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The Impact of Collaborative Strategic Reading on ESL International Students’ Reading Comprehension and Metacognitive Awareness in College

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The Impact of Collaborative Strategic Reading on ESL International Students’ Reading Comprehension and Metacognitive Awareness in College

By

FATIMAEZZAHRA BENLYAZID

A dissertation submitted in partial fulfillment
Of the requirements for the degree of
Doctor of Education

Seattle Pacific University

2019
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2019

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Date November 29, 2020
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# Table of Contents

List of Tables .................................................................................................................... iv

List of Appendices .............................................................................................................. v

Chapter I: Introduction...................................................................................................... 2

  Statement of the Problem............................................................................................... 2

  Purpose of the Study .................................................................................................... 3

  Significance of the Study ............................................................................................. 3

  Research Questions ....................................................................................................... 4

  Hypotheses ..................................................................................................................... 5

  Terms and Definitions ................................................................................................. 5

Chapter II: Review of Literature....................................................................................... 8

  Introduction ................................................................................................................... 8

  Theoretical Frameworks .............................................................................................. 9

    Social Constructivism ................................................................................................. 9

    Metacognitive Theory ............................................................................................... 10

  Reading Comprehension ............................................................................................. 15

  The Importance of Metacognition in Reading ............................................................ 19

  Reading Strategies Instruction .................................................................................... 22

  Collaborative Strategic Reading .................................................................................. 25

    Reciprocal Teaching ................................................................................................. 25

    Cooperative Learning ............................................................................................... 26

  CSR in Practice ............................................................................................................. 28

  CSR Empirical Evidence .............................................................................................. 31
List of Tables

Table 1. Correlations between Reading Comprehension and Metacognitive Awareness Pretests and Posttests ................................................................. 57

Table 2. Descriptive Statistics of Pretests and Posttests .......................... 58

Table 3. Tests of Normality .................................................................... 60

Table 4. Independence of Reading Covariate and the Treatment Effect ....... 62

Table 5. Independence of Metacognitive Knowledge Covariate and the Treatment Effect ................................................................. 62

Table 6. Tests of Between-Subjects Effects to Test Homogeneity of Regression Slopes for Reading Posttest .............................................. 63

Table 7. Tests of Between-Subjects Effects to Test Homogeneity of Regression Slopes for Metacognitive Awareness Posttest .................... 64

Table 8. ANOVA: Tests of Between-Subjects Effects for Reading comprehension Posttest ................................................................. 66

Table 9. ANCOVA: Tests of Between-Subjects Effects for Reading Comprehension Posttest .................................................................. 67

Table 10. Estimated Marginal Means for Reading Comprehension Posttest Scores ................................................................. 68

Table 11. ANOVA: Tests of Between-Subjects Effects for Metacognitive Knowledge Posttest ................................................................. 68

Table 12. ANCOVA: Tests of Between-Subjects Effects for Metacognitive Knowledge Posttest ................................................................. 69

Table 13. Estimated Marginal Means for the Metacognitive Knowledge Posttest Scores ........................................................................ 70
# List of Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix A</td>
<td>Social Competence-Teen Survey</td>
<td>110</td>
</tr>
<tr>
<td>Appendix B</td>
<td>Degrees of Reading Power (U Form)</td>
<td>112</td>
</tr>
<tr>
<td>Appendix C</td>
<td>Degrees of Reading Power (A1 Form)</td>
<td>118</td>
</tr>
<tr>
<td>Appendix D</td>
<td>Metacognitive Awareness of Reading Strategies Inventory (Marsi)</td>
<td>128</td>
</tr>
<tr>
<td>Appendix E</td>
<td>SPU IRB Exemption</td>
<td>130</td>
</tr>
<tr>
<td>Appendix F</td>
<td>EDCC IRB Exemption</td>
<td>131</td>
</tr>
<tr>
<td>Appendix G</td>
<td>Student Consent Form</td>
<td>132</td>
</tr>
<tr>
<td>Appendix H</td>
<td>Student Questionnaire</td>
<td>134</td>
</tr>
</tbody>
</table>
Abstract

Many ESL international students struggle with academic reading, which hinders their success in American colleges. Collaborative Strategic Reading (CSR) is a multi-component approach that trains struggling readers to apply a set of cognitive and metacognitive strategies to enhance their reading comprehension and content area reading. This quasi-experimental nonequivalent control group pretest-posttest study aims to evaluate the effect of CSR on ESL international students' reading comprehension and their metacognitive awareness in college. The researcher employed Degrees of Reading Power (DRP) and Metacognitive Awareness of Reading Strategies Inventory (MARI) measurement tools to collect the data. Capturing students' perceptions of CSR in the treatment condition is another area the researcher explored in this study. Thirty-two intermediate ESL international students were involved in this investigation using convenience sampling. Failing one of the main assumptions of MANCOVA has led the researcher to conduct two One-Way ANCOVAs to analyze the data. The findings of the study were statistically significant for both the reading comprehension and the metacognitive knowledge ($p < .05$) after controlling for the reading and metacognitive awareness pretest scores favoring the CSR group.

Keywords: collaborative strategic reading, struggling readers, metacognitive strategies, reading comprehension, metacognition
Chapter I: Introduction

American postsecondary institutions have been the premier destination for international students from the entire globe seeking quality education in the U.S. (Han, Stoking, Gebbie, & Appelbaum, 2015). Although there has been a decline in new international student enrollment, the U.S. is still the leading host of over one million international students whose contribution to the U.S. economy exceeded $42 billion in 2017 (Open Doors Report, 2018). Many of these students do not meet the English language proficiency requirement (TOEFL, IELTS). Thus, they have to enroll in ESL programs to ameliorate their English skills before they enter college.

Statement of the Problem

College courses include mostly non-fiction expository texts which can be daunting for ESL international students who may lack the skills that allow them to gain meaning from conceptually dense texts (Biancarosa & Snow, 2004). Reading comprehension not only depends on decoding skills but also requires a set of cognitive skills (Takala, 2006) that enables the reader to understand, analyze, and synthesize information obtained from texts (Smith, 2014). Understanding informational texts is an essential skill that ESL students need to acquire (Levine, Ferenz, & Reves, 2000) to perform well in college. Therefore, it is crucial for ESL programs in the U.S. to offer effective research-based reading comprehension instruction that combines the best practices in reading and language development (Klingner, Vaughn, Boardman, & Swanson, 2012).

Researchers and teachers have started perceiving strategic reading as a bridge to reading success (Talebi, 2013). Collaborative Strategic Reading (CSR) is one of the most
promising approaches in this domain. It is a multi-component approach based on teaching students four metacognitive strategies explicitly (preview, click and clunk, get the gist, and wrap up) as they work in cooperative learning groups, supporting each other's reading comprehension, content learning, and language acquisition (Klingner, Vaughn, et al., 2012).

**Purpose of the Study**

The purpose of this quasi-experimental study is to examine the impact of CSR, an explicit strategy instruction approach, on ESL college students’ reading comprehension and their level of metacognition when they read informational texts, controlling for their reading comprehension and metacognitive awareness pretest scores. This investigation also intends to capture students’ perceptions of CSR.

**Significance of the Study**

Although many researchers have investigated CSR and metacognitive strategy training in elementary (Klingner, Vaughn, Arguelles, Hughes, & Ahwee, 2004; McCown & Thomason, 2014), secondary (Boardman, Klingner, Buckley, Annamma, & Lasser, 2015; Vaughn et al., 2011, Vaughn et al., 2013), and tertiary levels (Karabuga & Kaya, 2013; Khonamri & Karimabadi, 2015), some areas in the research literature have remained underexplored or unexplored. All the studies carried out in higher education have examined the use of CSR in EFL (English as a Foreign Language) settings. However, searching PsycINFO and ERIC databases along with Google Scholar search did not yield any studies that investigated the impact of CSR on ESL college students’ reading comprehension and metacognitive awareness in a diverse setting such as the U.S.
Conducting CSR research in EFL and ESL settings can be different. In an EFL context, all participants generally share the same cultural and linguistic backgrounds, so when they work as a group, they may discuss the CSR strategies in their native language and might translate a word or a sentence to a less capable group member instead of helping him or her implement the fix-up strategies learned to deal with comprehension breakdowns. On the other hand, CSR research conducted in an ESL environment involves participants from diverse cultures, speaking different languages, belonging to different systems of education, and holding different beliefs. This diversity could affect the work of the group members who would be more inclined to use the target language to discuss the CSR strategies to accomplish the mutual tasks of their group. Therefore, it is essential to conduct a study in a postsecondary environment that involves a diverse population to determine if CSR would have the same positive outcomes on students’ reading comprehension and metacognitive knowledge as the studies carried out in EFL postsecondary settings. It is an area that deserves further research, and it would contribute to the literature of literacy, informing the practice of ESL reading teachers in tertiary institutions and increasing the retention rate for international students in American colleges and universities.

**Research Questions**

1. Is there a statistically significant effect of CSR on the reading comprehension of students in the treatment group in comparison to their peers in the control group when controlling for the reading pretest scores?
2. Is there a statistically significant effect of CSR on the metacognitive awareness of students in the treatment group in comparison to their peers in the control group when controlling for the metacognitive knowledge pretest scores?

3. What are the students’ perceptions of CSR after the treatment?

**Hypotheses**

**H₀₁** There is no statistically significant difference in the reading comprehension posttest scores between ESL students in the treatment group and their peers in the comparison group controlling for the pretest scores.

**H₀₂** There is no statistically significant difference in the metacognitive awareness posttest scores between ESL students in the treatment group and their peers in the comparison group controlling for the pretest scores.

**H₁** There is a statistically significant difference in the reading comprehension posttest scores between ESL students in the treatment group and their peers in the comparison group controlling for the pretest scores.

**H₂** There is a statistically significant difference in the metacognitive awareness posttest scores between ESL students in the treatment group and their peers in the comparison group controlling for the pretest scores.

**Terms and Definitions**

**Click.** A click is a section in a reading passage that the reader comprehends smoothly (Klingner, Vaughn, et al., 2012).

**Clunk.** A clunk is a word or concept in a text that does not make sense to the reader (Klingner, Vaughn, et al., 2012).
**Collaborative Strategic Reading (CSR).** A multi-component approach designed to teach students with diverse abilities to use four metacognitive strategies (preview, click and clunk, get the gist, and wrap up) with expository texts (Klingner, Vaughn, & Boardman, 2015) as they work in cooperative learning groups.

**Cooperative Learning (CL).** Cooperative Learning uses small groups in which the members of the group work together to accomplish shared goals maximizing their own and each other's learning (Johnson, Johnson, & Smith, 2014).

**Metacognition.** Metacognition refers to “the active monitoring and consequent regulation and orchestration of cognitive process to achieve cognitive goals” (Flavell, 1976, p. 252).

**Metacognitive Reading Strategies.** Metacognitive reading strategies are intentional, carefully planned techniques used by learners before, during, and after reading to monitor or manage their reading (Sheorey & Mokhtari, 2001), and they are often used together, supporting each other (O’Malley & Chamot, 1990).

**Reciprocal Teaching (RT).** Reciprocal Teaching is an instructional technique that aims to improve reading comprehension through teaching metacognitive skills explicitly: Summarizing, question generating, clarifying, and predicting (Palincsar & Brown, 1984).

**Scaffolding.** Scaffolding is any form of assistance a learner receives from experienced individuals (peers or teachers) when he/she cannot carry out the task alone.

**Social Interdependence.** Social interdependence occurs when the members of a group share mutual goals, and each individual’s success is affected by the actions of the other team members (Deutsch, 1962; Johnson & Johnson, 1989a).
Zone of Proximal Development (ZPD). ZPD refers to the distance between the student’s current level in which he can proceed alone and his intended level in which he can achieve with the assistance of more experienced individuals (Vygotsky, 1978).
Chapter II: Review of Literature

Introduction

Reading comprehension happens when the reader interacts with the text using his/her background knowledge (linguistic, conceptual, and experiential) to construct meaning (Kintsch, 2005). However, comprehension can be a complicated process for ESL learners in college, especially when they have to deal with informational texts (Robertson, 2008). Although most L2 adult learners have spent several years learning literacy skills and content knowledge in their first language, many of them fail to employ these skills when dealing with L2 texts (Walter, 2007). For this reason, Koda (2005) described these learners as inefficient readers who function like novices.

The Linguistic Interdependence Hypothesis (Bernhardt & Kamil, 1995) and the Linguistic Threshold Hypothesis (Cummins, 1979) attempted to explain the L2 reading process and its relationship with L1 literacy. The former views L1 as an asset that can allow L2 readers to transfer their L1 skills and strategies to L2, facilitating their reading comprehension (Bernhardt & Kamil, 1995). The latter argues that L2 readers cannot transfer their L1 skills to the target language until they progress to a certain level in their L2 proficiency (Cummins, 1979). However, there is a consensus that many factors come into play in transferring L1 metacognitive strategies, mainly the students’ L2 proficiency, their reading experience in L1, motivation, the topic of the text, and context (Grabe & Stoller, 2011). Thus, it is imperative to explicitly instruct some metacognitive reading strategies to L2 students, especially those with limited L2 proficiency, to help them shift their attention from focusing only on the word level of the text to employing high order mental strategies to derive meaning from it.
Collaborative Strategic Reading (CSR), an approach that trains students to apply metacognitive and cognitive strategies in cooperative groups, has shown generally positive outcomes in improving poor/struggling readers’ reading comprehension and metacognitive awareness in elementary, secondary (Boardman et al., 2015; Klingner & Vaughn, 2000; Klingner et al., 2004; McCown & Thomason, 2014; Vaughn et al., 2011), and postsecondary levels (Karabuga & Kaya, 2013; Khonamri & Karimabadi, 2015).

This chapter sheds light on the theoretical foundation of CSR, reading comprehension, the role of metacognition in the reading process, and the importance of training students to employ a set of metacognitive strategies while reading. It also includes empirical evidence that supports CSR as a promising approach for elementary, secondary, and postsecondary students, mainly struggling readers such as English Language Learners (ELLs) and students with learning disabilities.

**Theoretical Framework**

Collaborative Strategic Reading is rooted in social constructivism and metacognitive theory.

**Social constructivism.** Social constructivism is grounded notably on the work of Vygotsky and Dewey. John Dewey (1938) wrote that the role of the school is to empower the learner to solve real-life problems by providing a nurturing environment in which the student has opportunities to direct his hands-on learning himself and by fostering interpersonal communication and group involvement. As a consequence of interaction, learners receive feedback on their activities, learn socially appropriate behaviors, and come to understand what is involved in cooperating and working together (Dewey, 1940, 1944).
With its foundation in Lev Vygotsky’s Sociocultural Theory, “CSR includes explicit instruction, scaffolding, peer-mediated learning, and embedded supports for struggling readers and English language learners” (Boardman et al., 2015, p.1259). Through the mediation of language, learners can interact with their social environment and develop their higher cognitive processes (Vygotsky, 1978). Vygotsky (1978) emphasized that the socio-cultural environment influences the learning process which takes place through the interactions that students have with others. Peers, teachers, and other experts scaffold or mediate learning by providing more information, encouragement, or any other form of assistance that would allow less capable children to accomplish tasks they could not do individually (Gillies & Ashman, 2003). Moreover, Vygotsky (1962) argued that culture is the primary determining factor for knowledge construction. Children learn through interacting with others and following the rules, skills, and abilities shaped by their culture. In essence, interaction not only involves communication but also plays a vital part in "creating, transforming, and augmenting higher mental processes” (Swain & Lapkin, 2011, p.6). Therefore, learning cannot be separated from the social context (Vygotsky, 1978), which is a fundamental element in Collaborative Strategic Reading.

**Metacognitive theory.** Flavell (1976) defines metacognition as “knowledge about cognition and control of cognition” (p.232). It consists of generally two complementary processes: Metacognitive knowledge and metacognitive regulation.

**Metacognitive knowledge.** Metacognitive knowledge refers to one’s knowledge of his own mental processes (Wenden, 1998). It involves his awareness of specific skills, strategies, and resources he needs to accomplish a task effectively (Baker, 1982).
Metacognitive knowledge includes three different types: declarative knowledge, procedural knowledge, and conditional knowledge. Declarative knowledge refers to oneself knowledge as a learner and the factors affecting one's cognition (Schraw, 1998). For example, a learner knows that skimming and scanning can speed up his or her reading. Procedural knowledge is the learner's knowledge about doing things. He or she knows how to use a particular strategy to accomplish a task (Schraw, 1998), for instance, how to summarize a text. Conditional knowledge is one's awareness of when and why to use a particular strategy (Schraw, Crippen, & Hartley, 2006).

**Metacognitive regulation.** Metacognitive regulation has an “executive or regulatory function” (Carrell, 1998, p.5). It refers to one’s ability to use self-regulatory strategies to achieve a goal successfully (Burley, 1985). This cognitive process is critical for readers who need to use their self-regulatory mechanisms to monitor their reading comprehension and evaluate their use of reading strategies. Regulation of cognition or metacognitive regulation consists of three skills, planning, monitoring, and evaluating (Schraw, 1998).

First, planning refers to the appropriate selection of cognitive tools that affect task accomplishment (Schraw, 1998). A student with self-regulatory strategies uses previewing before reading the passage to activate his or her prior knowledge, make predictions about the text, and plan for his or her reading. Second, monitoring refers to one’s ability to be aware of comprehension and task performance (Schraw, 1998). While reading, the learner applies the strategies selected in the planning phase with the ability to modify them based on their effectiveness, for example, rereading or self-questioning to
ensure better comprehension. Third, evaluating refers to appraising the performance of the reader and reevaluating the strategies used (Schraw, 1998).

Anderson (2002) has suggested five prominent components for metacognition in the classroom: (1) preparing and planning (students think about their goals and how they accomplish them), (2) selecting and using learning strategies (students select the most appropriate strategies to achieve their goals), (3) monitoring strategy use (students check the effectiveness of the strategies selected in meeting their learning goals), (4) orchestrating various strategies (students can coordinate, organize, and make associations among various strategies), and (5) evaluating strategy use (students judge the effectivity of what they are doing).

Metacognition plays a critical role in reading comprehension. This latter is a cognitively demanding process (Kendeou, Van Den Broek, Helder, & Karlsson, 2014) that involves more elements than the written language. Skilled readers use various cognitive and metacognitive strategies to extract and construct meaning from their reading (Snow, 2002). However, novice or struggling readers may understand each word and sentence, but they fail to comprehend the relationship between the sentences and so the meaning of the text as a whole (McNamara, 2009). Although proficient L1 readers can understand every single sentence in the L2 text, this does not necessarily guarantee their overall comprehension of the text (Walter, 2007). Walter (2007) describes this phenomenon as a “discontinuity between sentence by sentence processing of L2 text and whole-text processing” (p.15).

Therefore, we cannot assume that L2 readers automatically transfer their L1 reading skills to their target language reading. The students’ low competence in the target
language (Bernhardt & Kamil, 1995; Bossers, 1991; Brisbois, 1995) may hinder their engagement in higher levels of cognitive activity (Turnbull & Sweetnam Evans, 2017). Robertson et al. (2000) carried out a study to determine the regions of the brain involved in the process of mapping coherence discourse onto a developmental, mental representation using functional Magnetic Resonance Imaging (fMRI). The results revealed that there was an association between lower-level processes such as sentence-level reading processing and increased neural activity in the left hemisphere, while the right frontal lobe was involved with higher-level cognitive processes such as text comprehension. Hence, understanding the sentences of an L2 text does not indicate text comprehension (Walter, 2007).

Many arguments attempted to explain the failure of L2 readers to access their L1 reading strategies when reading in their second language. Cummins’ (1979) Linguistic Threshold Hypothesis posits that L2 readers are required to achieve a particular level of proficiency in the target language before they can transfer their L1 reading skills to deal with L2 texts. Another argument might be the negative perception of L1 as a barrier to L2 learning. Direct teaching methods, established to contrast grammar-translation and bilingual methods, have promoted “Target language only” approaches (Turnbull & Sweetnam Evans, 2017), portraying students’ first language as their enemy in achieving high levels in L2 proficiency (Gaebler, 2014).

However, numerous studies have unveiled the assets L1 offers to second language learners’ vocabulary (Liu, 2008), self-confidence (Phakiti, 2006), reading comprehension (Seng & Hashim, 2006), and other benefits (Bernhardt, 2005; Hudson, 2007; Koda, 2005; Koda, 2007). The Linguistic Interdependence Hypothesis argues that when students are
proficient in their first language reading, their L1 knowledge provides them with a good foundation for L2 literacy development (Peregoy & Boyle, 2000) because L1 and L2 are interdependent, and they share many similarities, especially in reading performance (Bernhardt & Kamil, 1995). In other terms, any language aspect acquired in the first language should be transferrable to L2 (Jiang, 2011), and it can “strongly predict corresponding skills in another language acquired later in time” (Verhoeven, 1991, p.72).

Verhoeven (1991) intended to identify the variables that could predict the biliteracy development of 72 first grade minority children (Turkish) in the Netherlands. One group received L2 literacy instruction before L1 literacy instruction, while the researcher provided an L1/L2 transitional curriculum in which L1 literacy instruction preceded the L2. The outcomes of the study demonstrated that the first group transferred the decoding skills and the reading comprehension acquired in L2 to L1, and the other group (L1/L2) showed similar behavior, transferring L1 reading skills to L2. This study supported "the interdependency in bilingual development in which cognitive/academic abilities in the second language could be predicted from similar abilities in the first language" (p.61).

In addition, Van Gelderen, Schoonen, Stoel, de Glopper, and Hulstijn (2007) inquired into the reading comprehension development of 389 Dutch (L1) adolescents learning English as a foreign language (L2). After assessing the participants’ L1 and L2 reading comprehension, linguistic knowledge, processing efficiency, and metacognitive knowledge, the researchers found a strong relationship between L1 and L2 reading comprehension and a significant effect of metacognitive knowledge on L2 reading comprehension. Although the results of this study supported the Linguistic
Interdependence Hypothesis, there was not sufficient evidence that this interdependence included lexical and syntactic skills (Verhoeven, 1994), which were strong predictors of L2 reading comprehension (Verhoeven, 2000). This lack of evidence may show a weakness in the Interdependence Hypothesis and the importance of L2 language proficiency.

Since there is no consensus that “all L1 reading strategies transfer automatically to L2” (Grabe & Stoller, 2011, p. 39), training young or adult struggling readers on how, when, and why to use a repertoire of reading strategies could allow them to take control of their cognitive processes (Cekiso, 2012), monitor their comprehension, and take ownership of their learning.

Collaborative Strategic Reading can be an effective reading approach that trains students to implement high-order thinking strategies that enable them to be actively engaged in the reading process where they can monitor and self-regulate their learning (Vaughn et al., 2013). In cooperative groups, students have the opportunity to activate their background knowledge (preview strategy), clarify misunderstandings (clunks strategy), find the main ideas (get the gist strategy), formulate questions (wrap up), and summarize the main points of the text (Klingner & Vaughn, 1999).

**Reading Comprehension**

Word decoding is not sufficient to understand a text (Gough & Tunmer, 1986). It is only a component of the basic knowledge a reader needs to have to comprehend a passage (Snow, 2002). There is a consensus that reading involves an interaction of several cognitive and psychological functions of different levels that support the reader to make sense of the text (Kong, 2006). According to Snow (2002), comprehension involves
three elements: the reader with his cognitive abilities, motivation, and knowledge, the
text (the wording of the text), and the activity (the purpose of the reading). Reading
comprehension is a process of extracting and constructing meaning simultaneously
through the reader's involvement and interaction with the text (Snow, 2002). This
involvement and interaction with the text manifest when readers use their background
knowledge, comprehension monitoring skills, and fix-up strategies (Snow, Burns, &
Griffin, 1998).

Wade (1990) describes good comprehenders as readers who are actively
constructing meaning (Anderson & Pearson, 1984), employing their background
knowledge (referred to as schema), monitoring their comprehension, making inferences,
summarizing, and evaluating “how well their schema fits with new incoming
readers read texts with some general tendencies such as their awareness of what they
read, the purpose of their reading, and the tentative strategies they use to self-regulate
their comprehension and repair potential comprehension breakdowns. Unlike skilled
readers, poor readers seem oblivious to metacognitive strategies and the need to use them
(Paris & Jacobs, 1984). They perceive reading as a decoding process rather than a process
of comprehending, reading word for word rather than for general meaning (Burley,
1985). Driven by the text, these L2 readers tend to use bottom-up skills to access the
text’s meaning (Nassaji, 2002), engaging in mental translation and missing the
opportunity of employing their top-bottom processing skills to make inferences and
connect their background knowledge to the text (Turnbull & Sweetnam Evans, 2017).
Reading comprehension research conducted in the L1 environment is complicated due to varying factors such as students' social and ethnic backgrounds, motivation, and attitudes toward reading, but the research carried out in L2 reading settings is even more convoluted (Grabe & Stoller, 2011). Most L2 readers have already acquired reading in their first language, and they may begin to use their L1 processing system along with their L2 system (Grabe & Stoller, 2011). However, there are many linguistic and processing differences between L1 and L2 readers on the level of vocabulary, grammar, discourse, orthography, and metalinguistic and metacognitive knowledge. All these differences can affect L2 readers’ reading comprehension (Grabe & Stoller, 2011).

According to Walter (2007), most L2 readers fail to use their higher-order L1 reading strategies efficiently because of their focus on decoding individual words in L2 texts. The Language Threshold Hypothesis argues that L2 learners can transfer and use their L1 reading strategies and skills effectively only if they attain sufficient L2 knowledge (Bernhardt & Kamil, 1995; Koda, 2005). However, lacking this knowledge (vocabulary and structure) may lead them to consume their most cognitive resources trying to understand vocabulary and sentence structure. As a consequence, they are left with a few cognitive resources that would enable them "to read more strategically and transfer L1 strategic reading practices to L2 settings" (Grabe & Stoller, 2011, p.44).

Most studies conducted to explore the role of L1 reading ability and L2 proficiency in L2 reading comprehension (Bernhardt & Kamil, 1995; Koda, 2005; Koda 2007; Pichette, Segalowitz, & Connors, 2003) yielded consistent results supporting the Linguistic Threshold.
Bernhardt and Kamil (1995) investigated the relationship between the first language literacy and the target language reading of 186 adult English speakers learning Spanish at various levels (beginning, intermediate, and advanced). The results indicated that L2 proficiency emerged as a stronger predictor of L2 reading ability than L1 reading ability (Bernhardt & Kamil, 1995). The L2 language proficiency accounted for 38% of the variance in L2 reading (Spanish) when entered first in the regression equation, whereas L1 reading (English) accounted for only 10% of the variance (Bernhardt & Kamil, 1995).

In a longitudinal study, Pichette, Segalowitz, and Connors (2003) aimed to measure the relationship between L2 and L1 reading ability and between L2 reading ability and L2 knowledge. They involved 52 Bosnian students speaking Serbo-Croatian and learning French as a second language. The findings of this study revealed that L1 reading ability and L2 knowledge were both associated with L2 reading ability. Multiple regression analysis showed that L2 knowledge was a significant predictor at Time 1 (the beginning of the study) when students had limited knowledge of French. However, both L1 reading ability and L2 knowledge emerged as significant predictors of L2 reading ability when most participants' L2 knowledge improved by the end of the study (Time 2).

These findings are consistent with the Linguistic Threshold research, which indicates that the limited L2 knowledge "short-circuits" the transfer of L1 top-down skills such as making predictions, inferences, and comments, asking questions, and evaluating what is read, to the target language (Clarke, 1980). Therefore, low-proficient L2 readers tend to focus on semantic cues overlooking syntactic cues (Clarke, 1980), but once they
achieve sufficient L2 knowledge, they can transfer their L1 reading skills successfully to the target language (Jiang, 2011).

Nevertheless, having the required linguistic threshold does not always guarantee an effective and efficient reading. There might be other factors that contribute to reading success besides having the necessary linguistic threshold, such as the text difficulty, the topic or the organization of the text, the time allotted to reading, the similarities and the differences between the L1 and the L2, and other factors (Grabe & Stoller, 2001). Moreover, transferring the L1 knowledge with its reading strategies to the second language does not always support comprehension. L1 resources can assist L2 readers to accomplish particular tasks and impede them to fulfill others (Grabe & Stoller, 2011) due to L1 interference that influences more beginning L2 readers who tend to use their L1 knowledge and their background knowledge to solve any comprehension breakdowns (Grabe & Stoller, 2011).

Language threshold and strategy research have demonstrated that transferring L1 skills ‘is not uniformly automatic” (Grabe & Stoller, 2011, p.47). Therefore, future research needs to shed additional light on the L1 skills and strategies that are automatically transferrable to L2 and the skills and strategies that require explicit instruction to be reinforced in L2 learning (Cook & Basseti, 2005).

**The Importance of Metacognition in Reading**

Reading is a cognitive task that requires students to interact actively with the text, using their metacognitive skills and tactics to construct meaning and monitor their comprehension (Kendeou et al., 2014). Sheorey and Mokhtari (2001) defined these skills
and strategies that are beyond the written as “intentional, carefully planned techniques” (p.436) by which learners observe or control their comprehension.

Reading strategies include thinking aloud, making guesses, summarizing, questioning, predicting, and making inferences. The critical role of these techniques in successful reading has led O’Malley, Chamot, Stewner-Mazanares, Kupper, and Russo (1985) to describe students without metacognitive strategies as learners without direction or opportunity to evaluate their growth, accomplishment, and future directions. Roeschl-Heils, Schneider, and van Kraayenoord (2003) investigated the interrelations among metacognition, motivation, and reading comprehension. The outcomes of their study showed that metacognitive knowledge accounted for more than 25% of the variance in reading comprehension.

In essence, successful readers are strategic readers who carefully orchestrate their cognitive resources when reading (Pressley & Afflerbach, 1995). In contrast, struggling readers are quite limited in their metacognitive knowledge about reading because of their focus on decoding individual words in L2 texts (Walter, 2007). Hence, training them to apply a set of metacognitive strategies while they read might facilitate their reading process and help them overcome comprehension failures at both the word and the sentence level (Aarnoutse & Schellings, 2003).

Since it is not feasible to observe metacognition and measure it directly, some researchers (Mokhtari & Reichard, 2002; Pereira-Laird & Deane, 1997; Schmitt, 1990) developed some self-report tools to measure metacognitive knowledge. Metacognitive Awareness of Reading Strategies Inventory (Marsi) is one of the most reliable self-report tools developed by Mokhtari and Reichard (2002) to assess the degree to which
adolescent and adult readers are or are not aware of their metacognitive processes involved while they are reading academic materials (Mokhtari & Reichard, 2002). The researchers developed this 30-item instrument (MARSI) based on the research literature of metacognition, reading comprehension, and reading strategies measurements. Initially, they collected 100 items, refined them for clarity, redundancy, and readability, and then reduced them to 60 items. The principle axis factor analysis selected to extract factors applying oblique rotation produced three factors. The researchers dropped items with weak loadings (< .3) along with others that loaded on more than one factor or reduced the subscale reliability. As a result, they obtained a reliable scale (Cronbach’s alpha was .93) with three subscales (Global Reading Strategies, Problem-Solving Reading Strategies, and Support Reading Strategies) that included 30 items.

Mokhatari and Shereoy (2002) developed Survey of Reading Strategies (SORS), a modified version of MARSI, to fit the ESL population taking into account the strategies employed by bilingual learners such as translation. This instrument attempted to assist ESL students to become more constructively responsive readers who are aware of the metacognitive processes that would help them in constructing meaning from their reading. The researchers adjusted MARSI in three ways to suit ESL learners. They simplified the wording of the items to make them accessible to ESL students, added two strategies related to students’ L1 (translating from one language to another and thinking in L1 and L2 while reading), and removed two items (summarizing what is read and discussing what is read with others) (Mokhtari & Shereoy, 2002). Assisting students to become thoughtful readers, which is the impetus of SORS, requires teachers to describe
each strategy, explain its objective, and provide examples of situations in which each strategy should be used.

Mokhtari, Dimitrov, and Reichard (2018) involved 1164 students in grade 6 through the first year of college to conduct a confirmatory factor analysis study to evaluate the factorial structure of MARSI, taking into consideration the recommendations of other researchers and practitioners who used MARSI. These suggestions led the researchers to modify the item wording, the scale format, and the type of responses expected to determine the students’ metacognitive awareness level (Mokhtari, Dimitrov, & Reichard, 2018). This study led to the reduction of items from 30 to 15, but its findings aligned with the original MARSI’s three latent factors (Global Reading Strategies, Problem-Solving Reading Strategies, and Support Reading Strategies), producing five indicators/items for each factor instead of ten.

Developing valid, reliable, and contextualized instruments that measure metacognition and strategy use can be challenging (McNamara, 2011) as the “students’ judgments of what their abilities and habits are, and measurements of their performance often do not match” (p.159). In other terms, there might be a discrepancy between students’ responses or beliefs and their actual practice (Mokhtari & Shereoy, 2002), which is a weakness in most self-report instruments, including the reviewed version of MARSI (MARSI-R), SORS, and the original MARSI used in this study.

Reading Strategies Instruction

Durkin’s (1978-1979) research represents one of the landmark studies that increased emphasis on reading comprehension strategy instruction. She investigated reading comprehension instruction in elementary classrooms from 3rd to 6th grade and
found that teachers provided little or no explicit comprehension instruction. Their teaching practices in reading focused on assessing students’ answers to teachers’ questions, and in social studies, they centered instruction on content over comprehension of the text (Durkin, 1978-1979).

Reading strategies instruction has been widely recognized as an approach used to enhance students’ reading comprehension. It helps them monitor their own thinking as they read, write, or solve any comprehension problems (Paris & Winograd, 1990). Strategic readers intentionally engage in planned actions under their control (Alfassi, 2004). They are aware of their weaknesses and strengths and able to deal with comprehension breakdowns through self-monitoring and self-instruction (Burley, 1985). Flavel (1987) stated that “Some metacognitive knowledge and self-regulatory activity is not accessible to consciousness” (p.21). Thus, offering explicit instruction to students could bring these higher-order skills to their conscious level.

Numerous studies (Edmonds et al., 2009; Habibian, 2015; Shamsi Nejad & Mahmoodi-Shahrebabaki, 2015) have investigated the effect of metacognitive strategy instruction on reading proficiency and yielded positive outcomes in favor of experimental groups that received explicit strategy instruction (Huang & Newbern, 2012).

Edmonds et al. (2009) synthesized research examining the benefits of reading strategies instruction, especially for adolescent struggling learners. The intervention groups showed improvement in reading comprehension when provided with a targeted reading intervention or multi-reading strategy components. The researchers concluded that it was crucial to engage students in thinking about the text, learning from it, and discussing what they know.
Habibian (2015) investigated the impact of metacognitive strategy training on the reading comprehension of 48 EFL postsecondary students in University Putra Malaysia. The pretest scores yielded no significant difference between the treatment group \((n = 24)\) and the control group \((n = 24)\). After 12 weeks of metacognitive strategies instruction, the participants in the treatment group demonstrated significant gains in reading comprehension and monitoring strategies (based on the Metacognitive Strategy Questionnaire) in comparison to their peers in the control group.

Adult ESL learners bring an abundance of L1 metacognitive and cognitive skills and life experiences. However, reading in a second language can be an overwhelming experience for some of them because they may focus heavily on the text itself, for instance, word recognition and word for word translation (Auerbach & Paxton, 1997). Moreover, they may employ fewer metacognitive strategies or be less intentional in the way they use them while reading (Pressley, 2002). Consequently, they may not be able to connect their background knowledge to the text, draw inferences, and evaluate their reading. Burley (1985) asserted that college students might be "the most successful trainees for metacognitive instruction" (p.7), as they seem to be more aware and capable of monitoring their reading. Through explicit strategy instruction, they might have access to their higher-order thinking strategies to help them ameliorate their reading comprehension.

The National Reading Panel, a US government body formed by Congress in 1997, examined 205 studies of reading comprehension strategies to assess their effectiveness (National Reading Panel, 2000). The National Reading Panel Report (2000) highlighted only studies with supporting evidence and located different reading strategies that
generally have some learning advantages to students, such as summarizing, questioning, previewing, and reading skills (National Reading Panel, 2000). The NRP Report (2000) perceives Collaborative Strategic Reading as an approach that has a solid research base for enhancing students' reading comprehension and metacognitive awareness.

**Collaborative Strategic Reading**

Collaborative Strategic Reading is a model of explicit strategy instruction that was initially designed to facilitate expository reading comprehension for students with learning disabilities, struggling students, and ELL learners. Through this model, ELL students obtain multiple opportunities to interact with others in the target language, pulling their background knowledge, negotiating meaning, socially constructing meaning (Klingner et al., 2004), and consequently accelerating their language acquisition (Klingner, Boardman, Eppolito, & Schonewise, 2012). CSR, one of the highly touted teaching practices, has the potential to promote metacognitive awareness and enhance reading comprehension (Fan, 2010; Khonamri & Karimababdi, 2015; Kusiak, 2001) of ESL students in college. CSR was founded on the Reciprocal Teaching (RT) technique and Cooperative Learning (CL), so it is essential to understand these two concepts.

**Reciprocal Teaching (RT).** Reciprocal Teaching (RT) is an instructional technique that aims to improve reading comprehension by teaching metacognitive skills explicitly. Palincsar and Brown (1984) developed Reciprocal Teaching as a teaching strategy targeting students with poor comprehension skills. This technique provides students with four reading strategies: predicting, questioning, clarifying, and summarizing. Each of these strategies helps learners monitor their reading and construct meaning from the text (Zoghi, Mustapha, Maasum, & Mohd, 2010). In an RT classroom,
the teacher would read a text segment, engaging in a dialogue with his or her students and modeling the use of every RT strategy. When the students become familiar with the dialogue process and the use of predicting, questioning, clarifying, and summarizing strategies, the teacher gives up his or her teacher-centered approach and assumes the role of a facilitator while students are working in small groups, engaging in a dialogue and applying the strategies learned (Palincsar & Brown, 1984).

Rosenshine and Meister’s meta-analysis (1994) reviewed 16 studies conducted between 1984-1992 on Reciprocal Teaching (RT). The results summarized indicated that RT had a statistically significant impact on the students’ reading performance on instructor designed assessments with an effect size of .88 and .32 on standardized reading comprehension measures (Rosenshine & Meister, 1994). This approach shows promise as an effective approach for improving reading comprehension.

Cooperative Learning. Cooperative Learning (CL) refers to “teaching methods in which students work together in small groups to help each other learn academic content” (Slavin, 2014, p.785). Each student is responsible for learning the material, participating in his or her group, and helping the other members of the team learn, which creates an atmosphere of achievement (Panitz, 1999). However, seating people together in the same room, telling them they are a cooperative group, does not make them a cooperative group (Johnson & Johnson, 2003). For the cooperative learning group to be effective, Johnson and Johnson (2009) recommended five fundamental elements when implementing CL: positive interdependence, individual accountability, face-to-face promotive interaction, group processing, and social skills.
**Basic elements of Cooperative Learning.**

*Positive interdependence.* The group members are required to work as a united group to achieve mutual goals (Yager, 2000). They need to realize that each person's effort is essential for the success of the whole group and not just for the individual, and if they fail to "swim together", they will sink together (Johnson & Johnson, 2008).

*Individual accountability.* Each team member is held accountable for doing his or her share of the work, so the group should be clear about its goals and ensure that the group members know their responsibilities. When individual accountability is structured, cooperation leads to higher achievement (Hooper, Ward, Hannafin, & Clark, 1989).

*Face-to-face promotive interaction.* Students are promoting each other’s learning through face-to-face activities (Johnson & Johnson, 2008), using verbal and non-verbal communication to solve problems and explain materials (Duplass, 2006). This interaction encourages them to employ their higher-order strategies to overcome difficulties and assist one another with accomplishing the task (Turnbull & Sweetnam Evans, 2017).

*Group processing.* Students discuss and reflect on their performance individually and as a group. They assess how their group is functioning and what actions are helpful and unhelpful. Then they make decisions on what actions they should modify to function more effectively and attain the group goals (Johnson & Johnson, 2008).

*Collaborative/social skills.* Students learn both the academic content and the interpersonal skills they need to work effectively in teams. However, many students come to class lacking these skills. Hence, teachers are required to teach skills such as communication, leadership, conflict management, friendship-development, and trust-building prior to implementing cooperative learning (Johnson & Johnson, 2009).
CSR in Practice

CSR blends Reciprocal Teaching and Cooperative Learning strategies to form a unique reading comprehension model (Klingner, Vaughn, et al., 2012). Within a social context, students apply the strategies they learned to the assigned text by discussing the material together, helping each other understand it, encouraging one another to do their best (Klingner & Vaughn, 1999), and achieving the mutual objectives of the group. By doing so, they meet the five essential elements of Cooperative Learning.

Teachers should implement CSR in three phases. After introducing all the four strategies (preview, click and clunk, get the gist, and wrap up), the teacher uses think-aloud procedures and modeling to explain each strategy, its importance, and when and how to implement it (Klingner & Vaughn, 1999), which enhance students’ strategy awareness (McLoughlin, Baird, Pigdon, & Woolley, 2000). In the second phase, students practice applying the strategies through teacher-led activities. When students become proficient in implementing these strategies, they will be ready to implement them in their cooperative groups. Moreover, they are expected to perform a role assigned by the teacher in their groups such as a leader, clunk expert, gist expert, encourager, and other roles besides filling out a learning log that documents their implementation of CSR. In this phase, students become involved actively in their groups having multiple opportunities to interact and contribute to their group's understanding of the text (Vaughn et al., 2011). This gradual release of responsibility is a crucial component in improving literacy achievement (Fisher & Frey, 2007), reading comprehension (Lloyd, 2004), and literacy outcomes for English language learners (Kong & Pearson, 2003).
CSR includes four metacognitive and cognitive strategies:

**Preview.** Before reading, students preview the text by examining the titles, pictures, headings, and other text structures and features (Block & Pressley, 2007). This strategy stimulates students’ thinking and helps them to activate their background knowledge and make predictions about the topic of the text (Vaughn & Klingner, 1999). They use their learning logs to write down their predictions and ideas and share them with the other members of the group (Klingner, Vaughn, et al., 2012). The teacher can facilitate this activity by pre-teaching vocabulary to help students build their background for the text they are reading (Harvey & Goudvis, 2007), especially with informational texts (August, Carlo, Dressler, & Snow, 2005).

**Click and clunk.** It is a self-monitoring strategy that teaches students to monitor their reading and think about what caused their comprehension breakdowns (Vaughn & Klingner, 1999). This metacognitive strategy is designed to help students become aware of when they understand and when they do not understand. Clicks are the parts of the text that the student reads and comprehends smoothly. However, clunks refer to the portions of the text (words, ideas, concepts) the reader fails to understand (Vaughn & Klingner, 1999). Using their learning logs, students write down their clunks, and in their group, the clunk expert takes them through the fix-up strategies to clarify those problematic parts, and if students cannot solve a clunk, they can request the teacher’s assistance. There are four fix-up strategies:

- **Fix-up strategy 1:** Students reread the sentence without the clunk/the problematic word. They need to look for information that will help them understand the word.
- Fix-up strategy 2: Reread the sentence with the clunk and the sentences before and after it looking for context clues.
- Fix-up strategy 3: Look for suffixes, prefixes, and root words.
- Fix-up strategy 4: Break the word apart and look for cognates or words that are familiar to students (Vaughn & Klingner, 1999).

Training students to employ click and clunk strategy can increase their awareness of what they read, allowing them to monitor and regulate their comprehension (Dermitzaki, Andreou, & Paraskeva, 2008).

**Get the gist.** During reading, students identify the main idea in each section of the text. One way to identify the main ideas is to answer questions about who or what the paragraph is about. Then the learners can identify the most important idea about the "who" or the "what". The purpose of this strategy is to ensure that readers understood what they have read by restating in their own words the key points discussed in the passage leaving out details (Vaughn & Klingner, 1999). Students write the gist of each paragraph in their learning logs and then share them in their cooperative groups. Besides promoting students’ memory, this strategy is a good indicator of reading comprehension (Klingner, Vaughn, et al., 2012). To assist students with distinguishing between major details and minor details, the teacher has to limit the gist to 12 words or less (Vaughn & Klingner, 1999).

**Wrap up.** After reading, students review the main ideas of the text and generate different types of questions. Then they take turns in their groups asking and answering those questions. Students should be trained to formulate questions starting with who, what, when, where, how, and why; however, the most important in answering these
questions is they require higher thinking skills rather than literal recall (Vaughn, Klingner, & Bryant, 2001). The purpose of this strategy is to teach students to identify the key concepts from the text they read (Vaughn et al., 2001), using question generation as a monitoring strategy that allows students to be aware of their comprehension (Palincsar & Brown, 1984).

The explicit instruction of these four metacognitive techniques informs students of the significance and the potential effectiveness of each strategy, which could have positive effects on their achievement (Zhao, 2009). When students master these self-regulatory strategies, they recognize the extent to which they understand the text and implement corrective strategies when they do not (Hitchcock, Dimino, Kurki, Wilkins, & Gersten, 2010).

**CSR Empirical Evidence**

Collaborative strategic reading has a sound theoretical base, which may make it a feasible strategy for enhancing reading comprehension and metacognitive awareness. However, it is imperative to examine the empirical evidence to determine its effectiveness with ESL international students in college.

**CSR preliminary studies.** Klingner and Vaughn’s (1996) preliminary study on CSR investigated the efficacy of Reciprocal Teaching with cooperative grouping and Reciprocal Teaching with cross-age grouping. The study involved 26 Latino middle school students identified as English language learners with learning disabilities. The researchers implemented Reciprocal Teaching with eight to nine students per group in the first phase of the study (15 sessions). They modeled the comprehension strategies and supported students to use them. In the second phase (12 days), the researchers randomly
assigned participants to Reciprocal Teaching in combination with cooperative grouping ($n = 13$) where students work collaboratively on implementing the strategies in small groups or to Reciprocal Teaching with cross-age tutoring ($n = 13$) in which students tutored younger students with learning disabilities in reading comprehension strategies. The results of the between-group analysis indicated that the overall difference between the two groups on the two measures of comprehension (Gates-MacGinitie Reading Comprehension Test and Passage Comprehension Tests developed by Palincsar and Brown, 1984) was not statistically significant. The results of the analysis of pretest to posttest gains on the dependent measures indicated that the overall growth of the subjects in reading comprehension was statistically significant ($p < .01$). The small sample size ($N = 26$), the homogeneity of the participants (all Hispanic), and the lack of a control group limited the generalizability of the findings of this study.

In their second study (Klingner, Vaughn, & Schumm, 1998), the researchers involved five heterogeneous fourth grade classes ($N = 141$). Based on the results of the Woodcock-Johnson Tests of Achievement (Woodcock & Johnson, 1989), they assigned three classrooms to the intervention condition ($n = 85$) and two classrooms to the teacher-directed instruction condition ($n = 56$). The treatment group received CSR instruction for 45 minutes per day during an 11-day social studies unit, while teachers provided the comparison group with business as usual instruction. The study yielded statistically significant main effects. Students in the experimental condition outperformed the comparison group on the Gates-MacGinitie Reading Tests with a moderate effect size of $d = .44$, $p < .001$ and made equal gains in content knowledge. Although the results of this study indicated that CSR could be used in general education classrooms as well, there
were still some weaknesses. The researchers implemented CSR and monitored the students’ use of the strategies rather than the teachers so they could have been a source of bias. Moreover, the limited duration of the intervention (11 days) might influence the long-term efficacy of CSR.

**CSR with elementary grades.** In a subsequent study, Klingner and Vaughn (2000) examined the effects of CSR on the helping behaviors of bilingual and ELL students in a fifth-grade classroom ($N = 37$) during a science unit that lasted four weeks. During an all-day workshop, the researcher (Janette Klingner) trained a teacher with 30 years of teaching experience and excellent classroom management to implement CSR. After that, she demonstrated five lessons in the teacher’s classroom, providing explicit instruction on how to implement CSR strategies. Without a control group, the researchers assigned students to six cooperative groups of six or seven that included at least two high or average achieving bilingual students and two ELLs. The participants worked collaboratively in their science class two to three days a week for 30 to 40 minutes a day. The researchers audiotaped these cooperative learning group sessions and coded the utterances obtained from the transcribed tapes, categorizing the helping behaviors into comprehension check, elaboration, instruction, and feedback. The results of this study yielded a significant increase in the participants’ target vocabulary ($p < .05$) from pretest to posttest. According to the researchers, students were engaged in academic-related strategic discussions when they were working together. One limitation of this study is the instrument (audiotaping) employed to capture the helping behaviors of the participants may have caused a threat to the internal validity of the study. Students may have over-performed and stayed engaged in group discussions when they knew they were
audiotaped. Additionally, the short duration of the treatment was not sufficient to
determine the long-term outcomes of CSR on the students’ helping behaviors. Finally, the
lack of a control or comparison group raises some issues concerning internal and external
validity.

To address the issue of the limited duration of CSR treatment in previous studies,
Klingner et al. (2004) carried out a quasi-experimental study implementing CSR in ten
4th grade classrooms for the entire school year. They offered professional development
and support for the teachers and assigned them randomly to five intervention classes and
five comparison classes (business as usual instruction). The results indicated that students
in the treatment condition who received a good amount and high quality of CSR from
their instructors showed gains over the control classes on reading comprehension tests \(p < .01\). The effect sizes varied based on the participants’ achievement level \(d = .50\) for
low-achieving students, \(d = .38\) for students with learning disabilities, \(d = .25\) for high
and average achieving students). These findings indicate that higher gains in reading
comprehension can be correlated with a higher quality of CSR (Boardman, Buckley,
Vaughn, Roberts, Scornavacca, & Klingner, 2016). One limitation of this study was the
lack of consistency in CSR implementation on the part of some teachers who
implemented CSR less frequently in their classes or did not implement CSR as intended.
Moreover, the effect size for the CSR group as a whole was small \(d = .19, p < .01\).

Due to the difficulty that many students encounter with informational texts,
McCown and Thomason (2014) investigated the impact of CSR on improving
informational text comprehension and metacognitive awareness of heterogeneous (gifted
students, ELL, students with disabilities) fifth-grade students \(N = 97\) in two elementary
schools with similar demographics. The researchers used intact classrooms to conduct their quasi-experimental pretest-posttest non-equivalent control group study. The treatment group \((n = 58)\) was located in one school and received reading, science, and social studies with CSR three times a week for three months, while the comparison group \((n = 39)\) was in another school receiving business as usual instruction for the same subjects. The data analysis showed a statistically significant difference in the informational text comprehension level between the treatment and the control groups \(F(1, 95) = 18.66, p < .001, \eta^2_p = .17\), favoring the intervention participants. However, there was no statistically significant results on the metacognitive awareness level \(F(4, 92) = 1.39, p = .24, \eta^2_p = .06\). Metacognitive awareness was measured based on the participants’ responses to a 30-item tool called Metacognitive Awareness of Reading Strategies Inventory (MARSI). This self-report instrument may have constituted a potential threat to the internal validity of the study. Another threat to the internal validity of the study is the difference between the intervention and control group teachers’ teaching qualifications. Finally, the study involved a large percentage of white students (population validity), which may temper the generalizability of the findings.

In a multi-site cluster randomized control trial (RCT), Boardman, Vaughn, Buckley, Reutebuch, Roberts, and Klingner (2016) involved 1372 fourth and fifth graders in their study assigning randomly 31 teachers to CSR groups \((n = 686)\) and 29 teachers to control groups \((n = 686)\). Their purpose was to measure the impact of CSR on the reading comprehension of 4th and 5th-grade children in general education classrooms and its efficacy on students with learning disabilities (subgroup). Thirty-two students in the treatment were identified with learning disabilities, whereas the comparison condition
included 55 students with learning disabilities. The intervention group received CSR two to three times a week for approximately 50 minutes over 14 weeks. The outcomes of this study did not reveal any difference between students without LD in CSR condition and those in the comparison group on reading comprehension; however, students with LD receiving CSR outperformed significantly those in the BAU group with an effect size of \( g = .52 \). These findings supported CSR as a practical approach for struggling readers, mainly those with learning disabilities. One weakness in this study was its failure to demonstrate the potential of CSR with students without learning disabilities, which could be explained by the low fidelity of CSR implementation. Based on the researchers’ observations, the majority of teachers implemented only three strategies of CSR (preview, click and clunk, and get the gist) instead of all the components of CSR (Boardman, Vaughn, et al., 2016).

**CSR with secondary grades.** Vaughn et al. (2011) carried out a randomized control trial by working with six middle schools in Texas and Colorado, randomizing students to 61 classes and then assigning the classes to treatment or comparison conditions (27 comparison and 34 treatment classes). Their purpose was to measure the effects of CSR and metacognitive strategic learning on the reading comprehension of students in 7th and 8th grade English language arts classes (\( N = 782 \)). Their study involved 17 teachers with various teaching qualifications (years of experience, level of education, and certificates). The teachers received 18 hours of CSR training before the researchers randomly assigned them to either treatment (\( n = 400 \)) or comparison (\( n = 382 \)) groups. Students in intervention classrooms were trained to implement CSR strategies in cooperative groups for 18 weeks (two sessions a week). The study yielded a
statistically significant difference in favor of the treatment group on the reading comprehension test with an effect size of $g = .12$ for the overall sample and $g = .36$ for struggling readers at $p < .05$, but the results were not statistically significant on reading fluency ($p = .52$). This finding is not surprising as the target of CSR is to improve the students’ thinking and interaction with the text and not the students’ reading speed (Vaughn et al., 2011). However, one might speculate that a rival explanation for the positive impact of CSR on reading comprehension was due to the teachers’ level of education and their teaching experience.

Vaughn et al. (2013) decided to extend the previous study (Vaughn et al., 2011) to a second year. They included 12 of the teachers who participated in their previous study with a new cohort of 7th and 8th graders ($N = 528$) and then assigned the participants randomly to intervention or comparison classes. Their purpose was to determine whether additional professional development and practice would improve implementation fidelity and enhance the new cohort’s reading comprehension. The researchers hypothesized that the condition group would outperform the comparison group similar to the Year 1 study. However, the findings indicated no difference between the treatment and the typical instruction classes as both groups (treatment and control) showed similar improvement in reading comprehension. One disadvantage of this study was its failure to document the impact of CSR fidelity on improving the students’ reading comprehension. Second, teachers in both CSR and business as usual instruction received prolonged professional development in CSR, which may have influenced the quality of instruction of the business as usual groups in comparison to the treatment groups. Contamination could have been another threat to the findings of the study; the control teachers may have
employed other interventions in their typical practice groups that might have had a similar effect as the CSR intervention.

The purpose of Reutebuch, El Zein, Kim, Weinberg, and Vaughn’s (2015) pilot study was to improve the reading comprehension of three Hispanic high school students diagnosed with Autism Spectrum Disorder (ASD) and failed to accomplish their academic tasks in a regular context due to their challenging behaviors. The investigators adapted CSR to teach the participants how to use a set of reading strategies to improve their reading comprehension and content knowledge. The participants were paired with academic advanced good-natured students to work cooperatively with for 30 minutes two to three times a week for 16 weeks during a schoolwide advisory period in a rural school district. The results of the study yielded an increase in two participants’ reading comprehension accuracy (from baseline 40%-60% to 81%-88% after the intervention), an increase in all of the participants’ social interaction frequency and academic engagement (from 2-6 times to 51-74 times after the treatment), and a significant decrease in their challenging behaviors such as off-task, task refusal, and skin picking behaviors (Reutebuch et al., 2015). However, the small number of participants ($n = 3$) and the lack of a comparison group may hinder the generalization of these outcomes. Additionally, the research design used (delayed multiple baseline design) may jeopardize the findings of this investigation since it is one of the weakest multiple baseline designs (Reutebuch et al., 2015).

Boardman et al. (2015) investigated the efficacy of CSR compared to typical instruction in middle school social studies and science classrooms. They conducted a multi-site cluster randomized trial in which intact social studies and science classes,
rather than students, were randomly assigned to condition, involving 19 teachers and 1074 students. There were two levels of treatment: “Full CSR” in which the participants ($n = 394$) received CSR in both social studies and science classrooms and “Partial CSR” which became an unintended treatment group formed due to scheduling conflicts that disrupted the design of the study. The “Partial CSR” students ($n = 261$) received CSR in one classroom, either social studies or science. After two days of professional development, the teachers in the treatment groups implemented CSR once a week in social studies and/or once a week in science classes throughout the school year, while the control classrooms ($n = 419$) received business as usual instruction. To measure the effects of CSR on the outcomes, the researchers used Hierarchical Linear Modeling, controlling for pretest scores and student demographics. Students in the “Full CSR” condition outperformed the control group and the “Partial CSR” intervention group ($g = .18, p < .05$) on the Gates-MacGinitie Reading Test. There was no significant difference in GMRT scores between the control group and the “Partial CSR” group, which may reveal the significance of CSR dosage on reading comprehension outcomes. Boardman et al.’s (2015) study raised a few problematic concerns. Firstly, the unintended treatment group interfered with the design of the study. Another possible weakness was the two-day professional development was insufficient to prepare teachers to implement CSR (low fidelity) adequately. Finally, the researchers did not control for other extraneous variables such as the teachers’ level of education, teaching experience, and subject matter knowledge. These variables might have influenced the findings of this study.

**CSR with postsecondary EFL learners.** Most studies of CSR have targeted English language learners (ELLs) with or without learning disabilities in inclusive
elementary, middle, or secondary classrooms. In general, CSR has been effective for increasing vocabulary (Klingner et al., 2004), reading comprehension, and promoting interaction (Klingner et al., 1998; McCown & Thomason, 2014; Reutebuch et al., 2015.). The cooperative learning component of CSR provides English language learners (ELLs) with extended exposure to the language from native speakers and support from bilingual peers (Klingner & Vaughn, 2000). Exploring the effectiveness of CSR with ESL learners in tertiary education has remained unexplored. Most of the studies available in the CSR literature were conducted in postsecondary EFL settings.

To investigate the effectiveness of CSR on Taiwanese university students’ reading comprehension questions (making inferences and predictions), Fan (2010) conducted a quasi-experimental study that included 110 EFL participants with low-intermediate to intermediate levels of English from two intact classes for 14 weeks. The researcher modeled CSR to the whole class and trained the treatment group to apply the strategies while reading expository texts for two weeks. On the other hand, the comparison group received traditional teacher-led instruction. To triangulate the data, the researcher employed videotaping to examine the quality of group discussions and used a questionnaire to capture the students’ perceptions of CSR after the intervention ended. The results, as measured by the researcher, indicated that CSR had a statistically significant effect on the treatment group’s ability to respond to questions related to the main idea (Gist) \( p = .002 \) and supporting details \( p < .05 \) compared to students in the comparison condition. On the other hand, the treatment group performance on answering questions related to predictions \( p = .71 \), inferences, \( p = .77 \) and unknown vocabulary \( p = .38 \) was not statistically significant. These non-significant results could be attributed
to the participants’ lack of background knowledge on the topic of the text (The Best Medicine).

Karabuga and Kaya (2013) conducted a mixed approach study to examine the effects of CSR on adult EFL learners’ reading comprehension and reading problems controlling for pretest scores. Forty undergraduate EFL students with different ages and backgrounds attending various departments at a Turkish university were conveniently selected from 15 different classes and appointed to treatment ($n = 21$) and comparison ($n = 19$) conditions. The researcher implemented CSR three hours a week for eight weeks. On the other hand, the comparison group received business as usual instruction. To triangulate the data, he utilized five instruments (pre-post reading comprehension tests, CSR learning logs, one-minute papers about the reading issues experienced by the participants, reflection learning logs, and the researcher’s field notes) to capture the effects of CSR along with students’ perceptions, feelings, criticisms, and suggestions regarding the intervention. The findings showed that the treatment group outperformed the control group significantly in reading comprehension as evidenced by the results of the post-reading comprehension test ($p < .001$). The researcher’s field notes, CSR learning logs, and reflective logs elucidated the results of this study, and the one-minute papers revealed that vocabulary was the main problem the participants encountered. This study was limited by the small sample size and the major involvement of the researchers who represented a potential source of bias. Lastly, the researchers did not report any effect sizes.

As a means of exploring the impact of CSR on EFL students’ critical reading and reading attitudes, Khonamri and Karimabadi (2015) designed a quasi-experimental study
that involved 40 Iranian university students majoring in English language literature and English translation with an intermediate level of English determined by the TOEFL test at the beginning of the term. The intervention was implemented twice a week for ten sessions. The teacher in the treatment group \((n = 20)\) explained CSR strategies along with the critical reading strategies in two sessions and then assigned students to cooperative groups to implement CSR independently for eight sessions. On the other hand, the control group received traditional teaching with student-teacher interaction dominance. The findings indicated that students in the CSR group outperformed \((p = .04)\) their peers in the control condition on critical reading and positive attitudes towards CSR. This study had a few limitations. First, the two CSR training sessions may not be sufficient to provide students with the confidence and self-efficacy they need to implement CSR independently in their cooperative groups. Furthermore, the homogeneity of the group (including their major) limited the generalizability of the findings. A final limitation was the small sample size and the lack of random assignment.

**Summary of CSR Literature**

Several studies conducted in CSR over the past 20 years have demonstrated the effectiveness of Collaborative Strategic Reading on reading comprehension and metacognitive awareness for culturally and linguistically diverse contexts in upper elementary, secondary, postsecondary, and special education classrooms (Klingner, Boardman, et al., 2012; Klingner et al., 2004; Vaughn et al., 2011; Khonamri & Karimabadi, 2015). However, there are still some areas that warrant further research.

CSR offers an opportunity for students to construct meaning in a social context where the members of the cooperative learning groups interact and support each other
employing a set of metacognitive strategies that stimulate
the person’s thinking and can lead to higher reading comprehension (Anderson, 2002).
Knowing that social skills allow people to interact positively with others and their
environment (Lynch & Simpson, 2010), none of the studies reviewed assessed the
participants’ social skills before the implementation of CSR. The participants were
assumed to be accustomed to cooperative learning.

An extensive body of research (Alexander, Entwisle, & Dauber, 1993; Cooper &
Farran, 1988; McClelland, Morrison, & Holmes, 2000, 2003) revealed that social skills
might predict students’ success in school, and thus socially fluent students outperform
academically those with social deficits. Therefore, offering social skills explicit
instruction or embedded instruction could improve the skills of students with social
deficits before implementing CSR.

Radley, Ford, Battagalia, and McHugh (2015) carried out a study to test the
efficacy of the Superheroes Social Skills program in increasing social engagement of four
children with Autism Spectrum Disorders (ASD) during recess. The results indicated that
each participant demonstrated strong effects in improving the time spent with their peers
from the baseline phase to the intervention phase. In addition, their pre- and post-
intervention Autism Social Skills Profile results yielded a large effect size ranging
between $r = .82$ and $r = .97$.

Researchers like Simonsen, Myers, Everett, Sugai, Spencer, and LaBreck (2012)
suggested teaching children social skills just like any academic skills. They proposed a
schoolwide action plan to guide school teams through implementation to benefit all
children instead of using social skills programs targeting particular children with social
deficits. Positive Behavior Support is an approach to social skills instruction that “emphasizes taking a preventive approach to reducing problem behavior while using proactive instructional methods to teach students appropriate social behavior” (Meier, DiPerna, & Oster, 2006, p. 411).

According to Bandura’s (1977) social learning theory, individuals acquire many social behaviors by observing others. Pairing up socially competent students with those with social deficits during school time may lead to an improvement in social skills (Lynch & Simpson, 2010) because students are more likely to imitate behaviors that are socially enhancing (Bandura, 1977).

Some international students come from traditional essentialist systems of education where lecturing and passive learning dominate. Some students may need support to develop their social skills to adapt to the United States’ democratic classroom environment. CSR offers an abundance of opportunities for students who do not have experience working collaboratively with others to learn the essential social skills that would allow them to function effectively in their groups (Klingner & Vaughn, 1999) and succeed in applying CSR strategies.

Although research has displayed the potential of CSR in trusting and empowering students to take ownership of their learning, taking turns as a teacher and leader of the dialogue to bring meaning to the written word (Hattie, 2009), there is a common weakness in CSR research in terms of the limited duration devoted to the CSR interventions. Apart from a few longitudinal studies, most studies reviewed implemented CSR for 11 days to a few months (Khonamri & Karimabadi, 2015; Klingner et al., 1998; Klingner & Vaughn, 2000), which may impede the long-term efficacy of the intervention.
Taking into consideration the three main phases of applying CSR (the modeling phase, the teacher-assisted phase, and the independent phase) as suggested by Vaughn and Solis (2014), CSR implementation requires sufficient time before teachers can gradually release the responsibility of learning over to the students (Klingner et al., 2004; Vaughn et al., 2013).

Another limitation in CSR research is the potential contamination of control groups and the failure to address it adequately. Some studies did not yield significant gains with the CSR implementation, which raised rival hypotheses including the possibility that the control participants might have learned about the treatment and adopted it. Consequently, the effectiveness of the treatment might have been minimized, leading to a Type II error in which the researcher does not reject the null hypothesis stating that the treatment is not effective when it is (Field, 2013).

The available research suggests that CSR is a promising and effective practice that can be suitable for reading and language arts instruction (Vaughn et al., 2011). Nonetheless, it is a complex instructional practice that requires training to understand the cognitive monitoring of text and strategic reading (Klingner et al., 2004). Therefore, many teachers find it challenging to learn how to teach comprehension strategies as well as designing collaborative groups, which is an essential component of CSR (Vaughn et al., 2013). Offering limited professional training to the implementers constitutes another common weakness in CSR research. Studies showed that teachers who implemented CSR more frequently had a positive impact on their students’ reading outcomes than those who did not (Klingner et al., 2004; Vaughn et al., 2011).
Although there are several gaps in the CSR literature, the underpinnings of CSR in social constructivism and metacognitive theory, supported by generally effective empirical evidence, make Collaborative Strategic Reading appear to be a promising practice that could well suit the needs of ESL international students in college. It may have the potential to improve their reading comprehension, help them develop their language through interaction, and promote their cognitive awareness in a low anxiety atmosphere (Klingner & Vaughn, 2000).

CSR has been implemented heavily in primary and secondary levels (Boardman et al., 2015; Klingner et al., 2004; McCown & Thomason, 2014; Vaughn et al., 2011). However, the studies conducted in postsecondary levels are limited, and most of them were carried out in EFL contexts (Karabuga & Kaya, 2013; Khonamri & Karimabadi, 2015). With the number of international students in American colleges and universities, exploring the feasibility of CSR and its effectiveness on international students’ reading comprehension in college merits further research, bridging the language and culture gap and informing the practice of ESL teachers.
Chapter III: Method

The purpose of this study is to evaluate the effect of Collaborative Strategic Reading on the reading comprehension and the metacognitive awareness of students in the treatment group compared to their peers in the control group, controlling for the reading comprehension and metacognitive awareness pretest scores. Capturing the students’ perceptions of CSR implementation in the treatment group is another area the researcher aims to explore.

1. Will ESL students in the treatment group demonstrate statistically significant gains in reading comprehension in comparison to their peers in the control group when controlling for the reading comprehension pretest scores?

2. Will ESL students in the treatment group demonstrate statistically significant gains in metacognitive awareness in comparison to their peers in the control group when controlling for the metacognitive awareness pretest scores?

3. What are the students’ perceptions of Collaborative Strategic Reading after the treatment?

This chapter describes and explains: 1) the research design of this study, 2) the sampling procedure, 3) the instrument tools used to collect the data, and 4) the statistical procedure employed to analyze the data.

Research Design

A pretest-posttest nonequivalent control group design was selected to answer the research questions. While the researcher assumed that the two groups were similar, there was a possibility that the two groups were different (nonequivalent) before the treatment, which may affect the internal validity of the study (Trochim, 2006). However, the
nonequivalent group design is the most frequently used design in social research. Its structure is similar to a randomized design but lacks the random assignment (Trochim, 2006). Moreover, quasi-experimental research could provide a basis for future experimental studies.

**Variables**

The dependent variables identified in this quasi-experimental study are the students’ performance in reading comprehension as measured by Questar’s Degrees of Reading Power (DRP) and their performance in metacognitive awareness as assessed by the Metacognitive Awareness of Reading Strategies Inventory (MARSI) (Mokhtari & Reichard, 2002). The independent variable is the type of instruction: the treatment group received CSR instruction from the investigator, while another ESL instructor provided the control group with business as usual (BAU) instruction. The covariate variables are the DRP and MARSI pretest scores.

**Participants and Sampling Procedure**

The researcher used the data she collected in Winter 2017 to answer the research questions (ex post facto design). She initially recruited 36 subjects enrolling in an intensive ESL program in a community college in Washington to meet the English proficiency requirement before they could enter college or transfer to a four-year university. However, the investigator had to exclude four students who did not meet the age requirement. Two of these four 17-year old students were in the treatment group and had the choice to work individually or in pairs on the same materials as the treatment group with the teacher’s guidance like any typical ESL instruction classroom. The study involved 22 males and 12 females with an age range of 18 to 26 years, coming from
diverse countries: 14 Chinese, 5 Vietnamese, 3 Japanese, 3 Saudis, 2 Koreans, 2
Cambodians, 1 Palestinian, 1 Taiwanese, and 1 Indonesian. They were all fluent in their
L1 and not identified with any learning disability. Their stay in the U.S. ranged between
one month to nine months, so most of them had little experience in the U.S. educational
system. The majority of the participants were interested in pursuing a degree in STEM
majors such as computer programming, engineering, medicine, pharmacy, and other
majors, but their common goal was to improve their English skills before they could
pursue their fields of interest.

Before the intervention, the researcher summarized the details of the study and
submitted the Institutional Review Board (IRB) research application at the community
college where she worked to gain approval to conduct the study.

It is complicated to conduct a true experiment with a random assignment that
satisfies the traditional laboratory standards of quality in the real world of classrooms and
schools (Gersten, Baker, & Lloyd, 2000). Therefore, the researcher decided to use
convenience sampling to select two ESL reading classes Level 3 (intermediate English
proficiency) based on the objective of the study, the time, and the funds available for the
researcher. Every quarter, teachers do their best to ensure that students’ demographics
(gender, age, country of origin, number of students) are equal across all classes, so the
researcher assumed that the demographic characteristics of the treatment group ($n = 16$)
and the control group ($n = 16$) were equal. The treatment group received CSR instruction
three to four times a week for 50 minutes per session for nine weeks using three
informational reading units (Starting a Career, the Human Brain, and Communication).
On the other hand, another ESL instructor provided the control group with business as
usual instruction using the same materials. Both teachers in the treatment and the comparison groups had approximately similar teaching qualifications (education level and teaching experience).

**Instrumentation**

Since social skills are crucial to the success of CSR, the researcher decided to assess the treatment group’s social skills before proceeding with the study to identify any socially incompetent participants. The Social Competence Teen Survey, developed by Child Trends for the Flourishing Children Project, includes nine items in the form of scenarios assessing a set of skills that are required to get along with people and work collaboratively with them. This instrument provides students with five choices (not at all like me, a little like me, somewhat like me, a lot like me, and exactly like me), and each choice places them in high, average, or low social competence. Fortunately, the participants’ responses did not indicate any social skills concerns.

The researcher employed three research instruments to answer the research questions: Degrees of Reading Power, Metacognitive Awareness of Reading Strategies Inventory (MARSI), and a questionnaire.

**Degrees of Reading Power.** DRP is a multiple-choice test, developed by Touchstone Applied Science Associates, to assess at different grade levels students’ reading comprehension of passages of increasing difficulty (Touchstone Applied Science Associates, 1998). The test employed included non-fiction passages (9-24 passages) on various topics. Each reading passage had a missing sentence, and students had to select a sentence that made the best sense in the blank from multiple-choice options. This tool requires the use of more reading strategies than students’ background knowledge. The
researcher selected this measurement tool to assess the participants’ reading
comprehension, as it is one of the most reliable valid tools designed to evaluate how
students process and understand expository texts, measuring their growth over time
(Morsy, Keiffer, & Snow, 2010). Kuder-Richardson Formula 20, a measure of reliability,
indicated high internal consistency reliability of $K-R\ 20 = .95$. Also, the readability of
passages correlated with the difficulty of items ($r = .95$), suggesting criterion validity.

**Metacognitive Awareness of Reading Strategies Inventory (MARSI).** MARSI
is a 30-item instrument developed by Mokhtari and Reichard (2002) to assess adolescent
and adult readers’ metacognitive awareness and their control of the strategic processes
they use while reading. It includes three strategy subscales or factors: Global Reading
Strategies, Problem-solving Strategies, and Support Reading Strategies. Students respond
to statements about their use of reading strategies on a 5-point Likert Scale ranging from
“I never or almost never do this” to “I always or almost always do this.” The researcher
selected this self-report measure for two reasons. First, metacognition is not directly
observable in students. Second, MARSI is one of the most reliable (Cronbach’s alpha
was .89) and valid instruments employed in the research literature of CSR measuring
metacognitive awareness. It was established based on a large sample ($N = 825$) drawn
from urban, suburban, and rural districts in five Midwestern states, and the results have
revealed that the students who reported high reading ability had also reported their use of
metacognitive strategies, which suggests the construct validity of this measurement
(Mokhtari & Reichard, 2002).
The researcher used a questionnaire to capture students’ perceptions of CSR, which provided valuable insights into the strengths and weaknesses of CSR, and the strategies the participants valued most and least.

**Questionnaire.** The researcher used a five-question survey to obtain the participants’ feedback on CSR (What do you like about CSR? Why? What do you dislike about CSR? Why? Which CSR strategies have helped you most with your reading comprehension? Which CSR strategies have helped you least with your reading comprehension? Which CSR strategies will you more likely use in the future? Why?). The researcher employed this measure to obtain a better understanding of what helped the students the most and least with their reading comprehension and what strategies they are more likely to keep using in the future. The students’ responses have helped the researcher to perceive some limitations and generate some future research recommendations.

**Procedure**

The researcher obtained the informed consent forms from the participants after she explained the purpose and significance of the study, addressing confidentiality to alleviate students’ concerns and ensure accurate participation. Then the researcher and the BAU instructor pretested students in the treatment and control conditions on reading comprehension using DRP (form A1, consisting of 9 passages) and then on their level of metacognition, employing MARSI to identify the preexisting metacognitive knowledge of the participants. Before the intervention, the treatment group teacher explained the essential elements of cooperative learning and reinforced them during the study to sustain the efficacy of group work. During the first week (four sessions), the researcher
explained each CSR strategy (preview, click & clunk, get the gist, and wrap up) and its importance in facilitating reading comprehension, and when and how to implement it (Klingner & Vaughn, 1999). Next, she modeled each strategy and each group role (leader, clunk expert, gist expert, and question expert) through think-aloud procedures, using expository texts from the three units she planned to teach that quarter. In the second and third week (six sessions), students had opportunities to practice these strategies and roles through teacher-led activities as well as interacting in English. Providing sufficient time and practice in initial training is crucial to the success of this approach. When students became familiar with CSR strategies, the researcher assigned them to mixed ability cooperative groups of four where they had the opportunity to apply these strategies and their roles in peer-led activities (Vaughn, Klingner, & Bryant, 2001). Each student was responsible for carrying out a particular role in his/her group, and these roles rotated every week so that all group members would experience a variety of roles (Johnson & Johnson, 1989b). The rationale for selecting groups of four was that four people or less in a group produce higher achievement (Slavin, 2014), and the smaller the size of the group, the higher the individual accountability may be (Johnson & Johnson, 1994).

While the participants were working independently in their cooperative groups, the teacher’s role was limited to classroom management, offering corrective feedback, monitoring students’ use of CSR strategies, and ensuring that the members of each group were implementing the CSR strategies and roles effectively and accurately.

The participants used learning logs to write their previews and predictions about the text before reading it, their clunks (difficult words and concepts), main ideas,
questions, and summaries. By doing that, they were able to keep track of their learning, demonstrate their individual accountability, and use their learning logs as a study guide. In addition, they used cue cards to outline the responsibilities of each group member. Once the participants felt secure carrying out their roles, they discontinued using them (Klingner & Vaughn, 1998).

After nine weeks of treatment, the researcher and the control group teacher administered another version of DRP (U-4 form) as a posttest with the same level of difficulty as the pretest to examine the difference between the treatment group and the control group on reading comprehension. To posttest metacognitive awareness, students took the same metacognitive survey pretest (MARSI). At the end of the intervention, students in the treatment group responded to five questions to express their perceptions of CSR.

**Data Analysis**

Based on the variables in this study, two dependent variables (reading comprehension and metacognitive awareness level), one independent variable (the type of instruction: CSR vs. BAU), and two covariate variables (DRP and MARSI pretest scores) (Tabachnick & Fidell, 2012), the researcher initially decided to perform One-Way MANCOVA to determine the impact of CSR on reading comprehension and metacognitive knowledge. However, violating the assumption of linearity between the two dependent variables led the researcher to conduct two One-Way ANCOVAs instead.

With a good covariate, ANCOVA can measure the means across the IV levels on the dependent variable, adjusting for any differences on the covariate. Covariates can
increase the statistical power of the model, reducing the probability of a Type II error (Leech, Barrett, & Morgan, 2005).

The first One-Way ANCOVA was used to detect the difference in means of the CSR group (treatment) and the BAU group (comparison) on their reading comprehension posttest scores (DV) while controlling for the effect of the pretest scores that may co-vary with the dependent variable. The second One-Way ANCOVA was computed to measure the difference in means of the CSR group and the BAU group on their metacognitive knowledge posttest scores controlling for the pretest scores. The researcher adjusted the alpha level to .025 for each One-Way ANCOVA to avoid Type I error. Hence, there would be a 2.5% chance that the outcomes of each One-Way ANCOVA would be due to random error/chance.
Chapter IV: Results

The purpose of this quasi-experimental study was to measure the effect of Collaborative Strategic Reading on the reading comprehension and the metacognitive knowledge of the treatment group in comparison to their peers in the control group after removing the effect of their reading and metacognitive knowledge pretest scores from the analysis.

The study involved 32 ESL international students enrolled in an ESL program at a Washington community college. The researcher assigned two intact groups to a treatment group \((n = 16)\) and a comparison group \((n = 16)\). The participants in the treatment group received CSR instruction for nine weeks to train them on using a set of metacognitive strategies while reading informational texts.

Based on the variables involved in this study, two dependent variables (reading comprehension and metacognitive awareness) and one independent variable (the type of instruction), the researcher decided to conduct a One-Way MANCOVA to analyze the data. However, the data failed to meet the assumption of linearity between the two dependent variables. The correlation table (see Table 1) did not produce statistically significant correlations between the reading and metacognitive awareness pretest scores \((r = .03, p = .87)\) and the reading comprehension and metacognitive knowledge posttest scores \((r = .06, p = .72)\). Therefore, the researcher determined to compute two One-Way ANCOVAs to evaluate the effect of the independent variable on each dependent variable.
Table 1

*Correlation is significant at 0.05 level (2-tailed).
**Correlation is significant at 0.01 level (2-tailed).

Metacog. Pretest= Metacognitive pretest
Metacog. Posttest= Metacognitive posttest

One-Way ANCOVA was run to test the effect of the CSR instruction on the reading comprehension posttest scores while controlling for the effect of the covariate (reading pretest). The researcher computed another One-Way ANCOVA to evaluate the
impact of CSR instruction on the metacognitive knowledge posttest scores controlling for
the metacognitive knowledge pretest scores.

**Descriptive Statistics**

Before conducting a One-Way Analysis of Covariance (ANCOVA), the
researcher screened the data through the IBM SPSS program for the accuracy of data
entry, missing values, outliers, and normal distribution.

Table 2 provides the descriptive statistics of all the variables involved in this
study for all the participants.

Table 2

*Descriptive Statistics of Reading Comprehension and Metacognitive Pretests and
Posttests*

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness Statistic</th>
<th>Std. Error</th>
<th>Kurtosis Statistic</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Pre</td>
<td>32</td>
<td>32.94</td>
<td>13.13</td>
<td>.21</td>
<td>.41</td>
<td>-1.23</td>
<td>.80</td>
</tr>
<tr>
<td>Reading Post</td>
<td>32</td>
<td>36.03</td>
<td>15.97</td>
<td>.67</td>
<td>.41</td>
<td>.29</td>
<td>.80</td>
</tr>
<tr>
<td>Metacog. Pre</td>
<td>32</td>
<td>3.14</td>
<td>.60</td>
<td>.07</td>
<td>.41</td>
<td>-.92</td>
<td>.80</td>
</tr>
<tr>
<td>Metacog. Post</td>
<td>32</td>
<td>3.35</td>
<td>.56</td>
<td>-.56</td>
<td>.41</td>
<td>.84</td>
<td>.80</td>
</tr>
</tbody>
</table>

*Note.* Reading Pre: Reading pretest; Reading Post: Reading posttest; Metacog. Pre: Metacognitive knowledge pretest; Metacog. Post: Metacognitive knowledge posttest

For all participants, the mean score for the reading comprehension pretest was
36.03 ($SD = 15.97$), and the mean score for the posttest was 32.94 ($SD = 13.13$). The
mean score for the metacognitive knowledge pretest was 3.14 ($SD = .60$), and for the
posttest, it was 3.35 ($SD = .56$). Table 2 indicates that the mean score for all the participants for the reading posttest ($M = 32.94$) was lower than the pretest ($M = 36.03$), which necessitated examining the means of pretests and posttests of both groups to access group gains on reading and metacognitive knowledge.

On the pretest, the CSR group’s mean was 37.06 ($SD = 4.15$) for the reading comprehension and 3.17 ($SD = .13$) for the metacognitive awareness, while the BAU group’s mean for the reading comprehension was 35 ($SD = 3.94$) and 3.10 ($SD = .16$) for the metacognitive knowledge. The CSR group participants’ mean for the reading comprehension posttest was 38.68 ($SD = 3.32$) and 3.54 ($SD = .07$) for the metacognitive awareness posttest. On the other hand, the BAU participants’ mean score was 27.18 ($SD = 2.6$) for the reading comprehension posttest and 3.16 ($SD = .17$) for the metacognitive awareness.

**Meeting the Parametric Assumptions of ANCOVA**

ANCOVA requires a set of assumptions to be satisfied, mainly normality, measurement variables, independence of observations, lack of extreme outliers, homogeneity of variance, the linearity of posttest and covariate, the independence of the covariate and the treatment effect, and homogeneity of regression slopes.

Table 3 shows Shapiro-Wilk’s and Kolmogorov-Smirnov tests of normality. According to Shapiro Wilk’s, the reading posttest scores of both groups were not statistically significant, $W(16) = .91, p = .14$; $W(16) = .91, p = .11$ as well as the metacognitive knowledge posttest scores of both groups, $W(16) = .96, p = .71$; $W(16) = .96, p = .76$. The reading and the metacognitive knowledge pretest scores of both groups have also remained within the normality range.
Table 3

*Tests of Normality*

<table>
<thead>
<tr>
<th>Group</th>
<th>Kolmogorov-Smirnov&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
<td>df</td>
</tr>
<tr>
<td>Reading Pre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSR</td>
<td>.15</td>
<td>16</td>
</tr>
<tr>
<td>BAU</td>
<td>.17</td>
<td>16</td>
</tr>
<tr>
<td>Reading Post</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSR</td>
<td>.20</td>
<td>16</td>
</tr>
<tr>
<td>BAU</td>
<td>.27</td>
<td>16</td>
</tr>
<tr>
<td>Metacog. Pre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSR</td>
<td>.14</td>
<td>16</td>
</tr>
<tr>
<td>BAU</td>
<td>.12</td>
<td>16</td>
</tr>
<tr>
<td>Metacog Post</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSR</td>
<td>.12</td>
<td>16</td>
</tr>
<tr>
<td>BAU</td>
<td>.15</td>
<td>16</td>
</tr>
</tbody>
</table>

<sup>a</sup>This is a lower bound of the true significance.

Lilliefors Significance Correction

*Note.* Reading Pre: Reading pretest; Reading Post: Reading posttest; Metacog. Pre: Metacognitive knowledge pretest; Metacog. Post: Metacognitive knowledge posttest

The values of skewness which were within the range of ±1, kurtosis (approximately within the range ±1), Shapiro-Wilk and Kolmogorov-Smirnov tests of normality, histograms, boxplots, and Q-Q plots showed that the data were normally distributed except for the BAU reading posttest according to Kolmogorov-Smirnov test. However, ANCOVA is robust against the normality assumption. Thus, the researcher assumed normality without any extreme outliers.
Since the dependent variables and covariate variables in this study were continuous (interval data), and the independent variable was categorical (CSR or BAU instruction), the assumption of measurement of variables was met.

The subjects participated only in one group, either the treatment or the comparison group, which satisfied the assumption of independence.

A bivariate correlation was run for each ANCOVA to test linearity between the covariate and the dependent variable. The reading pretest scores and the reading posttest scores were significantly correlated ($r = .35, p = .04$), and the metacognitive knowledge pretest scores were also significantly related to the metacognitive knowledge posttest scores ($r = .72, p = .001$). Therefore, linearity between the covariates and the dependent variables was satisfied.

**Inferential Statistics**

Two preliminary One-Way ANCOVAs were computed to satisfy homogeneity of variance and homogeneity of regression slopes, and two ANOVAs were run to meet the independence of the covariates and the treatment effects.

The homogeneity of variance value was not statistically significant for both reading comprehension scores, $F(1, 30) = .36, p = .55$ and the metacognitive knowledge scores, $F(1, 30) = .01, p = .89$. Levene’s test indicated that the variance of the dependent variable (reading posttest scores and metacognitive knowledge posttest scores) was equal across groups.

An ANOVA was conducted (see Table 4) to evaluate whether the intervention and the comparison group were different in the reading covariate before the study. The results revealed that there was no statistically significant difference between the CSR and
the BAU groups on the reading pretest scores, $F(1, 30) = .13, p = .72$. Another ANOVA (see Table 5), ran to detect the group differences on the metacognitive pretest scores (covariate), showed no statistically significant difference between the two groups on the metacognitive knowledge covariate, $F(1,30) = .10, p = .75$. With these non-significant values, the researcher assumed the independence of the covariate and the treatment effect (Field, 2013).

Table 4

*ANOVA: Independence of Reading Covariate and the Treatment Effect*

<table>
<thead>
<tr>
<th></th>
<th>Squares of Square</th>
<th>df</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>34.03</td>
<td>1</td>
<td>34.03</td>
<td>.13</td>
<td>.72</td>
</tr>
<tr>
<td>Within Groups</td>
<td>7868.93</td>
<td>30</td>
<td>262.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7902.96</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5

*ANOVA: Independence of Metacognitive Knowledge Covariate and the Treatment Effect*

<table>
<thead>
<tr>
<th></th>
<th>Squares of Square</th>
<th>df</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>.03</td>
<td>1</td>
<td>.03</td>
<td>.10</td>
<td>.75</td>
</tr>
<tr>
<td>Within Groups</td>
<td>11.25</td>
<td>30</td>
<td>.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11.29</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The homogeneity of regression slopes was tested to evaluate the group differences in the reading pretest covariate, inspecting whether or not the regression slopes for the two groups were equal or parallel (Johnson, 2016). When the value of the homogeneity of
regression slopes is not statistically significant, it suggests that there is no interaction between the covariate and the independent variable across all levels of the covariate (Johnson, 2016). For the reading comprehension, this test was not statistically significant, indicating that the assumption of homogeneity of regression slopes was satisfied $F(3, 28) = 1.31, p = .26$ (see Table 6).

Table 6

*Ttests of Between-Subjects Effects to Test Homogeneity of Regression Slopes for Reading Posttest*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
<th>Partial Eta-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>1796.31$^a$</td>
<td>3</td>
<td>598.77</td>
<td>4.72</td>
<td>.00</td>
<td>.33</td>
</tr>
<tr>
<td>Intercept</td>
<td>2774.64</td>
<td>1</td>
<td>2774.64</td>
<td>21.91</td>
<td>.00</td>
<td>.43</td>
</tr>
<tr>
<td>Type of Instruction</td>
<td>.29</td>
<td>1</td>
<td>.29</td>
<td>.00</td>
<td>.96</td>
<td>.00</td>
</tr>
<tr>
<td>Reading Pretest</td>
<td>539.65</td>
<td>1</td>
<td>539.65</td>
<td>4.26</td>
<td>.04</td>
<td>.13</td>
</tr>
<tr>
<td>Group*Reading Pretest</td>
<td>165.91</td>
<td>1</td>
<td>165.91</td>
<td>1.31</td>
<td>.26</td>
<td>.04</td>
</tr>
<tr>
<td>Error</td>
<td>3545.55</td>
<td>28</td>
<td>126.62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40058.00</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>5341.87</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a$R-Squared = .757 (Adjusted R-Squared = .731)

*Note.* Dependent Variable: Metacognitive Posttest Scores

However, the homogeneity of regression slopes that evaluated the group differences on the metacognitive awareness covariate was violated, producing a statistically significant interaction $F(3, 28) = 16.62, p = .001$ (Table 7). This interaction suggested that the relationship between the covariate and the dependent variable is not
linear at each level of the independent variable. The homogeneity of regression slopes violation could be crucial to the results of the study. It may lead the researcher to falsely conclude that the independent variable did not impact the students’ performance on the posttest and so erroneously fail to reject the null hypothesis (Johnson, 2016).

Table 7

Tests of Between-Subjects Effects to Test Homogeneity of Regression Slopes for Metacognitive Awareness Posttest

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>7.40&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3</td>
<td>2.46</td>
<td>29.04</td>
<td>.00</td>
<td>.75</td>
</tr>
<tr>
<td>Intercept</td>
<td>2.55</td>
<td>1</td>
<td>2.55</td>
<td>30.09</td>
<td>.00</td>
<td>.51</td>
</tr>
<tr>
<td>Type of Instruction</td>
<td>1.79</td>
<td>1</td>
<td>1.79</td>
<td>21.15</td>
<td>.00</td>
<td>.43</td>
</tr>
<tr>
<td>MetaPretest</td>
<td>3.51</td>
<td>1</td>
<td>3.51</td>
<td>41.39</td>
<td>.00</td>
<td>.59</td>
</tr>
<tr>
<td>Group*MetaPretest</td>
<td>1.41</td>
<td>1</td>
<td>1.41</td>
<td>16.62</td>
<td>.00</td>
<td>.37</td>
</tr>
<tr>
<td>Error</td>
<td>2.37</td>
<td>28</td>
<td>.085</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>369.57</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>9.78</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> R-Squared = .757 (Adjusted R-Squared = .731)

Note. Dependent Variable: Metacognitive Posttest Scores; MetaPre: Metacognitive pretest

One option to deal with the homogeneity of regression slopes violation is to drop the covariate variable from the analysis and run an ANOVA (Grace-Martin, 2019).

However, ANOVA would not reflect the differences between the groups before the study (baseline imbalance). Another option is to proceed with the homogeneity of regression slopes violation and interpret the results cautiously (Grace-Martin, 2019). Johnson (2016)
recommended an alternative analytical approach: the Johnson-Neyman (1936) Procedure, a procedure that allows “calculations of the point of interaction (crossover point) of regression lines known as simultaneous regions of significance (SROS)” (Johnson, 2016, p. 257). SROS is a region where the groups differ simultaneously for all the points in it (Potthoff, 1964). With this alternative approach, the researcher has to “identify the pretest scores ranges for which the groups differ significantly on the dependent variable” (Johnson, 2016, p. 257) and categorize them carrying out some tedious calculations (D’Alonzo, 2004). However, the researcher was not trained to use the Johnson-Neyman (1936) alternative, which requires complicated statistical procedures. Therefore, the researcher decided to proceed with ANCOVA with heterogeneous regression slopes to assess the group differences in metacognitive knowledge.

The researcher conducted a One-Way ANOVA to measure the impact of treatment on the reading achievement without controlling for the reading pretest scores (the covariate). The results were statistically significant, $F(1, 30) = 7.40, p = .01, \eta^2_p = .19$ (see Table 8). However, after adding the covariate to the analysis, computing a One-Way ANCOVA, the variance accounted for has slightly improved, $F(2, 29) = 7.45, p = .01, \eta^2_p = .20$ (see Table 9). The estimated marginal means (see Table 10) showed that the CSR group (treatment) made significant gains ($M = 38.40$) on the reading comprehension posttest compared to their peers in the control group ($M = 27.46$) with an effect size of $\eta^2_p = .20$ after controlling for the pretest scores. This moderate Partial Eta-Squared value indicated that 20% of the variance in the reading posttest scores (dependent variable) was attributed to the type of instruction (IV) after controlling for the effect of the reading pretest scores.
Table 8

ANOVA: Tests of Between-Subjects Effects for Reading Comprehension Posttest

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>1058.00</td>
<td>1</td>
<td>1058.00</td>
<td>7.40</td>
<td>.011</td>
<td>.198</td>
</tr>
<tr>
<td>Intercept</td>
<td>34716.12</td>
<td>1</td>
<td>34716.12</td>
<td>243.11</td>
<td>.000</td>
<td>.890</td>
</tr>
<tr>
<td>Group</td>
<td>1058.00</td>
<td>1</td>
<td>1058.00</td>
<td>7.40</td>
<td>.011</td>
<td>.198</td>
</tr>
<tr>
<td>Error</td>
<td>4283.87</td>
<td>30</td>
<td>142.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40058.00</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>5341.87</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R-Squared = .198 (Adjusted R-Squared = .171)

Note. Dependent Variable: Reading Posttest
### Table 9

**ANCOVA: Tests of Between-Subjects Effects for Reading Comprehension Posttest**

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected</td>
<td>1630.40</td>
<td>2</td>
<td>815.20</td>
<td>6.37</td>
<td>.00</td>
<td>.30</td>
</tr>
<tr>
<td>Model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>2747.48</td>
<td>1</td>
<td>2747.48</td>
<td>21.46</td>
<td>.00</td>
<td>.42</td>
</tr>
<tr>
<td>Reading Pretest</td>
<td>572.40</td>
<td>1</td>
<td>572.40</td>
<td>4.47</td>
<td>.04</td>
<td>.13</td>
</tr>
<tr>
<td>Group</td>
<td>953.99</td>
<td>1</td>
<td>953.99</td>
<td>7.45</td>
<td>.01</td>
<td>.20</td>
</tr>
<tr>
<td>Error</td>
<td>3711.47</td>
<td>29</td>
<td>127.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40058.00</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected</td>
<td>5341.87</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a R-Squared = .305 (Adjusted R-Squared = .257)

**Note.** Dependent Variable: Reading Posttest

*Covariate:* Reading pretest
Table 10

Estimated Marginal Means for Reading Comprehension Posttest Scores

<table>
<thead>
<tr>
<th>Type of Instruction</th>
<th>Mean</th>
<th>Std. Error</th>
<th>97.5% Confidence Interval</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSR</td>
<td>38.40</td>
<td>2.83</td>
<td></td>
<td>31.7</td>
<td>45.10</td>
</tr>
<tr>
<td>BAU</td>
<td>27.46</td>
<td>2.83</td>
<td></td>
<td>20.77</td>
<td>34.15</td>
</tr>
</tbody>
</table>

*a Covariates appearing in the model are evaluated at the following values: Reading Pretest Scores = 36.0313.

Note. Dependent Variable: Reading Posttest Scores

A One-Way ANOVA (see Table 11) was conducted to detect the difference between the CSR group and the BAU group on the metacognitive knowledge posttest without removing the effect of the pretest scores. The results were marginally significant, $F(1, 30) = 4.04, p = .053$, $\eta^2_p = .11$.

Table 11

ANOVA: Tests of Between-Subjects Effects for Metacognitive Knowledge Posttest

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>1.16*</td>
<td>1</td>
<td>1.16</td>
<td>4.04</td>
<td>.053</td>
<td>.11</td>
</tr>
<tr>
<td>Intercept</td>
<td>359.79</td>
<td>1</td>
<td>359.79</td>
<td>1252.62</td>
<td>.000</td>
<td>.97</td>
</tr>
<tr>
<td>Group</td>
<td>1.16</td>
<td>1</td>
<td>1.16</td>
<td>4.04</td>
<td>.053</td>
<td>.11</td>
</tr>
<tr>
<td>Error</td>
<td>8.61</td>
<td>30</td>
<td>.28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>369.57</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>9.78</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a R-Squared = .119 (Adjusted R-Squared = .090)

Note. Dependent Variable: Metacognitive Posttest
The One-Way ANCOVA (see Table 12) results showed that there was a statistically significant difference in the metacognitive awareness posttest after controlling for the effect of the metacognitive knowledge, $F(2, 29) = 6.89, p = .014$. The estimated marginal means (see Table 12) revealed that the CSR group made significant gains ($M = 3.52$) in comparison to the BAU group ($M = 3.15$). The variance accounted for has increased from 11% to 19%, $\eta^2_p = .19$. This moderate effect size revealed that the membership in one group versus the other explained about 19% of the movement in the dependent variable (metacognitive knowledge posttest).

Table 12

*ANCOVA: Tests of Between-Subjects Effects for Metacognitive Knowledge Posttest*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>$df$</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
<th>Partial Eta-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>5.98$^a$</td>
<td>2</td>
<td>2.99</td>
<td>22.90</td>
<td>.00</td>
<td>.61</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.85</td>
<td>1</td>
<td>1.85</td>
<td>14.18</td>
<td>.00</td>
<td>.32</td>
</tr>
<tr>
<td>Metacog. Pretest</td>
<td>4.82</td>
<td>1</td>
<td>4.82</td>
<td>36.91</td>
<td>.00</td>
<td>.56</td>
</tr>
<tr>
<td>Group</td>
<td>.90</td>
<td>1</td>
<td>.90</td>
<td>6.89</td>
<td>.01</td>
<td>.19</td>
</tr>
<tr>
<td>Error</td>
<td>3.79</td>
<td>29</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>369.57</td>
<td>32</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>9.78</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a$ R-Squared = .612 (Adjusted R-Squared = .586)

*Note.* Dependent Variable: Metacognitive Posttest

*Covariate:* Metacognitive Knowledge pretest
Table 13

*Estimated Marginal Means for the Metacognitive Knowledge Posttest Scores*

<table>
<thead>
<tr>
<th>Type of Instruction</th>
<th>Mean</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSR</td>
<td>3.52a</td>
<td>.09</td>
<td>3.30</td>
<td>3.73</td>
</tr>
<tr>
<td>BAU</td>
<td>3.18a</td>
<td>.09</td>
<td>2.97</td>
<td>3.39</td>
</tr>
</tbody>
</table>

*aCovariates appearing in the model are evaluated at the following values: Metacog. Pretest Scores = 3.1406.

Note. Dependent Variable: Metacognitive Knowledge Posttest

**Summary of the Findings**

Before conducting two One-Way ANCOVAs to answer the research questions, the researcher examined the data to determine its suitability for ANCOVA. The assumption of normality was assumed based on skewness and kurtosis values (within a close range of ±1) (see Table 2) and Shapiro-Wilk’s non-significant results (see Table 3). The homogeneity of variance was satisfied through Levene’s test. A bivariate correlation between the pretest scores and posttest scores indicated their linearity. The ANOVA outputs revealed the independence of the covariates and the treatment effect (see Table 4 and Table 5). Finally, the homogeneity of regression slopes was met for the reading comprehension (see Table 6) but not for the metacognitive Knowledge (see Table 7), which may lead the researcher to falsely not reject the null hypothesis making false conclusions (Type II error).

The outcomes of the two One-Way ANCOVAs conducted revealed that there was a statistically significant difference between the treatment group and the comparison group on the reading comprehension posttest scores while controlling for the covariate
(see Table 9). Also, there was a statistically significant difference between the groups on the metacognitive knowledge posttest scores after removing the effect of the covariate from the analysis (See Table 12). The treatment group outperformed the comparison group in reading comprehension and metacognitive knowledge (see Table 10 and Table 13). Therefore, both null hypotheses were rejected.

The next chapter provides a summary of research, method, procedures, and findings, a discussion of the results, limitations, implications for practice, and recommendations for future research.
Chapter V: Discussion

The primary purpose of this study was to assess the effect of the Collaborative Strategic Reading (CSR) approach on the reading comprehension and the metacognitive knowledge of the participants in the treatment group compared to their peers in the comparison group while controlling for the reading and metacognitive knowledge pretest scores.

Summary of Research, Method, and Procedures

Previous studies investigated CSR in elementary (Klingner et al., 2004; McCown & Thomason, 2014), secondary (Boardman et al., 2015; Vaughn et al., 2011, Vaughn et al., 2013), and tertiary levels (Karabuga & Kaya, 2013; Khonamri & Karimabadi, 2015). All the studies conducted at the tertiary level were carried out in EFL settings, involving participants who shared similar cultural and linguistic backgrounds. However, no study in the research literature has explored the impact of CSR on the reading comprehension and the metacognitive knowledge of postsecondary students in an ESL context in which subjects differ linguistically and culturally. Therefore, the researcher decided to conduct this study in a postsecondary ESL setting.

This investigation was grounded on the social constructivism theory and the metacognitive theory. According to social constructivism, students construct their knowledge from their social context through hands-on activities, interaction with others, experiences, and language use (Dewey, 1944). The metacognitive theory refers to the learners’ knowledge of skills and strategies and their ability to regulate them (Baker, 1982; Burley, 1985). Based on these theories, students in CSR classrooms
work in cooperative groups interacting with their peers, negotiating meaning, supporting each other to accomplish the objectives of the group, and employing a set of metacognitive strategies that would allow them to activate their background knowledge, solve comprehension breakdowns, and identify main ideas.

This study involved 32 intermediate ESL international students coming from diverse countries to the US to enhance their English skills before entering college. The intervention group received CSR to ameliorate their reading comprehension and metacognitive knowledge while reading expository texts for nine weeks, whereas the comparison group received BAU type of instruction.

In this investigation, the researcher employed two instruments, Degrees of Reading Power (DRP) and Metacognitive Awareness of Reading Strategies Inventory (MARSI), to answer the first two research questions. At the end of the study, the participants responded to a questionnaire that captured their perceptions of CSR. Their responses highlighted some of the CSR strengths and areas of improvement. The variables included in this study were two dependent variables (reading comprehension and metacognitive knowledge), two covariates (reading comprehension pretest scores and metacognitive knowledge pretest scores), and one independent variable with two levels (the type of instruction: CSR and BAU). Pretests were administered to obtain the students’ baseline and control for its effect to get a “purer” impact (Field, 2013) of CSR on the reading and metacognitive awareness posttest scores.
Summary of the Findings

The outcomes of the first One-Way ANCOVA that evaluated the effect of CSR on the treatment group’s reading performance while controlling for the reading pretest scores yielded a statistically significant effect of the type of the instruction on the reading posttest scores \((p = .01)\), favoring the CSR group with a moderate to large effect size \(\eta^2_p = .20\). Therefore, the researcher rejected the first null hypothesis.

The second One-Way ANCOVA, conducted to detect the difference in means between the treatment condition and the comparison condition on the metacognitive knowledge posttest scores after controlling for the impact of the covariate, produced a statistically significant difference between the intervention group and the control group on the metacognitive posttest scores \((p = .01)\). The treatment group outperformed the comparison group, and the type of instruction explained 19% of the variance. Thus, the researcher rejected the second null hypothesis. All these findings indicate that the difference between groups on the reading comprehension and the metacognitive knowledge posttest scores might be attributed to the group membership (CSR vs. BAU).

Discussion of the Findings

The findings of the first ANCOVA were consistent with the results of other studies (Karabuga & Kaya, 2013; Klingner et al., 1998; McCown & Thomason, 2014; Vaughn et al., 2011). In examining the effect of CSR on 48 EFL students’ reading performance while controlling for pretest scores, Karabuga and Kaya (2013) found that CSR had a positive impact on the treatment’s reading posttest scores \((p < .001)\). Also, Klingner et al.’s (1998) study revealed that students in the treatment group
(CSR) made significant gains in their reading posttest with an effect of $d = .44$ ($p = .001$). McCown and Thomason’s (2014) study is another investigation that yielded significant gains for the intervention group’s reading comprehension ($F(1, 95) = 18.66, p < .001$) with a moderate effect size of $\eta^2_p = .17$. Finally, in their randomized control trial, Vaughn et al. (2011) found that CSR had a statistically significant impact on the reading achievement of the intervention group with an effect size of $g = .36$ for struggling readers at $p < .05$. All these results align with the findings of this current study showing CSR as a promising approach that has the potential to enhance students’ reading comprehension.

The research literature has mixed results regarding the impact of CSR on improving metacognitive knowledge. This present study is not consistent with McCown and Thomason’s (2014) investigation that did not yield a statistically significant difference between the groups on the metacognitive awareness level $F(4, 92) = 1.39, p = .24, \eta^2_p = .06$. Nevertheless, the findings of Gurk and Mall-Amiri (2016) align with the results of this current study. Investigating the effect of cooperative learning on reading comprehension and the metacognitive awareness of 90 intermediate Iranian EFL students produced statistically significant outcomes for both reading comprehension and metacognitive awareness in favor of the treatment group.

The poor performance of most students in the treatment group and the comparison group in this study on the reading comprehension pretest may indicate that these students did not use their L1 reading strategies and skills to handle conceptually dense passages. Their failure to transform their L1 metacognitive
strategies may support the Linguistic Threshold Hypothesis, which argues that ESL students’ low proficiency in the target language (Bernhardt & Kamil, 1995; Bossers, 1991; Brisbois, 1995) could obstruct their engagement in higher levels of cognitive activity (Turnbull & Sweetnam Evans, 2017). However, when the treatment group received training in how to apply CSR strategies, most students showed significant gains in the reading posttest ($p = .01$, $\eta^2_p = .20$).

In this study, the mean score of the reading posttest for all the participants was lower than the mean score of the reading pretest. However, the estimated marginal means (see Table 10) showed that the mean score of the reading posttest ($M = 38.40$) for the treatment group was higher than the pretest ($M = 37.06$), whereas the mean score of the comparison group on the reading posttest ($M = 27.46$) was lower than the pretest mean score ($M = 35$), affecting the mean scores of all the participants on the reading posttest. The underperformance of the control group on the reading posttest could be attributed to the length of the posttest. Therefore, failing to use metacognitive strategies to deal with the passages may have led students in the comparison group to consume most of their time trying to understand difficult words. CSR may have helped participants in the treatment group to monitor and self-regulate their reading (Vaughn et al., 2013). As a result, they outperformed the comparison group on the reading comprehension posttest. Additionally, some participants in the intervention condition used highlighters to highlight the main parts of the reading passages and wrote some predictions and questions on the margin of the text. Their improvement on the posttest reflected the benefits they have received from this explicit strategy instruction approach.
Furthermore, the outcomes of this study are consistent with the findings of Habibian’s (2015) study with 48 EFL postsecondary students. The obtained results of the pretest indicated no difference between the control and the treatment group on the pretest scores; however, after 12 weeks of metacognitive strategy instruction, the participants in the treatment group showed significant gains in reading comprehension and monitoring strategies than their peers in the control group.

The outcomes of Roeschl-Heils, Schneider, and van Kraayenoord’s (2003) research on the interrelations among metacognition, motivation, and reading comprehension indicated that metacognitive knowledge accounted for more than 25% of the variance in reading comprehension. Supporting the results of Roeschl-Heils et al.’s investigation, the current study revealed that CSR instruction accounted for 20% of the variance in reading comprehension and 19% for the metacognitive knowledge after controlling for the pretest scores.

The researcher attempted to implement CSR accurately in three phases, ensuring the gradual release of responsibility to the participants (implementation fidelity). Delivering a high quality of CSR requires teachers to provide students with sufficient time to acquire the CSR strategies before they allow students to apply them independently in their groups. First, the instructor needs to explain and demonstrate CSR strategies. After students understand why, when, and how to use these strategies, they can implement them through the teacher’s led activities. Lastly, when the learners become confident in using CSR strategies independently, the teacher can assign them to cooperative groups in which each learner performs a specific role to attain his or her group’s mutual goals. Hence, delivering a high quality of CSR may
have contributed to the positive outcomes of this present study, which supports the conclusions of Klingner et al. (2004), who concluded that students who received a higher quality of CSR showed more gains in reading comprehension than those who did not. Also, Boardman, Buckley, et al. (2016) found an association between higher reading comprehension performance and a higher quality of CSR.

The participants’ responses to the questionnaire revealed that most students perceived CSR positively. It established a context for them to not only apply their metacognitive strategies but also work collectively on mutual tasks, offering support to one another, communicating, sharing ideas, and solving comprehension failures to improve their reading comprehension. Their responses align with Vygotsky’s theory (1978), which emphasizes the role of the social environment in developing students’ cognitive skills. Through interaction and scaffolding, less capable students can construct knowledge within their Zone of Proximal Development with the assistance of more experienced individuals (peers or teachers).

Klingner et al. (2004) and Reutebuch et al.’s (2015) conclusions support the participants’ positive perceptions of CSR. Klingner et al. (2004) asserted that CSR created multiple opportunities for ESL learners to socially construct meaning, interact in the target language, and so accelerated their language development. Reutebuch et al.’s (2015) pilot study that involved three struggling Hispanic high school students diagnosed with Autism spectrum disorder (ASD) yielded an increase in all three participants’ social interaction frequency and academic engagement (from 2-6 times to 51-74 times) after 12 weeks of CSR instruction.
Based on the questionnaire responses, although most participants praised the “cooperative group” component of CSR, some of them were not satisfied with the passivity of some group members who failed to do their share of the work or preferred to work individually. Their responses are consistent with Johnson and Johnson’s (1994, 1999, 2008, 2009) work on cooperative learning and Lewin (1935) and Deutsch’s (1962) theory of social interdependence, which emphasized the value of working in groups and helping each other to achieve mutual objectives (Johnson & Johnson, 2009) making students active constructors of knowledge (Liang, 2002) and partners of success instead of rivals (Johnson et al., 2014). Thus, when a group member fails to do his share, the success of the other group members will be jeopardized.

**Limitations of the Study**

While this study has generally displayed positive outcomes, some limitations need to be addressed.

First, it was unethical for the researcher to use the control group to determine the treatment group’s gains in reading comprehension and metacognitive knowledge, depriving the comparison group of a learning opportunity that may have benefited their reading comprehension and metacognitive awareness.

The second limitation is violating the homogeneity of regression slopes in the second One-Way ANCOVA. This violation could have led the researcher to falsely reject the null hypothesis, claiming that CSR does not affect the metacognitive knowledge of the participants when it really does. If the researcher had selected an
alternative approach to deal with the heterogeneity of regression slopes (Johnson, 2016), she could have obtained more statistically significant results.

The response bias could be another limitation in this investigation. When the students responded to the self-report MARSI tool, they might not have selected the responses that represented what they did in reality, but instead, they may have chosen some answers that would appeal to the researcher (Furnham, 1986). This type of bias may arise from social desirability in which subjects select behaviors or attitudes that are more socially acceptable and underreport answers that might be viewed as socially undesirable (Lavrakas, 2008).

The positive findings of this study may not establish an absolute causal relationship between CSR and reading comprehension and the metacognitive knowledge because some possible threats might have interfered with the internal and external validity of the study. Due to the lack of randomization, there is a possibility that the two groups were not equivalent before the intervention, so selection bias constituted a threat to the internal validity of this study (Gall, Gall, & Borg, 2007). Besides, resentful demoralization of the control group may have affected the external validity of this present inquiry (Gall et al., 2007). The participants in the control group may have experienced resentful demoralization when they had perceived a desirable intervention offered only to the treatment group. This issue might have negatively influenced the performance of the control group on the posttests.

Finally, nine weeks of treatment may not be sufficient to maintain the long-term benefits of CSR. Some participants may not continue applying these strategies when dealing with metacognitively demanding readings.
All these limitations may affect the generalizability of the findings of this study. Therefore, replicating this investigation is recommended to confirm the obtained results.

**Implications for Practice**

Based on the positive outcomes of this study, the researcher recommends implementing CSR in ESL programs to ameliorate ESL students’ reading comprehension and metacognitive knowledge in college. CSR would prepare ESL learners to apply multiple metacognitive strategies to deal with informational texts in college. However, the efficacy of CSR depends on several factors.

First, teachers need to have positive attitudes toward this explicit strategy instruction approach to implement it with fidelity and deliver its benefits to the students. Research has shown that there is an association between higher reading comprehension and a higher quality of CSR (Boardman, Buckley, et al., 2016). Teachers who are reluctant or resistant to CSR may fail to help their students to enhance their reading comprehension.

The gradual release of responsibility is an essential element in CSR that teachers need to consider if they decide to implement CSR in their classes (Klingner et al., 2004; Vaughn et al., 2013). Students need sufficient time to understand the elements of cooperative learning, acquire the CSR strategies, and practice them with the teacher’s guidance before they can apply them independently in their groups (Fisher & Frey, 2007; Kong & Pearson, 2003; Lloyd, 2004).

Another implication for practice is designing diverse groups, which can boost the benefits of CSR in ESL classrooms. When the members of a group differ
linguistically and culturally, they are inclined to use the target language as a means of communication to share their ideas, make predictions, and ask and answer questions. As a result, their target language develops, and their speaking and listening skills improve (De Jong & Commins, 2006).

Additionally, teachers who intend to use CSR need to monitor group work closely to ensure that each member of the group is accomplishing his or her task. Unfortunately, the cooperative group component of CSR may allow some students to get a free ride. Free riders or hitchhikers are students who shirk their responsibilities in a team (Kaufman, Felder, & Fuller, 2000), while the other team members feel inclined to cover for them to prevent their group from sinking. In the absence of individual accountability measures, hitchhikers receive the same grades as the industrious team members, and so a free ride. Thus, it is not fair to reward hitchhikers for their laziness and irresponsibility (Kaufman et al., 2000). Panitz (2003) suggested that teachers should monitor group work and observe the contribution of each group member by circulating the classroom and using quizzes, tests, and assignments to ensure individual accountability.

According to students’ responses to the questionnaire, most of them reported that the strategies they are more likely to employ in the future are click and clunk and get the gist. The researcher recommends focusing on these two challenging strategies when implementing CSR.

When students are working in groups, their interactions might get off-task without the teacher knowing because the teacher cannot monitor all groups at the same time (Kagan, 2012). Therefore, teachers need to master a set of classroom
management tools before implementing CSR and carefully design their group activities in a way that “leaves no room for minds to wander” (Kagan, 2012, p.1).

A final implication for practice is to assess students’ social skills before implementing CSR. Students with poor social skills tend to be disengaged and passive in their groups, which may impede the effectiveness of CSR. Hence, teachers need to use other interventions to promote their social skills; otherwise, cooperative groups will not be productive (Johnson & Johnson, 1989b).

**Recommendations for Future Research**

Future researchers may wish to consider designing CSR studies that would allow the control group to benefit from the treatment at the end of the intervention to address any ethical concerns.

Second, replicating this study with a larger sample size is highly recommended before generalizing the results to the target population, which would support the internal validity as well as the representativeness of the findings of this present study (Kukull & Ganguli, 2012).

Besides, to deal with the homogeneity of regression slopes violation, researchers are advised to proceed with alternative approaches to avoid a Type II error (Johnson, 2016).

Additionally, researchers who intend to use MARSI as a metacognitive strategy measurement might consider restricting the information they share with their subjects to minimize response bias and obtain more accurate responses.

Moreover, researchers can use this investigation as a preliminary study for a randomized experiment. Randomization would reduce selection bias, a threat to the
internal validity of the study, by giving an equal opportunity to all participants to be in the treatment group or the comparison group (Kunz, Vist, & Oxman, 2007) and thus producing more generalizable conclusions to the target population.

Most students reported that click and clunk strategy was the least helpful because it involves many fix-up strategies, so researchers should consider exploring some ways to encourage students to maximize their use of this strategy.

Furthermore, ESL students have spent several years learning reading; however, some of them fail to transfer most of their reading skills and strategies to their L2. Thus, recommendations for future research directions should include discovering ways to maximize the use of the first language as a resource to develop students’ L2 reading comprehension and explore whether their L1 reading level or ability can predict their L2 reading level.

In CSR, students in cooperative groups are engaged cognitively and behaviorally (Fredricks, 2014). They are equipped with not only metacognitive skills that would help them achieve academic gains in reading but also social skills that are crucial to their success in school. An area that warrants further research is to measure the effect of CSR on both reading comprehension and social skills or to assess the relationship between these two variables.

Although the results of this study showed a difference between the treatment group and the comparison group on the reading comprehension, the researcher could not identify which strategies were more effective than others. Exploring this area in the future would allow teachers to reinforce these strategies more than others.
Finally, since students’ social skills and teachers’ attitudes toward CSR are crucial to the CSR efficacy, researchers should consider including these two factors as covariates to assess the effect of CSR on reading. They might explain more of the unexplained variance.

**Conclusion**

International students come to the US seeking quality education in American postsecondary institutions. However, English language proficiency is the main obstacle that prevents some students from entering college. Thus, they are required to enroll in ESL programs before they can pursue their majors in college. Reading expository texts in college can be cumbersome for international students who may focus on the word or the sentence-level and fail to transfer their L1 reading strategies and skills to the L2 texts. However, an explicit strategy instruction approach could enhance their reading comprehension and metacognitive knowledge.

Research on CSR has yielded significant gains in reading achievement (Habibian, 2015; Karabuga & Kaya, 2013; Klingner et al., 1998; McCown & Thomason, 2014; Vaughn et al., 2011), metacognitive knowledge (Gurk & Mall-Amiri, 2016), language development, and interaction (Klingner et al., 2004; Reutebuch et al., 2015). The researcher hypothesized that CSR instruction would have a statistically significant impact on the ESL international students’ reading comprehension and metacognitive knowledge performance when controlling for their pretest scores. She involved two intact groups \((N = 32)\) and assigned them to a treatment group receiving CSR for nine weeks and a comparison group provided with BAU type of instruction. The two One-Way ANCOVAs computed indicated that CSR instruction (IV) had a statistically significant effect on the
reading comprehension ($p = .01, \eta^2_{p} = .20$) and the metacognitive awareness ($p = .01, \eta^2_{p} = .19$) of the treatment group after removing the impact of the pretest scores. Therefore, the researcher rejected both null hypotheses.

Besides, students’ responses to the perception questionnaire have shed light on some strengths and weaknesses of CSR and the most and the least useful strategies for the participants. Their feedback could guide future research.

In conclusion, although the findings of this study suggest that the intervention group has benefited from the CSR approach, there are still some limitations and areas that need to be addressed in future studies.
References

http://doi.org/10.1080/0305569032000159688


https://doi.org/10.3200/JOER.97.4.171-185


https://doi.org/10.1111/j.1467-1770.1994.tb01112.x


https://doi.org/10.1207/S1532799XSSR0404_4


https://doi.org/10.1111/j.1473-4192.2007.00131.x


Appendix A

Social Competence-Teen Survey

NAME: ___________________________ DATE: ___________________________

Social Competence – Teen Survey

Please indicate how much these statements describe you.

1. I avoid making other kids look bad.
   - ☐ Not at all like me
   - ☐ A little like me
   - ☐ Somewhat like me
   - ☐ A lot like me
   - ☐ Exactly like me

2. If two of my friends are fighting, I find a way to work things out.
   - ☐ Not at all like me
   - ☐ A little like me
   - ☐ Somewhat like me
   - ☐ A lot like me
   - ☐ Exactly like me

3. When I work in school groups, I do my fair share.
   - ☐ Not at all like me
   - ☐ A little like me
   - ☐ Somewhat like me
   - ☐ A lot like me
   - ☐ Exactly like me

Please indicate how often this happens. How often...

4. Do you get along well with people of different races, cultures, and religions?
   - ☐ None of the time
   - ☐ A little of the time
   - ☐ Some of the time
   - ☐ Most of the time
   - ☐ All of the time

Measure developed by Child Trends for the Flourishing Children Project, funded by the Templeton Foundation. For more information on positive indicators, search the Child Trends website at www.childtrends.org.
5. Do you listen to other students' ideas?
   ○ None of the time
   ○ A little of the time
   ○ Some of the time
   ○ Most of the time
   ○ All of the time

6. Do you control your anger when you have a disagreement with a friend?
   ○ None of the time
   ○ A little of the time
   ○ Some of the time
   ○ Most of the time
   ○ All of the time

7. Can you discuss a problem with a friend without making things worse?
   ○ None of the time
   ○ A little of the time
   ○ Some of the time
   ○ Most of the time
   ○ All of the time

8. Do you follow the rules at a park, theater, or sports event?
   ○ None of the time
   ○ A little of the time
   ○ Some of the time
   ○ Most of the time
   ○ All of the time

9. Do you respect other points of view, even if you disagree?
   ○ None of the time
   ○ A little of the time
   ○ Some of the time
   ○ Most of the time
   ○ All of the time

Measure developed by Child Trends for the Flourishing Children Project, funded by the Templeton Foundation. For more information on positive indicators, search the Child Trends web page at www.childtrends.org.
Appendix B

Degrees of Reading Power (U Form)
DIRECTIONS TO THE STUDENT

This is a test to find out how well you read. The test contains passages for you to read. Sentences are missing from the passages. Wherever a sentence is missing, there is a blank line with a number on it. Below the passage you will find the same number and five sentences. Choose the sentence that makes the best sense in the blank.

On your answer sheet, find the same number as the blank. Mark the letter for the answer you have chosen.

Read Sample S-1 below and see how the right answer has been marked on your answer sheet. Then read Sample S-2 and mark the answer on your answer sheet.

SAMPLE S-1

It was sunny and hot last week. But on Sunday the weather changed. It turned cloudy and cool. It has stayed that way ever since.

S-1

a) The sun is even stronger.
b) But the change failed to save the crops.
c) That is why the heat remains a problem.
d) It is cooler now than it was last week.
e) The other days were drier than Friday.

SAMPLE S-2

It rained unusually hard all day yesterday. In the afternoon, water began rising in local streams. By evening, streets were flooded in all parts of town.

S-2

a) Public schools are closed today because of the flooding. Most stores and businesses will not open until tomorrow at the earliest. People are being asked to stay at home if at all possible.
b) Yesterday’s weather is keeping people indoors.
c) That is because there are no streams nearby.
d) So nobody thought it would rain.
e) These stores are even farther away.

Look at the answer for Sample S-1. The letter d is marked because sentence d makes the best sense in the blank.

For Sample S-2 you should have marked the letter a because sentence a makes the best sense in the blank.

As you can see, you may not be sure of the answer unless you have read everything that comes before the blank.

You are not expected to read at the same speed as other people or to answer the same number of items. As you work on this test you will find that the passages become harder to read. Do your best to read as many passages as you can and to answer as many items as you can. Work carefully and do not rush. You will be given as much time as you need.

Remember, mark all your answers on the separate answer sheet. Mark only one answer for each item. If you want to change an answer, be sure to erase your first mark completely. Then mark the answer you want.
Police doctors can learn a lot from skeletons. A heavy lower jaw, for example, identifies the skeleton as a man. In an adult skeleton, experts can tell if the jaw belongs to a man or a woman simply by looking. But to distinguish a boy from a girl, the exact width of the jaw must be known. One must measure carefully. Simply looking isn’t enough.  

Age can also be determined. People have 400 bones at birth, but only 206 bones when fully grown. As people grow, bones that once were separate join together. This means that the number of bones is important. Counting them often gives the correct age within a year.

Teeth, too, are useful in establishing age. Doctors know at what age different teeth usually appear in the growing child. Certain teeth usually appear before others do. This order is also known. So seeing which teeth have appeared helps establish the age of a skeleton.  

Doctors can also tell height and weight from a skeleton. They have little hard proof of exactly how tall or how heavy the person was. But it is possible to guess rather accurately. The estimate is based on the length of the arm and leg bones.  

Because of the teeth, doctors are sometimes able to say exactly whose skeleton it is. Teeth records are rather like fingerprints. No two sets are alike. A person’s dental history is his and his alone. Few things are quite so individual. So by comparing the skeleton’s mouth with dental records, positive identification becomes possible.

Sicknesses like anemia also leave useful clues. Such sicknesses make the bones look a particular way. The bones, in effect, are marked. So comparison with medical records helps to establish the skeleton’s identity.

Sometimes police artists try to reconstruct the face over a skull, using clay. Often the portrait is quite accurate. But some features will usually be missing. For example, one can’t show the ears with this technique.

1. a) So the skeleton’s jaw need not be examined.
   b) That is because the children’s jaws look more alike than those of the adults.
   c) The upper jaw is narrower in boys, while the lower is narrower in girls.
   d) For this reason, men and women cannot be distinguished by both procedures.
   e) It is useful to look only during this brief period of time.

2. a) The other teeth are even smaller.
   b) For this reason, it is difficult to determine how many bones are present.
   c) Their appearance can therefore be deceiving.
   d) Yet age is relatively unimportant.
   e) The number of teeth, like the number of bones, changes as the child grows.

3. a) Thus, doctors can determine the person’s age, sex, and size.
   b) These differences become more important as time passes.
   c) So it is almost impossible to estimate weight.
   d) The doctors, however, have yet to find ways of measuring these differences.
   e) Therefore, other sources of evidence are unreliable.
Bridges are built to allow a continuous flow of highway and railway traffic across water lying in their paths. But engineers cannot forget that river traffic, too, is essential to our economy. To keep boats moving freely, bridges are built high enough, when possible, to let them pass underneath. Sometimes, however, channels must accommodate very tall ships. It may be uneconomical to build a tall enough bridge. To save money, engineers build movable bridges.  

In the swing bridge, the middle part pivots or swings open. When the bridge is closed, this section joins the two ends of the bridge, blocking tall vessels. But this section turns. When swung open, it is perpendicular to the ends of the bridge, creating two free channels for river traffic. With swing bridges, channel width is limited by the bridge’s piers. The largest swing bridge provides only a 75-meter channel. Such channels are sometimes too narrow. In such cases, a bascule bridge may be built.

Bascule bridges are drawbridges with two arms that swing upward. They provide an opening as wide as the span. They are also versatile. These bridges are not limited to being fully opened or fully closed. They can be fixed at different angles to accommodate different vessels.

In vertical lift bridges, the center remains horizontal. Towers at both ends allow the center to be lifted like an elevator. One interesting variation of this kind of bridge was built during World War II. A lift bridge was desired, but there were wartime shortages of the steel and machinery needed for the towers. It was hard to find enough material. An ingenious engineer designed the bridge so that it did not have to be raised above traffic. Instead it was lowered. It could be submerged seven meters below the surface of the river. Ships sailed over it.

4 a) However, other ships cannot proceed.  
b) Only railroad traffic can use such bridges.  
c) Tall ships can then be accommodated at an acceptable cost.  
d) Therefore, no more than two ships a day can be accommodated.  
e) However, the currents are often too strong for small ships.

5 a) Highway traffic need not be halted.  
b) They can be used with greater flexibility than swing bridges allow.  
c) Even so, tall-masted schooners cannot pass.  
d) Thus, bascule bridges have few, if any, advantages.  
e) Hence, only long drawbridges are useful where river currents are strong.

6 a) Thus a swing bridge would have been more economical at that location.  
b) The river was too narrow for any other kind of bridge.  
c) Hence, the bridge had to be at least seven meters wide.  
d) The channel created for them was wider than a swing bridge would have provided there.  
e) The crew had to turn the ship around to accomplish this.
Before anesthetics were discovered, surgery was carried out under very severe time restrictions. Patients were awake, tossing and screaming in terrible pain. Surgeons were forced to hurry in order to constrain suffering and minimize shock. Speed was essential. Haste, however, did not make for good outcomes in surgery.

The discovery of anesthetics happened, in part, by accident. During the early 1800s, nitrous oxide and ether were used for entertainment. At "ether frolics" in theaters, volunteers would breathe these gases, become lightheaded, and run around the stage laughing and dancing. By chance, a Connecticut dentist saw such a show. One volunteer banged his leg against a sharp edge but did not notice. He paid no attention to his wound, as though he felt nothing. This gave the dentist the idea of using gas to kill pain.

At first, using the "open drip method," ether and chloroform were filtered through a cotton pad placed over the mouth and nose. This direct dose was difficult to regulate and irritating to the nose and throat. Patients would hold their breath, cough, or gag. This made it impossible for them to relax, let alone sleep. Consequently, surgery was often delayed. It couldn’t begin until the patient had quieted and the anesthesia had taken hold.

Today's procedures are safer and more accurate. In the "closed method," a fixed amount of gas is released from sealed bottles into an inhalator bag when the patient exhales. He inhales this gas through tubes with his next breath. In this way the gas is controlled. The system carefully regulates how much gas reaches the patient.

For dentistry and minor operations, patients need not be asleep. Newer anesthetics can be used which deaden nerves only in the affected part of the body. These local anesthetics offer several advantages. For instance, since the anesthesia is fairly light and patients remain awake, they can cooperate with their doctors.

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7 a) The results of these painful procedures were often poor.
   b) For this reason, the operating room was frequently crowded.
   c) Soon afterward, the effects of the anesthesia began to wear off.
   d) That is why the surgical team was enlarged.
   e) Thus the cause of the disease was identified.

8 a) If this occurs, the dose must be increased.
   b) It provides a degree of control not possible with the open drip method.
   c) The other tube should be removed at this time.
   d) Accordingly, use of such disinfectants has reduced the rate of infection.
   e) Under these conditions, it is not necessary to use any anesthesia.

9 a) So patients’ refusal to cooperate is understandable.
   b) Under these circumstances, the prognosis is poor.
   c) The use of surgical gowns and antiseptics eliminated this problem.
   d) For older people, such operations are therefore considered the most dangerous type.
   e) Like early surgical patients, they are awake; unlike early patients, they are comfortable.
Appendix C

Degrees of Reading Power (A1 Form)

DIRECTIONS TO THE STUDENT

This is a test to find out how well you read. The test contains passages for you to read. Sentences are missing from the passages. Wherever a sentence is missing, there is a blank line with a number on it. Below the passage you will find the same number and five sentences. Choose the sentence that makes the best sense in the blank.

On your answer sheet, find the same number as the blank. Mark the letter for the answer you have chosen.

Read Sample 5-1 on the next page and see how the right answer has been marked on your answer sheet. Then read Sample 5-2 and mark the answer on your answer sheet.
SAMPLE S-1

It was sunny and hot last week. But on Sunday the weather changed. It turned cloudy and cool. It has stayed that way ever since.

S-1

a) The sun is even stronger.
b) But the change failed to save the crops.
c) That is why the heat remains a problem.
d) It is cooler now than it was last week.
e) The other days were drier than Friday.

S-2

a) Yesterday's weather is keeping people indoors.
b) That is because there are no streams nearby.
c) Only the high school opens this early.
d) So nobody thought it would rain.
e) These stores are even farther away.

Look at the answer for Sample S-1. The letter d is marked because sentence d makes the best sense in the blank.

For Sample S-2 you should have marked the letter a because sentence a makes the best sense in the blank.

As you can see, you may not be sure of the answer unless you have read everything that comes before the blank.

You are not expected to read at the same speed as other people or to answer the same number of items. As you work on this test you will find that the passages become harder to read. Do your best to read as many passages as you can and to answer as many items as you can. Work carefully and do not rush. You will be given as much time as you need.

Remember, mark all your answers on the separate answer sheet. Mark only one answer for each item. If you want to change an answer, be sure to erase your first mark completely. Then mark the answer you want.
Farm windmills played an important role in the growth of the United States. These farm mills differed from the smock and post mills of Europe in several ways. The European windmills were large buildings. They had to be large to house the bulky millstones. Millers’ families often lived inside the European mills. There was enough room. Sometimes there was even space to store grain. The American farm mills, built mainly to pump water, were much smaller. Often, they were little more than fan blades set atop open towers. But the mills worked, and they were priced within reach. Each ranch or homestead could have its own.

American mills needed less tending than European ones. Windmills must face the right direction to catch the wind. Otherwise they will not work. European mills had to be positioned by hand as the wind changed. But the American farm windmill adjusted itself. The owner did not have to turn it.

1 a) So the smaller the tower, the larger the fan blades.
b) Yet few such mills ever reached this country.
c) European millers thus helped American farmers.
d) Even the larger mills were not very useful in this regard.
e) But Americans, unlike Europeans, could not live in the mills.

2 a) This was an advantage of the open tower windmill.
b) In this respect, the tower was dangerous.
c) So it was difficult to drive the millstones.
d) Therefore, the small units were less useful than the large ones.
e) For this reason, it was difficult to store any grain.

3 a) Small ranches had the opposite problem.
b) A suitable mill could be theirs at an affordable price.
c) Yet few such mills were ever sold.
d) Thus, in the end, the European mills proved to be superior.
e) So the process could be dangerous.

Farm windmills served many purposes. They sawed wood and they ground feed and grain. They shelled corn and they ran elevators. All these jobs were important. But above all, the mills pumped water. In the dry western states they made it possible for livestock to drink and for fields to be irrigated. Windmills also helped the railroads, which needed water for their steam engines. Windmills pumped water into tanks along the tracks. Locomotives would stop and take it aboard. In this way, trains got the water they needed.

By the late 1800s, the mills were greatly in demand. One attraction was that windmills could bring running water indoors. For this and other reasons, business boomed. The mills were very popular. By 1889, 77 factories were making them in the United States. Windmills could be ordered with different size engines and towers. Metal or wooden blades were available. This meant that people could pick a mill with the features they wanted.
The Amish of Pennsylvania maintain an agrarian way of life that centers on the family. In the multigenerational Amish farm family, the elderly occupy a position of respect and authority sustained through specific customs of working and living.

Work is a vital part of the Amish ethic for family members of all ages. Accordingly, the elderly do not retire from the farm at a specific age. They remain active. They continue to work, but at a slower pace.

Living arrangements on Amish farms have both the contributions and the needs of the elderly in mind. When an older couple retire, they give their farm, and their home, to one of their married children. The older couple must then move. They do not go far, however; most Amish farms contain two adjacent houses. One of these, known as the "grandfather house," becomes the older couple's home. This arrangement enables them to maintain close family contact and to supervise the new farmers. The older couple are there to give advice. Their opinions are valued. Through their very presence, they have influence.  

Living in a separate dwelling affords the elderly independence, as does maintaining their own transportation. Since the Amish use horse and buggy, the elderly do not risk losing a driver's license because of age. They can travel at will. This freedom is significant, because seeing friends is an important part of life for the elderly. Most older Amish couples maintain an extra bedroom for visitors. Guests are always welcome. With friends and family around them, the elderly Amish do not experience the loneliness that can trouble older people elsewhere.  

Elderly Amish are secure financially as well as socially. Through decades of hard work and frugality, most save enough for a secure retirement. For those in need, aid is provided by relatives or the church. The elderly are always supported. No older Amish faces poverty.  

4 a) Better living arrangements are sought if this occurs.  
b) Only then can the older couple buy a farm.  
c) Their children are likely to be too far away to notice.  
d) Though they no longer own the farm, they may affect what happens there.  
e) For this reason, such values are becoming harder and harder to maintain.  

5 a) So despite their efforts, they often fail.  
b) It is hard to maintain the place for this reason.  
c) They must therefore depend on family members for transportation.  
d) The elders cannot accept the offer.  
e) The extra room in the grandfather house helps them avoid this problem.  

6 a) Opportunities for such friendships are therefore few.  
b) Their way of life assures them authority, respect, and freedom from want.  
c) So frugality is increasingly rejected by members of the younger generation.  
d) The others attend as well.  
e) For this reason, each decade seems harder than the last.
Mosaics are decorative patterns made by fitting together pieces of stone, glass, or other material. Mosaics date to ancient times. The earliest, made from pebbles found on beaches and in river beds, were used to decorate floors. Early mosaic patterns were made by placing white stones among black ones to form rough geometric arrangements. Later designs were not as simple. The ancient Greeks, who refined the art, produced intricate pictures of flowers, animals, and mythological creatures. 7.

To broaden the color range in mosaics, the Greeks used stone cubes that they trimmed to size from larger, mineral-rich rocks. These cubes, called tesserae, fit together more snugly than pebbles did. With smooth, regular edges, they could be close-packed to create detailed pictures.

The Greeks later began using glass to supply more brilliant reds, blues, and greens. These shades were rarely found in nature. Dyed glass tesserae could give any color desired, but were too fragile for widespread use on floors. Eventually, though, mosaics appeared on walls. Glass and other materials, which were insufficiently durable for floors, could be used for wall mosaics without regard for wearing ability. The strength of the materials was no longer important. 8.

Mosaic art reached its peak in early medieval times. In Byzantine churches and palaces, mosaics not only extended across the walls but also overspread ceilings and archways. The decorations consisted of pictures formed of millions of glass tesserae. They also contained bits of marble, semiprecious stone, and mother-of-pearl, for artists found that using a variety of textures produced interesting visual effects. To add further richness, artists used glass cubes containing gold foil. These cubes were often placed in the wall at an angle. The exposed tips caught the light to produce shimmering creations that many consider the height of mosaic art. 9.

7 a) So there were fewer white pebbles than black ones.
b) The stone patterns were thus becoming more complex.
c) Too few beaches had the right kind of pebbles.
d) In that respect, their geometry was flawed.
e) For this reason, perfectly flat stones could not be used.

8 a) Stone tesserae or glass ones could give color to the patterns there.
b) The age of the tesserae was therefore hard to determine.
c) The other pieces were even smaller.
d) These tesserae were not suitable for the larger buildings.
e) Rounding the corners produced that effect.

9 a) The source of the cubes therefore determined the price.
b) So the larger stones continued to be preferred.
c) Even then, reds and greens could not be included in the designs.
d) These works depended on a technique developed by the Greeks.
e) The discovery of stone tesserae still lay in the future.
During the era of Tsar Peter the Great (1682-1725), Russia was transformed from a weak, isolated, and backward country to a world power. The reforms of this era were aimed at making Russia more like Europe. To begin with, they focused on the appearance of Russians, whose long tunics did not look European. The government decreed that Russians must dress like Europeans. If they did not wear German-style clothing, they were fined.  

10 Russian military forces, dependent on the contributions of independent nobles, were inadequate for modern war. A modern army was needed. The state set about subduing the nobles and making soldiers of them. It established military schools, which all nobles were required to attend. This education changed them. Government training made aristocrats into bureaucrats, for after graduating they had to enter lifelong government service, civilian or military. This, in turn, caused profound changes in the social structure. Inherited titles and land no longer determined someone’s social status. A person’s standing was determined by new factors, instead. One’s administrative position replaced one’s family position, and promotion up the 14 grades of government service was by merit only.

To europeanize rural Russia, it was necessary to industrialize it. The state opened factories for producing gunpowder, uniforms, sails, and rope. These were not the only businesses that were started. The government also began a timber industry and opened mines for metal ores. Since there were no entrepreneurs to provide starting capital for these ventures, the mines and factories did not belong to either the nobles or peasants. It was the government that owned them. The state financed them, assigned managers to run them, and even provided labor by assigning entire villages to become factory serfs. The peasants had no choice in this matter. They had to work. But their forced output was unreliable, and soldiers guarded them to prevent escape.  

11 These changes brought Russia into the modern age, and established a precedent of powerful government.  

10 a) As a result, the clothing did not fit.
   b) Therefore, no reform could occur.
   c) Tunics were therefore outlawed.
   d) Despite this, the Germans did not respond.
   e) For this reason, only the young were affected.

11 a) Very few had work to do.
   b) These wages were paid on a monthly basis.
   c) Accordingly, the army moved only at night.
   d) Enforced service thus existed on many social levels.
   e) Therefore, each village was entirely independent.

12 a) Europeanization helped to modernize Russia.
   b) Such dates, however, were hard to determine at first.
   c) Several guards were therefore selected for the task.
   d) Each one served for decades.
   e) Only a few leaders, however, actually attended.

(To the Next Page)
Today we can hardly imagine the dearth of mass entertainment in 1900. Some segments of the population attended plays, concerts, opera, vaudeville, and burlesques. But, altogether, only about 15 percent of the public was reached by these entertainment media. Most people were not.

Edison is usually credited with inventing the movies, but he didn’t do it alone. Many American and European inventors worked simultaneously on technological advances that made motion pictures possible. Edison did invent the Kinetoscope, a peepshow cabinet providing a minute’s entertainment. Edison viewed it merely as a diverting plaything: he did not recognize the money-making potential of moving pictures. Others, however, did foresee the profits. Recognizing and exploiting the commercial potential of film, these individuals launched the motion picture industry.

The first films were only brief depictions of the passing scene, of unstaged events such as waves breaking on shores. There were no real stories as such. Nonetheless, even without actors, scripts, or plots, the novelty of these films made them an immediate success. Gradually, though, audiences grew tired of watching trains arrive at stations, waves break on shores, and cavaliers on parade. Such films had become boring. So weary had audiences become that vaudeville houses shifted their film programs to the end of the bill in order to clear the house at the conclusion of the show.

An historic breakthrough occurred when filmmakers realized they could create original dramas on film. The earliest films had only recorded naturally occurring, un rehearsed events. But now there were plots. The scenes were planned. The action was arranged. The introduction of melodramas coincided with the opening of nickelodeons, store-front theaters charging only a nickel’s admission. The show played continuously from eight in the morning to midnight. Patrons would enter whenever they liked and stay until thoroughly satiated. Then they would leave. The response to this new mass medium was so great that 8,000 nickelodeons opened in this country between 1905 and 1909.

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13 a) They perceived what Edison had not.  
b) The cost of the Kinetoscope was therefore hard to justify.  
c) As a result, both types of contracts became standard.  
d) So the source of their financing was suspect.  
e) This kind of theater was unsuitable for such shows.

14 a) Edison’s peepshow still gave patrons the longest show for the money. 
b) As a result, these projectors tended to break easily. 
c) Theaters in the East were therefore the least profitable. 
d) People walked out on the achievement of inventors on two continents. 
e) The Kinetoscope had put an end to this problem.

15 a) Edison’s forecasts of the industry’s potential had been realized. 
b) Thus many years passed before the first vaudeville theater opened. 
c) Only the Kinetoscope provided that advantage. 
d) The decision to move west was thereby vindicated. 
e) Some of the once-unserved 85 percent were now being entertained.
Magnetic resonance imaging (MRI) is one of several advances in diagnostic technology made possible by advances in medicine and electronics. Like other new techniques, it enables physicians to see inside the human body without incurring the ordinary risks associated with surgery or radiation. However, safety is not its only advantage. Besides eliminating or minimizing harmful side effects, MRI is uniquely capable of detecting differences among the body's soft tissues and producing computer-generated images of these tissues. Consequently, much is revealed.  

MRI utilizes equipment containing a huge electromagnet that lines a six-foot tube. The body, placed within this tube, can be surrounded with a powerful magnetic field. When the magnet is activated, protons—particles of hydrogen atoms in body tissue—become oriented uniformly with respect to the field produced by the magnet. Normally, these particles are arranged randomly. Once in alignment, the protons are pulsed by radio signal, causing them to shift. They are then exposed to a magnetic field whose direction and intensity differ from the first, producing a different alignment. The sequence is repeated from yet a third direction. The protons turn again. With each new orientation, their rate of activity changes, causing them to emit radio signals. A computer analyzes these signals and produces three-dimensional images depicting anatomical features and the chemical activity exhibited by different body tissues.  

Most individuals can undergo MRI without difficulty. For others, the process would be dangerous. Veterans with embedded shrapnel, for example, ought not be exposed to the magnet, since the metal could be pulled from their bodies. Such is the force of the magnetic field. The magnet's strength also requires that it be located in a room specially insulated from external radio frequencies, contributing to the considerable cost of MRI. Many feel, though, that MRI is economical, considering the suffering and financial loss often resulting from incorrect or late diagnoses. Thus, the expense may be justified.  

16 a) Both kinds of medication can prevent this adverse reaction.  
   b) The technique cannot be used in these cases.  
   c) The name of the procedure is therefore misleading.  
   d) In this sense, the surgical risks have been overstated.  
   e) Technological advances make this possible.  

17 a) In this respect, the radio signals may pose a threat.  
   b) The tube lining is important in producing these images.  
   c) The patient’s age is therefore an important consideration.  
   d) Yet most of the tissues lie outside the magnetic field.  
   e) In these cases, the images are poor.  

18 a) The tube, if necessary, is left outside the room.  
   b) So there are safer ways to get the same data.  
   c) Diagnosis involving soft tissue may warrant it.  
   d) A weaker magnet can then be substituted.  
   e) It takes longer to record these radio signals.
Chaparral is scruffy woodland vegetation consisting mainly of dwarf evergreen oaks. It provides a striking illustration of how adaptations permit species to live in seemingly inhospitable surroundings.

Chaparral develops exclusively in areas characterized by hot, dry summers and cool, damp winters. It can cope with the prolonged periods of drought characteristic of such regions because its roots penetrate to great depth and also extend laterally to capture all available moisture. Moreover, this growth occurs rapidly.

Evaporation is reduced by thick, small leaves that expose minimum surface to the air and by a waxy layer on those leaves. Furthermore, the plants' stomata, or leaf openings through which gases pass, are situated on the leaf undersurfaces and embedded in crevices, where less evaporation occurs. Thus, loss of water is minimized.  

Chaparral is singularly adapted to cope with the fires that periodically rage through the parched vegetation. The seeds of certain chaparral species cannot germinate unless seared by flames. Such seeds may lie dormant in place for years. Propagation begins only after a fire has occurred.

Seeds that germinate after a fire begin to sprout at an opportune time, for the reduced ground vegetation following a fire means the chaparral seedlings encounter little competition from established plants. Moreover, the seedlings establish themselves when the danger of additional fire is minimal.

Although chaparral shrubs reproduce by means of seeds, that is not their principal means of doing so. Most chaparral propagation is achieved through root sprouting. Here swellings on the roots gradually thicken into buds. These buds sprout only under the same circumstances that activate chaparral seed; fire is required. Bud-sprouted plants have an advantage because their existing root system promotes rapid development. Accordingly, chaparral regains a normal appearance faster than other vegetation after a fire.

19 a) That is why the plant is subject to attack by few insects.
b) Winter, therefore, is a time of danger.
c) The stomata, however, do little to help the plant.
d) That is because the root system is quite shallow.
e) Its leaf structure helps the plant conserve moisture.

20 a) Yet some trees receive little sunshine.
b) So other plants threaten the chaparral.
c) Such plants, of course, are hard to find.
d) Thus, summer fires favor the development of these dwarf oaks.
e) Dampness poses the greatest danger while the plants are young.

21 a) Seeds, however, cannot germinate at this time.
b) It maintains this appearance through subsequent droughts.
c) This transformation makes chaparral hard to recognize.
d) Additional propagation is therefore unnecessary.
e) Subsequently, therefore, the roots decay.
As a narrative art form, a novel needs a storyteller, or narrator, from whose viewpoint the narrative unfolds. Novelists employ various techniques to achieve the narrative voice they desire.

Authors frequently utilize omniscient narrators capable of penetrating characters’ minds and commenting on their thoughts, motives, or emotions. In such instances, characters’ behavior is not merely described. It is also explained. Although the narrator’s omniscience may encompass all participants in the novel, authors sometimes grant a narrator access only to the mind of a single character. Where this occurs, the narrator’s knowledge is more limited. 22

Narrators may themselves be participants in the events of a novel or may be mere observers. With narrator-as-participant, the material available for narration is bounded, since the narrator can know firsthand only those events in which he or she participates directly. This problem can be handled in several ways. One solution is to incorporate secondary narratives: one character reports what others have said concerning novelistic events about which the narrator-character lacks firsthand knowledge. Alternatively, the author may employ different characters as narrators in different chapters. In such cases, the narrator may change repeatedly.

Some novelists reduce the interpretive and editorial role of the narrator, preferring that characters and events speak for themselves, as in onstage drama. The narrator then functions as an objective observer who merely records everything seen and heard; such narrative may involve the reader by being highly specific, meticulously cataloging scenes or characters. The more detail the better. Readers can then draw their own inferences concerning characters and events. 23

An alternative mechanism for reducing the narrator’s perceived influence is the unreliable observer, a narrator who appears unable to interpret characters’ behavior accurately or to grasp the significance of events. The narrator, it seems, does not understand the story. This technique creates the illusion that readers, ignoring or bypassing the narrator, receive the story directly from the author. 24

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22 a) This novel, too, is difficult to understand.
   b) Most novels, however, are much longer.
   c) As a result, authors exclude such characters from their novels.
   d) In this case, only one character’s behavior can be explained.
   e) This decision does not reside with the author.

23 a) Such characters typically have only minor roles in the novel.
   b) The novel’s dramatic impact, therefore, peaks early.
   c) This avoids the boundary encountered when a character narrates.
   d) Use of secondary narratives is therefore the preferred method.
   e) Such events are seldom included in serious novels.

24 a) The narrator in this case contrasts greatly with an omniscient one.
   b) This technique is employed only in the early pages of the novel.
   c) The other characters are described in considerable detail.
   d) There is little opportunity to think about characters’ behavior.
   e) The narrator therefore tries to be particularly sympathetic.
Appendix D

Metacognitive Awareness of Reading Strategies Inventory (MARSII)

### Metacognitive Awareness of Reading Strategies Inventory (MARSII) Version 1.0

Kouider Mokhtari and Carla Reichard © 2002

**DIRECTIONS:** Listed below are statements about what people do when they read academic or school-related materials such as textbooks, library books, etc. Five numbers follow each statement (1, 2, 3, 4, 5) and each number means the following:

- **1** means “I never or almost never do this.”
- **2** means “I do this only occasionally.”
- **3** means “I sometimes do this.” (About 50% of the time.)
- **4** means “I usually do this.”
- **5** means “I always or almost always do this.”

After reading each statement, **circle the number** (1, 2, 3, 4, or 5) that applies to you using the scale provided. Please note that there are **no right or wrong answers** to the statements in this inventory.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STRATEGIES</th>
<th>SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLOB</td>
<td>1. I have a purpose in mind when I read.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>SUP</td>
<td>2. I take notes while reading to help me understand what I read.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>3. I think about what I know to help me understand what I read.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>4. I preview the text to see what it’s about before reading it.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>SUP</td>
<td>5. When text becomes difficult, I read aloud to help me understand what I read.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>SUP</td>
<td>6. I summarize what I read to reflect on important information in the text.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>7. I think about whether the content of the text fits my reading purpose.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>PROB</td>
<td>8. I read slowly but carefully to be sure I understand what I’m reading.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>SUP</td>
<td>9. I discuss what I read with others to check my understanding.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>10. I skim the text first by noting characteristics like length and organization.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>PROB</td>
<td>11. I try to get back on track when I lose concentration.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>SUP</td>
<td>12. I underline or circle information in the text to help me remember it.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>PROB</td>
<td>13. I adjust my reading speed according to what I’m reading.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>14. I decide what to read closely and what to ignore.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>SUP</td>
<td>15. I use reference materials such as dictionaries to help me understand what I read.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>PROB</td>
<td>16. When text becomes difficult, I pay closer attention to what I’m reading.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>17. I use tables, figures, and pictures in text to increase my understanding.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>PROB</td>
<td>18. I stop from time to time and think about what I’m reading.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>19. I use context clues to help me better understand what I’m reading.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>SUP</td>
<td>20. I paraphrase (restate ideas in my own words) to better understand what I read.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>PROB</td>
<td>21. I try to picture or visualize information to help remember what I read.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>22. I use typographical aids like bold face and italics to identify key information.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>23. I critically analyze and evaluate the information presented in the text.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>SUP</td>
<td>24. I go back and forth in the text to find relationships among ideas in it.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>25. I check my understanding when I come across conflicting information.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>26. I try to guess what the material is about when I read.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>PROB</td>
<td>27. When text becomes difficult, I re-read to increase my understanding.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>SUP</td>
<td>28. I ask myself questions I like to have answered in the text.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>GLOB</td>
<td>29. I check to see if my guesses about the text are right or wrong.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>PROB</td>
<td>30. I try to guess the meaning of unknown words or phrases.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

Metacognitive Awareness of Reading Strategies Inventory

SCORING RUBRIC

Student Name: ___________________ Age: ________ Date: ________________

1. Write your response to each statement (i.e., 1, 2, 3, 4, or 5) in each of the blanks.
2. Add up the scores under each column. Place the result on the line under each column.
3. Divide the score by the number of statements in each column to get the average for each subscale.
4. Calculate the average for the inventory by adding up the subscale scores and dividing by 30.
5. Compare your results to those shown below.
6. Discuss your results with your teacher or tutor.

<table>
<thead>
<tr>
<th>Global Reading Strategies (GLOB Subscale)</th>
<th>Problem-Solving Strategies (PROB Subscale)</th>
<th>Support Reading Strategies (SUP Subscale)</th>
<th>Overall Reading Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1._____</td>
<td>8._____</td>
<td>2._____</td>
<td>GLOB____</td>
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<tr>
<td>3._____</td>
<td>11.____</td>
<td>5._____</td>
<td>PROB____</td>
</tr>
<tr>
<td>4._____</td>
<td>13.____</td>
<td>6._____</td>
<td>SUP____</td>
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<td>7._____</td>
<td>16.____</td>
<td>9._____</td>
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<td>10.____</td>
<td>18.____</td>
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<tr>
<td>29.____</td>
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<td></td>
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</tr>
</tbody>
</table>

____ GLOB Score  ____ PROB Score  ____ SUP Score  ____ Overall Score
____ GLOB Mean  ____ PROB Mean  ____ SUP Mean  ____ Overall Mean

KEY TO AVERAGES: 3.5 or higher = High  2.5 – 3.4 = Medium  2.4 or lower = Low

INTERPRETING YOUR SCORES: The overall average indicates how often you use reading strategies when reading academic materials. The average for each subscale of the inventory shows which group of strategies (i.e., global, problem-solving, and support strategies) you use most when reading. With this information, you can tell if you are very high or very low in any of these strategy groups. It is important to note, however, that the best possible use of these strategies depends on your reading ability in English, the type of material read, and your purpose for reading it. A low score on any of the subscales or parts of the inventory indicates that there may be some strategies in these parts that you might want to learn about and consider using when reading (adapted from Oxford 1990: 297-300).
Appendix E

SPU IRB Exemption

March 27, 2019

Subject: IRB Approval – IRB # 181906008 (Exempt Review)

To: Fatima Ezzahra Benlyazid

Your research project “The impact of collaborative strategic reading on ESL international students’ reading comprehension and metacognitive awareness in college” has been approved. This study was approved under exempt review as it meets the criteria listed in the SPU IRB User Guidelines (2012, p. 5).

Your approval is in effect until what time any methods of the study change substantively. When that occurs, you will need to renew your IRB application. Your study has been assigned IRB number: IRB # 181906008.

To complete your documents please add the IRB # to your study’s written recruitment material and invitation to participate in the research project.

Best wishes in the completion of your research.

Sincerely,

[Signature]

John B. Bond, Ed.D.
SOE IRB Coordinator
Professor of Educational Leadership

Cc: Dr. Bill Nagy
Appendix F

EDCC IRB Exemption

October 13, 2016

FATIMA BENLYAZID
RESEARCHER/ESL INSTRUCTOR
EDMONDS COMMUNITY COLLEGE
20000 68TH AVE W
LYNNWOOD, WA 98036

Dear Fatima,

Fatima Benlyazid-

As the IRB Chair for Edmonds Community College and pursuant to 45 CFR Part 690: Federal Policy for the Protection of Human Subjects, I have reviewed the Proposal for Collaborative Strategic Reading: A Promising Approach to Enhancing ESL Students' Reading Comprehension In College (IRB No. 2016-1013).

I have determined that this education project is exempt under the established Section 101(b) of the Common rule which states:

Section (6) 101: To what does this policy apply?
(1) Research conducted in established or commonly accepted educational settings involving normal educational practices, such as
   a) research on regular and special education instructional strategies, or
   b) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

This letter is to inform you of my findings, identify the claimed exemption and to provide you documentation.

Please let me know if you need additional information or documentation in meeting the IRB requirement.

Sincerely,

Terry Cox
Vice President, Workforce Development and Training
Appendix G

Student Consent Form

INFORMED CONSENT
Title of the Study:
The Impact of Collaborative Strategic Reading on ESL International Students’ Reading Comprehension and Metacognitive Awareness in College

Principal Investigator(s): Fatima Benlyazid (Benlyazidf@spu.edu; 425-948-5055).

DESCRIPTION OF THE RESEARCH
The purpose of this research is to investigate the impact of training students to implement cognitive and metacognitive strategies to enhance their reading comprehension and their metacognitive awareness. You have been invited to participate because the results of this study will assist teachers improve their teaching and train ESL struggling readers to apply a set of reading strategies to improve their reading comprehension and overcome comprehension breakdowns.

The research will take place at Edmond Community College, 20000 68th Ave W, Lynnwood, WA 98036.

WHAT WILL MY PARTICIPATION INVOLVE?
If you decide to participate in this research, you will be asked to work in groups, accomplish the reading task assigned to you in your group, and report your answers to your peers. Working in groups will also involve supporting low-performing members of your group when needed.

Your participation will last for 9 weeks (Winter quarter 2017). You may withdraw from the study at any time.

ARE THERE ANY RISKS TO ME?
There are no foreseeable risks or discomforts. Group work is usually used in ESL programs and college.

ARE THERE ANY BENEFITS TO ME?
After the intervention, students may be able to utilize a set of reading strategies that would allow them to monitor their reading, identify comprehension misunderstandings, and so improve their reading comprehension. They might also develop their social skills when they work in groups.

Participant’s Initials
Page 1 of 2
HOW WILL MY CONFIDENTIALITY BE PROTECTED?

While there will probably be publications as a result of this study, your name will not be used nor will you be identified in any way. The information in the study records will be kept confidential. Data will be stored securely and will be made available only to persons conducting the study unless you specifically give permission in writing to do otherwise. No reference will be made in oral or written reports that could link you to the study (the investigator will use numbers instead of names). The Principal Investigator listed above may use your de-identified data in future research, presentations, or for teaching purposes.

WHOM SHOULD I CONTACT IF I HAVE QUESTIONS?

You may ask any questions about the research at any time. If you have questions about the research after you leave today you should contact the Principal Investigator, (Fatima Benlyazid, 425-948-5055).

If you have questions about your rights as a research subject you should contact Terry Cox, Vice President for Workforce Development and Training, at Terry.Cox@edcc.edu or at 425-640-1489.

Your participation is completely voluntary. If you begin participation and change your mind you may end your participation at any time without penalty.

Your signature indicates that you have read this consent form, had an opportunity to ask any questions about your participation in this research and voluntarily consent to participate. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You will receive a copy of this form for your records. If you are under 18, you will be excluded from this study.

Participant’s Name (please print): ____________________________

Participant’s Signature: ____________________________ Date: __________

PI’s Name (please print): ____________________________

PI’s Signature: ____________________________ Date: __________

Copies to: Participant  Principal Investigator
Appendix H

Student Questionnaire

Respond to these five questions in your blue books. There is no word limit.

1. What do you like about CSR? Why?

2. What do you dislike about CSR? Why?

3. Which strategies have helped you most with your reading comprehension?

4. Which strategies have helped you least with your reading comprehension?

5. Which strategies will you more likely use in the future? Why?