own learning, to have, and to hold responsibility for all the decisions concerning all aspects of this learning' (Holec, 1981 cited in Khoshsima & Tiyar, 2015, p.65). Although it is questionable whether the totality of English language learning need be fully in the hands of EFL students for them to be considered autonomous, this definition certainly highlights an important aspect about the ongoing process of learner autonomy. It places in the center of the learning process the learner, and rather than evaluation and monitoring coming from a teacher, they are part of self-reflection by the learner in order for them to take greater control of their learning. Autonomy has been incorporated into the notion of language learning strategies and has been posited as being a result of learning strategies (Benson, 2007, p.28). In a study conducted with EFL participants, an investigation into the correlation between language learning strategies and autonomy was carried out (Khoshsima & Tiyar, 2015). The findings suggest that there is a link between the use of language learning strategies and building learner autonomy.

2.2.3   Metacognition

Metacognition is defined as being 'knowledge and cognition about cognitive phenomena (Flavell, 1979, p.906).   Knowledge about cognition (hereafter metacognitive knowledge) can be equated to awareness, and cognition about cognition (hereafter self-regulation) can roughly be equated to monitoring and evaluation respectively. Metacognitive knowledge itself is constituted of three components: declarative knowledge, procedural knowledge, and situational knowledge (Schraw, Crippen, & Hartley, 2006, p.114). Self-regulation refers to monitoring and evaluation of reading performance as well as planning. It has been posited that self-regulation can only come after metacognitive knowledge is achieved (Wenden, 1998, p.520).   Taken together, metacognitive knowledge and self-regulation are significant because they help the learner be more aware of the learning process and of themselves centrally located within that process, and assist the learner to understand when methods of learning are and are not effective and how to recalibrate to make it more effective. It is noticeable that metacognition plays an important part of learner autonomy as well. A learner must first be aware of their

own cognitive processes when in learning environments before they can take the action to better facilitate their learning which is necessary to develop autonomy. In a study conducted with 4,270 L1 participants, results showed that groups which were instructed to make judgments about their learning before a reading task and to reconsider that judgment following comprehension tasks, had significant mean gains on a reading and literature test compared to groups that did not receive this instruction (Allen & Hancock, 2008). These results were interpreted to be evidence that readers who are aware of their strengths and weaknesses in comprehension are better able to regulate their comprehension during reading and take appropriate action in order to increase comprehension than those who lack this metacognitive knowledge.

2.3   Reading Strategies Research

Some early publications on learning/reading strategies L2 readers sought to identify the strategies which language learners employ (Hosenfeld, 1979; Olshavsky, 1976; Rubin 1981) and provided the foundation for much of the subsequent research on L2 reading strategies. Olshavsky (1976) found that both good and poor readers used the same strategies, but good readers used them more often. The strategies used most by good readers were using context to guess meanings of unknown words, inserting additional information into a clause to better understand, rereading, and hypothesis-forming. Poor readers used inferencing and identifying personally with the text more than good readers.   Hosenfeld (1979) found that successful readers keep context in mind when reading, tries to guess meanings of words using context, translates in chunks rather than by single words, avoids glossary unless other strategies fail.   Unsuccessful readers lose meaning while decoding, translate in shorter chunks or single words, and give equal weight to each word. Rubin's (1981) work provided one of the early taxonomies of learning strategies which included the following categories: Clarification/verification, Monitoring, Memorization, Guessing/inductive inferencing, Deductive reasoning, Practice, Creates opportunities for practice, Production tricks (pp.124-126).

Following the research from Hosenfeld and Olshavsky, later research into learning strategies generally and reading strategies specifically focused on the differences of strategies use between varying levels of L2 proficiency levels. Block (1986) using Think-Aloud Protocols (TAP), found that the students who performed better at comprehension tasks 'integrated information, were aware of text structure..., and monitored their understanding consistently and effectively' (p.482). They also used context to guess meaning of words or passages. The group which performed poorly on comprehension tasks, on the other hand, reflected the reading through their personal experiences and in summarization tasks gave details rather than main ideas. In a study conducted by Carrell (1989), results showed that advanced ESL learners used more top-down strategies which focused on global meaning, whereas the lower proficiency group used bottom-up strategies to try to overcome reading difficulties. O'Malley and Chamot (1990) looked at learning strategies in general and found that more effective EFL students used more learning strategies than less effective EFL students, 'were more purposeful in their approach to a task, monitored their

comprehension and production for overall meaningfulness..., and effectively used their prior general knowledge as well as their linguistic knowledge while working on a task' (pp.140-141).

More recent studies have focused their research on the impacts of reading strategies instruction (Akkakoson & Setobol, 2009; Aghaie & Zhang, 2012; Dhieb-Henia, 2003), and identifying the frequency and types of reading strategies use employed by English language learners during the reading process (Nalliveettil, 2014; Park, 1997; Yang, 2016). In the study conducted by Akkakoson and Setabol (2009), reading strategies instruction was carried out with 207 Thai EFL engineering and science undergraduates over 15 weeks in which forty-four reading strategies were taught. It was found that there was significant increase in post-test scores for each group. The top five strategies used by the high-reading proficiency group after instruction were (1) adjusting reading rate according to text difficulty, (2) problem monitoring and evaluation, (3) comprehension monitoring, (4) going back to correct what was misunderstood, and (5) going back to read unknown words or incomprehensible parts. The top five strategies used for the lower-reading proficiency group after instruction were (1) adjusting reading rate according to the text's difficulty, (2) resourcing (e.g., using dictionaries), (3) comprehension monitoring, (4) paying close attention to difficult words or segments, and (5) problem monitoring and evaluation. It was concluded that reading strategies instruction is an effective method of teaching EFL readers compared to the traditional Thai teaching model which is 'solely based on the bottom-up model as it seems to be commonsensible [to Thai teachers] that comprehension hierarchically processes from the alphabets to the words and on to decoding sentences and paragraphs' (Akkakoson & Setabol, 2009, p.331). Two interesting findings of the study were that there was not an increase in the participants reported reading strategies use after the reading strategies instruction, and the overall highest frequency of reading strategies reported after instruction were strategies used for bottom-up processing.

Dhieb-Henia (2003) carried out a study in which reading strategies instruction was given to an experimental group of 35 participants over ten weeks, while 27 other participants did not receive any reading strategies instruction during that same time. The participants were EFL undergraduate biology students at two universities in Tunisia. The reading strategies instruction consisted of 'heightening

the students' awareness of the research article as the main means of communication among biologists' (Dhieb-Henia, 2003, p.395) and reading strategies to help deal with reading research articles. It was found that there was a significant increase in post-test scores for the experimental group, while there was no significant difference between the pre- and post-test scores for the control group. Retrospective interviews found that there was a significant difference in the participants' comments about lack of time before and after the instruction phase (30 declarative statements about insufficient time pre-instruction and no statement about insufficient time post-instruction). There was an increase in top-down processing used post-instruction, but no specific reading strategies were explicitly stated by the author. It was concluded that reading strategies instruction had a positive impact on students' performance of reading research articles and it may be an effective teaching method compared to the traditional approach which uses reading texts 'primarily for extra vocabulary and grammar practice' (2003, p.395).

Aghaie and Zhang (2012) studied the impact of reading strategies instruction on a treatment group using O'Malley and Chamot's Cognitive Academic Language Learning Approach (1996), while it is assumed that the contrast did not receive any reading strategies instruction. The 80 participants were EFL students in Iran. The reading strategies instruction consisted of cognitive and metacognitive reading strategies from the CALLA framework. It was found that there was a significant increase in post-test scores for the treatment group. Results for the contrast group were not given. Questionnaires showed that the treatment group used more reading strategies than the contrast group with the most significant differences in the following strategies: (1) I decide in advance to look at the text to see its layout, illustration; (2) I decide in advance what my reading purpose is; (3) I examine how well the text is understood; (4) While I read I check whether the material is making sense to me; and (5) I pay attention to meaning rather than form. The TAPs found that the treatment group transferred metacognitive reading strategies from L2 reading (English) to L1 reading (Persian). The contrast group, on the other hand, tended to transfer cognitive reading strategies to L1 reading from L2 reading. It was concluded that there was a strong association between reading strategies instruction and reading comprehension improvement and that students should be explicitly taught reading strategies in language classrooms.

In Park (1997), 332 undergraduates enrolled in English language classes at two Korean universities volunteered to participate. The Strategy Inventory for Language Learning (SILL) developed by Oxford (1990) and a questionnaire enquiring about background information on the participants were administered. Descriptive statistics showed that students who scored higher on the practice test used significantly more learning strategies than students who scored low on the practice test. It was found that only cognitive and social strategies were a predictor of English language scores. It was concluded that there was a 'significant, linear relationship between language learning and the TOEFL scores, that all six categories of language learning strategies were correlated with the TOEFL scores, and that cognitive and social strategies were more predictive of the TOEFL scores than the other four strategy categories' (Park, 1997, p.218). No specific reading strategies were identified in this study.

In a study by Yang (2016), 40 non-English major first year postgraduates from an engineering college in China participated. Descriptive statistics showed that (1) overall reading strategies use was medium and that cognitive strategies were used more than metacognitive strategies; (2) the most frequently used metacognitive strategy was self-consciousness which is described as knowing the importance of improving reading proficiency; (3) the most frequently used cognitive strategies are prediction of the content of the text and scanning the text; and (4) that successful learner use reading strategies more than unsuccessful learners. It was concluded that reading strategies should become a part of teaching practice in order to 'help students to develop good habits [sic] of using these strategies consciously during reading' (Yang, 2016, p.209).

In Nalliveettil's study (2014), 52 first year undergraduate engineering students from eleven engineering colleges across India participated. Methods of data collection were qualitative and included verbally answering comprehension questions about a semi-technical text from an information technology journal and using TAPs. Qualitative analysis of the TAP transcripts showed that (1) successful and partly successful readers were able to get the meaning of difficult sentences after rereading without having to know each word; (2) successful readers were able to use textual features to assist with meaning when comprehension broke down; (3) successful readers 'identified new English words by associating its sounds with a cluster of letter which led to more rapid and efficient word identification'

(Nalliveettil, 2014, p.47); (4) successful readers used background information to help grasp meaning of the text; and (5) partly successful and unsuccessful readers did not use cognitive skills frequently and they placed equal emphasis on each word. It was concluded that English teachers should incorporate more reading strategy training in class to help students develop their reading skills.

These studies provide an indication of what one might expect when viewing other research on reading strategies. Hypotheses from the given background research here are (1) reading strategies instruction seems to be effective in increasing reading comprehension; (2) there is a link between the frequency of reading strategies use and proficiency level; (3) high proficiency readers use different reading strategies than low proficiency readers.

Section 3: Methodology

3.1 Rationale for Methodology

In order to answer the three research questions regarding the effectiveness of reading strategies, the correlation between frequency of reading strategies use and proficiency level, and the most effective reading strategies, a mixed methods research synthesis (MMRS) was used. MMRS is best defined as 'a synthesis in which researchers combine qualitative, quantitative, and mixed methods studies, and apply a mixed methods approach in order to integrate those studies, for the broad purpose of breadth and depth of understanding and corroboration' (Heyvaert, Maes, & Onghena, 2013, p.662). MMRS is a recent type of systematic literature review (Heyvaert, *et* al., 2013; Sandelowski, Voils, & Barroso, 2006; Sandelowski, Voils, Leeman, and Crandell, 2012), which allows for the integration of varying research methods from primary studies to be used and treated with equal or varying degrees of dominant status (Heyvaert, *et al.*, 2013).

The choice of MMRS as the research method for the current study is based on several contributing factors. First of all, to start at the primary study level, the paradigmatic views of both qualitative and quantitative research insist on particular and opposing ways of treating knowledge. The quantitative, or positivist view, treats knowledge as something objective and independent of perception, while the qualitative, or constructivist view, treats knowledge as subjective and intrinsically linked to perception[3] (Arthur, Waring, Coe, & Hedges, 2012, p.7). Shifting this to the systematic literature review level, meta-analysis pools data from quantitative studies and 'establish whether scientific findings are consistent and can be generalized across populations and treatment variations and whether findings vary between subgroups' (Cleophas & Zwinderman, 2007, p.2870). However, even though meta-analyses intend to limit bias, according to Cleophas and Zwinderman, they are sensitive and vulnerable to issues such as publication bias in which only partial results are published and/or heterogeneity of variables between studies (2007, p.2872). On the other side of the spectrum, meta-synthesis brings together

---

[3] Note: I am using two very opposing views of paradigms to illustrate the point here. There are other examples that may not be so diametrically opposed, but an in-depth discussion of these would not serve the purpose of describing MMRS nor the overall aim of the study.

qualitative studies which have been selected based on the relevance of a particular research question which the synthesist aims to explore (Zimmer, 2004, p.312). Unlike a meta-analysis which pools, compares, and contrasts data, meta-synthesis provides a new interpretation of the data while 'preserving the integrity of the meaning of included studies...[but where] the synthesized data are beyond those provided by primary qualitative studies' (Mohammed, Moles & Chen, 2016, p.696). But due to the nature of interpretative research, meta-syntheses have been criticized for aggregating data 'in a kind of averaging process' (Walsh & Downe, 2005, p.209). MMRS, unlike either meta-analysis or meta-synthesis, is able to reconcile both aggregation and interpretation because it accepts that 'methodologically diverse primary studies may yield thematically similar findings' (Sandelowski, *et al*., 2012, p.322), and, therefore, 'neither logic [for aggregation or configuration (quantitative or qualitative methods)] is better or stronger than or preferable to the other but rather more or less allowable by the nature of the findings in the body of the literature under review' (2012, p.322). In other words, both methods can reveal knowledge, so to exclude one for the other is to limit the possibilities of what may be gained from each.

A second reason why MMRS was chosen to carry out the current study is that it allows for more studies to be included and for analyses to vary according to the studies being synthesized. Because much of the data needed to complete a meta-analysis is missing from the primary studies, choosing that method would have yielded few studies from which to merge data and to analyse by quantitative methods. Moreover, by including results from studies that used both quantitative and qualitative methods of data collection and analysis, a triangulation of data may yield more valid results.

Another factor for using MMRS is that many of the studies have both a quantitative and a qualitative research design, using a combination of questionnaires, reading comprehension tests, TAPs, and semi-structured interviews. Data from mixed methods research is more easily justified under MMRS without the need to reconcile data types or convert quantitative to qualitative data and vice versa. Finally, the studies that are being used in the current synthesis have both implications for generalizability as well as being context specific. MMRS allows the opportunity to examine each of these aspects with equal status.

3.2   Research Design

The design of my research is A – QUAL + QUAN which means that I have included all qualitative and quantitative data in each stage of the current research, both qualitative and quantitative approaches have been conducted concurrently, and that each approach is given equal dominance in status (Heyvaert, *et al.*, 2013, p. 666). The framework used for the mixed methods research synthesis in this study was developed by Heyvaert, *et al.* (2013), and consists of the following steps:

1. Identify the problem (Section 1)
2. Develop a review protocol and literature search (Section 3.3)
3. Select an appropriate research design and provide a rationale for its implementation (see above)
4. Independent extraction of articles by two reviewers (not within the guidelines of current research);
5. Quantitative and qualitative data analysis conducted (Section 4.1)
6. Describe methods and results (Section 4.1 and 5.1)
    (p.667)

3.3   Literature and Database Search

To find the studies to synthesize, the Educational Resources Information Center (ERIC) sponsored by the U.S. Department of Education was used as the only database. Its aim is 'to provide broad access to education research in a user-friendly, timely, and efficient manner' (ERIC, 2016). The database was selected because it had yielded more results based on initial searches than did the Australian Education Index and the British Education Index. Ease of navigation and searches, information provided on each source in the search results, and the importance of having research which was as current as possible were also factors in choosing the ERIC database. Key word searches were undertaken over a period of two months (February 8th to April 10th, 2017) and included a combination of the following terms: reading strategies, college students, higher education, English as a foreign language, foreign countries, reading comprehension, learning strategies. Only peer reviewed research was included in the database search.

Of the initial search results, the studies which were selected for the next stage required certain key elements to be present. Because the current study is interested in the effectiveness of reading strategies, there needed to be a way of measuring their effectiveness.   To this end, studies which contrasted at least two levels of participants' reading comprehension were chosen. Preference was given to studies that contrasted high and low proficiency readers, but also included interventionist studies which contrasted experimental and control groups, and/or pre- and post-test scores of participants in interventionist studies.   Only studies in which the participants were above secondary/high school levels of education were included. The reason for this is that studies have shown that there is a difference in the use of strategies depending on age and education level (Ghafournia, 2014; Yang, 2016) and combining studies which used younger learners or older learners would have added too many variables which could impact reliability of the results.   Another requirement for selection was that English should be seen as a foreign language. English as a foreign language (EFL) refers to contexts in which English is neither the first language nor a language which is widely used. EFL students, therefore, have limited access to using English outside of the classroom (Carter & Nunan, 2001, p.2). A further exclusion was made by omitting studies which focused on digital reading. Although digital reading trends have shown a significant increase over the last decade which are sure to continue (Singer & Alexander, 2017, p.155), the evidence on whether differences exist between print and digital reading mediums for reading comprehension is mixed (Singer & Alexander, 2017; Sun, Shieh, and Huang, 2013). It was therefore decided to exclude digital reading because of the possibility of it being an unknown variable which skew the results.

The next stage of selection included sorting the studies into two different types: interventionist studies and all other studies which included data about frequency use, comprehension level, and the strategies used by each group. Interventionist studies would be used to explore whether reading strategies are indeed effective. The other studies would be used to explore frequency comparisons between high and low proficiency readers as well as the most effective reading strategies. Due to the issue raised in Section 2.2.1 on categorizing reading strategies, and because of the aim of the current study, research which focused or reported only on the category level of reading strategies (e.g., global, cognitive, etc...) were excluded for being too general and research which focused or reported on only one

or two reading strategies (e.g., activating prior knowledge, skimming, etc...) were excluded for being too specific. The final studies to be included in the current synthesis amounted to thirteen, four of which were interventionist studies and nine of which were studies which reported on frequency use of strategies and which strategies were used by each proficiency group.

3.4   Data Analysis

For interventionist studies which included an experimental and a control group, data was analysed by comparing the mean scores of the pre- and post-test reading comprehension tests for each group. A further level of analysis was provided for the pre- and post-test reading comprehension test scores for the experimental groups by finding their effect sizes, statistical significance, and correlation. Although statistical significance provides a measure as to the increase or decrease in scores, 'an effect size refers to the magnitude of an effect' (Aarts, van den Akker, & Winkens, 2014, p.62) and it provides a more accurate figure by including the sample size in its calculations. To calculate the effect sizes of the increase from pre- to post-test scores, I used Cohen's d on each study since the sample sizes were the same. A further calculation to determine correlation (r) was used. This method of data analysis is common in quantitative primary studies and meta-analysis and is keeping within the framework proposed by Heyvaert, *et al.* (2013).

In order to analyze the studies which reported on frequency of reading strategies use and the individual reading strategies used by proficiency level, it was required to homogenize the variables as much as possible without jeopardizing the meaning from the primary studies. To do this, it was important to use common terms when referring to the participant groups being compared in the studies. As such, High Proficiency Readers (HPR), Low Proficiency Readers (LPR), and Mid Proficiency Readers (MPR) have been adopted to include the terms used for readers in the studies: good, poor, medium, higher-level, lower-level, successful, unsuccessful, etc...). A problem was presented by the fact that there were several reading strategies frameworks used in the studies. To overcome this obstacle, it was decided to refrain from using any categorization and to focus on the reading

strategies individually, a level in which there appears to be much common ground between the various taxonomies. Because much of the terminology differed between reading strategies frameworks, whenever there was more than a single term for a strategy, the term that best described the strategy was used. Once these variables were consistent across the studies, it allowed for data to be extracted and compared. Much of the data derived from quantitative methods such as questionnaires, but full results were not published for each study. Unfortunately, this meant that it was not possible to calculate effect size or correlation when answering the second and third research question. Therefore, data has been analyzed by comparing overall results of frequency between HPR and LPR groups, and the different strategies used by each group. As no statistical calculation has been carried out and does not take into account the sample size of each study, the results shown should be viewed as a form of coded data by theme.

The results of the data for all three research questions are further explored in the discussion section by investigating the context of the studies either individually or as a group. This level of analysis will include exploring the methodology of data collection, cultural context, analysis of the qualitative data (i.e., from interviews and TAPs), and looking at other research and theories which may provide alternative or fuller explanations of the combined results of the studies. This satisfies the condition the framework of Heyvaert, *et al*. (2013) that analysis should use quantitative as well as qualitative analyses. A summary for each study has been provided in Appendix 1.

Section 4: Results

4.1 – Impact of Reading Strategies Instruction on Reading Comprehension

The first part of the analysis of the current study was to investigate the impact of reading strategies on reading comprehension in order to answer the first research question: *Are reading strategies effective in increasing reading comprehension for higher education EFL students?* For this part of the analysis, four studies were identified which provided a measure of reading comprehension before and after reading strategies instruction was carried out with the participants. Of these studies, three of them compared the reading comprehension test results of experimental groups (EG) which received reading strategies instruction to the reading comprehension test results of control groups (CG) which did not receive reading strategies instruction. The other study used only one group of students which received reading strategies instruction and compared the results of the reading comprehension tests between high proficiency, mid-proficiency, and low proficiency readers.

Table 1. Comparison of Pre-Test and Post-Test RCT Scores for All Groups

Study	Akkakoson (2013)		Al-Ghazo (2016)		Habibian (2015)		Wichadee (2011)		
Participants	164		60		48		40		
Location	Thailand		Jordan		Malaysia		Thailand		
Comparison	CG & EG; HPR, MPR, LPR (EG).		CG & EG		CG & EG		HPR, MPR, LPR		
Pre-Test Mean Score	EG 30.11	CG 29.02	EG 38.15	CG 37.59	EG 10.27	CG 9.66	HPR 19.58	MPR 13.93	LPR 8.77
Post-Test Mean Score	EG: 33.04	CG: 27.55	EG 54.66	CG 41.45	EG 14.02	CG 9.42	HPR 23.42	MPR 18.13	LPR 13.54

The results of the studies in which both an experimental and a control group were compared, show that the experimental group outperformed the control group in the post-test reading comprehension test. Further, the post-test reading comprehension test scores of the groups which received reading strategies instruction show increased test performance in comparison to the pre-test reading comprehension test scores, whereas the control groups in each of the studies had either only a slight increase in their post-test scores compared to the pre-test (Al-

Ghazo, 2016) or actually had a decrease in their post-test reading comprehension test scores (Akkakoson, 2013; Habibian, 2015).

All of the studies, including Wichadee (2011), show that overall reading comprehension test scores increased on the post-tests for the groups which had received reading strategies instruction. Wichadee (2011) found that each proficiency level had an increase in their post-test reading comprehension test scores. Comparing the scores from the pre-test and the post-test using the mean, pooled standard deviation, and the number of participants (see Table 2 below), the effect size was calculated. Using the interpretations for pre- and post-tests recommended by Plonsky and Oswald (2014), who criticized the Cohen scale because it 'underestimates the range of effects typically obtained in L2 research' (2014, p.889), the effect size suggests that the magnitude of reading strategies instruction on reading comprehension test scores was small in three of the studies (Akkakoson, 2013; Habibian, 2015; Wichadee, 2011), but in Al-Ghazo the magnitude of reading strategies was large.

Table 2. Comparison of Pre-Test and Post-Test RCT Scores for EGs Using Cohen's *d* and Correlation Coefficient *r*[4]

Study	*n*	Test	Mean	S.D.	Pooled S.D.	*d*	*r*
Akkakoson (2013)	82	Pre-Test	30.11	7.12	8.32	0.352	0.1
		Post-Test	33.04	9.37			
Al-Ghazo (2016)	30	Pre-Test	38.15	3.94	3.82	4.32	0.9
		Post-Test	54.66	3.70			
Habibian (2015)	24	Pre-Test	10.27	3.66	3.57	1.05	0.4
		Post-Test	14.02	3.47			
Wichadee (2011)	40	Pre-Test	13.95	4.74	4.68	0.913	0.4
		Post-Test	18.22	4.61			

Another calculation for the correlation coefficient was carried out. Using the recommendation by Plonsky and Oswald (2014) again for the interpretation of the correlation coefficient between reading strategies instruction and increase in post-test reading comprehension test scores, findings suggest that there is a small correlation in Akkakoson (2013), a medium correlation in Habibian (2015) and Wichadee (2011), and a large correlation in Al-Ghazo (2016). These results seem to indicate that overall reading strategies instruction has an impact on reading comprehension test scores. Generalized further, one may conclude that the use of reading strategies

---

[4] Note: Effect size and correlation coefficient were calculated using Wilson, D.B., https://www.campbellcollaboration.org/escalc/html/EffectSizeCalculator-Home.php

affects reading comprehension. However, taking effect size into consideration, the outcome is mostly minimal. In answer to the first research question, then, the results indicate that reading strategies may have a slightly positive impact on reading comprehension.

3.2 – Comparison of Reading Strategy Frequency Use by Proficiency Level

The second level of analysis of the current study was to ascertain if there is a relationship between frequency of reading strategies use and reading proficiency level. The purpose of this section is to answer the second research question: *Does the frequency use of reading strategies correlate to reading comprehension level for higher education EFL students?* These results are collated on Table 3 which shows the name of the study, the number of participants, the groups which are being compared in the study, and the comparison of reading strategy frequency use

Table 3. Comparison of Reading Strategies (RS) Frequency Use and Reading Proficiency Levels

Study	*n*	Comparison	Data Collection Method	RS Frequency Use
Akkakoson (2013)	164	CG & EG; HPR, MPR, LPR (EG).	Pre-instruction questionnaire	HPR > LPR (EG)
Chen & Intaraprasert (2014)	926	HPR & LPR	Questionnaire	HPR > LPR
Endley (2016)	12	HPR & LPR	TAP	HPR < LPR
Fotavian & Shokrpour (2007)	31	HPR & LPR	Questionnaire	HPR > LPR
Karimi & Shabani (2013)	30	HPR & LPR	Questionnaire	HPR > LPR
Madhumathi & Ghosh (2012)	52	HPR, MPR, LPR	Questionnaire	HPR > MPR > LPR
Malcolm (2009)	160	HPR & LPR; Y1 & Y4[5]	Questionnaire	HPR < LPR for Y1 & Y4
Wichadee (2011)	40	HPR, MPR, LPR	Pre- & Post-instruction questionnaire	HPR < MPR & LPR (pre-RS Instruction & post-RS Instruction); All used RS more post-RS Training

[5] In addition to comparing high proficiency and low proficiency English readers, Malcolm (2009) also compares the reading strategies frequency use between year one and year four students.

between the groups. Only the studies which explicitly report on frequency use for proficiency groups have been used as data.

Results of the studies show that HPRs reported a higher frequency of reading strategies use than LPRs and/or MPRs in five of the studies (Akkakoson, 2013; Chen & Intarapresert, 2014; Fotavian & Shokrpour, 2007; Karimi & Shabani, 2013; Madhumathi & Ghosh, 2012). In three of the studies (Endley, 2016; Malcolm, 2009; Wichadee, 2011), results showed that HPRs reported using reading strategies less frequently than LPRs and/or MPRs.[6] These mixed results indicate that the frequency of reading strategies use is not an accurate indicator of reading proficiency level or that reading proficiency level is an indicator of the frequency of reading strategies use. Therefore, in answer to the second research question, frequency use of reading strategies does not necessarily correlate to reading comprehension level.

4.3 Most Frequently Used Reading Strategies by Proficiency Level

The third part of the analysis of the data was to identify the reading strategies used by HPRs and LPRs. The purpose of this section is to provide an answer to the main research question: *Are there differences in the types of reading strategies used by HPRs and LPRs, and if so, do the differences provide insights into what may be the most effective reading strategies?* None of the interventionist studies analyzed in Section 4.1 provided a description of reading strategies use according to proficiency level. It is assumed that the participants in the experimental groups likely used the taught reading strategies more overall in comparison with the control group. However, it is not reliably possibly to infer ranking of reading strategies use from the data given in the studies. Therefore, they have been excluded in this section of the analysis. For a list of the reading strategies taught in those studies, see Appendix 1 for each study. Table 4 shows the most frequently used and/or reported use of reading strategies by HPRs. In addition to showing which studies identified the reading strategies as the highest frequency by HPRs, the framework upon which the categorization of the reading strategies is based has been included.

---

[6] In Endley (2016), this result was observed via coding from think-aloud protocols performed by the participants.

Table 4. Most Frequently Used and/or Reported Reading Strategies by HPRs[7]

Strategy	Study[8]	Framework
Rereading	Endley (2016)	SORS
	Fotavian & Shokrpour (2007)	OMCF
	Lai *et al*. (2013)	Carrell
	Madhumathi & Ghosh (2012)	SORS
Using context clues for word or sentence meaning	Chen & Itaraprasert (2014)	SQBER
	Karimi & Shabani (2013)	SORS
	Lai *et al*. (2013)	Carrell
	Zhang (2016)	Flavell
Activating prior knowledge	Karimi & Shabani (2013)	MARSI
	Lai *et al*. (2013)	Carrell
	Zhang (2016)	Flavell
	Fotavian & Shokrpour (2007)	OMCF
Underlining/Circling/ Highlighting	Endley (2016)	SORS
	Karimi & Shabani (2013)	MARSI
	Malcolm (2009)	SORS
Adjusting reading rate according to difficulty	Chen & Itaraprasert (2014)	SQBER
	Malcolm (2009)	SORS
Trying to stay focused	Karimi & Shabani (2013)	MARSI
	Malcolm (2009)	SORS
Note-taking	Fotavian & Shokrpour (2007)	OMCF
	Karimi & Shabani (2013)	SORS
Paying close attention according to difficulty	Endley (2016)	SORS
	Malcolm (2009)	SORS
Using extralinguistic clues (length, difficulty, organization)	Karimi & Shabani (2013)	MARSI
	Lai *et al*. (2013)	Carrell
Paying attention to key words in text	Chen & Itaraprasert (2014)	SQBER
Reading the questions about the text	Chen & Itaraprasert (2014)	SQBER
Fast reading first and peruse later.	Chen & Itaraprasert (2014)	SQBER
Reading slowly and carefully	Endley (2016)	SORS
Paraphrasing	Endley (2016)	SORS
Directing attention	Fotavian & Shokrpour (2007)	OMCF
Recognizing text structure	Fotavian & Shokrpour (2007)	Block
Relating information in different parts of the text	Karimi & Shabani (2013)	MARSI
Summarizing	Karimi & Shabani (2013)	MARSI
Reading aloud	Karimi & Shabani (2013)	MARSI
Self-questioning about text	Karimi & Shabani (2013)	MARSI
Monitoring for comprehension	Lai *et al*. (2013)	Carrell
Reading further for clarification	Lai *et al*. (2013)	Carrell
Visualizing information	Malcolm (2009)	SORS
Using text features (e.g. tables)	Malcolm (2009)	SORS
Using reference materials	Zhang (2016)	Flavell

[7] Note: Some of the phrasing of the strategies have been amended in an attempt to combine several frameworks. To view these amendments, see Appendix 1 at the end of each summary where I have given the reading strategies which were included in each study. All amendments have the replacement term next to the strategy in brackets underlined and boldfaced (e.g., Appendix 1, Lai, Li & Amster (2013): 13. Translating words, phrases into Chinese [**Translating**].
[8] Results for HPR not given in Meniado (2016).

Results show that among these studies, the most commonly used reading strategies by HPRs are *Rereading*, *Using context clues for word or sentence meaning*, *Underlining/Circling*, and *Activating prior knowledge*. Three other strategies occurred in more than one study as used and/or reported by high proficiency readers: *Adjusting reading rate according to difficulty*, *Paying close attention according to difficulty*, and *Note-taking*. These reading strategies are a combination of top-down support strategies which involve a reader's direct engagement with the text (e.g., using context to bridge vocabulary knowledge gaps, underlining, circling, and taking notes on important information in the text), as well as self-monitoring strategies to assess comprehension of the text (e.g., rereading and changing pace of reading depending on the difficulty of the text).

For LPRs, the results of these studies show they most commonly used the reading strategies *Rereading*, *Using reference materials (e.g., dictionaries)*, *Translating*, *Paying close attention according to difficulty*, and *Focusing on understanding each word* (see Table 5). The majority of these reading strategies are bottom-up processes in which the attention of the reader is focused on the meaning of individual words or sentences within the text.

Table 5. Most Frequently Used and/or Reported Reading Strategies by LPRs[9]

Strategy	Study	Framework
Rereading	Chen & Itaraprasert (2014)	SQBER
	Endley (2016)	SORS
	Fotavian & Shokrpour (2007)	OMCF
	Madhumathi & Ghosh (2012)	SORS
	Malcolm (2009)	SORS
Translating	Fotavian & Shokrpour (2007)	OMCF
	Lai *et al*. (2013)	Carell
	Malcolm (2009)	SORS
	Meniado (2016)	SORS
Using reference materials (e.g. dictionaries)	Chen & Itaraprasert (2014)	SQBER
	Fotavian & Shokrpour (2007)	OMCF
	Lai *et al*. (2013)	Carell
	Zhang (2010)	Flavell
Paying close attention according to difficulty	Endley (2016)	SORS
	Madhumathi & Ghosh (2012)	SORS
	Malcolm (2009)	SORS
Focusing on understanding the meaning of each word	Lai *et al*. (2013)	Carell
	Zhang (2010)	Flavell
Trying to stay focused	Malcolm (2009)	SORS
	Meniado (2016)	SORS
Reading slowly and carefully	Endley (2016)	SORS
	Malcolm (2009)	SORS
Using Context Clues	Chen & Itaraprasert (2014)	SQBER
Paying attention to key words	Chen & Itaraprasert (2014)	SQBER
Reading or checking the new word list	Chen & Itaraprasert (2014)	SQBER
Underlining/Circling/Highlighting	Endley (2016)	SORS
Paraphrasing	Endley (2016)	SORS
Questioning for clarification	Fotavian & Shokrpour (2007)	OMCF
Simplifying	Fotavian & Shokrpour (2007)	OMCF
Analyzing unknown words using affixes	Lai *et al*. (2013)	Carell
Using text features (e.g. tables)	Malcolm (2009)	SORS
Activating prior knowledge	Meniado (2016)	SORS

However, results of the reading strategies based on the frequency in which they are identified in the studies considered should be treated with caution. Out of the nine studies referenced here, there are five frameworks being utilized. Each framework presupposes a central theory about reading strategies as discussed previously. As such, these studies will include some strategies which are not

[9] Results for LPR not given in Karimi & Shabani (2013).

included in other studies, and exclude strategies which have been included in others. Therefore, to provide a more valid synthesis of the results of the studies, it is also important to compare and contrast the highest reported and/or used reading strategies of the two groups of readers. Table 6 shows the reading strategies which are used and/or reported as the highest frequency by both HPRs and LPRs. The results show a combination of bottom-up processing (e.g., key word focus, using dictionaries), cognitive strategies, metacognitive strategies, support, and problem-solving strategies. However, there is no clear trend which can be deduced from this data.

Table 6. Most Frequently Used and/or Reported Reading Strategies by HPR & LPRs

Reading Strategies Used by HPR and LPR	
Using text features (e.g. tables)	Paraphrasing
Using reference materials	Underlining/Circling/ Highlighting
Using context clues for word or sentence meaning	Rereading
Paying attention to key words in the text	Activating prior knowledge
Paying close attention according to difficulty	Trying to stay focused
Reading slowly and carefully	

When the results of the highest frequency reading strategies for HPRs only are viewed alongside of the highest frequency reading strategies for LPRs only, however, there is a stark contrast between the types of reading strategies employed by each. The HPRs (Table 7, left column) show strategies which involve awareness about the reader's comprehension performance, metacognitive awareness of attention during the reading process, using top-down processing to ascertain meaning and overcome knowledge gaps, and engage more critically with the text thereby being more participatory in the co-construction of meaning. LPRs (Table 7, right column), on the other hand, show a much greater reliance on strategies which are focused on the linguistic level of a text. Of the six strategies that were identified for LPR in the studies, only two of them relate to higher-order linguistic processing: simplifying and paraphrasing.

It would appear, then, that HPRs have a tendency to use more metacognitive reading strategies and reading strategies that involve top-down processing than LPRs. On the other hand, LPRs appear to be reliant on reading strategies which focus on bottom-up processing. It cannot be concluded with any certainty that any of the strategies identified here are more effective than others. In regards to the main research question of the current study, while the data points to a definite difference

in the reading strategies used by HPRs and LPRs, it is unclear which reading strategies are the most effective reading strategies.

Table 7. Comparison of the Most Used Reading Strategies for HPR & LPR

Reading Strategies Used Only by HPRs	Reading Strategies Used Only By LPRs
Adjusting reading rate according to difficulty	Reading or checking the new word list
Using extralinguistic clues (length, difficulty, organization)	Focusing on understanding the meaning of each word
Fast reading first and peruse later.	Analyzing unknown words using affixes
Elaborating	Translating
Note-taking	Simplifying
Directing attention	Questioning for clarification
Recognizing text structure	
Relating information in different parts of the text	
Reading the questions about the text	
Trying to get back on track when concentration lost	
Summarizing	
Reading aloud	
Self-questioning about text	
Monitoring for comprehension	
Reading further for clarification	
Visualizing information	

Section 5: Discussion

With respect to the first research question on whether reading strategies have an impact on reading comprehension, the experimental and quasi-experimental studies showed that the magnitude was small between the pre-tests and post-tests of the participants that received reading strategies instruction in three of the cases (Akkakoson, 2013; Habibian, 2015; Wichadee, 2011), while it was large in only one (Al-Ghazo, 2016). The instructional phases for the studies ranged from 10-16 weeks of reading strategies instruction. Each instructional phase included information on what the strategies are (declarative knowledge), in which situations each strategy is best used (situational knowledge), and how to use each strategy (procedural knowledge). Although each study used different frameworks for reading strategies instruction, and included varying strategies as part of the content of instruction, the post-test performance of each group improved. These findings are consistent with other studies which have researched the impact of reading strategies instruction on EFL students' reading comprehension (Aghaie & Zhang, 2012; Akkakoson & Setobol, 2009; Cubukcu, 2008; Dhieb-Henia, 2003; Rasekh & Ranjbary, 2003; Razi & Cubukcu, 2014; Whankhom, Phusawisot, & Sayankena, 2016). Further, for the studies in which participants were part of either a CG or EG (Akkakoson, 2013; Al-Ghazo, 2016; Habibian, 2015), there was an even greater significance between the two groups' post-test reading comprehension scores. One explanation of these findings could be that the use of reading strategies assists the reader's comprehension of the text. Thus, EGs who were explicitly taught reading strategies, and thereby gained the declarative, situational, and procedural knowledge of them, were able to apply the reading strategies to increase their reading comprehension performance. Indeed, as Habibian found by conducting semi-structured interviews after the post-test with the EG, all but one participant agreed that 'learning and practicing metacognitive strategies can enhance their reading ability' (2008, p.67).

Although the evidence from the experimental and quasi-experimental studies does suggest that reading strategies are effective in increasing reading comprehension, there may be other possibilities for the higher post-test scores of the groups that received reading strategies instruction. First of all, it should be noted that in the experimental studies, only one of the studies showed an increase in the

post-test scores for CGs which did not receive reading strategies instruction (Al-Ghazo, 2016). The other studies (Akkakoson, 2013; Habibian, 2015), both showed a decrease in post-test comprehension scores for CGs. Further, in similar studies, the CGs' post-test scores increased but not significantly (Cubukcu, 2008; Dhieb-Henia, 2003; Razi & Cubukcu, 2014). It would be expected in the studies where the CG was receiving English language instruction that there would be an improvement in post-test reading comprehension scores which Razi and Cubukcu term 'the learning effect' (2014, p.292) since the participants would have been taking classes to build on their knowledge of using English language.[10] However, this was not the case and it raises questions as to why.

One area in particular may explain the lack of improvement on the CGs' post-test comprehension scores: teaching methodology. In each of the three countries where the primary studies took place – Thailand (Akkakoson, 2013), Jordan, (Al-Ghazo, 2016), and Malaysia (Habibian, 2015) – educational reforms have been implemented on a national basis emphasizing a more learner-centered learning environment which focuses on communication. This is in contrast to the way that English language had traditionally been taught in these countries where the model was more teacher-centered (Akkakoson, 2013; Alhabahba *et al*., 2016; Hardman and A-Rahman, 2014). The reforms, however, have had issues in being implemented. In Jordan, for instance, a report found that despite a shift towards learner-centered learning, the approach most common among teacher practice had remained teacher-centered (USAID, 2008, cited in Alhabahba *et al*., 2016, p.5). Further, it has been found that in regards to reading, teachers in Jordan often focus on word and sentence meaning rather than on the meaning of a text in full (Al Ma'ani, 2007, cited in Al-Ghazo, 2016). In Thailand, the National Education Act of 1999 called for a move toward learner-centered teaching which for English language teaching 'meant emphasizing the development of communicative language skills' (de Segovia & Hardison, 2009, p.155). However, after interviews and classroom observations, it was found that the implementation of the reforms had not taken place and that the teacher-centered model was still commonplace. In Akkakoson, it was found that the teachers instructing the CG 'generally use a traditional, teacher-centred approach to teaching EFL reading' (2013, p.429). A study on classroom

---

[10] Note: This does not include Dhieb-Henia (2003) since it was not stated in the study whether the CG was receiving instruction.

practices in Malaysia after educational reforms had been mandated by the government, also show a disconnect between prescribed teaching approaches and actual classroom teacher behaviour (Hardman & A-Rahman, 2014). Their findings question that reforms in English language education in Malaysia have taken hold and show evidence that classrooms are still teacher-centered.

Classroom approaches that incorporate learning strategies, on the other hand, are very much a learner-centered approach. By drawing students' attention to their own individual learning process and what they, as the learner, can do to monitor and evaluate that process, places a much greater emphasis on decision-making within the learning environment by the student. The Cognitive Academic Language Learning Approach (CALLA) which was used as the teaching model in Al-Ghazo (2016), for instance, is

> based on cognitive learning theory in which learners are viewed as mentally active participants in the teaching-learning interaction...[and] suggests ways in which the teacher can support the mental processes of ELL students through activities in which students reflect on their own learning and learn how to learn more effectively (Chamot & O'Malley, 1996, p.260).

This learner-centered approach is also seen in Akkakoson (2013), where students were given the opportunity to discuss the reading strategies and were required to record their use of the reading strategies in portfolio assignments. Portfolios offer three main characteristics according to Ikeda and Takeuchi: '(a) they are purposeful; (b) they are collections of learner's work; and (c) they include learner's reflections on each work' (2006, p.387). There is no mention of the teaching principles upon which the study by Habibian (2015) was based. However, the reading strategies taught were a mixture of strategies dealing with text content (e.g., underline the main point, identify keywords, use diagrams, etc) and strategies focusing on the learner (e.g., using background information, monitor the reading, adjust rate of reading, etc). As such, inherent within the latter strategies is the importance of learner reflection upon the reading process. Due to the difference in teaching methods between the traditional and reading strategies approach, it is possible, therefore, that the increase in RCT scores could be attributed to differences in how the control groups and the experimental groups were taught. There is evidence that a shift from teaching-centered to learner-centered instruction can increase reading comprehension results. In a study by Kashef, *et al*.(2012), it was found that by implementing learner-

centered teaching principles to undergraduates in Iran, a culture in which teacher-centered methods are prevalent, post-test reading comprehension scores increased commensurate with the studies analyzed here. It is important to emphasize that the possible differences in classroom instruction should not be used to negate the results of the experimental and quasi-experimental studies, only that the variation should be added as a caveat to those results.

Another possibility for the increase in RCT scores is that students were focused more on their reading task performance than they had been previously. As pointed out in Section 2.2, one of the main features of reading strategies instruction is that it draws attention to the reading process and the learner's role within that process, and it empahasizes a process in which the reader is an active participant rather than a passive participant. In other words, awareness of what happens when one is engaged in the act of reading is heightened. This awareness does not necessarily constitute reading strategies use, but may simply enhance active participation during reading tasks and on-going self-reflection by the reader about their comprehension of the text. What it does constitute, is metacognitive awareness about reading as a process.

The second research question the current study sought to answer was whether frequency use of reading strategies was correlated to reading proficiency level. As shown in the results, there was no clear evidence that a relation exists in this regard. In other studies which looked at the correlation between frequency of reading strategies use and proficiency level in an EFL context, it was found that the HPR groups used reading strategies more frequently than LPR and MPR groups (Ghahari & Basanjideh, 2017; Hong-Nam & Page, 2014; Kim, 2016; Nalliveettil, 2014; Park, 1997; Rahman, Jumani, Chaudry, Chisti, Abbasi, 2010; Rastegar, Kermani, & Khabir, 2017; Tavakoli, 2014; Yang, 2016). In a similar study carried out in and ESL context, however, it was found that HPR groups used the least amount of reading strategies, while MPR groups used the most (Huang & Nisbet, 2014). While many studies have been identified that found HPRs use more reading strategies than LPRs, the results in the current study raise doubts about the conclusiveness of the correlation. It is important to note that most of the data collection on frequency use of reading strategies was via self-report questionnaires only (Chen & Intaraprasert, 2014; Fotavian & Shokrpour, 2007; Madhumathi & Ghosh, 2012, Malcolm, 2009; Wichadee, 2011), and therefore a distinction between awareness of the reading

strategies and use of the reading strategies must be made. As Mokhtari and Reichard (2002) argue, knowing about the strategies and employing them are two very different claims, and there is no guarantee that awareness equates to use (p.255), or conversely, that lack of awareness equates to absence of use. When considering the results of the studies in which questionnaires were the sole method of data collection, then, they must be interpreted with caution.

However, even when results are taken from the studies which used qualitative methods of data collection, a similar picture arises. In Akkakoson (2013), participants in the experimental group completed portfolios to record and show their use of reading strategies on texts. Results showed that HPRs used more reading strategies than LPRs. Karimi and Shabani (2013), collected data on the frequency use of reading strategies by having participants complete a written TAP during a reading task in which they noted each time they used a strategy and which strategy was used. The results showed that HPRs used more reading strategies than LPRs. In another TAP study (Endley, 2016), which was conducted verbally, however, the results showed that LPRs used more reading strategies than HPRs. Again, there appears to be an inconsistency in the findings.

An explanation of this uncertainty may be due to the way in which reading strategies are employed rather than the amount of strategies employed. The studies which used qualitative methods of data collection are especially enlightening for providing further analysis into the way that the participants used reading strategies. Table 8 shows the studies which used qualitative methods to collect data on how the participants used reading strategies.

One of the themes that arises from these studies is that HPRs use reading strategies more effectively than LPRs. In Akkakoson (2013), from the EG, the portfolios of ten HPRs, MPRs, and LPRs (30 participants in total) were chosen to be analyzed. It was found that the HPRs and MPRs generally had a much better grasp on the conditions in which each strategy was used most effectively. Karimi and Shabani (2013) found that HPRs were characterized as effective users of prior knowledge to help better understand a text, effective self-monitors of their comprehension of the text, and effective at using context clues for guessing, 'whether at word-level or at more general propositional and discoursal levels' (p.134). These findings are further confirmed in Endley (2016) who showed that

Table 8. Qualitative Data Collection Studies and Frequency of Reading Strategies Use[11]

Study	Participants	Data Collection Method	Frequency of RS Use
Akkakoson (2013)	30 of 164	1. Portfolio	HPR > LPR
Endley (2016)	12	1. Concurrent Verbal TAP (2 sessions) 2. Semi-Structured Interviews (following each TAP session)	HPR < LPR
Karimi & Shabani (2013)	30	1. Questionnaire 2. Concurrent Written TAP	HPR > LPR

HPRs either used context to guess meanings of words from context or, if unable to sufficiently ascertain the meaning from the context, used the context to assist them in identifying the most relevant definition from the dictionary. This was in contrast to LPRs in which it was noted that 'a common pattern among the LPR group was a readiness to settle for the first definition found without considering whether the definition was appropriate to the context' (p.207). There were further instances in which LPRs demonstrated a lack of using context efficiently by either guessing incorrectly and not using a dictionary before continuing on in the text, or without either attempting to infer meaning from context or using a dictionary before continuing on in the text. There was also a stark difference in the way that HPRs and LPRs underlined and circled parts of the texts. While the former used this strategy to identify important information, the latter were much less systematic and in the interviews were unable to give their reasons why they had used this strategy. It was also found that the participants who performed best on the summarization tasks and the reading comprehension test of true-false statements – two LPRs and one HPR based on the pre-task reading comprehension test results – were able to effectively monitor their comprehension as they read the text. Overall, when the quantitative and qualitative data are assessed, these studies show that the frequency of reading strategies use may have less of a determination on reading proficiency level than effective use of reading strategies. An effective use of reading strategies includes when to use them, which strategies to use, and to monitor and evaluate whether they

---

[11] Two studies which used qualitative data collection methods are not included here: Wichadee (2011) and Zhang (2010). Wichadee (2011) used semi-structured interviews to investigate participants' perceptions on usefulness of reading strategies; Zhang (2010) did not provide a measure of frequency use between proficiency levels.

serve the task at hand. It should be considered, however, that Akkakoson (2013) found that all subgroups from the EG – HPRS, MPRs, and LPRs – were able to use a combination of reading strategies effectively. This may be explained by the research design whereby they all received reading strategies instruction.

For the third research question which the current study endeavoured to answer regarding the differences in reading strategies use between HPRs and LPRs and if they give an indication as to what reading strategies are the most effective, the data shows that the reading strategies used most often by HPRs (see Table 4) are a combination of strategies incorporating higher order text meaning (e.g., relating information in different parts of the text, reading further for clarification, etc.), strategies which focus on the organization of the text (e.g., using extralinguistic clues, recognizing text structure), and, most prevalent, strategies which involve monitoring and evaluating comprehension of the text (e.g., adjusting reading rate, directing attention, monitoring for comprehension, etc.). The strategies most frequently used by LPRs (see Table 5) are strategies which are focused at word-level meaning (e.g., translating, checking new word list, focusing on understanding each word). This trend within the studies points to HPRs being able to evaluate their comprehension and to use the text in building and reinforcing comprehension (Chen & Intarapresert, 2014; Endley, 2016; Karimi & Shabani, 2013; Lai, *et al*., 2013; Malcolm, 2009; Zhang, 2010). Several of the studies found that for the LPRs, on the other hand, there was a tendency to place emphasis on each word in order to comprehend the texts (Chen & Intarapresert, 2014; Fotavian & Shokrpour, 2007; Lai, *et al*., 2013; Malcolm, 2009; Meniado, 2016; Zhang, 2010). The difference in reading behaviour between the two groups is that HPRs appear to employ more strategies which help them construct meaning from the text holistically while being aware of themselves (i.e., their mental processes) during a reading task, whereas LPRs' attention seems to be concentrated on constructing meaning from the text, but in a fashion that is piecemeal. These findings are consistent with several other studies enquiring about EFL students' reading strategies use (Aryadoust & Zhang, 2016; Li, 2010; Zhang, 2000, Zhang, 2001).

There are a few possible explanations for these results. First of all, it may be that those strategies used by HPRs are the most effective for reading comprehension. Strategies such as evaluation of comprehension and recognizing text structure were noted as being 'very helpful [as opposed to] paying attention to single words,

translation, and looking up all new words [which] can be regarded as negative strategies in terms of efficiency' (Fotavian & Shokrpour, 2007, p.58). The reason for this assessment is that there was a wide gap of reported use between the HPRs and the LPRs for each of those strategies. The authors have equated this difference as one between effective and ineffective strategy use. Further, they have surmised that the focus on smaller linguistic items of words and phrases impedes reading rate which in turn impacts reading comprehension. However, in a study by Oh (2016), it was found that, while processing speed had a significant impact on reading comprehension, vocabulary knowledge showed the greatest variance in reading comprehension (p.272-273). Therefore, although a slow reading rate may deter comprehension, lack of vocabulary will be a greater determinant of reading comprehension. It should be questioned, then, whether strategies such as translating and focusing on understanding each word are ineffective. Likewise, it does not necessarily mean that those reading strategies most frequently used by HPRs are the most effective reading strategies.

Another possible reason for the difference in the types of reading strategies most used by HPRs and LPRs is that reading proficiency level may have a correlation with the types of reading strategies used. As Ellis cautiously points out, 'the strategies that learners elect to use reflect their general stage of L2 development' (2008, p.716). It must be made clear that Ellis is not proposing that using certain strategies causes higher L2 proficiency, or that an increase in L2 proficiency causes use of certain strategies. It also does not mean that an increase in L2 proficiency is reciprocal to strategy use development. However, it does not discount these possibilities either. In other words, it is possible that as reading proficiency increases, an impact is made on the reading strategies; or that as certain types of reading strategies are used, then there will be an increase in reading proficiency; or that reading proficiency and reading strategies develop in conjunction with one another. After carrying out a meta-analysis of studies researching reading comprehension with different variables, Jeon and Yamashita (2014) concluded that the strongest correlations impacting reading comprehension of L2 learners were grammar and vocabulary knowledge (p.187). The most significant aspect concerning L2 reading, then, is not so much a reading problem as it is a language problem (p. 189). As has been shown with the studies analyzed here, the strategies which the LPRs employ are those that indicate there is a greater issue with the

comprehension of English, rather than the comprehension of reading. This lends support to Ellis' theory that the types of strategies used reflect the level of the L2 learner, and it may indicate that the reading strategies used by each level of L2 learners are the most effective for the stage they are situated in.

There are other variables which limit definitive conclusions about which strategies are the most from the data collected. The first is that the type of text being read may determine certain strategies being more effective than others. In a study conducted on L1 reading strategies used while reading texts from history, chemistry, and mathematics, it was found that although there were similarities in the strategies used in each instance, they were used in 'varying degrees and in unique ways' (Shanahan, Shanahan, & Misischia, 2011, p.422). In a study conducted on EFL students' use of reading strategies according to discipline − management, psychology, mechanical engineering, and computer engineering −, it was found that there was a significant difference in the way that each discipline used reading strategies (Siefoori, 2014). It is important, therefore, to allow that some reading strategies, whether used by HPR or LPR may be more effective under certain conditions than others. Another issue that arises in trying to determine the most effective strategies from the data, is that the purpose of the reading task may have an effect on the strategies used. If a text is being read for the purpose of answering questions on a delayed test, then reading strategies which help store the information in longer-term memory may be more effective. If the purpose of reading a text is to gather information quickly, then fast reading strategies like skimming and scanning are going to be effective.

The final reason which I will discuss in regards to identifying the most effective reading strategies from the studies analyzed has to do with the way the studies collect data. There are a few issues with questionnaires. First of all, they offer little data on when those reading strategies are being used, granting that they are actually being used rather than just being known by the participant completing the questionnaire. They offer a further problem in that they do not say how effective a strategy may be (Endley, 2016, p.193). But qualitative methods like TAPs have their issues as well. It is possible that by interrupting the reading process to either verbalize or write down which strategy was used and at what point, concentration may be lost thereby skewing the results of what is observed in a laboratory setting as opposed to what really happens during a reading task in authentic conditions. This

alteration in cognition by the participant, termed *reactivity*, is seen as one of the main criticisms of TAPs (Barkaoui, 2011, p.52). This issue was investigated by Leow and Morgan-Short (2004) in regards to SLA learners' reading comprehension, intake and written production. They found that reactivity was not an issue with subsequent writing tasks (2004, p.48). However, the issue with reporting on reading strategies at the time they are happening could have an impact if the participants are required to expound upon their thoughts and processes as stated by Ericsson and Simon (1984, cited in Barkaoui, 2011, p.52). It is important, therefore, to take into account that the types of reading strategies that are reported and/or observed through each method may possibly be impacted by the methods of data collection.

It is clear from the studies surveyed that HPRs use different types of reading strategies than LPRs regardless of method of collection, text type, or purpose of reading task. One difference that appears to be clear is that HPRs use reading strategies which show evidence of higher levels of metacognition. As noted earlier in this study, the experimental and quasi-experimental studies included each of these types of metacognitive knowledge about reading strategies; in other words, what the strategies are, how to use them, and when they are best employed. In turn, each study showed an increase in reading comprehension test scores following instruction. Viewing the difference in reading strategies between HPR and LPR, one may draw the conclusion that metacognitive reading strategies are vital in developing reading comprehension. However, a longitudinal study carried out on L1 elementary students found that students who received reading instruction performed lower on post-test RCTs than students who were taught a reading technique called Questioning the Author in which students question what the author means when they are having difficulty understanding the text (McKeown & Beck, 2009). They suggest that the findings provide support that the key to reading comprehension 'may involve deliberate, but not conscious, attention to text content in ways that promote attending to important ideas and establishing connections between the them' (2009, p.22). This suggestion is reinforced by another study which found that self-questioning about the text had a larger role in reading comprehension than background knowledge and could possibly be due to the focus of the participants attention because they 'invested large portions of their mental resources to apply this [background knowledge] strategy' (McNeil, 2010, p.898). A possible explanation for these differences between self-questioning and background knowledge and other

reading strategies is that if focus is on the reading process, then concentration is being pulled away from the text.

The notion that deliberate, but not conscious, attention being important to reading comprehension is echoed in Automaticity Theory which states that readers have a limited capacity of attention and 'that part of the reading process should be executed with minimal attention in order to achieve reading comprehension' (Gorsuch & Taguchi, 2010, p.32). The issue for LPRs, then, may be that their attention is being drawn to lexical and syntactical gaps in knowledge to the detriment of fluency and synthesizing meaning between sentences. It is possible that LPRs are aware of their comprehension and can evaluate their understanding of a text, but their issue is that their comprehension is reliant on decoding each word. This process of decoding is 'demanding on cognitive resources...[and at the point when EFL readers] can recognize words automatically, this frees cognitive resources for higher-level comprehension' (Gorsuch & Taguchi, 2010, pp.31-32). This may explain why the most used reading strategies by both HPRs and LPRs is *rereading*. By rereading part or all of a text, the cognitive resources of the reader are freed up in order for greater levels of fluency to be achieved. For HPRs this may mean automatizing some of the lower-level reading processes like phonological and orthographic decoding and/or some of the higher-level reading processes such as connecting meaning from one sentence to another. For LPRs, the rereading process may have to do with organizing meaning according to the syntax of the sentence. Repeated reading has been found to have a significant impact on reading comprehension, especially for lower level EFL readers (Taguchi, 1997). It is perhaps possible that rereading a text is one of the most effective reading strategies and one that readers intuitively employ because of its effectiveness. If this is the case, then the differences between the reading strategies used by HPRs and LPRs may indicate more about the level of proficiency of the readers, but the similarities in the use of reading strategies between the two groups may be able to shed light on the most effective reading strategies.

Section 6: Conclusion

6.1   Summary of Research

The concern which this synthesis of research aimed to address was whether there is sufficient evidence to warrant using classroom time, which is especially valuable to EFL students due to the lack of exposure to English outside of the classroom, to teach reading strategies. From the findings of the research, it seems that there is not enough evidence at this point to justify using classroom time to teach reading strategies in which declarative, situational, and procedural knowledge of each reading strategy is given. Out of the four studies which included an instructional phase, only one was found to have an effect which could be considered large in magnitude (Al-Ghazo, 2016). This particular study used the CALLA framework devised by O'Malley and Chamot (1996) and may provide some evidence as to its effectiveness. However, with limited research on its implementation in an EFL context, this cannot be surmised with any certainty.

That there was no clear link to be found between the frequency of reading strategies use and proficiency level by the EFL reader raises further questions about the effectiveness of reading strategies. One would hypothesize that higher use of an effective method would yield more favourable results, but this was not necessarily the case with the findings here. Although several of the studies did show that HPRs used reading strategies more frequently than LPRs, the converse was also the case in other studies. But because strategies are by nature purposeful actions taken by readers, some of the reading strategies may have become automatized in some of the more proficient readers causing them to be overlooked by the reader. Again, an issue here is that many of the methods are insufficient in being able to tell us what is happening inside the mind of the reader. What the qualitative data showed was that HPRs seem to be more effective in their employment of strategies use than LPRs. It was noted that LPRs have a tendency to use strategies indiscriminately, if they do indeed use them. This lends support to Clarke's (1978) assertion that language problems short circuit the reading process for some L2 readers causing them read in an ineffective manner.

Finally, definite patterns in reading strategies used by HPRs and LPRs were found between the data. This was despite the fact that the primary studies used in

the synthesis were from varying EFL contexts from around the world. But as to being able to ascertain which reading strategies might be the most effective for the purpose of using classroom time to bring awareness to EFL students about them, it is perhaps in the similarities in reading strategies use between the HPRs and the LPRs which may point to the most effective reading strategies. It is possible that intuition plays a role in identifying the most effective reading strategies in that they are the ones that all readers from all proficiency levels will naturally resort to during the reading process. But purpose of the reading task must always be taken into consideration. For instance, underlining and circling will not be a likely strategy used by one who is reading for pleasure. For one who is trying to gather information for a dissertation, however, this would be a very likely strategy to use. It is to be expected that reading will always have a purpose. As such, the strategies one uses should themselves have a purpose in helping to meet that end. Unfortunately, it does not appear that there is enough evidence that any strategies can overcome major linguistic barriers, especially lack of vocabulary knowledge. In other words, readings strategies knowledge is not a substitute for vocabulary knowledge.

6.2   Pedagogical Implications

As already stated, there does not seem to be enough evidence that reading strategies are an effective means for improving reading comprehension, and therefore, it should be considered whether teaching them explicitly in an EFL context would be of greater benefit to the learner than using the time to work on components of reading which have been shown to improve reading comprehension (i.e., phonological awareness, vocabulary building). This is not to dismiss the notion that the student should be strategic during the reading process, only that the use of class time should be devoted to learning which has evidence of helping the student increase their proficiency. With that said, attention should be brought to the student that rereading a difficult passage may help increase their understanding of it. Further, emphasis should be placed on the interactive nature of reading and the construction of meaning by the reader. As discussed earlier, this view of the reader as an active participant is not common in many EFL contexts. Getting students to re-situate themselves in the center of the reading and the learning process may

enhance their awareness of themselves within that process so as to monitor, evaluate, and take greater control of it.

6.3 Limitations and Further Research Recommendations

There were many limitations in this synthesis which should be taken into account when assessing the interpretation of the results. The first is that only one database was used to locate the studies used here. As the framework for MMRS, a systematic search and extraction of articles should be carried out independently by two reviewers (Heyvaert, *et al*., 2013, p.667). This was not within the guidelines of the research project. Furthermore, due to time constraints and restriction on the limit of content, it was not possible to carry out a systematic search. Another limitation is that many variables were involved in each study (e.g., different reading strategies frameworks used). This may have an effect of skewing the results as far as the types of strategies used. With more time and space to include more studies, if there are indeed more studies which fit the criteria, any variances in frameworks might even out.

On a whole, reading strategies research in an EFL context should continue to be carried out. There were no certain conclusions reached in regards to reading strategies in the current study, but this does not rule out the possibility that further research will eventually be conclusive about reading strategies in an EFL context. There were no longitudinal studies which were identified in the search. Longitudinal experimental studies in which reading strategies instruction is given to an experimental group which a control group does not receive, might show the long-term effects of reading strategies instruction, including whether reading strategies become automatized and when. And finally, I would further recommend more MMRSs which collate and analyse existing research from qualitative and quantitative research methods. Both methods have for too long been seen to be in opposition to each other. However, combined they provide a much fuller, richer explanation of phenomenon which one method cannot describe alone.

References

Note: Studies that were included in the synthesis are marked with an asterisk (*).

Aarts, S., van den Akker, M., and Winkens, B. (2014). The Importance of Effect Sizes, *European Journal of General Practice*, 20(1), 61-64.

Aghaie, R., and Zhang, L.J. (2012). Effects of Explicit Instruction in Cognitive and Metacognitive Reading Strategies on Iranian EFL Students' Reading Performance and Strategy Transfer, *Instructional Science*, 40(6), 1063-1081.

*Akkakoson, S. (2013). The Relationship between Strategic Reading Instruction, Student Learning of L2-based Reading Strategies and L2 Reading Achievement, *Journal of Research in Reading*, 36(4), 422-450.

Akkakoson, S., and Setobol, B. (2009). Thai EFL Students' Use of Strategies in Reading English Texts, *The Journal of KMUTBN*, 19(3), 329-342.

*Al-Ghazo, A. (2016). The Effect of Explicit Instruction of Meta Cognitive Learning Strategies on Promoting Jordanian Language Learners' Reading Competence, *Journal of Education and Practice*, 7(10), 170-177.

Alexander, O., Argent, S., and Spencer, J. (2008). *EAP Essentials: A Teacher's Guide to Principles and Practice*. Reading: Garnet Publishing.

Alhabahba, M.M., Pandian, A., and Mahfoodh, O.H.A. (2016). English Language Education in Jordan: Some Recent Trends and Challenges, *Cogent Education*, 3, 1-14.

Allen, K.D., and Hancock, T.E. (2008). Reading Comprehension Improvement with Individualized Cognitive Profiles and Metacognition, *Literacy Research and Instruction*, 47(2), 124-139.

Arthur, J., Waring, M., Coe, R., and Hedges, L. (2012). *Research Methods and Methodologies in Education*. London: SAGE Publications Ltd.

Aryadoust, V., and Zhang, L. (2016) Fitting the Mixed Rasch Model to a Reading Comprehension Test: Exploring Individual Difference Profiles in L2 Reading, *Language Testing*, 33(4), 529-553.   (35)

Barkaoui, K. (2011). Think-aloud Protocols in Research on Essay Rating: An Empirical Study of Their Veridicality and Reactivity, *Language Testing*, 28(1), 51-75.

Benson, P. (2007). Autonomy in Language Teaching and Learning, *Language Teaching*, 40(1), 21-40.

Block, E. (1986). The Comprehension Strategies of Second Language Readers, *TESOL Quarterly*, 20(3), 463-494.

Carrell, P.L. (1989). Metacognitive Awareness and Second Language Reading, *The Modern Language Journal*, 73(2), 121-134.

Carter, R., and Nunan, D. (2001). *Teaching English to Speakers of Other Languages*. Cambridge: Cambridge University Press.

Chamot, A.U., and O'Malley, J.M. (1996). The Cognitive Academic Language (18) Learning Approach: A Model for Linguistically Diverse Classrooms, *The Elementary School Journal*, 96(3), 259-273.

*Chen, J., and Intaraprasert, C. (2014). Reading Strategies Empployed by University Business English Majors with Different Levels of Reading Proficiency, *English Language Teaching*, 7(4), 25-37.

Chirimbu, S., and Barbi-Chirimbu, A. (2015). Reading in a Foreign Language and the Development of Communicative Competences at the Level of Secondary School Pupils, *Professional Communication and Translation Studies*, 8, 177-185.

Clarke, M.A. (1978). Reading in Spanish and English: Evidence from Adult ESL Students, *Language Learning*, 29(1), 121-150.

Cleophas, T.J., and Zwinderman, A.H. (2007). Meta-analysis, *Circulation*, 115(22), 2870-2875.

Cohen, A.D. (2007). Coming to Terms with Language Learner Strategies: Surveying The Experts. In: Cohen, A.D., and Macaro, E. (Eds.), *Language Learner Strategies: Thirty Years of Research and Practice*, (pp. 29-46). Oxford: Oxford University Press.

Cubukcu, F. (2008). Enhancing Vocabulary Development and Reading Comprehension Through Metacognitive Strategies, *Issues in Educational Research*, 18(1), 1-11.

de Segovia, L.P., and Hardison, D.M. (2009). Implementing Education Reform: EFL Teachers' Perspectives, *ELT Journal*, 63(2), 154-162.

Dhieb-Henia, N. (2003). Evaluating the Effectiveness of Metacognitive Strategy Training for Reading Research Articles in an ESP Context, *English for Specific Purposes*, 22, 387-417.

Dole, J.A., Duffy, G.G., Roehler, L.R., and Pearson, P.D. (1991). Moving from the Old to the New: Research on Reading Comprehension Instruction, *Review of*

Educational Research, 61(2), 239-264.

*Endley, M. (2016). Proficiency as a Variable in Gulf EFL Students' Employment of
Reading Strategies, *Reading in a Foreign Language*, 28(2), 183-223.

Ellis, R. (2008). *The Study of Second Language Acquisition*, (2nd ed.). Oxford:
Oxford University Press.

ERIC. (2016). *ERIC Selection Policy*. Retrieved from https://eric.ed.gov/pdf/ERIC_
Selection_Policy.pdf

Erler, L., and Finkbeiner, C. (2007). A Review of Reading Strategies: Focus
on the Impact of First Language, In: Cohen, A.D., and Macaro, E. (Eds.),
Language Learner Strategies: Thirty Years of Research and Practice, (pp.
29-46). Oxford: Oxford University Press.

Flavell, J.H. (1979) Metacognition and Cognitive Monitoring, *American
Psychologist*, 34(10), 906-911.

*Fotavian, S., and Shokrpour, N. (2007). Comparison of the Efficiency of Reading
Comprehension Strategies on Iranian University Students' Comprehension,
Journal of College Reading and Learning, 372(2), 47-63.

Ghafournia, N. (2014). Relationship between University Level and Employment of
Language-Learning Strategies: A Study of EAP Learners, *English Language
Teaching*, 7(3), 159-166.

Ghahari, S., and Basanjideh, M. (2017). Psycho-linguistic Model of Reading
Strategies Awareness in EFL Contexts, *Reading Psychology*, 38(2), 125-153.

Goodman, K.S. (1967). Reading: A Psycholinguistic Guessing Game, *Journal of the
Reading Specialist*, 6(4), 126-135.

Goodman, K.S. (1970). Psycholinguistic Universals in the Reading Process, *Journal
of Typographic Research*, 4(2), 103-110.

Gorsuch, G., and Taguchi, E. (2010) Developing Reading Fluency and
Comprehension Using Repeated Reading: Evidence from Longitudinal
Student Reports, *Language Teaching Research*, 14(1), 27-59.

Grabe, W. (1991). Current Developments in Second Language Reading Research,
TESOL Quarterly, 25(3), 375-406.

*Habibian, M. (2015). The Impact of Training Metacognitive Strategies on Reading
Comprehension Among ESL Learners, *Journal of Education and Practice*,
6(28), 61-69.

Hardman, J., and A-Rahman, N. (2014). Teachers and the Implementation of a New

English Curriculum in Malaysia, *Language, Culture, and Curriculum*, 27(3), 260-277).

Heyvaert, M., Maes, B., and Onghena, P. (2013). Mixed Methods Research Synthesis: Definition, Framework, and Potential, *Quality and Quantity*, 47(2), 659-676.

Hong-Nam, K., and Page, L. (2014). Investigating Metacognitive Awareness and Reading Strategy Use of EFL Korean University Students, *Reading Psychology*, 35(3), 1995-220.

Hoover, W.A., and Gough, P.B. (1990). The Simple View of Reading, *Reading and Writing*, 2, 127-160.

Horiba, Y., van den Broek, P., and Fletcher, C.R. (1993). Second Language Readers' Memory for Narrative Texts: Evidence of Structure-Preserving Top-Down Processing, *Langauge Learning*, 43(3), 345-372.

Hosenfeld, C. (1979). A Preliminary Investigation of the Reading Strategies of (93) Successful and Nonsuccessful Second Language Learners, *System*, 5(2), 110-123.

Hsiao, T., and Oxford, R.L. (2002). Comparing Theories of Language Learning Strategies: A Confirmatory Factor Analysis, *The Modern Language Journal*, 86(3), 368-383.

Huang, J., and Nisbet, D. (2014). The Relationship Between Reading Proficiency and Reading Strategy Use: A study of Adult ESL Learners, *Journal of Adult Education*, 43(2), 1-11.

Ikeda, M., and Takeuchi, O. (2006). Clarifying the Differences in Learning EFL Reading Strategies: An Analysis of Portfolios, *System*, 34(3), 384-398.

Jafari, S.M., and Shokrpour, N. (2012). The Reading Strategies Used by Iranian ESP Students to Comprehend Authentic Expository Texts in English, *International Journal of Applied Linguistics and English Literature*, 1(4), 102-113.

Jeon, E.H., and Yamashita, J. (2014) L2 Reading Comprehension and Its Correlates: A Meta Analysis, *Language Learning*, 64(1), 160-212.

*Karimi, M.N., and Shabani, M.B. (2013). Comparing the Strategic Behavior of More Successful vs. Less Successful Preaders of Multiple Technical Reading Texts, *Innovation in Language Learning and Teaching*, 7(20), 125-138.

Kashef, S.H., Viyani, A., Ghabool, N., and Damavand, A. (2012). Examining the

Effect of a Learning-Centred Reading Instruction on Iranian Students' Reading Comprehension: An Action Research, *English Language Teaching*, 5(10), 58-63.

Khoshsima, H., and Tiyar, F.R. (2015). Language Learning Strategies for Building EFL Learners' Autonomy, *International Journal of English Language & Translation Studies*, 3(4), 60-73.

Kim, H. (2016). The Relationship between Korean University Students' Reading Attitude, Reading Strategy Use, and Reading Proficiency, *Reading Psychology*, 37, 1162-1195.

Koda, K. (2005). *Insights into Second Language Reading: A Cross-Linguistic Approach*. Cambridge: Cambridge University Press.

*Lai, S., Li, C., and Amster, R. (2013). Strategically Smart of Proficiency Driven? An Investigation of Reading Strategy Use of EFL College Students in Relation to Language Proficiency, *Contemporary Issues in Education Research*, 6(1), 85-92.

Leow, R.P., and Morgan-Short, K. (2004). To Think Aloud of Not To Think Aloud: The Issue of Reactivity in SLA Research Methodology, *Studies in Second Language Acquisition*, 26(1), 35-57.

Li, F. (2010) A Study of English Reading Strategies Used by Senior Middle School Students, *Asian Social Science*, 6(10), 184-192.

*Madhumathi, P., and Ghosh, A. (2012). Awareness of Reading Strategy Use of Indian ESL Students and the Relationship with Reading Comprehension Achievement, *English Language Teaching*, 5(12), 131-140.

*Malcolm, D. (2009). Reading Strategy Awareness of Arabic-speaking Medical Students Studying in English, *System*, 37, 640-651.

McDonough, S.H. (1995). *Strategy and Skill in Learning a Foreign Language*. London: Edward Arnold.

McKeown, M.C, and Beck, I.L. (2009). The Role of Metacognition in Understanding and Supporting Reading Comprehension. In: Hacker, D.J., Dunlosky, J., and Graesser, A.C. (Eds.), *Handbook of Metacognition in Education*, (7-25). New York: Routledge.

McNeil, L. (2011). Investigating the Contributions of Background Knowledge and Reading Comprehension Strategies to L2 Reading Comprehension: An Exploratory Study, *Reading and Writing*, 24(8), 883-902.

Mehrpour, S., and Rahimi, M. (2010). The Impact of General and Specific Vocabulary Knowledge on Reading and Listening Comprehension: A Case of Iranian EFL Learners, *System*, 38(2), 292-300.

*Meniado, J.C. (2016). Metacognitive Reading Strategies, and Reading Comprehension Performance of Saudi EFL Students, *English Language Teaching*, 9(3), 117-129.

Mohammed, M.A., Moles, R.J., Chen, T.F. (2016). Meta-synthesis of Qualitative Research: The Challenges and Opportunities, *International Journal of Clinical Pharmacy*, 38(3), 695-704.

Mokhtari, K., and Reichard, C.A. (2002) Assessing Students' Metacognitive Awareness of Reading Strategies, *Journal of Educational Psychology*, 94(2), 249-259.

Mokhtari, K., and Sheorey, R. (2002). Measuring ESL Students' Awareness of Reading Strategies, *Journal of Developmental Education*, 25(3), 2-10.

Mosgovsky, C., Jiang, G., Libert, Al., and Fagan, S. (2014). Bottom-Up or Top Down: English as a Foreign Language Vocabulary Instruction for Chinese University Students, *TESOL Quarterly*, 49(2), 256-277.

Nachmani, L. (2015). Cultural Aspects of EFL Reading Acquisition, *Procedia*, 209, 351-357.

Nalliveettil, G.M. (2014). Assessing Reading Strategies of Engineering Students: Think Aloud Approach, *English Language Teaching*, 7(5), 38-49.

Oh, E. (2016) Comparative Studies on the Roles of Linguistic Knowledge and Sentence Processing Speed in L2 Listening and Reading Comprehension in an EFL Tertiary Setting, *Reading Psychology*, 37(2), 257-285.

Oliver, R. And Young, S. (2016). Improving Reading Fluency and Comprehension in Adult ESL Learners Using Bottom-up and Top-down Vocabulary Training, *Studies in Second Language Learning and Teaching*, 6(1), 111-133.

Olshavsky, J.E. (1976). Reading as Problem Solving: An investigation of Strategies, *Reading Research Quarterly*, 12(4), 654-674.

O'Malley, J.M., and Chamot, A.U. (1990). *Learning Strategies in Second Language Acquisition*, Cambridge: Cambridge University Press.

Oxford, R.L. (1990). *Language Learning Strategies: What Every Teacher Should Know*, Boston: Heinle & Heinle Publishers.

Oxford, R.L. (2017) *Teaching and Researching Language Learning Strategies*, (2nd

ed). New York: Routledge.

Park, G. (1997). Language Learning Strategies and English Proficiency in Korean University Students, *Foreign Language Annals*, 30(2), 211-221.

Perfetti, C., and Stafura, J. (2014). Word Knowledge in a Theory of Reading Comprehension, *Scientific Studies of Reading*, 18(1), 22-37.

Plonsky, L., and Oswald, F.L. (2014). How Big is "Big"? Interpreting Effect Sizes in L2 Research, *Language Learning*, 64(4), 878-912.

Rahman, F.U., Jumani, N.B., Chaudry, M.A., Chisti, S.U.H., and Abbasi, F., (2010). Impact of Metacognitive Awareness on Performance of Students in Chemistry, *Contemporary Issues in Education Research*, 3(10), 39-44.

Rasekh, Z., and Ranjbary, R. (2003). Metacognitive Strategy Training for Vocabulary Learning, *TESL-EJ*, 7(2). Retrieved from http://tesl-ej.org/ej26/a5.html

Rastegar, M., Kermani, E.M., and Khabir, M. (2017). The Relationship between Metacognitive Reading Strategies Use and Reading Comprehension Achievement of EFL Learners, *Open Journal of Modern Linguistics*, 7, 65-74.

Razi, S., and Cubukcu, F. (2014). Metacognition and Reading: Investigating Intervention and Comprehension of EFL Freshman in Turkey, *Procedia*, 158, 288-295.

Rubin, J. (1975). What the "Good Language Learner" Can Teach Us, *TESOL Quarterly*, 9(1), 41-51.

Rubin, J. (1981). Study of Cognitive Processes in Second Language Learning, *Applied Linguistics*, 11(2), 117-131.

Samuels, S.J. (2002) Reading Fluency: Its Development and Assessment. In: Farstrup, A.E., and Samuels, S.J. (Eds.), *What Research Has to Say About Reading Instruction*, (3rd ed.), (166-183). Newark: International Reading Association.

Sandelowski, M., Voils, C.I., Barroso, J. (2006). Defining and Designing Mixed Research Synthesis Studies, *Research in the Schools*, 13(1). Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2809982/

Sandelowski, M., Voils, C.I., Leeman, J., and Crandell, J.L. (2012). Mapping the Mixed Methods-Mixed Research Synthesis Terrain, *Journal of Mixed Methods Research*, 6(4), 317-331.

Schraw, G., Crippen, K.J., and Hartley, K. (2006) Promoting Self-Regulation in Science Education: Metacognition as Part of a Broader Perspective on Learning, *Research in Science Education*, 36, 111-139.

Seifoori, Z. (2014). Discipline and Gender Variation in ESP Learners' Use of Metacognitive Strategies, *Iranian Journal of Language Teaching Research*, 2(2), 13-34.

Shanahan, C., Shanahan, T., and Misischia, C. (2011). Analysis of Expert Readers in Three Disciplines: History, Mathematics, and Chemistry, *Journal of Literacy Research*, 43(4), 393-429.

Silverman, R.D., Speece, D.L., and Haring, J.R. (2013). Fluency Has a Role in the Simple View of Reading, *Scientific Studies of Reading*, 17(2), 108-133.

Singer, L.M., and Alexander, P.A. (2017). Reading Across Mediums: Effects of Reading Digitial and Print Texts on Comprehension and Callibration, *The Journal of Experimental Education*, 85(1), 155-172.

Sun, S., Shieh, C., and Huang, K. (2013). A Research on Comprehension Differences Between Print and Screen Reading, *South African Journal of Economic and Management Sciences*, 16(5), 81-101.

Taguchi, E. (1997). The Effects of Repeated Readings on the Development of Lower Idneitifcation Skills of FL Readers, *Reading in a Foreign Language*, 11(1), 97-119.

Tavakoli, H. (2014). The Effectiveness of Metacognitive Strategy Awareness in Reading Comprehension: The Case of Iranian University EFL Students, *The Reading Matrix*, 14(2), 314-336.

Wallace, C. (2001). Reading. In: Carter, R., and Nunan, D. (Eds.), *The Cambridge Guide to Teaching English to Speakers of Other Languages*. (pp. 21-27). Cambridge: Cambridge University Press.

Walsh, D., and Downe, S. (2005). Meta-Synthesis Method for Qualitative Research: A Literature Review, *Journal of Advanced Nursing*, 50(2), 204-211.

Wenden, A.L. (1998) Metacognitive Knowledge and Language Learning, *Applied Linguistics*, 19(4), 515-537.

Whankhom, P., Phusawisot, P., and Sayankena, P. (2016). Development of the Instructional Model of Reading English Strategies for Enhancing Sophomore Students' Learning Achievements in the Institute of Physical Education in he Northeastern Region of Thailand, *Educational Research and Reviews*,

11(5), 153-163.

*Wichadee, S. (2011). The Effects of Metacognitive Strategy Instruction on EFL Thai Students' Reading Comprehension Ability, *Journal of College Teaching and Learning*, 8(5), 31-40.

Wilson, D.B. (2017). *Effect Size Calculator*. Retrieved from https://www.campbellcollaboration.org/escalc/html/EffectSizeCalculator Home.php

Yang, X. (2016). On Reltionship between Factors and the Use of Reading Strategies, *Theory and Practice in Language Studies*, 6(8), 1566-1571.

Yang, Y. (2016). A Research on Reading Strategies Among Non-English Major Postgraduates, *English Language Teaching*, 9(8), 204-212.

Zhang, L.J. (2000) Metacognition in L2 Reading Literacy Acquisition: The Case of Ten Chinese Tertiary Students Learning to Read EFL. Retrieved from https://www.academia.edu/487925/Metacognition_in_L2_reading_literacy_a cquisition_The_case_of_ten_Chinese_tertiary_students_learning_to_read_EF L?auto=downlod

Zhang, L.J. (2001) Awareness in Reading: EFL Students' Metacognitive Knowledge of Reading Strategies in an Acquisition-poor Environment, *Language Awareness*, 10(4), 268-288.

*Zhang, L.J. (2010). A Dynamic Metacognitive Systems Account of Chinese University Students' Knowledge About EFL Reading, *TESOL Quarterly*, 44(2), 320-333.

Zimmer, L. (2004). Qualitative Meta-synthesis: A Question of Dialoguing with (74) Texts, *Journal of Advanced Nursing*, 53(3), 311-318.

Appendix 1: Summary of Primary Studies Used in the Mixed Methods Research Synthesis

Study 1: Akkakoson (2013) The relationship between strategic reading instruction, student learning of L2-based reading strategies and L2 reading achievement.

In this study, 164 second to fourth year Thai undergraduate students majoring in mechanical engineering, electrical engineering, civil engineering, industrial management, computer science, and information technology from a science and technology university in Thailand took part. The students were considered to be of approximately the same level of English proficiency based on a standardized reading comprehension test which they took prior to instruction. The classes were assigned to one of two groups: a control group and an experimental group. The experimental group received explicit reading strategies training, while the control group did not receive explicit instruction in reading strategies. The students from the experimental group were further divided into three groups based on their post-instruction reading comprehension text scores: high-level, moderate-level and low-level of English reading proficiency. Data were collected by using a pre-test (a standardized English reading comprehension test) in which half of the students used form G and the other half used form H, and post-tests (with students being given either form G or form H so that they did not take the same test twice) in relation to instruction of the courses which lasted over a period of fourteen weeks. Students from the experimental were asked to complete reading portfolios to document their learning process of the L2-based reading strategies. Data were analyzed using correlation analysis (RCT, questionnaires, and portfolios) and qualitative analysis (portfolios). The research questions of the study are:

1. Can strategic reading instruction increase experimental cohort students' conscious use of multiple L2-based reading strategies and lead to greater English reading comprehension achievement compared to control cohort students in traditional, teacher-centred classes?

2. What possible differences are to be found in how different English reading proficiency level sub-groups (high, moderate, low) in the experimental cohort learn to use L2-based reading strategies?

Results of the study show (1) EG English reading proficiency improved slightly according to post-instruction RCT; (2) CG English reading proficiency showed no significant difference according to post-instruction RCT; (3) there was a significant difference in English reading proficiency between EG and CG according to post-instruction RCT; (4) explicit RS instruction has slight correlation with increase in RCT scores; (5) according to portfolio analysis HRP and MRP show a greater understanding of purpose and merit of using RS than LPR; (6) HPR and MPR have a better understanding of when and how to use RS than LPR; (7) HPR use RS more frequently and more effectively than MPR and LPR.

Reading Strategies taught to EG	
Cognitive Strategies: Bottom-up	12. Using imagery and relating verbal information to accompanying visuals [**Using text features (e.g. tables)**].
1. Resourcing [**Using referent materials (e.g. dictionaries)**].	13. Visualizing information read [**Visualizing**].
2. Breaking lexical items into parts [**Analyzing unknown words using affixes**].	14. Reacting personally to text.
3. Scanning for explicit information [**Scanning**].	15. Pausing to reflect on reading [**Pausing to think about text**].
4. Using local context clues to interpret a word or phrase [**Using context clues for word or sentence meaning**].	16. Understanding the meaning without translating.
5. Deciding which words are important [**Paying attention to key words in the text**].	*Metacognitive Strategies: Planning*
6. Using grammar knowledge.	1. Advance organization [**Previewing for text organization (e.g. titles, headings)**].
7. Paraphrasing.	2. Advance preparation [**Previewing**].
8. Rereading.	3. Problem identification [**Problem-solving**].
9. Translating.	4. Goal setting [**Directing attention**].
10. Linguistic transferring.	5. Self-management [**Self-managing reading**].
11. Marking the text [**Underlining/circling**].	6. Goal prioritization {**Clarifying purpose of reading**].
12. Adjusting reading rate [**Adjusting reading according to difficulty**].	*Metacognitive Strategies: Monitoring and Evaluating*
13 Paying close attention to particular parts of the text [**Paying attention according to difficulty**].	1. Comprehension monitoring [**Monitoring comprehension**].
14. Paying no attention to unknown	2. Double-checking.

words [**<u>Skipping over unknown words</u>**].	
Cognitive Strategies: Top-down	3. Performance evaluation [**<u>Self-evaluating</u>**].
1. Making predictions [**<u>Predicting</u>**].	4. Strategy monitoring and evaluation.
2. Confirming or modifying predictions [**<u>Monitoring predictions</u>**].	5. Problem monitoring and evaluation.
3. Skimming for gist [**<u>Skimming</u>**].	*Social Strategies*
4. Integrating textual information [**<u>Relating information in different parts of the text</u>**].	1. Discussing reading with others.
5. Making an inference based on information in the text [**<u>Inferencing</u>**].	2. Cooperating with others in the reading tasks.
6. Elaborating on prior knowledge [**<u>Elaborating</u>**].	*Affective Strategies*
7. Recognizing discourse format or text structure [**<u>Recognizing text structure</u>**].	1. Self-talking
8. Interacting with the text [**<u>Critically Analyzing</u>**].	*Test-taking Strategies*
9. Summarizing text information [**<u>Summarizing</u>**].	1. Understanding the comprehension-testing questions before reading the test passage.
10. Taking notes while reading [**<u>Note-taking</u>**].	2. Rereading the test passage to answer the comprehension-testing questions
11. Using grouping and classification [**<u>Grouping information</u>**].	

<u>Study 2: Al-Ghazo (2016)</u> The Effect of Explicit Instruction of Meta Cognitive Learning Strategies on Promoting Jordanian Language Learners' Reading Competence.

In this study, 60 Jordanian undergraduate students studying at Ajoun National University took part. The students were all considered to have a low proficiency in English language based on their placement tests at the beginning of the academic year. The students were assigned to one of two groups randomly: a control group and an experimental group. The experimental received explicit training in reading strategies based on the Cognitive Academic Language Learning Approach (CALLA) as developed by Chamot & Rubin (1994) and the control group did not receive any explicit reading strategies instruction. Data were collected using a pre- and post-test in reading comprehension (different tests, but similar in nature) in relation to the language instruction of each group which lasted for two and half

months. Data were analyzed using a *t*-test to analyze variance in reading comprehension between the two groups. The research question of the study is:

1. Does explicit instruction of meta-cognitive learning strategies have any significant effect on promoting language learners reading comprehension?

The results of the study show (1) there was a significant difference in post-test scores between the control group and the experimental group; (2) the experimental group scored significantly higher on the post-test than the control group; (3) explicit instruction of the CALLA has a significant impact on reading comprehension test.

Metacognitive Reading Strategies – based on Chamot & O'Malley (1994)	
1. Previewing.	5. Scanning.
2. Skimming.	6. Self-managing reading.
3. Planning reading task.	7. Self-monitoring comprehension. [**Monitoring comprehension**]
4. Reading selectively. [**Directing attention**]	8. Self-evaluating.

Study 3: Chen & Intaraprasert (2014) Reading Strategies Employed by University Business English Majors with Different Levels of Reading Proficiency.

In this study, 926 Chinese students from three universities studying Business English took part. The researchers used two tools for data collection: a questionnaire (Strategy Questionnaire for Business English Reading or SQBER – see below) which contained items for Pre-reading Strategies (PRS), While-reading strategies (WHS) and Post-reading Strategies (POS); and a reading comprehension test (Business English Reading Comprehension Test or BERCT) to check their proficiency of business English. There is no indication in the study of the order that the questionnaire and test were given to the students. It must be assumed, due to common practice among this type of research, that they were within close proximity of time from one another, either concurrently or the BERCT first followed by the SQBER. The data were analyzed by an SPSS program using Analysis of Variance (ANOVA), the Post-hoc Sheffe Test, and the Chi-square text. The research questions of the study are:

1. Do the reading strategies employed by university Business English majors vary significantly in terms of their levels of reading proficiency at the overall, category, and individual levels?

2. If they do, what are the main patterns of variation?

The results of the study show (1) students with good reading proficiency used a significantly higher frequency of reading strategies than the students with fair or poor reading proficiency; (2) students with good reading proficiency used a higher frequency of Strategies for Comprehending the Text (SCT) than students with fair or poor reading proficiency, but no significant difference in Strategies for Coping with Difficulties (SCD), both sub-categories of WHS; (3) the highest frequency of reading strategies reported by students with good reading proficiency are 'Guess the meanings of the words or sentences from the text', 'Adjust the reading rate accordingly', 'Pay attention to the key words in the text', 'Read the questions about the text', and 'Do fast reading first and peruse later'; (4) the highest frequency of reading strategies reported by students with poor reading proficiency are 'Guess the meanings of the words or sentences from the text', 'Pay attention to the key words in the text', 'Read or check the new word list', 'Reread the difficult parts', 'Consult the dictionary for new words'; (5) students with good reading proficiency had a tendency to use strategies related to guessing, seeking key information, regulating the reading process, and using linguistic knowledge; (6) students with poor reading proficiency had a tendency to use strategies related to coping with new words and seeking help from others.

Strategy Questionnaire for Business English Reading	
Pre-reading Strategies	
1. Read the title of the text carefully.	7. Read the first and last paragraphs.
2. Construct my related knowledge about the topic.	8. Skim the text.
3. Set goals or purposes of reading.	9. Read the first or the last sentence of each paragraph.
4. Read or check the new word list.	10. Make predictions or inferences about the content of the text.
5. Glance over the foot notes, tables and graphics, etc. (if any)	11. Search for some related information about the topic.
6. Read the questions about the text. (if any)	
While-reading Strategies	
12. Pay attention to the key words in the text.	24. Do fast reading first and peruse later.
13. Use specialized terms as clues or indications.	25. Analyze the formations of the unknown words.
14. Search for the topic sentence of each paragraph.	26. Guess the meanings of the words or the sentences from the context. [**Using context clues for word or sentence**

	meaning]
15. Read every word and sentence slowly and carefully.	27. Analyze the structures of difficult sentences.
16. Confirm my predictions or inference.	28. Adjust reading rate according to difficulty of different parts. [**Adjusting reading rate**]
17. Ask myself questions about some information in the text.	29. Ask the teachers, classmates or friends for help.
18. Make use of features of the text (e.g. notes, tables and italics).	30. Translate the text into Chinese.
19. Consider the logic, coherence and consistency of the textual information.	31. Make use of word collocations.
20. Draw on my prior knowledge of the topic.	32. Consult the dictionary for new words. [**Using reference materials (e.g. dictionaries**)]
21. Take notes or mark important information in the text.	33. Reread the difficult parts. [**Rereading**]
22. Pause and think about what I am reading from time to time.	34. Skip the new words or difficult sentences.
23. Skip or neglect the unneeded or unimportant content.	35. Consult references to solve reading problems or difficulties.
Post-reading Strategies	
36. Make critical comments and evaluations on the content of the text.	41. Read other resources about the same topic.
37. Look up the new words in the dictionary.	42. Review the notes and marks I made.
38. Reflect or evaluate my reading performance and results.	43. Conclude my reading problems/difficulties.
39. Summarize what I read.	44. Summarize the mistakes I made.
40. Review the content of the text.	45. Discuss the problems and difficulties with teachers or friends.

Study 4:   Endley (2016) Proficiency as a Variable in Gulf EFL Students'
Employment of Reading Strategies.

In this study, 12 Arabic-speaking undergraduate students from United Arab
Emirates University were assigned to one of two groups: five in the Higher
Proficiency Reading (HPR) group and seven in the Lower Proficiency Reading
(LPR) group (the mid-scoring students were excluded from the study). The students
were identified with their particular group by the results of an IELTS reading test
administered for the purpose of this study. Data were collected using two think-
aloud protocols (TAP) while the students read texts from two IELTS practice tests.
These were followed by comprehension questions about the texts which the students

needed to answer and semi-structured interviews in which the students were asked to summarize the main ideas of the texts they had read and to provide an explanation of the answers they gave on the comprehension test. The data were analyzed by transcribing the TAPs and semi-structured interviews and inductive data analysis was used to code themes and patterns using the Survey of Reading Strategies or SORS taxonomy – see below – developed by Mokhtari and Sheorey (2002). The research questions of the study are:

1. What are the primary comprehension problems encountered by students attending an English-speaking university in the Gulf region when reading academic texts in English?

2. What reading strategies do the students actually emply in order to solve their reading problems?

3. To what extent can the demographic variable of L2 reading proficiency be used to reliably predict the students' use of reading strategies in English?

The results of the study show (1) in general, the LPR group had difficulty with word recognition and constructing meaning from the text as whole; (2) HPRs reported use of 274 reading strategies and LPRs reported use of 305 reading strategies; (3) HPRs used most frequently rereading, reading slowly and carefully, paraphrasing, underlining/circling, paying closer attention (See Endley, 2016, Appendix C); (4) LPRs used most frequently underlining/circling, paying closer attention, reading slowly and carefully, rereading, and paraphrasing; HPRs tended to infer the meaning of unknown words while LPRs did not employ this strategy much; (5) LPRs had a tendency to underline and mark the text more indiscriminately; (6) HPRs reported a much higher frequency of using prior knowledge; (7) the three best performers of the comprehension and summarizing tasks (1 HPR and 2 LPRs) were effective in the employment of their use of underlining key parts of the text, checking dictionary definitions with the context of the texts, checking understanding as they read, re-reading, paying closer attention, and reading slowly and carefully; (8) the three worst performers of the tasks were unable to understand particular words, focused on individuals which appeared to impact their overall understanding of the texts, and were not able to work out complex grammatical structures.

Survey of Reading Strategies (Amended Version)	
Problem-solving Strategies	
1. Reading slowly and carefully.	5. Pausing from time to time to think

	about what has been read.
2. Trying to get back on track when concentration lost. [**Trying to stay focused**]	6. Visualizing information.
3. Adjusting reading rate according to difficulty.	7. Rereading.
4. Paying close attention according to difficulty.	8. Guessing the meaning of unknown words.
Support Strategies	
9. Note-taking.	14. Going back and forth in text to link ideas in it. [**Relating information is different parts of the text**]
10. Reading aloud.	15. Self-questioning about text.
11. Underlining/Circling.	16. Translating.
12. Using reference materials (e.g. dictionaries).	17. Thinking about information in English and L1.
13. Paraphrasing.	[17.5 – Summarizing]
Global Strategies	
18. Having a purpose when reading.	25. Using context clues for understanding.
19. Activating prior knowledge	26. Using typographical features (e.g. boldface, italics).
20. Previewing text for gist.	27. Critically analyze.
21. Evaluating content of text fits purpose.	28. Checking understanding of new information.
22. Previewing text characteristics (e.g. length, organization) [**Using extralinguistic clues length, difficulty, organization**)].	29. Predicting content.
23. Deciding what to read and what to ignore.	30. Confirming predictions.
24. Using text features (e.g. tables).	

Study 5: Fotavian & Shokrpour (2007) Comparison of the Efficiency of Reading Comprehension Strategies on Iranian University Students' Comprehension.

In this study, 31 Iranian undergraduate students enrolled in Reading Comprehension II at Shiraz University took part. During the course, the students were familiarized with all of the reading strategies in which they were later surveyed about. The students were assigned to two groups based on their grades from Reading Comprehension I: good readers and poor readers (the mid-scoring students were excluded from the study). Data were collected using a questionnaire based on Block (1986) and O'Malley and Chamot's (1990) reading strategy taxonomies, which the students completed after a reading version of the First Certificate in

English (FCE) was given (questionnaire scoring for each strategy: 2 stars for frequent use, 1 for occasional use, and 0 for never use). NOTE: the FCE was not used to assess students' comprehension. Prior to data collection, students were taught reading strategies and when to use them. Data were analyzed using frequency analysis a reported by the students. The aim of the study is:

1. To compare the effects of using reading comprehension strategies on students' reading comprehension.

The results of the study show (1) good readers used a significantly higher frequency of metacognitive reading strategies than poor readers; (2) good readers used most frequently elaborating, note-taking, directing attention, recognizing text structure, and rereading; (3) poor readers used most frequently rereading, questioning for clarification, simplifying, looking up all the new words, and translating; (4) according the Chi-square analysis used by the researchers, the most helpful (effective) reading strategies are elaborating, rereading, note-taking, recognizing text structure, and directing attention; (5) the least helpful according to their analysis are paying attention to single words, inducing, translating, simplifying, and looking up all the new words.

Reading Strategies Included – based on O'Malley & Chamot (1990)	
Cognitive Strategies	
1. Rereading.	8. Inferring or guessing new words [**Using context clues for word or sentence meaning**].
2. Note-taking.	9. Paying attention to single words [**Focusing on understanding meaning of each word**].
3. Question-making in the text [**Self-questioning about text**]	10. Translating.
4. Elaborating.	11. Summarizing.
5. Deducing.	12. Simplifying.
6. Inducing.	13. Imaging [**Using text features (e.g. tables)**].
7. Looking up all new words [**Using reference materials (e.g. dictionaries)**].	14. Exemplifying.
Metacognitive Strategies	
1. Anticipating [**Predicting**].	4. Using directing attention.
2. Monitoring comprehension.	5. Recognizing text structure.
3. Evaluating comprehension.	
Socio-Affective Strategies	
1. Questioning for clarification.	4. Commenting on the text.
2. Explaining the text to self or others.	5. Comparing attitudes.
3. Showing emotion about the text.	

Study 6: Habibian (2015) The Impact of Training Metacognitive Strategies on Reading Comprehension among ESL Learners.

In this study, 48 Malaysian undergraduate students studying English at the University Putra Malaysia took part. The students were considered to be of approximately the same level of English proficiency and were enrolled in first level of reading. The students were assigned to one of two groups randomly: a control group and an experimental group. The experimental group received explicit reading strategies instruction based on Wade *et al*. (1990), while the control group did not receive explicit instruction in reading strategies. Data were collected by using pre-test (taken from Longman Introductory Course for TOEFL) and post-tests (unclear if same test or from same source) in reading comprehension in relation to instruction of the courses which lasted over a period of twelve weeks. Following each test, participants were given a reading strategy questionnaire adapted from Beyer (1987). In addition, semi-structured interviews were carried out with the participants following the completion of the reading strategies questionnaire. Data were analyzed using a *t*-test for variance in various variables and interviews were transcribed for further analysis. The research questions of the study are:

1. Do explicit instructions of using metacognitive strategies enhance students reading performance?
2. What are the ranges of metacognitive strategies used by students after training sessions?

The results of the study show (1) there was a significant improvement in the pre- and post-test reading comprehension scores of the experimental group; (2) the control group's scores decreased on the post-test compared to the pre-test; (3) the experimental group's use of monitoring and assessment reading strategies increase significantly after reading strategies instruction but planning decreased.

Reading Strategies in the Instruction Training– based on Wade *et al*. (1990)	
1. Trying to highlight or underline the main point or and focus of specific information [**Underlining/circling**].	7. Problem-solving.
2. Paraphrasing.	8. Monitoring the reading. [**Monitoring comprehension**].
3. Identifying keywords [**Paying attention to key words in the text**].	9. Rereading.

4. Using diagrams	10. Self-testing [**Self-questioning about text**].
5. Mental integration [**Pausing to think about text**].	11. Adjusting rate of reading [**Adjusting reading rate according to difficulty**].
6. Using the background knowledge [**Activating prior knowledge**].	
Reading Strategies included on questionnaire* – based on Beyer (1987)	
Monitoring Strategies	2. Assessing goal achievement.
1. Keeping the goal in mind.	3. Assessing handling of errors.
2. Spotting errors.	4. Evaluating appropriateness of procedures used.
3. Knowing when a sub goal is achieved.	*Planning Strategies*
4. Knowing how to recover from errors.	1. Stating a goal.
5. Keeping one's place in a sequence.	2. Selecting operation.
6. Selecting next appropriate operations.	3. Predicting results desired.
7. Deciding when to go on.	4. Identifying potential errors.
Assessment Strategies	5. Identifying ways to recover from errors.
1. Judging accuracy and adequacy of the results.	

*There are 34 items on questionnaire, but only 16 exemplified in the study by the researcher. The questionnaire was not included in the appendix of the study.

Study 7: Karimi & Shabani (2013) Comparing the Strategic Behavior of More Successful vs. Less Successful Readers of Multiple Technical Reading Texts.

In this study, 30 Iranian freshman Midwifery undergraduate students studying at an Iranian university took part. The students were selected based on their scores on a multiple text comprehension test and assigned to one of two groups: fifteen Successful Readers (SR) and fifteen Less Successful Readers (LSR). Data were collected using the MARSI questionnaire developed by Mokhtari and Reichard (2002) – for reading strategies used see *Endley (2016)* in Appendix 1; MARSI does not include items 16. Translating and 17. Thinking about information in English and L1. – and through a Think-aloud Protocol using notes that the students made regarding every step, strategy, or action they used when reading the text for the multiple text comprehension test. Data were analyzed using descriptive statistics for the questionnaire and scores on the comprehension test and coding of strategies from the TAP notes. The research aim of the study is:

1. To compare the reading comprehension strategies utilized by the more successful vs. less successful ESAP readers of multiple technical reading texts.

The results of the study show (1) SR appear to be active, purposeful, and goal-oriented; (2) SR use extralinguistic clues such as pictures, tables, figures, and contextual information to understand text better; (3) SR preview the text before reading; (4) SR decide what is important within the text and what is not; (5) SR identify key information by use of boldfaced, italicized, and underlined segments of text; (6) SR often engage in periodic self-monitoring of their comprehension; (7) SR use context to guess meanings of unknown words; (8) SR adjust reading speed, get back on track when concentration lost, and visualize information; (9) SR employ strategies such as summarizing, note-taking, highlighting, underlining, reading aloud, self-questioning to help them remember and understand texts better; (10) SR connect parts of text to one another.

Study 8: Lai, Li & Amster (2013) Strategically Smart of Proficiency Driven? An Investigation of Reading Strategy Use of EFL College Students in Relation to Language Proficiency.

In this study, 45 Taiwanese college students in Taiwan took part. The students were assigned to two groups based on their scores on the GEPT, a standardized English language proficiency test: twenty-six High-level students (HLS) in one group and nineteen Low-level students (LLS) in the other (the mid-level students were excluded from the study). Data were collected using a questionnaire about reading strategy use and reading difficulty based on a Carrell (1989) study, which the students completed after they read a passage from the GEPT. The data were analyzed using frequency analysis of responses on the questionnaire. The research questions of the study are:

1. Is there any significant difference in reading strategy use between high- and low-proficiency level Taiwanese college students in a reading task? If so, what are the differences in reading strategy use between the two groups of students?

2. What are the difficulties Taiwanese college students have in doing their reading?

The results of the study show (1) there was a significant variation in the use of the strategies of understanding the meaning of each word, translating words and phrases into Chinese, looking up words in the dictionary, and relating the text to

what is already known about the topic with the first three used much more frequently by LLS than HLS and the latter used much more frequently by HLS than LLS; (2) HLS used most frequently the reading strategies of using context clues to improve comprehension, using prior knowledge and experience to understand the content of the text, having a good sense of understanding something and not understanding something, continuing reading for hope of clarification further in text, re-reading for understanding, relating information which comes next to previously information in the text; (3) LLS use most frequently the reading strategies of looking up words in a dictionary, focusing on understanding the meaning of each word, translating words and phrases into Chinese, and analyzing unknown words using knowledge about word affixes.

Reading Strategies Included* – based on Carrell (1989)	
3. Relating information which comes next in the text to previous information in the text [**Relating information in different parts of text**].	12. Focusing on understanding the meaning of each word.
5. Using prior knowledge and experience to understand the content of the text I am reading [**Activating prior knowledge**].	13. Translating words, phrases into Chinese [**Translating**].
6. Having a good sense of when I understand something and when I don't [**Monitoring for comprehension**].	15. Using context clues to improve comprehension [**Using context clues**].
7. Keeping on reading and hope for clarification [**Reading further for clarification**].	17. Relating the text to what I already know about the topic [**Activating background knowledge**].
9. Going back to point before the problematic part and re-read from there [**Rereading**].	18. Analyzing unknown words using my knowledge about word affixes [**Analyzing unknown words using affixes**].
10. Looking up unknown words [**Using reference materials (e.g. dictionaries)**].	

*Questionnaire not included in the study. What is included here is only what has been explicitly mentioned by the researchers.

Study 9: Madhumathi & Ghosh (2012) Awareness of Reading Strategy Use of Indian ESL Students and the Relationship with Reading Comprehension Achievement.

In this study, 52 Indian engineering undergraduate students studying at a university in India took part. The students were assigned to one of three groups

based on the Reading Comprehension Test (RCT): fourteen high proficiency students (HPS), twenty-seven medium proficiency students (MPS), and eleven low proficiency students (LPS). Data were collected using the SORS developed by Mokhtari and Sheorey (2002) – for reading strategies used see *Endley (2016)* in Appendix 1. There is no indication in the study of the order that the questionnaire and test were given to the students. It must be assumed, due to common practice among this type of research, that they were within close proximity of time from one another, either concurrently or the RCT first followed by the SORS. Data were analyzed using SPSS, paired sample *t*-tests, Pearson-product moment correlation, and ANOVA. The research questions of the study are:

1. What are the primary reading strategies used by Indian university students?
2. Is there a relationship between the second language reading proficiency and reading strategy use?
3. Is there a significant difference in strategy use associated with gender?

The results of the study show (1) overall reading strategy was reported by the students as medium to high; (2) the most frequently used reading strategies are rereading, trying to picture of visualize information to help remember, adjusting reading speed according to text, reading slowly and carefully to better understand, and getting back on track when concentration lost; (3) the least used strategies are using typographical features like bold face and italics to identify key information, translating from English into first language, thinking about information in English and first language, and stopping from time to time to think about what has been read; (4) HPS used rereading the most and translating into first language the least; (5) HPS frequently used reading strategies; (6) according to researchers, LPS used inappropriate reading strategies; (7) LPS used most frequently paying close attention when text is difficult and rereading; (8) LPS used least frequently using reference materials (e.g. a dictionary) to help understanding, and taking notes while reading.

Study 10: Malcolm (2009) Reading Strategy Awareness of Arabic-speaking Medical Students Studying in English.

In this study, 160 medical Arabic-speaking students (108 in Year One and 52 in Year Four) studying at a medical in Bahrain took part. The students were assigned to one of two groups in their respective year of study based on a general

proficiency exam which students take in their first year: High Proficiency Students (HPS) and Low Proficiency Students (LPS). Data were collected using the SORS questionnaire as developed by Mokhtari and Sheorey (2002) – for reading strategies used see *Endley (2016)* in Appendix 1 – , which students were asked to complete based on the strategies they used when reading medical texts and/or academic texts. The data were analyzed using ANOVA and Spearman rank order correlations. The research questions of the study are:

1. Are there differences in the reported use of academic reading strategies among Arabic-speaking medical students studying through the medium of English at different years of instruction?

2. Do students of low initial English language proficiency report using different reading strategies than students with high initial reading proficiency in English?

The results of the study show (1) Year One HPS used most frequently paying close attention according to difficulty, trying to stay focused, adjusting reading rate according to difficulty, underlining/circling; (2) Year Four HPS used most frequently paying close attention according to difficulty, visualizing information, rereading, using text features (e.g. tables), and trying to stay focused; (3) Year One LPS used most frequently trying to stay focused, rereading, paying close attention according to difficulty, reading slowly and carefully, and translating; (4) Year Four LPS used most frequently using text features (e.g. tables), trying to stay focused, rereading, paying close attention according to difficulty, reading slowly and carefully; (5)Year Four students reported slightly higher frequency of reading strategies; (6) Year Four students used a much higher frequency of metacognitive reading strategies than Year One students; (7) Year Four students used skimming to note text characteristics, critically evaluating, and using text features (e.g., tables) significantly more than Year One students; (8) Year One students used translating and thinking about information in both English and Arabic more than Year Four students; (9) Year One HPS reported higher frequency of adjusting reading speed and paying close attention than Year One LPS; (10) Year One LPS reported a higher frequency of thinking in Arabic and English more than Year One HPS; (11) Year Four HPS reported a higher frequency of visualizing information more than Year Four LPS; (12) Year Four LPS reported higher frequencies of translating into Arabic and using reference materials (e.g., dictionaries) more than Year Four HPS.

Study 11: Meniado (2016) Metacognitive Reading Strategies, Motivation, and Reading Comprehension Performance of Saudi EFL Students.

In this study, 43 Saudi students in a preparatory year program at an industrial college in Saudi Arabia took part. Data were collected using the SORS questionnaire developed by Mokhtari and Sheorey (2002) – for reading strategies used see *Endley (2016)* in Appendix 1 – and a reading comprehension test developed by the National Center for Assessment in Higher Education (2011). Data were analyzed using descriptive statistics. The research questions of the study are:

1. What are the metacognitive reading strategies used by students when reading academic texts? What metacognitive reading strategies do they commonly use?

2. What topics are the students interested in reading about? What is their level of interest / motivation to read?

3. What are the students' reading comprehension levels?

4. Is there a significant relationship between the students' use of metacognitive reading strategies and their reading comprehension performance?

5. Is there a significant relationship between the students' reading interest / motivation and their reading comprehension performance?

6. Is there a significant relationship between the students' use of metacognitive reading strategies and reading interest / motivation?

The results of the study show (1) most used strategies by participants are trying to get back on track when concentration is lost, translating, and activating prior knowledge; (2) the least used strategies are using text features (e.g. tables) and critically analyzing text; (3) metacognitive reading strategies are moderately used by the participants whom most were below average on the reading comprehension test; (4) there is no correlation between the use of metacognitive reading strategies and reading comprehension.

Study 12: Wichadee (2011) The Effects of Metacognitive Strategy Instruction on EFL Thai Students' Reading Comprehension Ability.

In this study, 40 first-year undergraduate Thai students from the School of Communication Arts at Bangkok University took part. The students were assigned to one of three groups based on a reading skill pre-test: High Proficient students (HPS), Intermediate Proficient students (IPS), and Low Proficient students (LPS). Data were collected using a questionnaire on reading strategies after the pre-test and post-test and semi-structured interviews which were carried out with 5 HPS and 5 LPS. As this is an action research study, there was an intervention in which between the pre-test and the post-test (same test), students were given reading strategies instruction over a 14 week period for 45 minutes at a time. Data were analyzed quantitatively for the questionnaires and tests and by content analysis for the semi-structured interviews. The research objectives of the study are:

1. To compare the pre- and post- reading comprehension scores of students in three reading proficiency levels – high, intermediate, and low.

2. To compare the pre- and post-metacognitive strategy use of students in three reading proficiency levels – high, intermediate, and low.

3. To explore the students' opinion on metacognitive strategy instruction.

The results of the study show (1) post-test results were significantly higher than the pre-test results; (2) HPS, IPS, and LPS all scored significantly higher on the post-test than the pre-test; (3) the most frequently used strategies after the training as reported by all the participants were clarifying the goal of reading, being aware of how much content remained to be read, asking oneself questions while reading; (4) the least frequently used strategy after the training as reported by the participants was thinking about how the text made one feel; (5) reading strategy use as reported by the participants significantly increased for each of the groups on the post-test; (6) in the semi-structured interviews, HPS reported that they will become more skilled readers by using reading strategies; (7) in the semi-structured interviews, 4 out of 5 LPS were unsure that reading strategies could be effective with them becoming more skilled in reading.

Reading Strategies Included – based on Wade, Trethen & Schraw (1990)	
1. Monitoring topic of keywords to activate prior knowledge.	8. Relating background knowledge to text..
2. Understanding task.	9. Paying attention to remaining content.
3. Clarifying purpose of reading.	10. Self-questioning about the text.
4. Planning reading of text.	11. Adjusting reading rate according to difficulty.

5. Highlighting/underlining/circling..	12. Adjusting reading rate according to time constraint.
6. Thinking about how text affects emotions.	13. Monitoring performance and progress.
7. Knowing which strategy to use and how and when to use it.	14. Rereading.

Study 13: Zhang (2010) Dynamic Metacognitive Systems Account of Chinese University Students' Knowledge About EFL Reading.

In this study, 10 Chinese freshman undergraduate students studying at a Chinese university took part. The students were assigned to one of two groups based on their National Tertiary Matriculation Examinations (NTME) including English, their academic records, and in consultation with their teachers: Successful students and Less Successful students (mid-level performing students were excluded from the study). Data were collected using semi-structured interviews with each participant immediately after the participants read two expository texts. Data were analyzed by transcribing the interviews and using Miles and Huberman's (1994) procedures for analyzing qualitative data to identify themes and patterns. The research questions of the study are:

1. What are the metacognitive knowledge systems of the Chinese EFL students who were selected for this study?

2. How do they perceive themselves, the learning tasks and processes, and the utility of reading strategies?

The results of the study show (1) Successful students have a strong tendency toward using context clues, using reference materials (e.g. dictionaries), and activating prior knowledge; (2) Less successful students have a tendency towards focusing on understanding the meaning of each word and using reference materials (e.g. dictionaries); (3)Successful students had a self-perception as being good at reading (4) Less Successful students had a self-perception as not being good at reading; (5) Less Successful students thought they weren't good at reading in English because they didn't have a large vocabulary and had difficulties with English grammar; (6) Successful students reported they could compensate for lack of vocabulary and grammar in other ways; (7) Less Successful students focused on linguistic proficiency as the main factor to successful reading; (8) Less Successful

students tended to use dictionaries more often and paid attention to each linguistic element; (9) Successful students used context to guess meanings of unknown words or consulting a dictionary; (8) Successful students had a greater awareness of strategy use than Less Successful students.