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Effects of RAP Paraphrasing and Semantic-Mapping Strategies on the Reading Comprehension of English Learners and Fully-English-Proficient Students with Mild-to-Moderate Learning Disabilities

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Dissertation Abstract

Effects of RAP Paraphrasing and Semantic-Mapping Strategies on the Reading Comprehension of English Learners and Fully-English-Proficient Students with Mild-to-Moderate Learning Disabilities

This study, using a repeated measures design with alternating treatments, measured the effectiveness of traditional instruction, the RAP Paraphrasing Strategy, the semantic-mapping strategy, and a combination of these strategies on the reading comprehension skills of 11 English learners (ELs) with learning disabilities and 8 fully English-proficient students (FEPs) with learning disabilities (LD) in two high-school, mild-to-moderate, special-day, English classes. The students were taught each of these strategies for 540 minutes in 9 days of instruction. The same teacher taught all three strategies to both classes. Data were gathered from the IDEA Oral Language Proficiency Test, alternate forms of the Comprehension subtest of the Gates-MacGinitie Reading Test, and a reading strategies steps quiz.

After traditional instruction, all of the groups made gains in reading, although not statistically significant. The ELs with LD in Class 1 made strong reading gains following the first intervention (the RAP Paraphrasing Strategy), whereas the FEPs with LD in Class 2 made statistically significant reading gains following the first intervention (the semantic-mapping strategy). The ELs with LD in both classes and the FEPs with LD in Class 2 made statistically significant gains in reading after the second intervention, whereas the FEPs with LD in Class 1 made strong gains. Following the interventions, the ELs with LD remembered a higher percentage of the steps of the RAP Paraphrasing Strategy, whereas the FEPs with LD remembered a higher percentage of the steps of the

semantic-mapping strategy. Each of the steps of the RAP Paraphrasing and semantic-mapping strategies were remembered by a majority of the students.

It can be concluded that secondary-level ELs with LD may more easily remember the RAP Paraphrasing Strategy and benefit more from this strategy following traditional instruction than the semantic-mapping strategy following traditional instruction. In addition, secondary-level FEPs with LD may more easily remember the semantic-mapping strategy and may benefit more from this strategy following traditional instruction than the RAP Paraphrasing Strategy following traditional instruction. Finally, secondary-level ELs with LD and FEPs with LD make the highest reading gains when taught all three strategies (traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy).

This dissertation, written under the direction of the candidate‘s dissertation committee and approved by the members of the committee, has been presented to and accepted by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education. The content and research methodologies presented in this work represent the work of the candidate alone.

Terry Halterman Jr. December 12, 2013

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CHAPTER I

STATEMENT OF THE RESEARCH PROBLEM

Which teaching strategy-- the traditional method, the RAP (reading a paragraph, asking one's self what the main ideas and details about a paragraph are, and putting these ideas and details into one's own words) Paraphrasing Strategy (an auditory-language-dependent, cognitive strategy), the semantic-mapping strategy (a visually-dependent, cognitive strategy), or a combination of these strategies -- is more effective in increasing the reading-comprehension achievement of high-school English-learners (ELs) with learning disabilities (LD) and fully-English-proficient students (FEPs) with LD in two high-school, mild-to-moderate, special-day (SDC) English classes?

When compared to their peers without LD, students with LD may demonstrate lower levels of metacognitive awareness regarding reading strategies (Pintrich, Anderman, & Klocubar, 1994). This lack of metacognitive skills in students with LD is a factor in the failure of these students to learn reading skills and strategies and to be able to use them when needed in various academic situations (Wong, 1986). According to Williams (2000, p. 2), "although students with LD may have the ability to process information, they do so with great inefficiency. It is commonplace for students with learning disabilities to be unaware of basic strategies that good readers use as a matter of course, such as re-reading passages they don't understand." Students with LD may not utilize cognitive strategy schema (Seidenberg, 1982) or have the prior knowledge schema (Snider & Tarver, 1987) required for processing text. As a result, for these students, new information from text may appear to be irrelevant and challenging to understand or remember (Carr & Thompson, 1996). In addition, students with LD often struggle with

organizing and remembering verbal information (Wong, 1978). These students may also have deficits in working memory that exist independently of (or in conjunction with) deficits in short-term memory that can negatively impact their reading ability (Swanson, Howard, & Saez, 2006).

Even though ELs generally possess a range of cognitive or metacognitive strategies to choose from when they read vocabulary that they do not remember and that are requisite to comprehending the main idea of a text, they may not be cognizant of how to make use of these strategies and the fact that no particular strategy will be successful in every situation (Anderson, 2002). These students also may possess the cultural, personal, academic, and mental background knowledge (schema) to support reading-comprehension, but they may not be aware of how to activate this background knowledge (Navarro, 2008). Other ELs may not have the required formal schema (background information on the organizational structure of a text) or content schema (background information on the content information of a text) to facilitate reading-comprehension (Carrell, 1984). In addition, for ELs, their awareness of the meaning of various words found in text and their skill in organizing linguistic information in short term memory may not be sufficient to support efficient reading comprehension (Lesaux & Kieffer, 2010).

Reading comprehension has been recognized as being essential both to academic achievement in all curricular areas and to lifelong learning (National Endowment for the Arts, 2007; National Institute of Health, 2000). According to Henderson and Buskist (2011), comprehending written material is a “constructive process in which skillful readers are active before, during, and after they read” (p. 232). A large body of research

supports the success of different instructional methods in enhancing reading-comprehension (National Institute of Health, 2000; RAND Reading Study Group, 2002). Some of this research has identified various strategies for increasing the reading-comprehension skills of students with disabilities (Berkeley, Scruggs, & Mastropieri, 2010). In addition, a smaller body of research has revealed efficient instructional strategies for augmenting the reading-comprehension skills of ELs in the United States (Taboada, 2009). Nevertheless, little consensus has been reached concerning the most effective means of raising the reading-comprehension skills of high-school ELs with LD and FEPs with LD. The purpose of this study was to examine the effectiveness of the traditional method, the RAP Paraphrasing Strategy, the semantic-mapping strategy, and a combination of these strategies in the improvement of the reading comprehension skills of ELs with LD and FEPs with LD in two high-school, mild-to-moderate, SDC**,** English classes and whether or not these students could remember the steps associated with these strategies after they had been taught them.

Purpose Statement

The twofold purpose of this repeated measures study was to assess the effectiveness of traditional instruction, RAP Paraphrasing Strategy, the semantic-mapping strategy, and a combination of the three strategies with high-school-level ELs with LD and FEPs with LD in two high-school, mild-to-moderate, SDC, English classes and to provide information on the knowledge of the two intervention strategies (the RAP Paraphrasing Strategy and the semantic-mapping strategy) after the students had been provided with traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy.

The methodology that was utilized to investigate the first purpose was a repeated measures design with alternating treatments, with two groups (each containing two language-proficiency groups: ELs with LD and FEPs with LD) exposed to three instructional conditions: the comparison condition (traditional instruction) and two experimental conditions (the RAP Paraphrasing Strategy and the semantic-mapping strategy in alternating order). If successful, one of the two experimental conditions (following traditional instruction) or a combination of these conditions (after the students had been taught both experimental strategies and traditional instruction) should have improved these students' reading-comprehension scores. The independent variable for this study was the type of instruction with four levels (traditional instruction, the RAP Paraphrasing Strategy, the semantic-mapping strategy, and the combined intervention). The dependent variable was defined as the differences between the scores on the pretest (a reading-comprehension subtest) and the scores on the tests at the end of each instructional phase (alternating parallel forms of the same reading-comprehension subtest). The procedure used to address the second purpose was to administer a quiz to examine whether the students knew the steps of how to apply each of the two the strategies after they had been taught them.

Theoretical Rationale

Five theories-- the metacognitive theory, the assimilation theory of meaningful learning and retention , the schema theory, the dual coding theory, and the cognitive load theory-- provided insight into how secondary-level ELs with LD and FEPs with LD can better comprehend what they are reading. The metacognitive theory provided part of the

theoretical foundation for the RAP Paraphrasing Strategy (Karbalaei & Amoli, 2010; Mothus & Lapadat, 2006) and the semantic-mapping strategy (Tateum, 2007).

Although the assimilation theory of meaningful learning and retention, the schema theory, and the dual coding theory have been presented as alternate forms of cognition (Ausebel, 1980; Sadoski, Paivio, & Goetz, 1991), all three attempt to elaborate upon processes that theoretically must occur for reading comprehension to be successful. The schema theory provided part of the theoretical foundation for both the RAP Paraphrasing Strategy (Shabani & Abbassi, 2011) and the semantic-mapping strategy (Guastello, Beasley, & Sinatra, 2000; Johnson et al., 1984; Sinatra, Stahl-Gemake, & Berg, 1984; Tateum, 2007; Toms-Bronowski, 1982; Wills, 2005). In addition, the assimilation theory of meaningful learning and retention (Novak & Canas, 2009), dual coding theory (Nesbit & Adesope, 2006; Wills, 2005), and the cognitive load theory (Johnson, Toms-Bronowski, & Pittelman, 1981; Wills, 2005) formed part of a theoretical rationale for the semantic-mapping strategy. The cognitive load theory in part focuses on reducing the mental effort necessary to build schema (Pierce et al., 1993).

Metacognitive Theory

This section of the theoretical rationale contains several theoretical perspectives on metacognitive theory. These perspectives are derived from educational theorists such as Flavell (1979), Baker and Brown (1980), Borkowski et al. (1983), Sternberg (1984), and Roberts and Erdos (1993). Although many explanations have been made regarding Flavell's theory of metacognition since its inception, the basis for this theory has remained intact.

According to Flavell (1979), metacognition is the process of an individual regulating his or her memory, understanding, and other cognitive functions. This process of regulation occurs through the actions and relationships between metacognitive knowledge, metacognitive experiences, goals (tasks), and actions (strategies). Metacognitive knowledge is composed of the knowledge and conceptions regarding the variables that work independently or with one another to influence the process and end result of cognitive actions. Metacognitive experiences are cognitive or affective experiences associated with a cognitive action. Goals serve as the preferred outcome of a cognitive action. Actions function as cognitions or other processes utilized to reach the goals. According to Flavell (1979, p. 906), metacognition has been demonstrated to affect substantially "oral communication of information, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, attention, memory, problem-solving, social cognition, and, various types of self-control and self-instruction," and other areas.

Additions to the metacognitive theory focused on the reasons for comprehension failures, comprehension monitoring, and how readers respond to difficulties in comprehension when they occur. According to Baker and Brown (1980), there are four reasons for reading-comprehension difficulties: (a) a lack of relevant schemata, (b) an inadequate number of clues to suggest the schemata, (c) the reader arrives at a logical conception of the text, but different from what the author planned, as well as (d) the reader interprets the text as the author intended without reflecting upon an alternative interpretation (Baker and Brown, 1980). These theorists stated that reading-comprehension involves the metacognitive process of monitoring that requires being

conscious of the efficiency of one's comprehension, making sure that the process persists without difficulties, and compensating if necessary. Experienced readers spontaneously monitor their own comprehension (frequently unconsciously) until faced with a comprehension difficulty at which point they use metacognitive reading strategies to remediate the problem.

Sternberg (1984) further elaborated upon the metacognitive system. As part of this theory, there are metacomponents (executive functions that are utilized in planning, regulating, and evaluating an individual's information processing), performance functions (that are used in the execution of a particular task or a group of tasks), and knowledge-acquisition functions (that are utilized to learn new information).

Nevertheless, metacognitive processes are not always employed when reading comprehension is attempted. Roberts and Erdos (1993) stated that metacognitive processes are only or almost only employed due to the inability of the present strategy to produce a favorable outcome (an impasse). This situation results in the need to ascertain a new strategy, otherwise a failure will result. When such an impasse is reached, more than a single strategy may be available for use. The individual will then have to figure out which is the best strategy to use and then evaluate the results of utilizing that strategy.

Students with LD may demonstrate lower levels of metacognitive awareness regarding reading strategies in comparison to their peers without LD (Pintrich, Anderman, & Klocubar, 1994). Lack of metacognitive skills in students with LD is a factor in the failure of these students to learn reading skills and strategies and to be able to transfer them when necessary to other academic situations (Wong, 1986). In general,

students with LD are not cognizant of the strategies that good readers use when they do not understand what they are reading (Williams, 2000).

Even though ELs frequently possess a range of cognitive or metacognitive strategies to select from when they read vocabulary that they do not recognize and that are requisite to comprehending the main idea of a text, they may not be cognizant of how to utilize these strategies and the fact that no single strategy will work in every situation (Anderson, 2002). Cognitive strategy instruction involves teaching students various cognitive and metacognitive strategies to use in different situations to improve learning (Montague & Dietz, 2009). The metacognitive theory supported providing the ELs with LD and FEPs with LD in this study with cognitive strategies such as the RAP Paraphrasing Strategy and the semantic-mapping strategy and teaching them how to use them to improve their reading comprehension skills.

Assimilation Theory of Meaningful Learning and Retention

Ausebel (1962) proposed the foundations of the assimilation theory of meaningful learning and retention. In his theory, he distinguished between two types of verbal learning tasks (learning involving language): rote learning tasks and meaningful learning tasks. Rote learning tasks occur apart from the cognitive structure and are generally affected by the interaction of various rote learning materials. Meaningful learning tasks are able to be associated with and anchored (connected) to relevant and broad concepts within the hierarchically organized (from the most general to the most specific) cognitive structure. Meaningful learning of verbal information is the primary method by which students may increase their level of knowledge (Ausebel, 1962).

As new meaningful verbal information enters the cognitive structure, there is an interplay between this information and the broad conceptual system under which it is to be subsumed (related). This process makes the remembering of information easier (Ausebel, 1962). There are three factors that encourage the assimilation and stability of meaningful verbal information. First, within the cognitive structure, there must be related subsuming concepts that can incorporate the new information. Second, these concepts must be comprehendible and stable. Third, these concepts should be distinguishable from the information to be learned (Ausebel, 1962).

Students with LD often struggle with organizing and remembering verbal information (Wong, 1978). Thus, visual displays of information (i.e., semantic maps) augment the reading comprehension of these students possibly by assisting them in organizing verbal information and facilitating the process of recall of that information (Kim, Vaughn, Wanzek, & Wei, 2004). Semantic maps in particular may function as a template, helping students to organize meaningful verbal knowledge, providing a structure that must be created in increments with small groupings of interacting concepts and concept frameworks. In other words, semantic maps can become a method of representing students' structural (hierarchical) understanding of verbal concepts, helping them to organize knowledge in a manner that it becomes meaningful learning (Novak & Canas, 2008). In this study, the semantic-mapping strategy was taught to provide the ELs with LD and the FEPs with LD with the ability to construct a framework in which to organize verbal concepts while reading to increase their level of reading comprehension.

Schema Theory

Anderson, Reynolds, Schallert, and Goetz (1977) proposed the schema theory. According to this theory, schemata (knowledge structures) serve as general ideas forming the basis of objects, events, or actions. Schemata are general due to the fact that they contain an empty space for every relevant element within the knowledge structure. Information is comprehended when a reader has established a connection between the relevant schemata and the incoming information. Comprehension requires filling the empty spaces in the relevant schemata so that the schemata are supported. The empty spaces in the schemata in which a reader may be attempting to construct the meaning of information need to be filled. These empty spaced must be filled even when the information provided is not direct or comprehension will not be successful. Finally, well-developed schemata may cause readers to interpret a passage in a specific way without considering that an alternative interpretation may be possible.

Brewster and Treyens (1981) added to the theory by stating that it appears that there are five ways that schemata may have an effect upon memory performance. First, schemata determine what information is examined and encoded into memory. Second, schemata serve as a knowledge structure for episodic information. Third, schema-based information is combined with episodic information. Fourth, schemata can direct the process of information retrieval. Fifth, schemata determine what information is given at recall.

Students with LD may not use the cognitive strategy schema (Seidenberg, 1982) or have the prior knowledge schema (Snider & Tarver, 1987) required for processing text. As a result, for these students, new information from text may appear irrelevant and

difficult to understand or remember (Carr & Thompson, 1996). Nevertheless, cognitive strategy schema and prior knowledge schema (Carr & Thompson, 1996) can be taught to students with LD to augment their reading comprehension.

ELs may possess the cultural, personal, academic, and mental background knowledge (schema) to assist them in reading comprehension, but they may be unaware of how to activate this background knowledge (Navarro, 2008). Other ELs may not be in possession of the requisite formal schema (background information on the organizational structure of a text) or content schema (background information on the content information of a text) to facilitate reading-comprehension (Carrell, 1984). Either way, they can be taught these strategies (Navarro, 2008) or taught to transfer strategies utilized in their native language (Klingner et al., 2006) to assist them in comprehending what they are reading. In this study, the RAP Paraphrasing Strategy and the semantic-mapping strategy were taught to provide the ELs with LD and the FEPs with LD with cognitive strategy schema to help them to activate background knowledge while reading to increase their level of reading comprehension.

Dual Coding Theory

This section contains a theoretical perspective on the dual coding theory, on which the use of semantic mapping partially is based. According to Paivio (2006), cognition is composed of two separate systems, a verbal system that works with language and a nonverbal (imagery) system that works with nonlinguistic objects and events. Both systems are assumed to be comprised of internal representational units, called logogens (language units) and imagens (image units), that are activated when an individual remembers, manipulates, or considers words or things. The representations are particular

to each modality, so that there are different logogens and imagens associated with the visual, auditory, haptic (tactile), and motor properties of language and objects. Although these systems may function on their own, cognition is the interplay between the two systems to the greatest extent possible (with one system at times dominating the other).

According to Nesbit and Adesope (2006), reading or creating semantic maps with semantically equivalent text or verbal information may help to develop cognitive representation of the information in both the verbal and nonverbal systems. Thus, connections between the verbal and nonverbal systems create more retrieval paths for verbal and nonverbal information.

Kim, Vaughn, Wanzek, and Wei (2004) stated that students with LD typically have low verbal ability that frequently reveals itself as difficulty in recalling verbal material. Nevertheless, semantic maps can assist students in storing new information in the nonverbal system in addition to the verbal system (Dexter, 2010). In addition, by making abstract verbal information more concrete via visual representations, learning will be facilitated for students (Dexter, 2010). By utilizing semantic mapping in this study, information from written passages would be imprinted into both the aforementioned verbal and nonverbal systems, thereby increasing the reading comprehension ability of the ELs with LD and FEPs with LD.

Cognitive Load Theory

This section contains theoretical perspectives on the cognitive load theory, in which the use of the semantic-mapping strategy partially is grounded. These perspectives are derived from educational theorists such as Adcock (2000), Baddeley (2000),

Swanson, Howard, and Saez (2006), and Cowan (2010). The multicomponent model may explain how students with LD learn to comprehend what they are reading.

As per Adcock (2000), cognitive load is the extent of mental resources (working memory) required for information processing. According to the multicomponent model (Baddeley, 2000, 2012), working memory (WM) is comprised of a central executive system that coordinates with four subsidiary storage systems: short-term memory (STM), the phonological loop (which holds verbal and acoustic information for a finite period of time), the visuospatial sketchpad (which holds visual-spatial information for a limited amount of time), and the episodic buffer (a temporary interconnection between the two of the subsidiary systems-the phonological loop and the visuospatial sketchpad, and long-term memory, as well as between working memory, perception, and long-term memory). According to Swanson, Howard, and Saez (2006), students with reading disabilities may have deficits in working memory that exist independently of (or alongside with) deficits in short-term memory.

According to Cowan (2010), young adults can retain only three to five items simultaneously in their WMs. With deficits in WM and STM for students with reading disabilities, this storage capacity is even more limited (Swanson, Zheng, & Jerman, 2009). Working memory deficits affect the reading-comprehension skills of these students (Swanson & Beringer, 1995). For ELs, their awareness of the meaning of various words found in text and their skill in organizing linguistic information in STM may be inadequate to sustain effective reading comprehension (Lesaux & Kieffer, 2010). Nevertheless, chunking information (combining items into a single chunk due to their associations) can increase the capacity of the WM (Cowan, 2010). Johnson, Toms-

Bronowski, and Pittelman (1981, p. 42) defined semantic-mapping as, "a categorical structuring of information in graphic form." Semantic-mapping becomes a way of visually chunking information and removing cognitive load from the phonological loop, thus expanding the capacity of WM. Thus, it was believed that in this study semantic mapping would decrease the cognitive load of the ELs with LD and FEPs with LD while reading, leading to gains in reading comprehension.

Background and Need

According to the following statistics, there is an achievement gap between ELs and FEPs with LD and FEPs without LD at the high-school level in terms of standardized measures of reading performance, all of which include some assessment of reading-comprehension skills. The achievement gap between ELs with LD and FEPS with LD and their English language proficient peers without LD at the high-school level is apparent only by examining the standardized test scores of high-school-level ELs and students with disabilities as separate populations as test data do not exist for ELs with LD or FEPs with LD (California Department of Education, 2011a, 2011b, 2012c, 2012d, 2012e, 2012f; National Center for Educational Statistics, 2010).

Many students who took the National Assessment of Educational Progress (NAEP), the California High School Exit Exam (CAHSEE), or the California Standards Test (CST) who are included as being ELs may be classified as students with LD and vice versa. Even though there are no national statistics by grade level tracking students with LD who also are ELs, nearly 8% of all students with disabilities also are ELs (D'Emilio, 2003). In addition, in urban school districts in California there is an

overrepresentation of ELs at the secondary level in special education programs for students with LD (Artiles, Salazar, & Higareda, 2005).

In 2009, 64% of 12th-grade students with LD scored below basic on the reading subtest of the NAEP, whereas 24% of 12th-grade students without disabilities scored below basic on the same subtest (National Center for Educational Statistics, 2010). In addition, 78% of 12th-grade ELs scored below basic on the NAEP, whereas 25% of their 12th-grade, non-EL peers scored below basic on the same subtest (National Center for Educational Statistics, 2010).

The national achievement gap between high-school students with disabilities and their peers without disabilities is similar to that at the state level on the English Language Arts (ELA) subtest of the CAHSEE. In 2011, approximately 61% of 10th-grade students with disabilities failed the ELA subtest of the CAHSEE, whereas approximately 14% of their peers without disabilities failed the same subtest (California Department of Education, 2011a). In the same year, approximately 56% of 10th-grade ELs failed the ELA subtest of the CAHSEE, whereas approximately 11% of their non-EL peers failed the same subtest (California Department of Education, 2011a).

Statewide, scores on the English-Language Arts (ELA) portion of the CST are close to those on the CAHSEE. In 2011, approximately 60% of 9th- through 11th-grade students with disabilities scored below basic or far below basic (California Department of Education, 2012e). In comparison, approximately 20% of their 9th- through 11th-grade peers without disabilities scored below basic or far below basic on the same subtest (California Department of Education, 2012f). In addition, approximately 61% of ninth- through 11th-grade ELs scored below basic or far below basic on the same subtest

(California Department of Education, 2012c). In comparison, approximately 16% of their 9th- through 11th-grade non-EL peers scored below basic or far below basic on the same subtest (California Department of Education, 2012d). Many of these students who took the CAHSEE or the CST who are counted as being ELs or students with LD also may be classified as students with LD or ELs, respectively.

Many ELs with LD and FEPs with LD have inadequate reading-comprehension skills. This lack of sufficient reading skills can be extrapolated from previously mentioned demographic data regarding which students with LD also are ELs and the following assessment data on students with LD and ELs at the national and state levels. In 2009, only 36% of students with disabilities and 22% of ELs scored basic or above on the reading subtest of the NAEP, which measures reading-comprehension skills in particular (National Center for Educational Statistics, 2010). Within the state of California, in the May 2011 administration of the CAHSEE, students with disabilities obtained an average of 46% correct on the reading-comprehension questions on the ELA (California Department of Education, 2011b). On the same subtest during the same administration, ELs obtained an average of 52% correct on the reading-comprehension portion of the same subtest (California Department of Education, 2011b). Thus, these students may not have the reading-comprehension skills necessary for learning in all academic content areas (National Reading Panel, 2000).

The consequences from inadequate reading-comprehension skills also extend to the postsecondary functional environment (National Institute for Literacy, 2008). Employers require increasingly literate workers to participate in the 21st-century workforce (National Endowment for the Arts, 2007). As per the National Endowment for

the Arts, employers deem 37% of high-school graduates as lacking efficient reading-comprehension skills. In addition, adults with minimal reading-comprehension skills are more apt to become homeless, without employment, or experience low paying jobs (National Institute for Literacy, 2008). In 2009, 66.7% of young adults with LD were employed (National Longitudinal Transition Survey 2, 2009) in comparison with the national employment rate of 90.7% (Bureau of Labor Statistics, 2010) and were making an average wage of $10.60 per hour nationally (National Longitudinal Transition Survey 2, 2009) when compared with the national average wage of $20.90 per hour (Bureau of Labor Statistics, 2010). Thus, improved reading-comprehension skills may lead to better academic performance, higher employability, and an improved standard of living for these students. What are needed are reading-comprehension strategies that these students can use effectively on their own in the classroom and beyond.

Cognitive strategy instruction is a series of instructional methods in which students are taught techniques for problem-solving, studying for a test, or comprehending what is being read (Dole, Nokes, & Drits, 2009). These strategies have been shown to augment reading comprehension when compared to more traditional methods of instruction (National Reading Panel, 2000). Cognitive strategy instruction generally includes the development of comprehension and an awareness of a student's own cognitive techniques that can be improved through learning, includes a teacher explaining or modeling for the student those methods that he or she can use to improve the reading-comprehension process, and having the student practice those methods with the teacher's assistance until the student begins to master those methods (National Reading Panel, 2000).

These strategies may be auditory-language-dependent or visually-dependent. Auditory-language-dependent, cognitive strategy instruction utilizes language in prereading activities or postreading activities to improve reading-comprehension skills (Sencibaugh, 2007). Examples of these strategies that students can learn to effectively use on their own include paraphrasing, summarization, main idea strategies, self-questioning, etc. Visually-dependent, cognitive strategy instruction utilizes pictures or visual ability in activities that improve reading-comprehension skills (Sencibaugh, 2007). Examples of these strategies include semantic-mapping, semantic-feature analysis, and text illustrations. Various auditory-language-dependent, cognitive strategies and visually-dependent, cognitive strategies (primarily semantic mapping, a form of text illustration) that students can use on their own have been studied since the early 1980s to improve reading-comprehension skills.

Auditory-Language-Dependent, Cognitive Strategies and Reading Comprehension

The following studies analyzed the effects of auditory-language-dependent, cognitive strategies on the reading comprehension of students. These studies utilized primary-level, secondary-level, and postsecondary-level students and general-education students, students with LD, or ELs as their participants. This research was grounded in the metacognitive theory, based on the theories of Flavell (1979), Baker and Brown (1980), Sternberg (1984), Nelson and Narens (1990), and Roberts and Erdos (1993) and the schema theory based on the theories of Anderson, Reynolds, Schallert, and Goetz (1977) and Brewster and Treyens (1981). This section includes a representative sample of auditory-language-dependent, cognitive strategies studies; most of which demonstrate evidence of improving the reading comprehension of students.

Single-Strategy Studies

Starting in the first half of the 1980s, various studies analyzed whether students could be taught to use a single auditory-language-dependent, cognitive strategy for reading comprehension, such as schema-based self-questioning (Singer & Donlan, 1982), summarizing (Brown, Day, & Jones, 1983), and text structure instruction (Taylor & Beach, 1984). These studies largely were aimed at students in the general-education environment. Singer and Donlan (1982) conducted a study to measure the effects of an auditory-language-dependent, cognitive strategy (schema-based self-questioning) when compared with traditional instruction on the reading-comprehension skills of 11th-grade students. In four of six instructional sessions, the experimental group scored higher than the comparison group on the reading comprehension quizzes.

In the research of Brown, Day, and Jones (1983) to measure the effects of the ability of fifth graders, seventh grades, eleventh graders, and first-year college students to summarize text, all of the age groups minimized the length of their summaries as instructed. Most (69%) of the summaries of the older students were written in their own words, whereas 16% of the summaries of the younger students were written in their own words. Fifth graders and seventh graders rarely deviated from the order of the text.

Statistically significantly more 11th graders and college students planned ahead than 5th graders and 7th graders. There also was a substantial difference between the plan-participants (with no effects regarding position in their summaries) and no plan-participants (who favored the first half of the story) in the 5th and 7th grades. Fifth and 7th graders who did not make a rough draft usually ran out of space prior to finishing their summaries. Eleventh graders and college students had adequate control of their activity

for them to create an accurate representation of both halves of the story, even without a producing rough draft.

Taylor and Beach (1984) conducted a study in part to measure the effects of an auditory-language-dependent, cognitive strategy (using text structure to form a hierarchical summary of social studies material that the students in the experimental instruction group read), traditional instruction, and a comparison condition in which students received no special instruction on the reading comprehension of junior-high-school students. Using text structure to form a hierarchical summary augmented the students' ability to recall relatively unfamiliar material, but not relatively familiar material. In addition, this form of an auditory-language-dependent, cognitive strategy led to gains in students' expository writing.

Multiple-Strategy Studies

Starting in the second half of the 1980s, various studies attempted to demonstrate that teaching students to use multiple strategies (including auditory-language-dependent, cognitive strategies, visually-dependent, cognitive strategies, or metacognitive strategies) grouped together in techniques, such as Informed Strategies for Learning (Paris, Cross, & Lipson, 1984) and strategies for comprehending expository text (Lau & Chan, 2004) could also lead to gains in reading-comprehension ability, mostly with positive (but not statistically significant) results. These studies were largely aimed at students in the general-education environment.

Paris et al. (1984) carried out a study to examine the effects of a multiple strategy program (Informed Strategies for Learning), including auditory-language-dependent, cognitive strategies and metacognitive strategies on the reading comprehension of third

graders and fifth graders. For the comprehension test of the Gates-McGinitie Reading Test and the Tests of Reading Comprehension, neither of the treatment effects, the grade effects, nor the Grade x Treatment interactions was statistically significant. The treatment and grade effects were statistically significant, however, for the cloze task and the error detection task in favor of the experimental groups in both grades, but the Grade x Treatment interactions were not.

In the research of Lau and Chan (2004) to investigate the effects of multiple strategies (including auditory-language-dependent, cognitive strategies, visually-dependent, cognitive strategies, and metacognitive strategies) compared with traditional instruction on the reading comprehension of low-achieving seventh-grade students, the most relevant results include the following. The students in the experimental group scored statistically significantly higher than the students in the comparison groups on the reading strategy and comprehension posttest. There were no statistically significant main effects, but the means of the students in the experimental group were higher than the means of the students in the three comparison groups on the transfer test. Students' improvements in their cognitive strategy use and reading comprehension were maintained 4 months after the end of the instructional period. The students in the experimental group did not demonstrate statistically significant changes in reading motivation (except for external attribution) following the cognitive strategies instruction. Some of the students in the comparison groups stated that there was not adequate direct reading instruction in language lessons and they rarely were provided with the chance to practice reading comprehension in a traditional instruction class. All of the students in the experimental group provided positive comments about the cognitive strategy instruction program used

in this study, stating that it improved their abilities and self-confidence in reading comprehension.

Beginning in the second half of the 1980s, these multiple-strategy studies began to focus more on ELs or students with LD. These studies using techniques, such as combining explicit verbal explanations with cognitive strategy instruction (Duffy et al., 1987; Olson & Land, 2007) demonstrated to some extent that these students also could benefit from multiple auditory-language-dependent, cognitive strategies to improve their reading-comprehension ability.

Duffy et al. (1987) conducted a study in part to measure the effects of explaining the rationale for using multiple reading strategies (including auditory-language-dependent, cognitive strategies and metacognitive strategies) on the reading-comprehension skills of third-grade students with low-reading ability (including mainstreamed special education students, immigrant children with severe language problems, and students with behavioral disorders). There was a statistically significant overall main effect in favor of the experimental group for the Supplemental Achievement Measure. There was a statistically significant overall main effect on the Graded Oral Reading Paragraph Test posttest in favor of the experimental group. The students in the experimental group did statistically significantly better than the students in the comparison group on the word meaning subtest and the word recognition subtest. There was a statistically significant overall difference on the Stanford Achievement Test favoring the treatment classrooms. There was a statistically significant difference in favor of the experimental group on the word study subtest, but there was no statistically significant difference observed on the comprehension subtest. On the Michigan

Educational Assessment Program, students in the experimental group scored statistically significantly higher than the students in the treated-comparison group.

As part of their study-Olson and Land (2007) carried out a study to measure the effects of multiple auditory-language-dependent, cognitive strategies (and other types of strategies: cognitive and metacognitive) combined with a rationale for using them on the reading skills and writing skills of secondary-level students (most of which were EL students). The students in the experimental group made statistically significantly higher gains than the students in the comparison group from pretest to posttest on multiple variables (including SAT-9 Reading scores) for most of the eight years of the study (except for the pilot year of the study in which the difference between the two groups, although not statistically significant, was still in favor of the experimental group).

The results of one study (Olson & Land, 2007) suggested that there may be statistically significant effects in favor of multiple auditory-language-dependent, cognitive strategies on the reading-comprehension skills of ELs (and other students). Another study (Duffy et al., 1987) suggested positive (though not all statistically significant) effects of multiple auditory-language-dependent, cognitive strategies on the reading-comprehension skills of ELs, students with LD, and students with behavioral disorders. Nevertheless, none of these studies utilized secondary-level ELs with LD as the participants in their studies. In addition, no information was provided concerning whether or not the students were cognizant of the steps to utilize these strategies.

Transactional Strategies Studies

Starting in the middle of the 1990s, studies began to focus on Transactional Strategies Instruction (Brown, Van Meter, Pressley, & Schuder; 1996; Reutzel, Smith, &

Fawson, 2005). Transactional Strategies Instruction involves teaching students to utilize adequately multiple cognitive strategies (including auditory-language-dependent, cognitive strategies) and metacognitive strategies with different texts and within different content domains to augment their reading-comprehension skills through teacher modeling and interaction within groups (with a gradual transition from the former to the latter). These studies largely were aimed at students in the general education environment with mixed results.

Brown et al. (1996) conducted a study in part to measure the results of various cognitive strategies (the Students Achieving Independent Learning program) on the reading-comprehension skills of second grade, low-achieving students when compared with the results of traditional instruction. According to the results of the strategies interviews, there was a statistically significant difference in the change in self-reported awareness of strategies between the SAIL students and the students in the comparison group for both comprehension strategies and word-level strategies. The fact that the students in the experimental group learned more comprehension strategies and word-level strategies was supported by two raters that reviewed lessons. Recall of stories indicated that students in the experimental group had recalls that were statistically significantly more interpretive and overall not statistically significantly more literal (but more literal nonetheless) than the students in the comparison group.

According to the results of the think-aloud, the students in the experimental group used statistically significantly more strategies, on average, during the think-aloud task than the students in the comparison group did. In terms of the number of reader-based responses (responses connecting what is read to prior knowledge), there was statistically

significant difference between the experimental group and the comparison group (in favor of the experimental group). The differences in the gains between the treatment groups on the pretest and posttest administrations of the comprehension and word skills subtests of the Stanford Achievement Test were statistically significant in favor of the experimental group.

Reutzel et al. (2005) conducted a study to compare the effects of two approaches (single-strategy instruction and transactional-strategies instruction) to teaching multiple auditory-language-dependent, cognitive strategies on the reading comprehension of second-grade students. No statistically significant difference was present between the single-strategy instruction and transactional-strategies instruction groups on the Comprehension Test of the Gates-MacGinitie Reading Test, the State End-of-Level comprehension-related test items, recall of superordinate concept units (from familiar and unfamiliar texts), a strategy utilization survey, and a reading motivation survey. Nevertheless, there were statistically significant differences between the single-strategy instruction and transactional-strategies instruction groups (in favor of the transactional-strategies instruction groups) on the recall of subordinate concept units (from familiar and unfamiliar texts), recall of science content knowledge, and the state end-of-level comprehension-related test items.

Thus, two studies (Brown et al., 1996; Reutzel et al., 2005) have suggested that there are statistically significantly positive effects of transactional, auditory-language-dependent, cognitive strategies on the reading-comprehension skills of students in the general education environment. No transactional-strategy studies had been conducted on secondary-level students, ELs, or students with LD. In addition, there was still a question

regarding the extent to which particular cognitive auditory-language-dependent, cognitive strategies were most effective. There was also no attempt to ascertain whether or not the students provided with the auditory-language-dependent, cognitive strategies could recall all of the steps in using the strategies.

Semantic Mapping (A Visually-Dependent, Cognitive Strategy) and Reading Comprehension

The following studies analyzed the effects of the semantic-mapping strategy (a visually-dependent, cognitive strategy) on the reading comprehension of students. These studies utilized primary-level, secondary-level, and postsecondary-level students and general education students, students with LD, or ELs as their participants. This research was grounded in the metacognitive theory, based on the theories of Flavell (1979), Baker and Brown (1980), Sternberg (1984), Narens (1990), and Roberts and Erdos (1993), the assimilation theory of meaningful learning and retention based on the theories of Ausebel (1962,1980), the schema theory based on the theories of Anderson, Reynolds, Schallert, and Goetz (1977) and Brewster and Treyens (1981), the dual coding theory based on the theories of Paivo (2006) and Nesbit and Adesope (2006), and the cognitive load theory based upon the theories of Adcock (2000), Baddeley (2000), Swanson, Howard, and Saez (2006), and Cowan (2010). This section includes a small representative sample of semantic-mapping studies, the majority of which demonstrate evidence of improving the reading comprehension of students.

Beginning in the early 1980s, various studies were examining the efficacy of semantic mapping on the vocabulary and reading comprehension of students in the general-education environment, some with statistically significant effects in favor of the semantic mapping. Margosein, Pascarella, and Pflaum (1982) conducted a study to

compare the effects of semantic mapping on reading comprehension and vocabulary acquisition of junior high-school students when compared with junior high-school students provided with context clues. The group receiving the experimental treatment demonstrated statistically significantly greater scores than the group receiving context clues on the weekly tests, the Treatment Test, and the Gates-MacGinitie Vocabulary Test. The group differences exhibited for the Gates-MacGinitie Comprehension Test and the Definition Test also were in favor of the group receiving the experimental treatment. These differences, however, were not statistically significant (especially for the Gates-MacGinitie Comprehension Test, as there was almost no difference between the two groups regarding posttest scores).

Starting in the middle of the 1980s, various studies analyzed the outcomes of semantic mapping on the reading-comprehension ability of students with LD, all with statistically significant effects in favor of semantic mapping. Sinatra, Stahl-Gemake, and Berg (1984) conducted a study to ascertain the effects of semantic mapping in comparison to traditional instruction on the reading comprehension of second through eighth graders (including six students enrolled in special education classes). Nineteen of the 27 students had higher total comprehension scores when semantic mapping was utilized. For all of the students, the average quantity of reading-comprehension questions correct using the semantic-mapping approach was 37.9, whereas for the traditional approach the average quantity correct was 35.9. This difference was statistically significant. No statistically significant differences were observed when comparisons were conducted between main idea, inferential, and detail questions.

Reyes, Gallego, Duran, and Scanlon (1989) carried out a study to measure the effectiveness of four instructional strategies, semantic mapping, semantic-feature analysis, semantic/syntactic-feature analysis, and traditional instruction in helping students with LD to recall existing information and associate those concepts with new information. Regarding vocabulary scores, there was a statistically significant effect for prior knowledge as a covariate. Main effect tests also suggested a statistically significant effect for condition and time, and there was a Condition x Time interaction. Concerning comprehension scores, prior knowledge had a statistically significant effect as a covariate. In addition, main effects tests suggested a statistically significant effect for condition and time. Students receiving instruction via the three interactive instructional strategies (semantic-feature analysis, semantic mapping, and semantic- and syntactic-feature analysis) retained a statistically significantly larger amount of vocabulary and demonstrated statistically significantly superior reading comprehension on the posttest and follow-up test than the students receiving the traditional instruction.

Bos and Anders (1990) conducted a study to measure the effectiveness of four instructional strategies (semantic mapping, semantic-feature analysis, semantic- and syntactic- feature analysis, and traditional instruction) in helping students with LD to improve their vocabulary learning and reading comprehension. Among the most relevant results, prior knowledge appeared to be a statistically significant covariate for the vocabulary score and the comprehension score. Nevertheless, prior knowledge did not appear to be a statistically significant covariate in the written-recall analyses. Previous interest on the topic as well as IQ, were not statistically significant covariates in any analysis involving the reading tests or written recalls.

For the vocabulary score, on the posttest students receiving the semantic-feature analysis and semantic-mapping instructional conditions had learned more vocabulary than students in the definitions condition. On the follow-up test, students in the semantic mapping, semantic-feature analysis, and semantic- and syntactic-feature analysis conditions scored higher than the students in the traditional instruction group. There were no differences between the scores of the students in the semantic mapping, semantic-feature analysis, and semantic- and syntactic- feature analysis conditions on the posttest or the follow-up test. For the comprehension score, at the posttest students receiving the semantic-feature analysis, semantic-mapping, and semantic- and syntactic-feature-analysis instructional conditions had statistically significantly higher reading comprehension scores than students in the traditional instruction condition. On the follow-up test, students in the semantic- and syntactic-feature analysis condition scored statistically significantly higher than the students in the traditional instruction group. There were no differences between the scores of the students in the semantic mapping, semantic-feature analysis, and semantic- and syntactic-feature analysis conditions on the posttest or the follow-up test.

Regarding the written recalls, for vocabulary generated, conceptual units, prior knowledge, and holistic rating, there were no statistically significant differences between the four instructional conditions at posttest. On the follow-up test, students receiving the semantic-feature analysis and semantic- and syntactic-feature-analysis instructional conditions had statistically significantly higher reading comprehension scores than students in the traditional instruction condition in terms of vocabulary generated, conceptual units, and holistic rating, whereas for prior knowledge, students receiving the

semantic-feature analysis, semantic-mapping, and semantic- and syntactic-feature-analysis instructional conditions had statistically significantly higher reading comprehension scores than students in the traditional instruction condition.

Starting in the late 1990s, studies began to analyze the outcomes of semantic mapping on the reading-comprehension ability of ELs. El-Koumy (1999) conducted a study to measure the effects of three methods of teaching semantic-mapping strategies on the reading-comprehension ability of EL university students in Egypt. There was a statistically significant difference in scores between the three groups in the study on the posttest (the Test of English as a Foreign Language). The teacher-student interactive semantic-mapping group achieved statistically significantly higher scores than the teacher-initiated semantic-mapping group and the student-mediated semantic-mapping group. There was no statistically significant difference in the mean scores of the teacher-initiated semantic-mapping group and the student-mediated semantic-mapping group.

In his study, El-Koumy (1999) found that for EL university students, the teacher-student interactive semantic-mapping group outscored the teacher-initiated semantic-mapping group and the student-mediated semantic-mapping group on a reading comprehension assessment. Nevertheless, in this study, no research at the high-school-level was undertaken that synthesized research on how ELs with LD and FEPs with LD develop reading-comprehension skills. Also, there was no attempt to ascertain whether or not the students provided with the semantic-mapping strategy could recall all of the steps in using the strategy. Thus, this study addressed these needs.

Research Questions

1. To what extent is there a difference between pretest reading-comprehension skill scores for ELs with LD compared with FEPs with LD?
2. After traditional instruction, to what extent is there a change in pretest reading-comprehension skills scores to posttest 1 reading-comprehension skill scores for ELs with LD and FEPs with LD across classes?
3. After traditional instruction, to what extent is there a difference in the change from pretest reading-comprehension skills scores to posttest 1 reading-comprehension skill scores for ELs with LD compared with FEPs with LD?
4. After the first intervention (the RAP Paraphrasing Strategy for the first class and the semantic-mapping strategy for the second class), to what extent is there a difference in change from pretest reading-comprehension skills scores to posttest 2 reading-comprehension skill scores for ELs with LD and FEPs with LD separately for each class?
5. After the first intervention (the RAP Paraphrasing Strategy for the first class and the semantic-mapping strategy for the second class), to what extent is there a difference in the change from pretest reading-comprehension skills scores to posttest 2 reading-comprehension skill scores for ELs with LD compared with FEPs with LD in each class, ELs from the first class compared with ELs with LD in the second class, and

FEPs with LD in the first class compared with FEPs LD in the second class?

6. After the second intervention (the semantic-mapping strategy for the first class and the RAP Paraphrasing Strategy for the second class), to what extent is there a difference in the combined treatment effects (from pretest to posttest 3) on the reading-comprehension skills scores for ELs with LD and FEPs with LD separately for each class?
7. After the second intervention (the semantic-mapping strategy for the first class and the RAP Paraphrasing Strategy for the second class), to what extent is there a difference in the change from pretest reading-comprehension skills scores to posttest 3 reading-comprehension skill scores for ELs with LD compared with FEPs with LD in each class, ELs with LD from the first class compared with ELs with LD in the second class, and FEPs with LD in the first class compared with FEPs with LD in the second class?
8. Following instruction in the RAP Paraphrasing Strategy and the semantic-mapping strategy, which steps in using these strategies can high-school ELs with LD and FEPs with LD remember to use?

Educational Significance

Reading comprehension is the basis of all academic learning (National Institute of Health, 2000). Nevertheless, a large percentage of high-school ELs with LD and FEPs with LD are not learning requisite reading-comprehension skills. Although progress has been made in making sure that these students learn these skills, a more complex

curriculum produces higher cognitive demands on students with LD (Lipka & Siegel, 2006) and on ELs with LD in particular (Lin & Chen, 2005). Even though there have been advances made in reading-comprehension instruction, future opportunities for these students undoubtedly will be limited by their inadequate reading-comprehension skills.

According to the National Reading Panel (National Institute of Health, 2000, p. 4-1), reading comprehension is "critically important to the development of children's reading skills and therefore to the ability to obtain an education" and can be accomplished through the teaching of cognitive strategies: comprehension monitoring, cooperative learning, utilization of graphic or semantic organizers, questions answering, question generation, story structure, and summarization. The report also stated that literature indicates that teaching reading-comprehension via cognitive strategies can teach students to think strategically when they are faced with obstacles reading. Even though the National Reading Panel gave a valid explanation of the benefits of particular cognitive strategies, it did not review studies for high-school ELs with LD or FEPs with LD in particular.

Developing an instructional method for improving the reading-comprehension of ELs with LD and FEPs with LD is crucial. According to the No Child Left Behind Act (2001) and the Individuals with Disabilities Education Improvement Act (2004), all students must participate in statewide assessments measuring their mastery of content standards including reading. Finding instructional methods to teach reading comprehension becomes more imperative in light of the fact that such legislation leads to teachers' concerns regarding spending time on test-taking skills and on content material as well pressure for getting students to perform well on these assessments (Ryan, 2002).

Thus, instructional time is limited and more focus is needed to identify the most effective methods of teaching reading-comprehension skills, especially to high-school ELs with LD and FEPs with LD.

This study was designed to add to the collective knowledge on teaching strategies used to improve reading comprehension, providing evidence as to the effectiveness of the RAP Paraphrasing Strategy, the semantic-mapping strategy, and a combination of these strategies on the reading-comprehension skills of high-school ELs with LD and FEPs with LD and ascertaining whether high-school ELs with LD and FEPs with LD can remember the steps of these strategies after they are taught them.

Definition of Terms

Although there are other ways to define the terms used below, the definitions below are the ones that were followed in the study.

Auditory-Language-Dependent, Cognitive Strategy Instruction: Cognitive strategy instruction utilizing language in prereading activities or postreading activities to improve reading-comprehension skills (Sencibaugh, 2007). Examples of these strategies include paraphrasing, summarization, main idea strategies, self-questioning, and so on.

Cognitive Strategy Instruction: For the purposes of this study, cognitive strategy instruction is an instructional method whereby students are taught the mental techniques for comprehending what is being read (Dole, Nokes, & Drits, 2009).

English learner (EL): The definition of an English-learner usually is based upon the state definition. According to the California Department of Education (2012b),

> English learner students are those students for whom there is a report of a primary language other than English on the state-approved Home Language Survey and who, on the basis of the state approved oral language (grades kindergarten through grade twelve) assessment procedures and literacy (grades three through

> twelve only), have been determined to lack the clearly defined English language skills of listening comprehension, speaking, reading, and writing necessary to succeed in the school's regular instructional programs.

For the purposes of this study, however, an English learner is a student who scored beginning to early advanced on the IDEA Oral Language Proficiency Test II, Form E (Ballard & Tighe, 2010).

Fully English-proficient student (FEP): The definition of a fully English-proficient student (FEP) usually is based upon the state definition. According to the California Department of Education (2012b),

> Students who are fluent-English-proficient are the students whose primary language is other than English and who have met the district criteria for determining proficiency in English (i.e., those students who were identified as FEP on initial identification and students redesignated from limited-English-proficient [LEP] or English learner [EL] to FEP).

For the purposes of this study, however, a fully English-proficient student (FEP) is a student who scored advanced on the IDEA Oral Language Proficiency Test II, Form E (Ballard & Tighe, 2010). In addition, in this study, the term fully English-proficient does not refer to native English-speaking ability.

Learning disability (LD): The definition of a learning disability (LD) is based upon the federal definition. According to the Individuals with Disabilities Education Improvement Act, Pub. L. No. 108-446, 118 Stat. 2657 (2004), "In general.--The term 'specific learning disability' means a disorder in 1 or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations." In addition, for the purposes of this study, a student with a

learning disability is defined as a student receiving instruction for core subjects in the SDC class program.

Paraphrasing: The definition of paraphrasing is to retell or rewrite a text in an individual's own words (Munro, 2005).

RAP Paraphrasing Strategy: The definition of the RAP Paraphrasing Strategy is a paraphrasing strategy involving an individual reading a paragraph, asking himself or herself what the main ideas and details about a paragraph are, and putting these ideas and details into his or her own words (Schumaker, Denton, & Dechler, 1984).

Reading-Comprehension: According to the U.S. Department of Education (1995), reading-comprehension is defined as, "intentional thinking during which meaning is constructed through interactions between text and reader." In this study, reading-comprehension was measured by student scores on the Gates-MacGinite Reading Test, Forms S and T.

Semantic Mapping: Semantic mapping is the process by which a graphic arrangement is constructed demonstrating the major concepts and relationships in text before, during, or after the text is read, based upon the students' prior knowledge or schema (Sinatra, Stahl-Gemake, & Berg, 1984).

Traditional Instruction: The traditional method is an instructional strategy in which the teacher begins with by reviewing concepts and vocabulary from the day before. The teacher then introduces new the concepts and vocabulary that the students will encounter in the text and the students write the concepts, vocabulary, and the accompanying definitions in their notebooks. The students then begin reading the reading passage out loud. The teacher provides questions that the students are to answer after reading each

paragraph of the reading passage. As a postreading activity, the teacher reviews important points from the text.

Visually-Dependent, Cognitive Strategy Instruction: Cognitive strategy instruction utilizing pictures or visual ability in activities that improve reading-comprehension skills (Sencibaugh, 2007). Examples of these strategies include semantic feature analysis, semantic mapping, and text illustrations, and so on.

Summary

Various studies had suggested that cognitive strategy instruction may be effective in improving reading comprehension of general education students (Brown, Day, & Jones, 1983; Brown et al., 1996; Lau & Chan, 2004; Sinatra, Stahl-Gemake, & Berg, 1984; Singer & Donlan, 1982; Taylor & Beach, 1984). One study demonstrated the effectiveness of various strategies in improving reading comprehension of ELs when they are taught to use these cognitive strategies on their own (Olson & Land, 2007). Other studies also had demonstrated the effectiveness of various cognitive strategies in improving reading comprehension of students with LD when they are taught to use these strategies on their own (Bos & Anders, 1990; Reyes at el., 1989; Sinatra et al., 1984). Research had not revealed which strategy or combination of strategies more strongly promotes the reading-comprehension skills of high-school ELs with LD along with FEPs with LD when they are taught to use these strategies on their own. In addition, no studies had been conducted to examine whether or not high-school ELs with LD and FEPs with LD can remember the steps to these strategies after they have been taught them.

This repeated-measures study was designed to measure the efficacy of traditional instruction, the RAP Paraphrasing Strategy, the semantic-mapping strategy, and a

combination of these strategies as these strategies had not been examined together in previous literature on reading-comprehension interventions for secondary-level ELs with LD and FEPs with LD. The first intent of this study was to demonstrate that the RAP Paraphrasing Strategy and the semantic-mapping strategy contributed to the reading-comprehension of high-school ELs with LD and FEPs with LD in two high-school, mild-to-moderate, SDC, English classes. The second intent of this study was to gain information on whether or not these students could remember the steps of how to apply the RAP Paraphrasing Strategy and the semantic-mapping strategy after they had been provided with these strategies.

The theoretical rationale for the present study was based on metacognitive theory (Baker & Brown, 1980; Flavell, 1979; Roberts & Erdos, 1993; Sternberg, 1984), the assimilation theory of meaningful learning and retention (Ausebel, 1962, 1980), schema theory (Anderson et al., 1977; Brewster & Treyens, 1981), dual coding theory (Nesbit & Adesope, 2006; Paivio, 2006), and the cognitive load theory (Adcock, 2000; Baddeley, 2000; Cowan, 2010; Swanson et al., 2006).

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this study was twofold. First, this study used a repeated measures design with alternating treatments to assess the effectiveness of traditional instruction, a series of reading-comprehension interventions based on the RAP (reading a paragraph, asking one's self what the main ideas and details about a paragraph are, and putting these ideas and details into one's own words) Paraphrasing Strategy (an auditory-language-dependent, cognitive strategy), the semantic-mapping strategy (a visually-dependent, cognitive strategy), and a combination of these strategies on the reading comprehension of high-school-level English learners (ELs) with learning disabilities (LD) and fully-English-proficient students (FEPs) with LD in two high-school mild-to-moderate special-day (SDC) English classes. Second, this study examined whether these students knew the steps of how to apply each of the two the RAP Paraphrasing Strategy and the semantic-mapping strategy after they had been taught them.

Two categories of reading-comprehension studies including the RAP Paraphrasing Strategy and the semantic-mapping strategy were selected as being relevant to the present study. The first section includes studies based on the RAP Paraphrasing Strategy and its relationship to reading comprehension. The second section is composed of studies based on semantic mapping and its relationship to reading comprehension. The diverse range of subjects (i.e., language proficiency and disability status) resulted in the two sections being divided by type of student (general-education students, ELs, and students with LD). In addition, the second section also contains one other subsection: specialized studies on semantic mapping.

Studies using general education students or students with other types of disabilities as participants were included in this review because of the fact that in some sections, the amount of research done on ELs or students with LD was minimal. Studies with primary-level students and post-secondary students were included in the review due to the fact that studies with secondary-level students were lacking in some sections. The reasoning was that if the strategies generally worked for primary-level and postsecondary-level students, they would work for secondary level students as well.

The RAP Paraphrasing Strategy (An Auditory-Language-Dependent, Cognitive Strategy) and the Reading Comprehension of General-Education Students

This section provides a brief introduction to the RAP Paraphrasing Strategy. This section also contains studies concerning the efficacy of the RAP Paraphrasing Strategy in increasing the reading-comprehension skills of general education students. The participants in these studies were all primary-level.

Schumaker, Denton, and Deschler (1984) published their seminal work on paraphrasing. In this curricular guide, they introduced the RAP Paraphrasing Strategy. The acronym RAP stands for read a paragraph, ask yourself what are the main ideas and details about a paragraph, and put these ideas and details into your own words. According to these researchers (Schumaker et al., 1984),

> Paraphrasing is advantageous for students for a number of reasons. First, it requires that the students *actively* interact with the material rather than passively reading it. Second, the division of the reading passage into small units and the alternation of activities (reading, questioning, paraphrasing, reading, etc.) require that the student maintain a high level of attention during the reading activity. In addition, the *Paraphrasing Strategy* requires that students "chunk" the material in a lengthy passage into small units and remember information in these smaller units. (p. 3)

Lee and Von Colln (2003) conducted a single-case quasi-experimental study using an ABAB reversal design (baseline, RAP Paraphrasing Strategy, baseline, RAP Paraphrasing Strategy) to measure the effects of the RAP Paraphrasing Strategy on the reading-comprehension skills of a 12-year-old, African-American student (an extremely small sample size). The instructional steps included describing, modeling, and engaging in verbal practice for the first phase of the intervention, and participating in controlled practice and feedback, engaging in advanced practice and feedback, and posttesting and making commitments for the second phase of the intervention. Relevant data for this study were based upon a paraphrasing score in a researcher-designed assessment (based upon the recommendations of Schumaker, Denton, and Deschler, 1984) and a comprehension score in a researcher-designed assessment, given multiple times during the study. The relevant results of this study are as follows.

A series of analyses utilizing the Durbin-Watson (DW) statistic to find the first-order auto-correlation for each of the dependent measures were conducted. Regarding the paraphrasing scores, the student's scores varied with a slowing trend during baseline measurements but increased with the introduction of the paraphrasing instruction. With the introduction of a second baseline, the paraphrasing scores once again decreased with a slowing trend, but with the reintroduction of the paraphrasing instruction, the paraphrasing scores began to increase again in both level and trend. There was a statistically significant treatment effect on the student's paraphrasing skills.

Regarding the reading-comprehension scores, the student's scores varied moderately with a slowing trend during baseline measurements, but increased to a large extent with the introduction of the paraphrasing instruction. With the introduction of a

second baseline, the reading-comprehension scores changed in both level and trend. Nevertheless, when the paraphrasing instruction was reintroduced, reading-comprehension scores once again increased in both level and trend. There was a statistically significant treatment effect on the student's reading-comprehension skills.

Hagaman and Reid (2008) conducted a multiple baseline study across participants with multiple probes given during baseline to ascertain the outcomes of the RAP Paraphrasing Strategy on the reading-comprehension skills of three sixth-grade students (a small sample) at risk for reading failure for an unspecified period of time. Data for this study were obtained from a checklist of information from each reading selection modeled from methods used in the Qualitative Reading Inventory–3 and short-answer questions developed by one of the researchers and derived from the reading passages that the students read (both text-implicit and text-explicit questions were included). The researchers did not state whether the students were reminded on these assessments to use the strategies that they had been taught. The results of this study are as follows.

All of the students possessed stable baselines at low levels. The mean percentages of text recalled for the first, second, and third student were 9.6, 24.5, and 10.2, respectively. Following the cognitive strategy instruction, the mean percentage of text recalled increased immediately. Mean percentages of text recalled for the first, second, and third student were 59.5, 47.5, and 85.25, respectively. Thus, the percentage increase for the first, second, and third student was 619, 190, and 830, respectively. For all three students, treatment effects were maintained across a 2-week follow up, where mean percentages of text recalled for the first, second, and third student were 42, 41, and

59, respectively. One student's level did drop during the maintenance period, but her score was still higher than the baseline level.

During the baseline period, the mean number of correct short-answer responses (out of a possible six questions) for the first, second, and third student was 1.6, 0, and 1.4, respectively. Following the RAP Paraphrasing instruction, the mean number correct for the first, second, and third student was 4.75, 3.5, and 3.75, respectively. Increases for the first, second, and third students were 315%, 350%, and 235%, respectively. Maintenance performances for the first, second, and third students were 4, 3, and 4, respectively. For the three students, treatment effects continued across a 2 week follow-up.

During the baseline period, the mean number of correct text-implicit responses (out of a possible three questions) for the first, second, and third student was 1, 0, and 0.6, respectively. Following the cognitive strategy instruction, the mean number correct for the first, second, and third student was 2.25, 1.25, and 1.5. Maintenance performances for the first, second, and third students were 3, 2, and 1.

During the baseline period, the mean number of correct text-explicit responses (out of a possible three questions) for the first, second, and third student was 0.7, 0.0, and 0.2, respectively. Following the cognitive strategy instruction, the mean number correct for the first, second, and third student was 2.5, 2.25, and 2.25, respectively. Maintenance performances for the first, second, and third students were 1, 0, and 3, respectively.

Koolen (2008) carried out a quasi-experimental study to ascertain the effects of the RAP Paraphrasing Strategy on the reading-comprehension skills of third-grade students in Australia for approximately 4 weeks (although the intervention was taught for

3 1/2 weeks). Three students served as the experimental groups and were provided with the paraphrasing strategy, whereas the remaining three students served as the comparison group and received traditional instruction. Relevant data were obtained from the Neale Analysis of Reading Ability, the Spontaneous Retelling Analysis Test, and a paraphrasing and synonyms test (designed by Munro, 2005), all of which were given as pretests and posttests. The researcher did not state whether the students were reminded on these assessments to use the strategies that they had been taught.

The paraphrasing pretest results indicate that the participants in both the experimental group and the treatment group had from 7 to 10 correct responses (22% to 31%) out of 32 possible correct responses. The paraphrasing posttest results suggest that the participants in the experimental group substantially improved their performance with posttest scores ranging from 23 to 30 correct responses (71% to 93%). This is an improvement in the quantity of correct responses from 49% to 62%. It is apparent from the posttest that the results of the comparison group did not improve substantially from the results of the pretest (22% to 34%). With the synonyms posttest, there was a substantial improvement from 0.4 to 0.7 synonyms per word to 1.1 to 2.4 synonyms per word (an improvement of 0.7 to 1.7 synonyms per word) for the participants in the experimental group. There was little such improvement for the participants in the comparison group.

As per the Spontaneous Retelling Analysis Test, the participants in the experimental group were able to remember a mean of 73% of the key events and plot from the text on the posttest. This was 29% more than the students in the comparison group who were able to remember a mean of 44% of the key events and the plot from the

text on the posttest. The participants in the experimental group demonstrated an increase in the recall of important events and plot of 30% due to the implementation the RAP Strategy. According to the results of the Neale Analysis of Reading Ability, there was an overall increase in reading-comprehension raw scores, percentile ranks, and stanines for the participants in the experimental group. No such overall gains in reading-comprehension were observed for the students in the comparison group.

Hagaman, Casey, and Reid (2012) conducted a study using a multiple-baseline design to measure the effects of the RAP Paraphrasing Strategy taught using the self-regulated strategy development model on the reading-comprehension skills of six third-grade students who were identified as fluent readers with comprehension difficulties. This intervention was taught individually to each student in five to seven sessions over a period of 2 weeks. Data were obtained from the percentage of text recalled (using procedures designed by two of the researchers, based on the Qualitative Reading Inventory–3) and short-answer questions (created by the researchers), both utilizing text from the Dynamic Indicators of Basic Early Literacy Skills, Oral Reading Fluency Probes. These assessments were used three or more times during baseline, repeatedly during independent performance, and as maintenance probes administered 2 and 3 weeks after the posttest The researchers did not state whether students were reminded on these assessments to use the strategies that they had been taught.

The mean percentage of text recalled for the participants increased from baseline (18.7%, 20.3%, 17.5%, 15.3%, 28.7%, and 14.0%, respectively) to posttest (52.4%, 75.0%, 75.5%, 63.2%, 87.0%, and 85.6%, respectively), an increase of 180%, 260%, 331%, 313%, 203%, and 511%, respectively, and remained relatively stable during the

maintenance probes (52.0%, 82.5%, 76.0%, 68.0%, and 86.0%, respectively), although one student was unavailable for the maintenance probes. The mean percentage of short-answer questions answered correctly increased by 46%, 30%, 28%, 150%, 33%, and 155%, respectively from baseline to the posttest and decreased only slightly from the posttest to the maintenance probe, although one student was unavailable for the maintenance probes. The improvement rate differences (IRD) suggested large effects for two of the students, moderate effects for two of the students, as well as small effects for two of the students.

All of the aforementioned studies on the efficacy of the RAP Paraphrasing Strategy (Hagaman, et al., 2012; Hagaman & Reid, 2008; Koolen, 2008; Lee & Von Colln, 2003) suggest that this strategy is a successful means of improving the reading-comprehension skills of general-education students. Nevertheless, these studies contained small sample sizes and their participants were neither students with LD nor ELs and were not secondary-level students. There was also no attempt to ascertain whether or not the students provided with the RAP Paraphrasing Strategy could recall all of the steps in using the strategy once the students were taught to make use of the strategy. This study addressed these gaps in the research on the RAP Paraphrasing Strategy and its effects on reading-comprehension skills by focusing on students with LD (both students who are ELs and students who are FEPs) at the secondary level, measuring the effects of the RAP Paraphrasing Strategy on the their reading comprehension skills and on ascertaining whether or not the students when provided with the RAP Paraphrasing Strategy (both following traditional instruction and in combination with traditional instruction and the semantic-mapping strategy) can recall all of the steps in

using the RAP Paraphrasing Strategy once the students had been taught how to use this strategy.

The RAP Paraphrasing Strategy (An Auditory-Language-Dependent, Cognitive Strategy) and the Reading Comprehension of ELs

Munro (2005) carried out a study to measure the effects of the RAP Paraphrasing Strategy on the reading-comprehension skills of four elementary-level ELs for 10 sessions (days) of 40 to 45 minutes each. Relevant data were obtained from the Reading Record, Assessment Record and Text (Nelson, 2000), an oral retelling or paraphrasing assessment (designed by the researcher), a record of oral language (Clay, Gill, Glynn, McNaughton and Salmon, 1983), and a synonyms word test (Munro, 2005) used as pretests and posttests. The researcher did not state whether the students were reminded on these assessments to use the strategies that they had been taught.

For the first student, reading-comprehension scores rose by 30%, oral-retelling-paraphrasing showed a gain of 33%, the synonyms scores demonstrated 10 more responses correct that in the pretest, and the record of oral language scores showed a gain from 35 to 40. The second student's reading-comprehension scores showed a gain from 50% to 62%. The synonyms task demonstrated only two more correct answers than the pretest, whereas the record of oral language scores improved from 27 to 34. This student made the largest improvement in the oral-retelling-paraphrasing task with a gain of 50%.

The third student's reading-comprehension scores showed a gain from 75% to 88%. The synonyms task showed no gains from pretest to posttest (although the scores were still relatively high when compared to the other three students). The record of oral language only improved from 36 to 37 (although this student's posttest score was still larger than the posttest scores of two of the other students). This student made no gains

on the oral-retelling-paraphrasing task, but this student scored 100% on both the pretest and posttest. The fourth student's reading-comprehension scores showed a gain of 50%, and this student's oral-retelling-paraphrasing task demonstrated a gain of 58%. This student made little gain (one correct answer) in oral language scores. On the synonyms task this student obtained only three more correct answers than the pretest.

Karbalaei and Amoli (2010) carried out a quasi-experimental study to ascertain the effects of the RAP Paraphrasing Strategy on the reading-comprehension skills of 63 EL undergraduate students in India. The RAP Paraphrasing Strategy was taught to these students for approximately 2 months in eight instructional phases. Relevant data were obtained from the Test of English as a Foreign Language, administered to divide the students into low-prior knowledge students and high-prior knowledge students, and the Test of Reading Comprehension in English (Rajinder, 2008), administered as both a pretest and a posttest. The researchers did not state whether the students were reminded on these assessments to use the strategy that they had been taught. A paired-samples *t*-test suggested that there was a statistically significant increase in reading-comprehension skills from pretest to posttest. In addition, independent-samples *t* tests indicated that there was not a statistically significant difference in the change in scores from pretest to posttest between high-prior knowledge students and low-prior knowledge students.

Both of these studies on the efficacy of the RAP Paraphrasing Strategy (Karbalaei & Amoli, 2010; Munro, 2005) indicate that this strategy is a successful means of increasing the reading-comprehension skills of ELs. Nevertheless, one of these studies contained small sample sizes and the participants in both studies were not students with LD and were not secondary-level students. There was also no attempt to ascertain

whether or not the students provided with the RAP paraphrasing Strategy could recall all of the steps in using the strategy once the students had been taught how to use the strategy. This study will address these shortcomings in the research on the efficacy of the RAP Paraphrasing Strategy on reading-comprehension skills with its partial foci on students with LD who are ELs and on ascertaining whether or not the students when provided with the RAP paraphrasing Strategy (after being taught with traditional instruction and then in combination with traditional instruction and the semantic-mapping strategy) can recall all of the steps in using the strategy once the students had been taught how to use the strategy.

The RAP Paraphrasing Strategy (An Auditory-Language-Dependent, Cognitive Strategy) and the Reading Comprehension of Students with LD and Other Disabilities

Hall (2004) carried out a study with a mixed methods design to ascertain the effects of the RAP Paraphrasing Strategy on the reading-comprehension skills of four sixth-grade students who were being provided with special educational services under the classification of mental retardation for 5 weeks. Students were taught how to use the strategy and used the strategy for three weeks (week 3-5). Quantitative data were obtained from reading comprehension tests given at baseline, during the intervention, and following the intervention. Qualitative data were obtained from student surveys administered at the end of each week (asking students what they felt about the warm-up activities utilized in the lessons) and from a survey given at the end of the study (asking the students what they felt about the RAP Paraphrasing Strategy). The researcher did not state whether students were reminded on these assessments to use the strategies that they had been taught.

The mean of the participants' baseline reading-comprehension test scores was 67% correct, whereas their mean during the intervention was 87% correct and following the intervention was 83% correct. On the first question of the first survey, two students responded that the warm-ups were never easy during baseline. The same students responded that warm-ups were sometimes easy during the intervention and following the intervention. Two students responded that warm-ups were sometimes easy during baseline, during the intervention, and following the intervention. On the second question of the first survey, two of the participants stated that they always comprehended what they were reading during baseline, during the intervention, and following the intervention. Two of the participants stated that they sometimes comprehended what they were reading during baseline and during the intervention, but that they always comprehended what they were reading following the intervention. On the third question of the first survey, three participants stated that they sometimes had difficulties comprehending what they were reading during baseline, during the intervention, and following the intervention. The remaining participant stated that he did not have difficulties comprehending what he was reading at any time.

On the first question in the second survey, two of the participants stated that the RAP Paraphrasing Strategy was always easy to utilize. The other two participants stated that the RAP Paraphrasing Strategy was sometimes easy to utilize. On the second question in the second survey, one participant stated that the RAP Paraphrasing Strategy never helped him to comprehend what he was reading. Two of the participants stated that the RAP Paraphrasing Strategy always assisted them in comprehending what they were reading. The remaining student stated that The RAP Paraphrasing Strategy sometimes

helped him to comprehend what he was reading. On the third question in the second survey, two of the participants stated that they sometimes enjoyed utilizing the RAP Paraphrasing Strategy and the two participants stated they always enjoyed utilizing the RAP Paraphrasing Strategy.

Mothus and Lapadat (2006) conducted a study with a quasi-experimental pretest-posttest comparison group design of the effects of the RAP Paraphrasing Strategy and the PAR Writing Strategy (put ideas into categories, ask what the main idea was and provide details, and record the main idea in one's own words) on the reading-comprehension skills of eighth-grade students with LD for a year. Thirty-three students served as the strategies intervention model group, 34 students served as the learning assistance group, and 31 students served as the comparison group. In the strategies intervention model group, the participants were taught how to paraphrase using the RAP Paraphrasing Strategy for the first 20 weeks (55 minutes every other school day) of the school year and the PAR Writing Strategy for the second 20 weeks (55 minutes every other school day) of the school year. In the learning assistance group, participants were provided with tutoring, remediation (extra work), and compensatory learning assistance (the utilization of modifications and different formats to present information to students). The comparison group received no intervention.

Relevant data were obtained from the Stanford Diagnostic Reading Test (SDRT) given as both a pretest and a posttest. A 6 x 1 analysis of variance (ANOVA) on the pretest scores of the three different pretest groups (each divided into one group representing each of two schools) suggested that there were no statistically significant differences in the reading-comprehension pretest scores. As per the results of

independent-samples *t* tests, there were no statistically significant differences in pretest scores between the three treatment groups. A 3 x 1 ANOVA on the gain scores of the three treatment groups indicated that there was a statistically significant difference in the reading-comprehension gain scores. The strategies intervention model group made statistically significantly greater gains in reading comprehension than the learning assistance group. The strategies intervention model group did not differ statistically significantly in reading-comprehension gain scores from the comparison group. Neither did the learning assistance group and the comparison group. To compare the differences between pretest and posttest scores of the three treatment groups, the effect size of the pretest to posttest scores was calculated for strategies intervention model group (d = 1.07), the learning assistance group (d = 0.43), and the comparison group (d = 0.87).

Blume (2010) carried out a study for approximately 3 1/2 months with a multiple baseline design to ascertain the effects of the RAP Paraphrasing Strategy on the reading-comprehension skills of three fourth-grade students with LD. Data were obtained from the percentage of correct literal questions and the percentage of correct inferential questions. These questions were taken from *Timed Readings Plus Book One* (Spargo, 1998). The data were gathered at baseline, during the treatment period, and during the maintenance period. The researcher did not state whether the students were reminded on these assessments to use the strategies that they had been taught.

The RAP Paraphrasing Strategy did produce some gains in the percentage of correct literal comprehension questions. In addition, this strategy produced substantial improvements in the percentage of correct inferential comprehension questions. The RAP Paraphrasing Strategy also produced a maintenance of treatment effects for all of

the study participants. Two of the participants demonstrated continuous gains during maintenance in the percentage of correct literal comprehension questions.

All three of these studies on the efficacy of the RAP Paraphrasing Strategy (Blume, 2010; Hall, 2004; Mothus & Lapadat, 2006) suggest that this strategy is a means of increasing the reading-comprehension skills of students with LD. In one study (Hall, 2004), the majority of the participants indicated that the RAP Paraphrasing Strategy assisted then in reading comprehension. Nevertheless, two of these studies contained small sample sizes and the participants in all three studies were not ELs. In addition, only one of these studies used secondary-level students as its participants. There was also no attempt to ascertain whether or not the students provided with the RAP Paraphrasing Strategy could recall all of the steps in using the strategy. The present study addressed the shortcomings in this research by analyzing the effects of the RAP Paraphrasing Strategy on the reading comprehension ability of both secondary-level ELs with LD and FEPs with LD and by analyzing whether or not these students could remember the steps of the RAP Paraphrasing Strategy after they were taught this strategy.

Various studies (Hagaman, et al., 2012; Hagaman & Reid, 2008; Koolen, 2008; Lee & Von Colln, 2003) have shown that the RAP Paraphrasing Strategy can be utilized to increase the reading-comprehension skills of elementary-level, general-education students. Other studies (Karbalaei & Amol, 2010; Munro, 2005) have demonstrated that the RAP Paraphrasing Strategy can be used to improve the reading-comprehension skills of elementary and post-secondary ELs, respectively. Additional studies have shown that the RAP Paraphrasing Strategy can be utilized to augment the reading-comprehension skills of elementary students with LD (Blume, 2010), elementary students with other

disabilities (Hall, 2004), and secondary students with LD (Mothus & Lapadat, 2006) with some success. Although the majority if these studies demonstrated the efficacy of the RAP paraphrasing in improving students' reading-comprehension skills, none of these studies investigated the effects of this instructional strategy on the reading comprehension skills of ELs with LD and FEPs with LD at the secondary level. In addition, there was no attempt to ascertain whether or not the students provided with the RAP Paraphrasing Strategy could recall all of the steps in using the strategy once the students had been taught how to utilize the strategy.

The Semantic-Mapping Strategy (A Visually-Dependent, Cognitive Strategy) and the Reading Comprehension of General Education Students

The following studies analyzed the effects of the semantic-mapping strategy (a visually-dependent, cognitive-strategy-instruction strategy) on the reading comprehension of general education students. These studies utilized primary-level, secondary-level, and postsecondary-level students as their participants. This section of the literature review includes a small representative sample of semantic-mapping studies, the majority of which demonstrate evidence of improving the reading comprehension of general-education students.

Guastello, Beasley, and Sinatra (2000) carried out an experimental study comparing the effect of semantic mapping on the reading comprehension of 62 junior-high-school students when compared with utilizing traditional instruction on the reading comprehension of 62 other junior-high-school students with expository text for 8 days (large sample sizes). The participants in this study were low-achieving seventh graders. The students in the experimental condition were introduced to the study unit, were provided with a model and rationale for using semantic mapping, and with the guidance

of their teacher produced their own concept maps while reading the text. The students in the comparison group were taught with traditional instruction. Data for this study were obtained from the Comprehensive Assessment Program (CAP), Level H (in this study comprised of tests measuring the students' achievement in reading and science) administered as a pretest, and a teacher-designed test (measuring the students' knowledge of the content and vocabulary of the text read in the study) utilized as both a pretest and a posttest. The students were allowed to take home their instructional materials (the semantic map for the students in the experimental condition and the textbook for the students in the comparison condition) to study in preparation for the posttest assessment. The results of this study are as follows.

The results suggest that the experimental and comparison groups scored in a similar manner on the CAP and the teacher-designed pretest. Nevertheless, a large difference was present in posttest gains. Due to the fact that the pretest was statistically significantly related to posttest scores, an analysis of covariance (ANCOVA) was carried out using the pretest scores as the covariate. The assumption of homogeneity of variance did not appear to be violated, and the pretest was revealed to be a statistically significant covariate. The ANCOVA also demonstrated a statistically significant treatment main effect in favor of the experimental group. In addition, utilizing an estimate of pooled variance, the effect size for the experimental condition was 5.98, suggesting that semantic mapping augmented the reading-comprehension scores of the students in the experimental group by approximately six standard deviations in comparison with the students in the comparison group.

Joseph (2002) conducted a quasi-experimental study to measure the effects of semantic mapping on the reading-comprehension skills of tenth-grade students for 2 days (after the students were taught to use semantic mapping for 2 months). The students were divided into groups of 20 and 29 students (the first group reading the first article first and the second group reading the second article first and both groups reading the opposite articles the following day). Data were obtained from two reading-comprehension tests designed by the researcher, one test administered after the students read each article. All of the students received the instruction on semantic mapping. The students were instructed to create a semantic map before taking the second test, but not the first. As per a paired-samples *t* test, the effects of semantic mapping were statistically significant for the second group of students, but not statistically significant for the first group. Analyzed together, the effects of semantic mapping for the whole group of students was not statistically significant, but was strong nonetheless.

Willits (2002) carried out a study with an action research design in part to ascertain the effects of semantic maps and learning styles on the reading-comprehension skills of 18 seventh graders in geography, one of whom was diagnosed with attention-deficit disorder (ADD), one of whom was diagnosed with attention-deficit disorder (ADD) and LD, and one of which was diagnosed with attention-deficit hyperactivity disorder (ADHD) for 15 weeks. Relevant data were obtained from the Learning Style Inventory for Grades 5-12 administered before the semantic-mapping intervention, textbook chapter tests (comprised of multiple-choice, matching questions, and chapter essay questions), delayed-recall essay questions, and individual interviews with the participants on their preference for semantic mapping conducted with a 5-point Likert

Scale (5 indicating a high preference and 1 indicating a low preference). The students were to construct semantic maps to answer the essay questions (for the three chapter essays following the instruction on semantic mapping and for the second delayed-recall essay question). The results of this study are as follows.

As per a Wilcoxon-Signed Rank Test, there was a statistically significant difference between the scores the participants obtained on the pretest chapter essays and the posttest chapter essays. Through a paired-samples *t* test, a comparison of the participants' essay responses prior to and following semantic mapping when divided by their learning-style preferences (auditory, visual, and tactile) suggested statistical significance. Datum could not be compared for the kinesthetic-learning preference as only one student possessed a kinesthetic-learning preference, but this student did make sufficient progress.

Statistically significant differences were present between the scores the participants obtained on the pretest multiple-choice and matching questions and the posttest multiple-choice and matching questions using two Wilcoxon-Signed Rank Tests (one conducted without one of the chapters). Through two paired-samples *t* tests, a comparison of the participants' multiple-choice and matching responses prior to and following semantic mapping, when divided by their learning style preferences (auditory, visual, and tactile), only auditory and tactile were statistically significant in the first *t* test and only tactile was statistically significant in the second *t* test (conducted without one of the chapters).

As per a Wilcoxon-Signed Rank Test, there was not a statistically significant difference between the scores the participants obtained on the first delayed-recall essay

(prior to semantic mapping) and the second delayed-recall essay (following semantic mapping). Through a paired samples *t* test, a comparison of the participants' first delayed-recall essay and second delayed-recall essay when divided by their learning-style preferences (auditory, visual, and tactile) indicated no statistical significance.

For the first individual interview question, when the participants were asked if they would utilize the semantic-mapping strategy when preparing for a test, the mean for this question was 3.16 whereas the median was three and the mode was four, indicating that more participants would use this strategy a little more when compared with the other methods. For the second question (requiring a yes or no response), 17 of the participants stated that they would definitely use the semantic-mapping strategy in different classes, whereas one participant did not. The mean percentage for this response was 94%, whereas the median and mode were one. For the third question, when the participants were asked if they would utilize semantic mapping during the reading and outlining of text, the mean response to this question was 3.44 and the median was 3.5. A mode was not calculated for the responses to this question due to the fact that the same number of participants responded with a three as they did with a four.

Asan (2007) carried out a study with a nonequivalent comparison group design to measure the effects of semantic mapping on the reading-comprehension skills of fifth-grade students in Turkey for 5 days. Twenty-three students were divided into an experimental group (13 students, provided with an introduction to semantic mapping with the Inspiration Program, traditional instruction, and the task to construct a semantic map with the Inspiration Program) and a comparison group (10 students receiving only traditional instruction). Data were obtained from a comprehension test (used as a pretest

and a posttest) designed by the teacher (via consulting with the researcher), a semantic map scoring rubric, and an open-ended student interview question. The students in the experimental group were instructed to create a semantic map the day before taking the posttest. The relevant results are as follows.

The results of a paired-samples *t* test indicated that the increase in scores for the experimental group (but not the comparison group) from the pretest to the posttest was statistically significant. In addition, the correlations between semantic map scores and the corresponding map multiple-choice scores (as measured by the semantic map scoring rubric) were high overall. The researcher stated that these findings suggest that the students were performing equivalently on the semantic map items and reading-comprehension test items designed to measure the same subject matter. Finally, 54% of the students found that semantic mapping was useful for organizing their ideas, 61% of the students stated that using the Inspiration Program was enjoyable, and 61% of the students stated that learning to utilize the Inspiration Program and connecting ideas was a simple strategy.

Bulunuz and Jarrett (2009) conducted a study with a counterbalanced design in part to measure the effects of reading, hands-on learning stations, and semantic mapping on the comprehension of 52 undergraduates. All students in this study were given the aforementioned forms of instruction. Data for this part of the study were obtained from an open-ended survey about the subject matter given as a pretest and as posttests. There were statistically significant differences regarding time and instructional method. Although there was a difference in scores between pretest and posttest (in favor of the posttest) and scores were higher (both on the pretest and posttest) on material covered in

the learning stations than by reading, the difference in posttest scores between the learning stations and reading was not statistically significant. Students who created semantic maps had statistically significant higher scores than those who did not. There were no differences regarding whether or not the students had first learned a concept through learning stations or through readings and there were no interactions.

Goss (2009) conducted a quasi-experimental study to measure the effect of semantic mapping on the reading-comprehension and summarization skills of 12 fifth-grade students for 12 weeks. These students were evenly divided into three focus groups; all of which were provided with instruction on semantic mapping. Students filled in skeleton semantic maps, created semantic maps using poster boards with moveable notes, and created computer-generated semantic maps with a partner. Relevant data were obtained from the *Scott Foreman* pretest and posttest and focus-group discussions.

The pretest results indicated a mean percentage of 29% of knowledge for the concepts already taught with a range of scores from 9% to 73%. The posttest results indicated a mean percentage of 59% of knowledge for the concepts already taught with a range of scores from 27% to 82%. Overall, the students stated that semantic mapping assisted them in understanding the connections between concepts. In addition, the combination of learning different methods of semantic mapping seemed to have a positive effect on their learning due to the facilitated learning of vocabulary (even though the students stated a preference for semantic maps constructed through the use of a computer).

Various studies has demonstrated the efficacy of semantic mapping in improving the reading-comprehension skills of students in the general education environment (Asan,

2007; Bulunuz & Jarrett, 2010; Goss, 2009; Guastello et al., 2000; Joseph, 2002; Willits, 2002). Only three of the studies where semantic mapping was successful (Guastello et al., 2000; Joseph, 2002; Willits, 2002) used secondary-level students as their participants. Because none of these studies focused on ELs and students with LD as their participants, the current study focused on the effects of semantic mapping (following traditional instruction and in combination with traditional instruction and the RAP Paraphrasing Strategy) on the reading comprehension of ELs and FEPs with LD. In addition, because there was also no attempt to ascertain whether or not the students provided with the semantic-mapping strategy could recall all of the steps in using the strategy after being taught how to use it, this was done in the present study.

The Semantic-Mapping Strategy (A Visually-Dependent, Cognitive Strategy) and the Reading Comprehension of ELs

Han (2006) carried out a study for 6 weeks to measure the effects of semantic mapping on the reading-comprehension skills of undergraduate ELs in China. Twenty students served as the experimental group and 20 students served as the comparison group. The experimental group was provided with traditional instruction combined with semantic mapping (using the Inspiration Program), whereas the instruction the comparison group was given was traditional instruction. Data were obtained from an attitude survey measuring the participants' attitudes toward their assigned type of instruction and a main-ideas, subordinate-ideas, and reading-between-the-lines test. The most relevant results include the following.

The results of four independent-samples *t* tests on main ideas, subordinate ideas, reading between the lines, and the three types of questions combined indicated that there were no statistically significant differences between the mean of the experimental and

comparison groups. An ANOVA indicated that there was a statistically significant difference between main ideas, subordinate ideas, and reading between the lines for the experimental group. A Tukey Post Hoc analysis suggested that there were statistically significant differences between main idea reading and reading between the lines, and subordinate idea reading and reading between the lines for this treatment group. An additional ANOVA indicated that there was a statistically significant difference between main ideas, subordinate ideas, and reading between the lines for the comparison group also. A Tukey Post Hoc analysis suggested that there were statistically significant differences between main idea reading and reading between the lines and subordinate idea reading and reading between the lines for this treatment group. As per the attitude survey, students in the experimental condition had a statistically significantly higher positive attitude rating (toward semantic mapping) than that of the students in the comparison group (toward traditional instruction).

Tateum (2007) conducted an experimental study to measure the effectiveness of using semantic mapping as a prereading activity on the reading comprehension of 26 undergraduate, lower-intermediate EL students for 70 minutes when compared with the effectiveness of traditional instruction on the reading comprehension of an additional 26 undergraduate, lower-intermediate EL students with text for 75 minutes. The students in the experimental had semantic mapping as a prereading activity. The students in the comparison group were provided with a listening-comprehension activity instead of semantic mapping as a prereading activity. Data for this study were obtained from a researcher-designed reading-comprehension posttest. The results of this study are as follows.

The study resulted in a mean of 11.62 (out of 15 questions) and a standard deviation of 0.98 for the group receiving the semantic-mapping strategy and a mean of 9.54 and a standard deviation of 1.14 for the group provided with the listening-comprehension strategy. There was a statistically significant difference between the mean of the semantic-mapping group and the mean of the listening-comprehension group (in favor of the semantic-mapping group). On questions 1 through 5 (reading for main ideas each paragraph) the semantic-mapping group outscored the listening-comprehension group on three out of five questions, on question 6 (reading for the main idea of the passage) the semantic-mapping group and the listening-comprehension group received the same score, on questions 7 and 8 (reading for particular information or scanning) the semantic-mapping group outscored the listening-comprehension group on both questions, on questions 9 and 13 (ascertaining the meaning of words through context) the semantic-mapping group outscored the listening-comprehension group on both questions, on questions 10 and 11 (reference terms) the semantic-mapping group and the listening-comprehension group received the same score on both questions, on questions 12 and 14 (making inferences) the semantic-mapping group outscored the listening-comprehension group on both questions, and on question 15 (identifying the author's purpose) the listening-comprehension group outscored the semantic-mapping group. Nevertheless, no baseline in the study was established to indicate whether both groups of participants started at the same level.

Hayati and Shariatifar (2009) conducted a study to compare the effects of semantic mapping and underlining on the reading-comprehension skills of intermediate ELs at a university in Iran for one hour. Twenty students served as the participants in the

first experimental group and were given instruction in semantic mapping. Twenty students served as the participants in the second experimental group and were provided with instruction in underlining. Twenty students served as the comparison group and were provided with elements of traditional instruction (were instructed to read the reading passage by themselves). Relevant data were obtained from a reading comprehension test taken from Intermediate Reading Comprehension (Dehmireh, 1991). This test was administered immediately after each student received his or her respective form of instruction. The results of this study are as follows.

The students in the second experimental group (underlining) scored the highest, and the students in the comparison group scored the lowest. According to the results of a one-way ANOVA for the reading-comprehension test, there was a statistically significant difference between the performances of the students in the three instructional conditions. As per a Tukey post hoc comparisons, there were statistically significant differences in reading-comprehension scores between the three groups (with the underlining group obtaining statistically significantly higher scores than the semantic-mapping group and the comparison group, and the semantic-mapping group obtaining statistically significantly higher scores than the comparison group).

Khajavi and Ketabi (2010) conducted an experimental study to ascertain the effects of semantic mapping on the reading-comprehension skills and self-efficacy of undergraduate, intermediate ELs in Iran provided with instruction for approximately 10 sessions of 60 minutes (one session per week). Thirty students served as the experimental group (provided with a strategy description, a discussion of goals and purposes, modeling of the strategy, student mastery of the steps in the strategy, and

guided practice and feedback), and 30 students served as the comparison group (taught using traditional instruction). Data were obtained from a reading-comprehension test (used as a pretest and a posttest) including passages from TOEFL practice tests (Pyle, 2001) and passages from the Readers Digest magazine (combined by the researchers) and the Motivated Strategies for Learning Questionnaire (MSLQ). The results of this study are as follows.

Students in the experimental (semantic-mapping) group demonstrated higher posttest scores on the reading-comprehension test than the students in the comparison group. As per an ANCOVA, the semantic-mapping strategy had a statistically significantly positive effect on the reading-comprehension scores of the students. Students in the experimental group also demonstrated higher posttest scores on the self-efficacy test (the MSLQ). As per a second ANCOVA, the semantic-mapping strategy had a statistically significantly positive effect on the self-efficacy levels of the students.

Russell (2010) carried out a study with a mixed measures design to ascertain the effects of Thinking Maps (Alper & Hyerle, 2006; Hyerle, 2000, 2004), a set of graphic organizers (comprised mostly of semantic maps) on the reading comprehension of students (from the third through the fifth grade) for 2 years. Students from four schools served as the experimental group, and the students from four schools served as the comparison group. One hundred, ninety-nine students (137 of which were ELs) served as the experimental group and 179 students (92 of which were ELs) served as the comparison group. The experimental group was taught to utilize Thinking Maps, whereas the comparison group was not taught to utilize semantic maps. Relevant data were obtained from the 3rd Grade Reading Texas Assessment of Knowledge and Skills

(used as a pretest), the 4th Grade Reading Texas Assessment of Knowledge and Skills, and the 5th Grade Reading Texas Assessment of Knowledge and Skills (used as a posttest). The researcher did not state whether the students had been reminded to use the instructional strategies that they were taught on the posttest. The most relevant results include the following.

As per the results of a repeated-measures ANOVA, there was a statistically significant difference in the growth in reading-comprehension scores within subjects due to the fact that the students in both the experimental and comparison groups demonstrated growth from the fourth to the fifth grade. In addition, the between group differences were not statistically significant. As per a second repeated-measures ANOVA, there was a statistically significant difference in reading-comprehension scores within subjects for the Instructional Condition x English Proficiency interaction due to the fact that in the fifth grade, for FEPs in the comparison group there was a statistically significantly higher growth in reading-comprehension scores than any other group. Nevertheless, ELs in the experimental group had a larger mean in the growth in reading comprehension scores than FEPs in the experimental group. The between subjects effects also were not statistically significant. In other words, there was not a statistically significant difference in scores between groups with regard to instructional condition or English proficiency.

Shaul (2011) conducted a study to measure the effects of semantic mapping on the reading-comprehension skills of twelfth-grade ELs in Israel for 3 weeks. The students were divided into an experimental group (eight students) and a comparison group (six students), each subdivided into low-knowledge students and high-knowledge students. The experimental group was introduced to semantic-mapping techniques and

provided with time to generate semantic maps (after reading), whereas the comparison group was not. Data were obtained from an analysis of the three reading comprehension tests completed immediately after every lesson, a focus group interview (conducted prior to the research), and semistructured interviews (conducted after each test). Transcriptions were then developed from the semistructured interviews and the focus group. The relevant results of this study are as follows.

It was apparent that regarding all three assessments, the mean of the scores for semantic maps for the low-knowledge students were higher and reading comprehension was more homogenous when compared with the mean of the scores for semantic maps for the high-knowledge students in the experimental group. In addition, the improvement from test one to test three (53, 66, and 77) for the low-knowledge students in the experimental group was not present from test one to test three (68.2, 63.4, and 65.4) for the high-knowledge students in the experimental group. The scores for the low-knowledge students in the comparison group (64.0, 76.6, and 55.6) and the high-knowledge students in the comparison group (57.5, 66.0, and 61.0) did not appear to influence the students' reading-comprehension skills.

In the focus interview held prior to the study, low-knowledge students expressed the fact that they lacked self-confidence (100%), that they needed extra assistance (100%), and that semantic mapping would improve their reading comprehension (66.6%) and possibly make them think differently while reading (33.3%). None of these students believed that their attendance would improve or that semantic mapping would not lead to an improvement in their grades. Nevertheless, high-knowledge students emphasized less that they needed more assistance (66.6%), believed that semantic mapping would better

their reading comprehension (33.3%), and stated that they lacked self-confidence (33.3%). Some high-knowledge students also stated that semantic mapping would not lead to improvements in their grades (33.3%) and that their attendance would improve (33.3%). None of these students expressed that semantic mapping would possibly make them think differently while reading. Both high-knowledge students and low-knowledge students stated that they were excited about semantic mapping (33.3%).

In the final interviews, all low-knowledge students mentioned a progressive transformation in their comprehensive reading from test one to test three. These students expressed that in test one they did not read the text in a comprehensive manner, whereas in test two and test three, these students stated that they read the text more comprehensively. Nevertheless, there was no transformation in the high-knowledge students' degree of comprehensive reading. Both low-knowledge students and high-knowledge students all stated that their reading comprehension had improved as a result of semantic mapping. The students in the low-knowledge groups expressed higher positive attitudes toward semantic mapping than the high-knowledge students (66.6% as compared to 33.3%). The low-knowledge students stated that because of semantic mapping they read the text more than one time (66.6%), whereas 66.6% of the high-knowledge students said that they only read the text one time. Finally, both groups developed detailed semantic maps.

Supramaniam (2011) conducted a mixed-methods study to ascertain the effects of semantic mapping on the reading-comprehension skills of 10 lower-secondary, intermediate ELs in Malaysia for 6 sessions (on 6 days, 40 minutes per day). All of the students received instruction on semantic mapping. Data were obtained from a

researcher-designed reading-comprehension test used as a pretest and as a posttest (where the students were allowed to use the semantic map), as well as a student interviews. The relevant results are as follows.

On the pretest, the students obtained a mean of 51.50 points (out of a possible 100 points), whereas the students had a mean of 62.00 points on the posttest. Thus, the students obtained a higher score on the posttest (after semantic-mapping instruction) than the pretest (before semantic-mapping instruction). According to the student interview, the students were initially overwhelmed with using semantic mapping. Once they became familiar with this learning strategy, they became interested in utilizing it and found it to be an effective strategy (by expanding one's thinking skills and background knowledge).

Various studies have demonstrated the efficacy of semantic mapping in improving the reading-comprehension skills of ELs (Hayati & Shariatifar, 2009; Khajavi & Ketabi, 2010; Shaul, 2011; Supramaniam, 2011; Tateum, 2007). One study (Hayati & Shariatifar, 2009) suggested that underlining may be a superior instructional strategy when compared with semantic mapping. In one study (Russel, 2010), ELs provided with instruction on semantic mapping outperformed the FEPs receiving the same instruction on a measure of reading comprehension. In another study (Shaul, 2011), students with low prior knowledge outperformed students with high prior knowledge when taught how to utilize semantic mapping. In three studies (Han, 2006; Shaul, 2011; Supramaniam, 2011), the participants indicated that semantic-mapping strategy would help them to comprehend what they are reading, although in Shaul (2011), only the majority of low-knowledge students indicated this.

Nevertheless, none of the ELs in these studies were students with LD. In addition, there was no attempt to ascertain whether or not the students provided with the semantic-mapping strategy could recall all of the steps in using the strategy once they were taught how to utilize the strategy. The present study addressed these shortcomings in the research on the efficacy of the semantic-mapping strategy on reading-comprehension skills with its partial foci on teaching the semantic-mapping strategy (following traditional instruction and in combination with traditional instruction and the RAP Paraphrasing Strategy) to ELs who are also students with LD and on ascertaining whether or not the students when provided with the semantic-mapping strategy could recall all of the steps in using the strategy once the students had been taught how to use the strategy.

The Semantic-Mapping Strategy (A Visually-Dependent, Cognitive Strategy) and the Reading Comprehension of Students with LD

A study with a pretest-posttest comparison group design was conducted by Dexter (2010) in part to measure the effects of semantic mapping and semantic mapping combined with visual display on the reading comprehension of 33 junior-high-normally-achieving students, students with LD, and low-achieving students compared with the effects of the semantic mapping alone on the reading-comprehension and recall of 29 junior-high-normally-achieving students, students with LD, and low-achieving students with expository text from two to eleven weeks. Data for this study were obtained from a written factual recall measure (utilized as a pretest, a posttest, and a maintenance test), a multiple-choice measure (utilized as a pretest, a posttest, and a maintenance test), a far-transfer measure (utilized as a posttest and a maintenance test), and a survey (a 5-point Likert scale utilized as a posttest). The students in the semantic-mapping combined with

visual-display group were provided with a researcher-developed visual organizer before the posttest and the students in the semantic-mapping group received the semantic map that they had created before the posttest. The most relevant results of this study are as follows.

For all students, for written factual recall, there was a statistically significant difference in mean gain from pretest to posttest in favor of the semantic-mapping combined with visual-display group. When the data were disaggregated by student type, for students with LD and normally achieving students, this difference was statistically significant. For all students, there was a statistically significant difference in posttest scores (statistically significant for students with LD when the data were disaggregated) and a statistically significant difference in maintenance test scores (statistically significant for students with LD and normally achieving students when the data were disaggregated) in favor of the semantic-mapping combined with visual-display group.

For all students, for multiple-choice factual recall, there was a statistically significant difference in mean gain from pretest to posttest in favor of the semantic-mapping combined with visual-display group. For normally achieving students, this difference was statistically significant when the data were disaggregated. Nevertheless, the students with LD in the semantic-mapping group made nearly the same strong gains as the students with LD in the semantic-mapping combined with visual-display group did. For all students, there was no statistically significant difference in posttest scores (also not statistically significant for any group of students when the data were disaggregated). Students with LD in the semantic-mapping group had posttest scores that were close to those of the students with LD in the semantic-mapping combined with

visual-display group. Nevertheless, there was a statistically significant difference in maintenance test scores (statistically significant for students with LD and normally achieving students when the data were disaggregated) in favor of the semantic-mapping combined with visual-display group.

For all students, for the multiple-choice far transfer measure, there was a statistically significant difference for posttest scores (statistically significant for students with LD when the data were disaggregated) in favor of the semantic-mapping combined with visual-display group. There also was a statistically significant difference for maintenance scores (statistically significant for students with LD and low achieving students when the data were disaggregated) in favor of the semantic-mapping combined with visual-display group.

Regarding the survey, in general, the students stated that they had learned much during the study as well as stating that they enjoyed the semantic-mapping lesson and the opportunity to learn either with semantic mapping or semantic-mapping combined with visual display. No statistically significant differences were present between the conditions on any of the questions. The students with LD had similar, high ratings for both the semantic-mapping strategy and the semantic-mapping combined with visual display strategy.

In this study (Dexter, 2010), semantic-mapping combined with visual display generally produced superior results to semantic mapping alone with students with LD (and other students). Nevertheless, students with LD in the semantic-mapping group made nearly the same strong gains as the students with LD in the semantic-mapping combined with visual-display group for multiple-choice factual recall. In the same study,

the participants indicated that learning the semantic-mapping strategy would help them to comprehend what they were reading. This study used secondary-level students as participants, but none of the participants in these studies were ELs. There was no attempt to ascertain whether or not the students provided with the semantic-mapping strategy could recall all of the steps in using the strategy once the students were taught how to use the strategy. The present study addressed these shortcomings in the research on the effect of the semantic-mapping strategy on reading-comprehension skills with its foci on teaching this strategy (following traditional instruction and then in combination with traditional instruction and the RAP Paraphrasing Strategy) to students with LD and on ascertaining whether or not these students when provided with the semantic-mapping strategy could recall all of the steps in using the strategy once the students had been taught how to use the strategy.

Specialized Studies on Semantic Mapping

The following studies were included in the literature review to provide information on the design of the semantic maps that the students will be taught how to use in this study. Kozminsky and Nathan (2008) carried out two experimental studies in Israel to ascertain the effects of geometric semantic map nodes on the reading-comprehension skills of undergraduates. The first study examined the effects of map interface on the reading-comprehension skills of 162 students in 3 weekly sessions. Thirty-four students served as the first experimental group and were provided with instruction on how to use biform semantic maps with ellipses for content nodes and rectangles for structure nodes. Thirty-four students served as the second experimental group and were provided with instruction on how to use biform semantic maps with

rectangles for content nodes and ellipses for structure nodes. Thirty-one students served as the third experimental group and were provided with instruction on how to use uniform semantic maps with rectangles for both types of nodes. Thirty-one students served as the fourth experimental group and were provided with instruction on how to use uniform semantic maps with ellipses for both types of nodes. Thirty-two students served as the fifth experimental group and were provided with instruction on how to use semantic maps without geometric forms surrounding content or structure nodes. Relevant data were obtained from a reading-comprehension test designed by the researchers (administered as a pretest), a test on verbal and spatial abilities (administered as a pretest), a questionnaire (using a 5-point scale) as to the preference of map interface (administered as a pretest and a posttest), and eight comprehension questions: locating details, inference, identifying structure, and application (four administered on the second day of the study as a practice test and four administered on the third day of the study as a posttest).

There was no statistically significant difference between the treatment groups in the baselines reading comprehension scores or verbal and spatial ability scores. Results from an ANOVA on posttest results indicated that there were no statistically significant differences between the two biform semantic map groups or between the two uniform semantic maps groups on reading-comprehension scores. In addition, utilizing a semantic map without geometric forms or using a uniform interface resulted in lower reading-comprehension scores when compared with the biform semantic map groups. This analysis also revealed that using a biform semantic map resulted in higher reading-comprehension scores than utilizing a uniform semantic map (with a semantic map with

ellipses for content nodes and rectangles for structure nodes producing the highest reading-comprehension scores). This study also suggested that a visual differentiation between content and structure nodes on a semantic map results in higher comprehension scores. The students preferred this visual differentiation regardless of which interface group they had been assigned to. In addition, prior to and after studying, the students indicated a preference for a biform text interface when compared to a uniform or no-form text interface.

The second study examined the effects of using an incongruent biform semantic map in addition to the semantic map interfaces used in the first study, with 43 undergraduates in three weekly sessions. The students were randomly assigned randomly to five experimental groups: congruent biform semantic maps with ellipses for content nodes and rectangles for structure nodes, uniform semantic maps with rectangles for both types of nodes, incongruent biform semantic maps with ellipse and rectangle forms that were randomly utilized for the semantic map's nodes, semantic maps without any geometric forms surrounding content or structure nodes, and no map. Relevant data were obtained from a reading-comprehension test designed by the researchers (administered as a pretest), a questionnaire (using a 4-point scale) as to the preference of semantic map interface (administered as a pretest and a posttest), and eight comprehension questions: locating details, inference, identifying structure, and application (four administered on the second day of the study as a practice test and four administered on the third day of the study as a posttest). The results of this study were similar to those of the first. Most importantly, reading-comprehension scores after utilizing an incongruent or a no-frame semantic map were typically lower than those in the biform and uniform conditions. In

this study the order of semantic map preference was the congruent biform semantic map interface, the uniform semantic map interface, the incongruent biform semantic map interface, and the no frame semantic map interface.

Amadieu, Van Gog, Paas, Tricot, and Marine (2009) conducted a study with a 2 x 2 factorial design to measure the effects of prior knowledge and semantic-mapping structure (with semantic maps on the internet with hyperlink nodes) on disorientation, cognitive load, and learning for 45 to 55 minutes per participant. This design was utilized with two factors, semantic-mapping structure and prior knowledge, creating four conditions: network structure and low-prior-knowledge, network-structure and high-prior-knowledge, hierarchical-structure and low-prior-knowledge, and hierarchical-structure and high-prior-knowledge. Twenty-four staff members at a Dutch university served as the participants in this study. Data were obtained from a prior knowledge test (a pretest), a pretest and posttest administered using the Inquisit 2.0.51002 software, self-ratings of mental effort (Paas, 1992), a Disorientation Scale (Ahuja & Webster, 2001), logged time on the learning task, logged time on the posttest, and eye-tracking hardware and software.

A series of Mann-Whitney tests were conducted to analyze the data in the study. An analysis of the pretest results indicated that pretest factual knowledge scores and conceptual knowledge were statistically significantly higher for the participants in the high prior knowledge group than the participants in the low prior knowledge group. Regarding pretest-posttest gains, the participants in the low prior knowledge group had a statistically significantly larger increase in factual knowledge and conceptual knowledge than the participants in the high-prior-knowledge group. No effect of semantic-mapping

structure was evident for the students in the low-prior-knowledge group in terms of factual knowledge. Nevertheless, a statistically significantly positive effect of hierarchical structure when compared with network structure was present for the participants in the low-prior-knowledge group with respect to conceptual knowledge. Regarding the participants in the high-prior-knowledge group, the hierarchical structure resulted in statistically significantly larger increases in factual knowledge than the network structure. No similar effects were found for conceptual knowledge regarding semantic-map structure for the participants in the high-prior-knowledge group.

The participants in the low-prior-knowledge group had statistically significantly higher amounts of mental effort in answering factual knowledge and conceptual knowledge statements than the participants in the high-prior-knowledge group. The hierarchical structure semantic map resulted in statistically significantly lower ratings of mental effort for the participants in the low-prior-knowledge group on factual knowledge and conceptual knowledge statements than the network structure, but no effect of semantic-mapping structure was observed for the ratings of mental effort by the participants in the high-prior-knowledge group for either factual knowledge or conceptual knowledge statements. Regarding the analysis of the time on the posttest, there was not a statistically significant effect on the time used answering the factual knowledge or conceptual knowledge statements.

In regard to the mental effort used in the learning task, there were no statistically significant differences between the participants in the low-prior-knowledge group and the participants in the high-prior knowledge group as well as between the hierarchical structure and the network structure. No difference was present between the participants

in the low-prior-knowledge group and the participants in the high-prior-knowledge group in the mental effort necessary to comprehend the semantic map. Nevertheless, the hierarchical structure as opposed to the network structure was associated with statistically significantly lower rates of mental effort for the participants in the low-prior-knowledge group and the participants in the high-prior-knowledge group.

No statistically significant difference in disorientation between the participants in the low-prior-knowledge group and the participants in the high-prior-knowledge group was observed. Concerning the participants in the low-prior-knowledge group, the hierarchical structure resulted in statistically significantly less disorientation than the network structure. No effect from semantic-mapping structure was present for the participants in the high-prior-knowledge group.

There were no statistically significant differences in duration of fixations between the participants in the low-prior-knowledge group and the students in the high-prior-knowledge group. The hierarchical structure resulted in statistically significantly larger fixations of duration for the participants in the low-prior-knowledge group but not for the participants in the high-prior-knowledge group. Concerning viewing behavior, for network structure the mean percentage of time used fixating on the 11 anatomic nodes was statistically significantly larger for the participants in the high-prior-knowledge group than for the participants in the low-prior-knowledge group. Nevertheless, there was no difference between students in the low-prior-knowledge group and students in the high-prior-knowledge group for hierarchical structure. Although for hierarchical structure the mean percentage of time used in fixating on macro-information nodes was statistically significantly greater for students in the low-prior-knowledge group than

students in the high-prior-knowledge group, this difference was not observed for network structure.

No differences were present between the participants in the low-prior-knowledge group and the participants in the high-prior-knowledge group concerning the quantity of nodes opened. In addition, there were no differences between hierarchical structure and network structure regarding the number of nodes opened. Ninety-six percent of the participants utilized the maximum time allowed to work on the learning task.

The hierarchical structure appeared to encourage the participants to read from left to right and from top to bottom. This pattern was not evident when the students were using the network map. The participants in the low-prior-knowledge group (but not the participants in the high- prior-knowledge group) generally opened nodes associated with anatomic nodes statistically significantly more frequently in the hierarchical structure than the network structure. There also was no effect or prior knowledge or semantic-mapping structure on the quantity of opened functional nodes. The amount of prior knowledge had no effect on the time utilized reading the semantic map. Nevertheless, the participants in the low-prior-knowledge group generally used a statistically significantly greater amount of time reading the hierarchical structure than the network structure. No such difference was evident for the participants in the high-prior-knowledge group.

Conradty and Bogner (2010) conducted a quasi-experimental study with a before-after-control-impact design to analyze the errors that students make when constructing semantic maps for approximately 4 hours. Two hundred and eighty-three sixth graders served as the experimental group and were taught to construct semantic maps. Fifty-six students served as the comparison group (that did not participate in the aforementioned

semantic-mapping instruction). Data were obtained through an analysis of errors in the semantic maps and a knowledge test (designed by the researchers) used as a pretest and a posttest. The relevant results of this study are as follows.

As a result of the study, the researchers suggested that there are three reasons for student errors in semantic mapping. First, there is a lack of understanding of the subject matter resulting in the creation of incorrect links. Second, links are created without understanding the rules behind making them. Third, there is a mixture of technical and factual errors.

For the purpose of teaching the semantic-mapping strategy in this study, various suggestions can be taken from these specialized studies on semantic mapping. Students must be taught the rules behind making links between concepts (Conradty & Bogner, 2010). Utilizing a biform text map, a semantic map using different shapes for different levels of concepts (utilizing ellipses for content nodes and rectangles for structure nodes) results in higher reading-comprehension scores than utilizing a uniform text map, that is, a semantic map using the same shapes for different levels of concepts. Congruent biform text maps also produce higher reading-comprehension scores than incongruent biform text maps (Kozminsky & Nathan, 2008). In addition, students with low-prior knowledge learn the same amount of factual knowledge from semantic maps with a network structure as they do from semantic maps with a hierarchical structure, but learn more conceptual knowledge and make use of less mental effort on an assessment after utilizing semantic maps with a hierarchical structure (Amadieu et al., 2009).

Summary

Various studies had demonstrated that the RAP Paraphrasing Strategy may have a positive effect on the reading-comprehension skills of general education students (Hagaman, Casey, & Reed; Hagaman & Reed, 2008; Koolen, 2008; Lee & Von Colln, 2003), ELs (Karbalaei & Amoli, 2010; Munro, 2005), and students with disabilities (Blume, 2010; Hall, 2004; Mothus & Lapadat, 2006). Other studies had indicated that the semantic-mapping strategy may have a comparable effect on the reading-comprehension skills of general education students (Asan, 2007; Bulunuz & Jarrett, 2009; Goss, 2009; Guastello, Beasley, & Sinatra, 2000; Joseph, 2002; Willits, 2002), ELs (Hayati & Shariatifar, 2009; Khajavi & Ketabi, 2010; Shaul, 2011; Supramaniam, 2011; Tateum, 2007), and students with LD (Dexter, 2010). None of these studies, however, had investigated the effects of these instructional strategies on ELs with LD and FEPs with LD at the secondary level in the same study. In addition, there was no attempt to ascertain whether or not the students provided with the RAP Paraphrasing Strategy or the semantic-mapping strategy can recall all of the steps in using these strategies.

Suggestions were taken from the specialized studies on semantic mapping (Amadieu et al., 2009; Conradty & Bogner, 2010; Kozminsky & Nathan, 2008) and were utilized in this study. Students need to be taught the rules for making links between concepts (Conradty & Bogner, 2010). Utilizing a biform text map (utilizing ellipses for content nodes and rectangles for structure nodes) results in higher reading-comprehension scores than utilizing a uniform text map. Congruent biform text maps also result higher reading-comprehension scores than incongruent biform text maps (Kozminsky & Nathan, 2008). Students with low-prior knowledge gain an equal amount of factual knowledge

from semantic maps with a network structure or a hierarchical structure, but gain more conceptual knowledge and use less mental effort on an assessment after utilizing semantic maps with a hierarchical structure (Amadieu et al., 2009).

Thus, although various studies had been implemented that have demonstrated the efficacy of both the RAP Paraphrasing Strategy and the semantic-mapping strategy in improving the reading-comprehension skills of general education students, ELs, and students with disabilities, none of these studies had measured the success of these strategies in improving the reading-comprehension skills of both ELs with LD and FEPs with LD at the secondary level in the same study. This study attempted to fill this gap in educational research. In addition, other studies had provided information regarding how the semantic-mapping strategy may be maximized to produce higher-comprehension skills. This information concerning maximizing the semantic-mapping strategy had yet to be utilized together in improving the reading-comprehension skills of both ELs with LD and FEPs with LD at the secondary level in the same study. This study also attempted to provide information regarding whether the ELs with LD and FEPs with LD could remember the steps to the RAP Paraphrasing Strategy and the semantic-mapping strategy after they were taught them.

CHAPTER III

METHODOLOGY

This study, using a repeated measures design with alternating treatments, measured the effectiveness of traditional instruction, the RAP (reading a paragraph, asking one's self what the main ideas and details about a paragraph are, and putting these ideas and details into one's own words) Paraphrasing Strategy (an auditory-language-dependent, cognitive strategy), the semantic-mapping strategy (a visually-dependent, cognitive strategy), and a combination of these instructional strategies on the reading comprehension of high-school English-language learners (ELs) with learning disabilities (LD) and fully English-proficient students (FEPs) with LD in two high-school, mild-to-moderate, special-day (SDC), English classes. In addition, this study attempted to provide information on the knowledge of these strategies after the students had been provided with the RAP Paraphrasing Strategy and the semantic-mapping strategy

The Research Design section addresses the design and the variables in this study. The Participants section details how the study's participants were sampled. The Setting section contains a brief description of the place in which the study was conducted. The Instructional Materials section addresses the curricular and assessment materials utilized in the study. The Independent Variables section provides information on the instructional conditions analyzed in this study. The Protection of Human Subjects section covers the procedures used by the researcher to ensure that the study's participants' confidentiality, safety, and freedom to participate in the study were maintained. The Instrumentation section contains descriptions concerning the purpose and composition of the English language proficiency and reading-comprehension assessments, and the postinstructional

quiz to be utilized as data-gathering instruments. The Procedures section provides information regarding the qualifications of the researcher to provide training to the teacher carrying out the study, the training the teacher received to conduct the study, the steps by which the instructional conditions and assessment measures were carried out within the study, and the procedures for data collection. The Research Questions section contains a description of the research questions used in this study. The Data Analysis section details how the data were examined after they were collected.

Research Design

This study was a repeated measures design with alternating treatments. A model of the overview of this repeated measures design is provided in Figure 1. The independent variable for this study was the type of instruction (traditional instruction, the RAP Paraphrasing Strategy, the semantic-mapping strategy, or combined RAP Paraphrasing Strategy and semantic-mapping strategy). For the first group, the students (ELs with LD and FEPs with LD) were provided with these instructional strategies in the following order: traditional instruction (the comparison method), the RAP Paraphrasing Strategy, and the semantic-mapping strategy (the combined strategy due to the fact that the students have been taught both intervention strategies). For the second group, the students (ELs with LD and FEPs with LD) were provided with these instructional strategies in the following order: traditional instruction (the comparison method), the semantic-mapping strategy, and the RAP Paraphrasing Strategy (the combined strategy due to the fact that the students have been taught both intervention strategies).

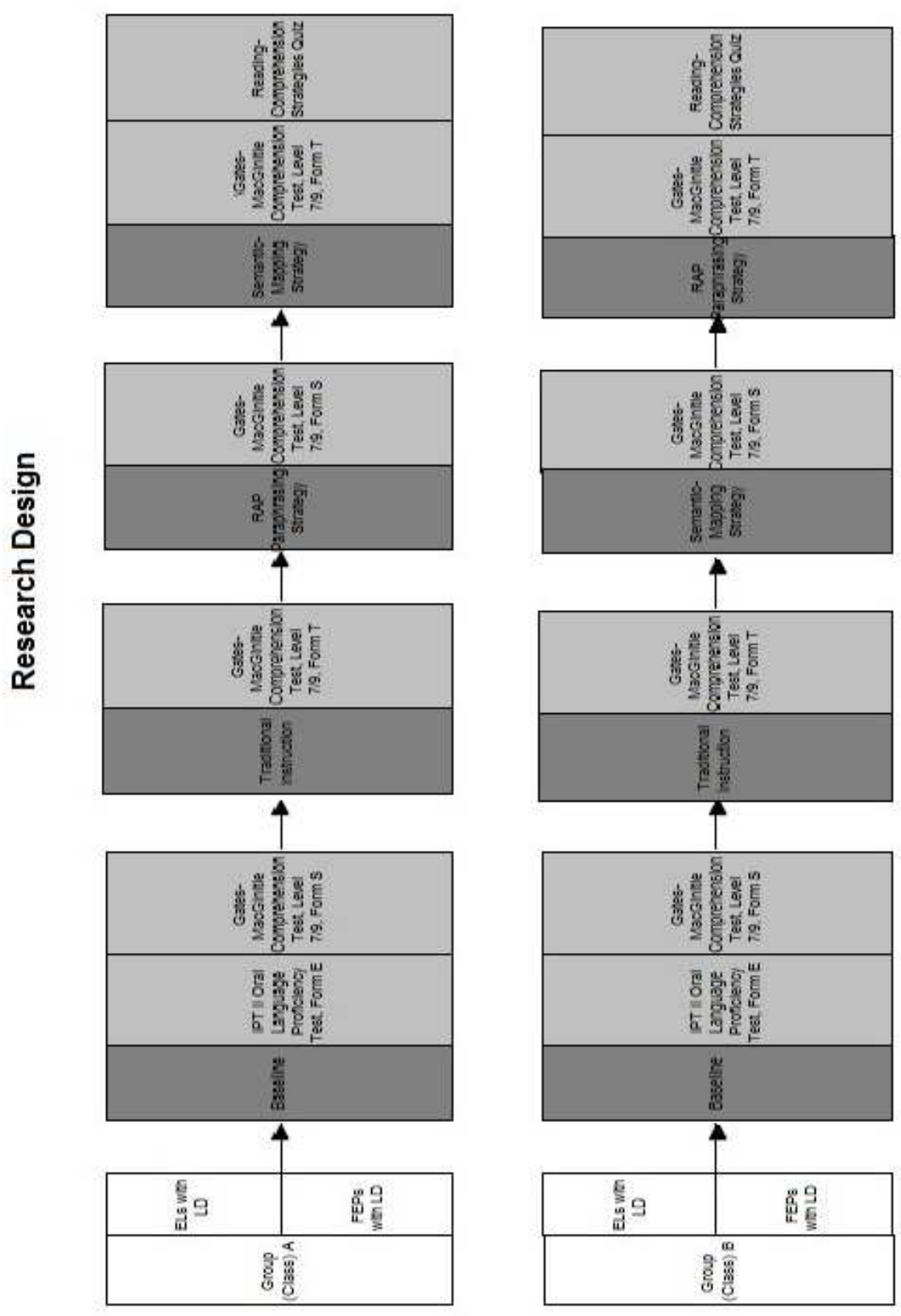

Figure 1. Repeated Measures Design with Alternating Treatments

Quantitative data were gathered on the IDEA Oral Language Proficiency Test II, Form E to provide a more current assessment than the California English Language Development Test of the English oral language proficiency skills of the ELs with LD in this study and to measure the English oral language proficiency of the students with LD not classified as ELs (see Table 1).

In addition, quantitative data were gathered to compare the efficacy of traditional instruction, the RAP Paraphrasing Strategy, the semantic-mapping strategy, and a combination of the RAP Paraphrasing Strategy and the semantic-mapping strategy on the performance of high-school ELs with LD and LEPs with LD with a measure of reading-comprehension skills, the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Forms S and T (MacGinitie, MacGinitie, Maria, Dreyer, & Hughes, 2000). The dependent variable was defined as the differences between the raw scores on the pretest (the reading-comprehension subtest at baseline) and the raw scores on the same subtest at the end of each instructional phase. Quantitative data also were collected from a quiz to examine whether the student knew the steps of how to apply each of the two intervention strategies.

Participants

Participants for this study were students enrolled in a medium-sized metropolitan high school of 1,345 students in an urban school district in the East Bay area of San Francisco (and their teacher). It is one of five high schools in the school district. Most of the students at this school identified themselves as Asian-Pacific Islander (32%) or Hispanic-Latino (30%). This school had a population of 223 ELs (16% of the school population). In addition, 30% of the students qualified for a free-or-reduced-price meal.

Within this school, there were 22 ELs with LD (as per the California English Language Development Test) and 20 FEPs in the mild-to-moderate, SDC program.

Out of a total of 25 students, a convenience sample of 19 high-school ELs with LD and FEPs with LD served as the participants for this study (as signed consent forms were received from parents for these students only). Fourteen of the participants were male, and five participants were female. Eleven of these students were ELs with LD, and eight of these students were FEPs with LD (as per the IDEA Oral Language Proficiency Test II, Form E). Ten of the ELs with LD spoke Spanish as their primary language, whereas one of the ELs spoke only English, but possessed low oral language skills. All of the ELs with LD and FEPs with LD in this study were reading 4 to 8 years below grade level as measured by each student's last administration of the Reading Comprehension Subtest of the Woodcock-Johnson III Test of Achievement and were receiving instruction in one of two high-school, mild-to-moderate, SDC, English classes for students with LD.

Students were in these two classrooms for an 85-minute block on Mondays, Tuesdays, Thursdays, and Fridays and a 70-minute block on Wednesdays as they attended three other classes daily. Some of these other classes were other mild-to-moderate classes, whereas some classes were classes in which the students were mainstreamed. One of the English classes was held at the beginning of the school day, whereas the other English class was held at the end of the school day.

The teacher for both the experimental groups (classes) was the regular English teacher for the students with LD who served as the participants in this study. The teacher held a Level II Education Specialist Instruction Credential. She had been teaching

English courses to high-school students with mild-to-moderate disabilities for 12 years. The teacher had no experience utilizing the RAP Paraphrasing Strategy or the semantic-mapping strategy. She was European American in ethnicity.

Setting

The participants' classroom appeared to be a typical high school classroom, although one paraprofessional was present to assist the teacher in carrying out instruction. There were five large tables and 15 chairs in the classroom to provide seating for the students. There were whiteboards to the side and rear of the classroom. There was one desk for the teacher and one for the paraprofessional in the classroom. There also were three bookshelves and two computers in the classroom.

Instructional Materials

In teaching with traditional instruction, reading materials were taken entirely from the 9th grade reading curriculum, from *Elements of Literature Third Course* (Probst, Anderson, Brinnin, Leggett, & Irvin, 1997). This district curriculum was utilized in this study because it is used by 9th grade students, so students would not be denied access to the curriculum that they would normally be using without this study and because the grade level of the reading material matched that of the Gates-MacGinitie Reading Test, Level 7/9, Forms S and T (MacGinitie et al., 2000). Comprehension questions for this instructional strategy were developed by the researcher.

Reading materials used in teaching the students to use the RAP Paraphrasing Strategy and the semantic-mapping strategy came from *Timed Readings Plus Book One* (Spargo, 1998). Once the students had been exposed to these strategies and had time to practice them, reading materials were then taken from the 9th grade reading curriculum,

from *Elements of Literature Third Course* (Probst et al., 1997). Lesson guides and other instructional materials specific to the RAP Paraphrasing Strategy and adapted for the semantic-mapping strategy came from *The RAP Paraphrasing Strategy* (Schumaker, Denton, and Deschler, 1984).

Independent Variables

The students were assigned by class to one of two sets of instructional conditions to ensure that traditional instruction and the two intervention strategies (the RAP Paraphrasing Strategy and the semantic-mapping strategy) could be compared with one another and that the order of instruction could be measured, given a small sample size. Class 1 was provided with reading comprehension instruction in the following order: traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy (for a combined effect). Class 2 was provided with reading comprehension instruction in the following order: traditional instruction, the semantic-mapping strategy, and the RAP Paraphrasing Strategy (for a combined effect).

For traditional instruction, the materials were taken from *Elements of Literature Third Course* (Probst, Anderson, Brinnin, Leggett, & Irvin, 1997) and comprehension questions were designed by the researcher. For the RAP Paraphrasing Strategy and semantic-mapping strategy, reading materials and questions based on the text were taken from *Timed Readings Plus* (Spargo, 1998) until the advanced practice and feedback stage and the posttest and make commitments stage in order to facilitate the students learning these strategies by providing them with text at their approximate reading level instead of more difficult text (above their reading level). Nevertheless, the majority of the reading

materials used in the instructional days of the study were taken from *Elements of Literature Third Course* (Probst et al., 1997).

Traditional Instruction

In each lesson, the teacher reviewed previously learned concepts and vocabulary from the day before. The teacher then discussed the definitions of new concepts and vocabulary while the students wrote the concepts, vocabulary, and the accompanying definitions in their notebooks. Each student then took turns reading a paragraph out loud. After reading each paragraph, the teacher asked the students two to three comprehension questions for the students to answer out loud. As a final activity, the teacher reviewed important points from the text.

The RAP Paraphrasing Strategy

The steps for the RAP Paraphrasing Strategy included having the students read a paragraph, ask themselves what the main ideas and details about a paragraph were, and put the main ideas and details of the paragraph into their own words (see Appendix D). This acronym (RAP) was shortened to Read, Ask Questions, and Put into Your Own Words (Munro, 2005) to make these steps easier to remember. The steps for teaching the RAP Paraphrasing Strategy (pretest and make commitments, describe, model, verbal practice, controlled practice and feedback, advanced practice and feedback, posttest and make commitments, and most of the orientation phase of the generalization stage) and the sequence for teaching this strategy were adapted from the sequence outlined by Schumaker et al. (1984).

Nevertheless, the last part of the orientation phase of the generalization stage, as well as the activation, adaptation, and maintenance phases of the generalization stage

were not used. The orientation phase applies to teaching students the various scenarios in which the RAP Paraphrasing Strategy can be used. The first part of this phase was only done in this study to provide closure to the instruction. The activation phase largely deals with applying the RAP Paraphrasing Strategy to other situations beside textbooks (and asks that the students do work in their other classes. The adaptation phase deals with breaking the strategy down into its three cognitive components when the entire strategy does not need to be used (which is not being testing with the Gates Macginitie). The maintenance phase deals with testing done periodically after the posttest. Thus, these phases did not pertain to the focus of this study.

In addition even though, Schumaker et al. (1984) recommend that students' paraphrases be tape recorded while the RAP Paraphrasing Strategy is being taught because low-achieving students often struggle with writing tasks, they also state that the paraphrases can be written. The second option was chosen to maximize the use of instructional time. Prior research also had resulted in statistically significant results when written paraphrases were utilized in teaching the RAP Paraphrasing Strategy to postsecondary ELs (Karbalaei and Amoli, 2010) and secondary students with LD (Mothus and Lapadat, 2006). Furthermore, student paraphrasing was stopped at the end of the class period to account for the writing speed of the students. Lastly, the teacher explained the results of the comprehension and paraphrasing tests to the students as a group and carried out oral quizzes with the students as a group instead of doing so individually as Schumaker et al. (1984) suggest. This was also done to maximize the use of instructional time.

The Semantic-Mapping Strategy

The steps for utilizing the semantic-mapping strategy were adapted from those outlined in Llewellyn (2007). In addition, the instruction utilized semantic maps using ellipses for content and rectangles for structure (Kozminsky & Nathan, 2008) within a hierarchical structure (Amadieu, Van Gog, Paas, Tricot, & Marine, 2009). The teacher ensured that the students were taught the rules the rules behind making links between concepts (Conradty & Bogner, 2010). Nevertheless, the steps (pretest and make commitments, describe, model, verbal practice, controlled practice and feedback, advanced practice and feedback, posttest and make commitments, and the first part of the orientation phase of the generalization stage) and sequence for teaching the strategy were ordered in a manner that was similar to that of the RAP Paraphrasing Strategy to assist in eliminating the order of instruction and time on each step as factors that may have altered the outcome of this study. Nevertheless, as in the RAP Paraphrasing Strategy, the last part of the orientation phase of the generalization stage, as well as the activation, adaptation, and maintenance phases of the generalization stage were not used.

The steps for the semantic-mapping strategy included having the students read a paragraph, identify the main idea and write the idea to the left and center of the paper, circle the important details of the paragraph, order the details on the paper to the right of the main idea and work from left to right (from the most general to the most specific), use links (lines) to show the relationships or connections between the words on the semantic map, and utilize a linking word in the form of a preposition, verb, or short statement to specify the relationship of one term or concept to another when necessary (see Appendix E).

Like the RAP Paraphrasing Strategy, when learning the semantic-mapping strategy, the students were taught to do semantic mapping with an acronym-RICOS: Read, Identify, Circle, Order (on paper), and Show Links. Students were taught to semantically map each paragraph (to match the approximate length of the text used in the reading comprehension test utilized in the present study). In addition, as was true with the RAP Paraphrasing Strategy, student semantic mapping was stopped at the end of the class period (to account for the speed of the students in constructing the semantic maps).

The Combined Intervention

The combined intervention for the ELs with LD and FEPs in Class 1 consisted of a combination of the instructional strategies in the following order: traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy, whereas the combined intervention for the ELs with LD and FEPs with LD in Class 2 consisted of a combination of the instructional strategies in the following order: traditional instruction, the semantic-mapping strategy, and the RAP Paraphrasing Strategy.

Protection of Human Subjects

The protection of the participants in this study proceeded according to the American Psychological Association's (APA, 2010) rules of conduct for research and publication. Approval to conduct the research study was obtained from the Superintendent of the School District where the study was conducted, the high-school principal, and the University of San Francisco's Institutional Review Board for the Protection of Human Subjects. A meeting was held with the Superintendent of the School District and the Assistant Superintendent of Instructional Services (September 18, 2012) to provide a verbal explanation of the study and to answer any questions. The

consent form for the Superintendent of the School District to sign also was provided at this meeting. The signed consent form was then received via district mail (signed September 24, 2012). A meeting also was held with the high-school principal and consent was obtained and this meeting (September 28, 2012). Approval of this study also was obtained from the University of San Francisco's Institutional Review Board for the Protection of Human Subjects (October 9, 2012).

The informed consent forms were mailed home to the parents of the proposed participants in the study (October 16, 2012) by the office staff (as per school district policy) to inform them of the nature and benefits of the study and to request their consent to allow their child's scores to be used. In addition, the consent forms informed the parents that their child's name would be kept confidential and that they could notify the researcher at any time to withdraw their child assessment results from the study at any time without adverse consequences. Withdrawal meant that the students would still receive the same form of instruction but that their data would be removed from the study.

For Spanish-speaking parents, the consent form was sent home in Spanish from the school office as is usually done by the school district (October 16, 2012). No other translations were required as no other language groups were usually represented in the mild-to-moderate, SDC population. Also within the envelope that the student's parent(s) received in the mail was a pre-addressed, stamped envelope in which to mail the signed forms back to the researcher. A second copy of the envelope was sent home a week later (October 23, 2012) to the parents who had not yet responded.

The teacher who would be providing the instruction and conducting the assessments for the study was given a consent form by the researcher. The consent form

stated the general intention of the study and requested consent from the teacher to provide the instruction and conduct the assessments for the study. As participation in the study was voluntary, the teacher was free to decline to be in this study or withdraw from it any point. There were no consequences for not participating in this study. The signed consent from the teacher was signed and returned (October 4, 2012).

The teacher was provided with a list of student names and corresponding numbers. When the students were administered assessments, they wrote their names on the assessments. The teacher then blacked out the students' names and replaced them with these numbers. Following the study, the list of students' names and corresponding numbers were destroyed. The students also were free to decline for the researcher to use their results on the assessments in this study after the final assessment was given. Withdrawal meant that the students would still receive the type of instruction used in the study, but their data would be removed from the study. There were no consequences for not allowing a student's data to be used in this study.

Instrumentation

For each group (class), the IDEA Oral Language Proficiency Test II, Form E (Dalton & Amori, 2010) was administered at baseline to provide a more updated assessment on the EL's English oral language proficiency than the California English Development Test. This assessment also was used to indicate which students were English learners who had English as their first language. In addition, for each group (class), the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S served as the pretest (MacGinitie, MacGinitie, Maria, Dreyer, & Hughes, 2000), whereas the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9,

Forms T, S, and T (MacGinitie et al., 2000) were used alternatively to measure the success of three conditions (one comparison and two experimental conditions) on the students' reading-comprehension ability. A quiz to examine whether the student knew the steps of how to apply each of the two the strategies also was utilized (see Appendix F).

The IDEA Oral Language Proficiency Test II, Form E

The IDEA Oral Language Proficiency Test II was designed to measure students' oral proficiency in English to identify ELs and put them in the correct instructional programs, monitor their degree of improvement, and redesignate students after they have finished successfully a language development program (Ballard & Tighe, 2010). This test (78 questions) measures four basic domains in oral language: vocabulary (23 questions), grammar (24 questions), comprehension (19 questions), and verbal expression (12 questions). There are two equivalent versions of this test: E and F. Because the IDEA Oral Language Proficiency Test II was developed for students from the 6th to the 12th grade, and the participants in this study range from the 9th to the 12th grade, this test is appropriate for the grade range of these students.

In 1983, the IDEA Oral Language Proficiency Test II was standardized on a population of 458 students from the 6th through the 12th grade. The IDEA Oral Language Proficiency Test II was renormed three times, once in 1997 (norming population not provided), once in 2008 to 2009 with a population of 1,600 students from the 6th through the 12th grade, and once again in 2009 with a population of 670 students (ages 11 through 21). Students were sampled from around the United States. Most of the students were from public schools. Student samples represented gender (U.S. Census

Bureau, 2010a), ethnicity (California Department of Education, 2010), primary language (California Department of Education, 2012a), and disability (U.S. Census Bureau, 2010b) in approximately the same proportions as that of the population of students in California.

The Cronbach's coefficient alpha reported for internal consistency for the IDEA Oral Language Proficiency Test II was .99 for Form E (for 670 students). The validity of the IDEA Oral Language Proficiency Test II was assessed through a variety of methods including content validity, convergent validity, divergent validity, and unidimensionality. Each of these validity types confirms that the IDEA Oral Language Proficiency Test II measures the constructs that it purports to measure. The IDEA Oral Language Proficiency Test II also had been used previously to measure the oral language proficiency skills of ELs (Atwood, 2001; Williams, 1988).

In this study, error scores were used along with each student's grade level to determine his or her level of English proficiency. The student started his or her testing on level A and if the student had made the minimum number of errors (0 to 4 errors) allowed, then he or she was tested on level B. On level B, if the student made 5 or more errors, he or she would remain in level A. If he or she had made the minimum number of errors (0 to 2 errors) allowed on level B, he or she was tested on level C. With 3 to 6 errors, the student would remain in level B and with 7 to 12 errors, the student would be placed in level A. On level C, if the student had made the minimum number of errors (0 to 2 errors) allowed on level C, he or she was tested on level D. With 3 to 6 errors, the student would remain in level C and with 7 to 12 errors, the student would be placed in level B. On level D, if he or she had made the minimum number of errors (0 to 3 errors) allowed on level D, he or she was tested on level E. With 4 to 7 errors, the student

would remain in level D and with 8 to 14 errors the student would be placed in level C. On level E, if he or she had made the minimum number of errors (0 to 3 errors) allowed on level E, he or she was tested on level F. With 4 to 7 errors, the student would remain in level E and with 8 to 14 errors the student would be placed in level D. On level F, with 0 to 4 errors, the student would remain in level F and with 5 to 14 errors the student would be placed in level E.

The student's English proficiency level was then be determined by using the Examiner's Manual (Ballard & Tighe, 2010). Students in levels A and B were classified as Beginning (Non-English Speaking), students in level C were classified as Early-Intermediate (Limited English Proficient), students in level D were classified as Intermediate (Limited English Proficient), students in level E were classified as Early-Advanced (Limited English Proficient), and students in level F were classified as Advanced (Fluent English Speaking). Students in levels A through E were labeled as ELs and students in level F were labeled as FEPs. The student participants in the study were then divided into ELs and FEPs.

The Gates-MacGinitie Reading Tests, Level 7/9, Forms S and T

The Gates-MacGinitie Reading Tests, Fourth Edition were designed as a measure of the overall level of student reading achievement for students at the prereading to the adult reading levels (Buros Institute of Mental Measurements, 2005). This assessment is written in 11 levels: Prereading, Beginning Reading, Level 1, Level 2, Level 3, Level 4, Level 5, Level 6, Level 7/9, Level 10/12, and Adult Reading. Level 7/9 contains two tests: Vocabulary (45 items) and Comprehension (48 items). The participants in this study were reading below the ninth-grade independent reading level. It was logical to

teach and test for material that was at the lowest instructional high-school reading level instead of teaching and testing material that was at elementary level (such as Level 6). The ninth grade was also the minimum grade at level at which these students would be provided with state standardized testing during the academic year. Therefore, it was appropriate for these students to take Level 7/9 of the Gates-MacGinitie Reading Tests.

The Gates-MacGinitie Reading Tests were standardized on 65,000 kindergarteners through 12th graders and 2,800 adults from 1998 to 1999. In addition, more than 30,000 students participated in the equating studies to analyze the relationships between the consecutive test levels, the alternate forms (S and T), and the most recent editions of the Gates-MacGinitie Reading Tests. Nevertheless, students with disabilities were not used in the standardization sample (MacGinitie et al., 2002; Maria & Hughes, 2008).

The equating of the two forms (S and T) for level 7/9 was conducted to produce alternate-form reliability coefficients as well as equivalent derived scores for both forms. An equipercentile process was utilized to relate the Word Decoding, Word Knowledge, Vocabulary, and Comprehension Tests and the total raw scores from one test form to the other at the same test level. Improving the equipercentile relationship was carried out utilizing a fifth-degree polynomial. This improvement was made more accurate by graphing the scores. Derived scores corresponding to the raw scores on one form of the test were then assigned to the equivalent raw scores on the other form of the test. The alternate forms reliabilities for the Comprehension Test for the ninth grade is .80, based on a sample size of 737 students from various regions of the United States (East, Midwest, South, and West), school district sizes (small, small-medium, medium-large,

and large), socioeconomic status levels, (low, low-average, high-average, and high), and school types (public and private schools).

The Kuder-Richardson Formula 20 (K-R 20) reliability coefficients for internal consistency for the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9 for grade 9 are .93 for Form S for the Fall, .92 for Form S for the Spring, .93 for Form T for the Fall, and .92 for Form T for the Spring for a sample of 737 students. Evidence for the validity of the Comprehension Test was provided in the form of content validity and concurrent validity. The evidence for content validity for this subtest was the involvement of several teachers and former teachers in the selection of test passages, clearly written guidelines that helped to make the test passages appropriate in content and presentation, a large number of reading passages, a balance of literal and inferential questions, guidelines for the construction of questions that helped to make the questions important and indicative of comprehension, wrong answer choices developed to prevent the students from earning good scores by answering questions through testing strategies not relevant to their understanding, and a qualitative analysis of age appropriateness and reading difficulty in addition to a quantitative analysis of readability using three readability formulas.

Concurrent validity was established by comparing the fourth edition to the third edition. According to the technical manual, the correlations for the Comprehension subtest were high, but these correlations were not provided. Concurrent validity also was established by comparing the fourth edition to reading course grades. As per the technical manual, the correlations were high, but again, these correlations were not provided (MacGinitie et al., 2002). Nevertheless, the Gates-MacGinitie Reading Tests

have been used previously to measure the reading- comprehension skills of students with LD (Aaron, Malatesha Joshi, Gooden, & Bentum, 2008; Cook, Eignor, Steinberg, Sawaki, & Cline, 2009; Kim et al., 2006; Solan, Larson, Shelley-Tremblay, Ficarra, & Silverman, 2001; Stetter & Hughes, 2011).

Raw scores from this assessment were produced by administering this assessment four times during this study (at baseline, following traditional instruction, following the first intervention strategy, and following the second intervention strategy). These scores were then statistically analyzed to conduct between-group comparisons (ELs from both classes versus FEPs from both classes, ELs versus FEPs within each class and ELs versus ELs and FEPs versus FEPs across classes) utilizing a series of independent-samples *t* tests and within-group comparisons using a series of paired-samples *t* tests of the students' reading-comprehension scores. The resulting statistics indicated to what extent particular groups of students were benefitting from each form of instruction.

The Reading Strategies Steps Quiz

The Reading Strategies Steps Quiz (see Appendix F) was used to investigate if the students remembered the names of the steps for the RAP Paraphrasing Strategy and the semantic-mapping strategy. The students were required to list the steps from memory. Raw scores on this quiz (one point per correctly identified step) were then used to measure which of the steps accompanying the two reading-comprehension strategies (the RAP Paraphrasing Strategy and the semantic-mapping strategy) each student remembered at the end of the study. The mean number (and standard deviation) and percentage of steps that the students wrote down on the reading strategies steps quiz for each the reading-comprehension strategies and the frequency and the percentage of

students remembering each step for each of the reading-comprehension strategies were calculated for all of the students as a group, for the ELs with LD and FEPs with LD across classes, and for ELs with LD and FEPs with LD within classes.

Procedures

This study addressed the research questions through a repeated measures design with alternating treatments. Two high-school, mild-to-moderate, SDC, English classrooms (groups) contained a total of 19 students with LD (ELs and FEPs) who served as the participants in the study. Each of the classes served as an experimental group, subjected to a different sequence of instructional conditions (see Table 2) and contained two language-proficiency groups (ELs and FEPs). Students in Class 1 were subjected to the instructional conditions in the following order: traditional instruction (the comparison condition), the RAP Paraphrasing Strategy (the first experimental condition), and the semantic-mapping strategy (the second experimental condition). Students in Class 2 experienced the conditions in the following order: traditional instruction (the comparison condition), the semantic-mapping strategy (the first experimental condition), and the RAP Paraphrasing Strategy (the second experimental condition). Different observation forms (lesson plans with check-off boxes alongside each instructional step) were designed so that the researcher would randomly choose two periods per week (either on the same day or two different days) to monitor the fidelity of instruction once per week in each of the two classes (see Appendix A). Observations of the lessons were conducted weekly for each class on the same day (November 29, 2012, December 6, 2012, December 12, 2012, December 18, 2012, January 10, 2013, January 18, 2013, January 22, 2013, and January

29, 2013). On each of these days, the researcher observed the teacher following all of the instructional steps.

The qualifications for the researcher to teach the RAP Paraphrasing Strategy and the semantic-mapping strategy include the following. The researcher had used various auditory-language-dependent, cognitive strategies for 15 years. In addition, he utilized The Paraphrasing Strategy (Schumaker et al., 1984) as a guide for teaching the RAP Paraphrasing Strategy. The researcher also had worked with different forms of semantic mapping for 15 years and used research to guide the teacher's training.

The researcher conducted four separate training sessions (90 minutes per session) for the teacher beginning on November 14, 2012 for the following: an introduction to the study, traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy. Teacher training was to begin on November 13, 2012, but teacher illness postponed the teacher training for a day. An additional teacher absence on November 15, 2012 pushed the teacher training back for another day. During each training session, specific materials were distributed to the teacher. In the introductory training session, the teacher was provided with all of the assessments to be utilized in the study along with an orientation of each assessment and an overview of the instructional procedures. During the traditional instruction training session, the teacher was provided with lesson plans and reading questions and answers. The researcher made sure that the teacher had enough copies of *Elements of Literature Third Course* (Probst, et al., 1997). During the RAP Paraphrasing Strategy training session, the teacher was provided with lesson plans, other instructional materials, and training to use these materials. In the semantic-mapping strategy training session, the teacher was provided with lesson plans, other

instructional materials, and training to use these materials. In addition, during the study, to ensure fidelity of instruction, the researcher randomly observed the teacher carrying out the instruction and administering the assessments through the use of daily lesson plan with a check-off section (see Appendix A) once per week per class (November 29, 2012, December 6, 2012, December 12, 2012, December 18, 2012, January 10, 2013, January 18, 2013, January 22, 2013, and January 29, 2013). On each of these days, the researcher observed the teacher following all of the instructional steps.

The IDEA Oral Language Proficiency Test II, Form E (Dalton & Amori, 2010) was administered by the teacher beginning on November 28, 2012 as a measure of oral language proficiency in English to each of the students in both classes in another classroom while the other students completed regularly assigned classwork. This assessment took approximately 5 to 25 minutes to administer per student. The student participants in the study were then divided into ELs and FEPs with LD. Any student identified by this assessment as being beginning, early intermediate, intermediate, or early advanced was then classified as being an EL with LD. As per the results, there were no beginning students in either of the two classes, and these was one intermediate student in Class 2 and one early advanced student in each class. The majority of the ELs with LD in both classes were early intermediate. Nevertheless, LEPs with LD made up a substantial proportion of the students in each class (see Table 1).

Table 1

Frequency and Percentage of Student Participants' Language Proficiency by Class

	Class 1		Class 2		Total	
Students by Language Proficiency	*f*	%	*f*	%	*f*	%
Beginning	0	0.0	0	0.0	0	0.0
Early Intermediate	4	50.0	4	36.4	8	42.1
Intermediate	0	0.0	1	9.1	1	5.2
Early Advanced	1	12.5	1	9.1	2	10.4
Total Number of ELs with LD	5	63.0	6	5.5	11	57.9
Total Number of FEPs with LD	3	37.5	5	45.4	8	42.1

The study began on December 5, 2012 and concluded on February 8, 2013 (see Table 2), with an additional 3 days used for students who had been absent or who needed to complete any work. The Comprehension Test of the Gates-MacGinitie Reading Test, Level 7/9, Form S (MacGinitie et al., 2000) was administered by the teacher on day 1 as a measure of reading-comprehension skills to establish a baseline to both groups of students. This assessment took approximately 60 minutes (as opposed to the suggested 35 minutes) to administer. Following the reading-comprehension subtest, the instruction and testing for the two experimental groups (classrooms) proceeded.

For the both groups of students, lessons were provided for days 2 through 10 for a total of approximately 540 minutes using traditional instruction. Each lesson began with a prereading stage in order to stimulate interest in the reading topic so that the students would be cognizant of the background knowledge of the information contained in the reading passage. The prereading stage reviewed concepts and vocabulary from the prior school day and introduced new concepts, vocabulary, and definitions that the students would encounter in the text on the whiteboard, while the students wrote these in their notebooks. The students then began reading the reading passage out loud. The teacher provided oral questions that the students were to answer out loud after reading

approximately every paragraph of the reading passage. As a postreading activity, the teacher reviewed important points from the reading passage (see Table 2).

Table 2

Timeline for the Study

Days	Class 1 Activity	Class 2 Activity
1	Comprehension Test of the Gates-MacGinitie Reading Test, Form S,	Comprehension Test of the Gates-MacGinitie Reading Test, Form S
2-10	Traditional Instruction	Traditional Instruction
11	Comprehension Test of the Gates-MacGinitie Reading Test, Form T	Comprehension Test of the Gates-MacGinitie Reading Test, Form T
12	RAP (Pretest and Make Commitments)	SM (Pretest and Make Commitments)
13	RAP (Pretest and Make Commitments)	SM (Pretest and Make Commitments)
14	RAP (Model the Strategy and Verbal Practice)	SM (Model the Strategy and Verbal Practice)
15	RAP (Verbal Practice and Controlled Practice and Feedback)	SM (Verbal Practice and Controlled Practice and Feedback)
16	RAP (Controlled Practice and Feedback)	SM (Controlled Practice and Feedback)
17	RAP (Controlled Practice and Feedback and Advanced Practice and Feedback)	SM (Controlled Practice and Feedback and Advanced Practice and Feedback)
18	RAP (Advanced Practice and Feedback)	SM (Advanced Practice and Feedback)
19	RAP (Advanced Practice and Feedback and Posttest and Make Commitments)	SM (Advanced Practice and Feedback and Posttest and Make Commitments)
20	RAP (Posttest and Make Commitments and Generalization)	SM (Posttest and Make Commitments and Generalization)
21	Comprehension Test of the Gates-MacGinitie Reading Test, Form S	Comprehension Test of the Gates-MacGinitie Reading Test, Form S
22	SM (Pretest and Make Commitments)	RAP (Pretest and Make Commitments)
23	SM (Pretest and Make Commitments)	RAP (Pretest and Make Commitments)
24	SM (Model the Strategy and Verbal Practice)	RAP (Model the Strategy and Verbal Practice)
25	SM (Verbal Practice and Controlled Practice and Feedback)	RAP (Verbal Practice and Controlled Practice and Feedback)
26	SM (Controlled Practice and Feedback)	RAP (Controlled Practice and Feedback)
27	SM (Controlled Practice and Feedback and Advanced Practice and Feedback)	RAP (Controlled Practice and Feedback and Advanced Practice and Feedback)
28	SM (Advanced Practice and Feedback)	RAP (Advanced Practice and Feedback)
29	SM (Advanced Practice and Feedback and Posttest and Make Commitments)	RAP (Advanced Practice and Feedback and Posttest and Make Commitments)
30	SM (Posttest and Make Commitments and Generalization)	RAP (Posttest and Make Commitments and Generalization)
31	Comprehension Test of the Gates-MacGinitie Reading Test, Form T	Comprehension Test of the Gates-MacGinitie Reading Test, Form T
32	Reading Strategies Steps Quiz	Reading Strategies Steps Quiz

On day 11, the students were tested by the teacher with the Comprehension Test of the Gates-MacGinitie Reading Test, Level 7/9, Form T (MacGinitie et al., 2000). This assessment took approximately 60 minutes (as opposed to the suggested 35 minutes) to administer. For Class 1 (on days 12 through 20) and for the Class 2 (on days 22 through 30) for a total of approximately 540 minutes, lessons were provided using the RAP Paraphrasing Strategy (Schumaker, Denton, & Deschler, 1984). The students in the first group (on day 12) and the students in the second group (on day 22) were pretested in their ability to paraphrase paragraphs. The students in Class 1 (on day 13) and the students in Class 2 (on day 23) were provided with a reading comprehension test, test results, a commitment to teach them the RAP Paraphrasing Strategy, and a description of the strategy. The students in Class 1 (on day 14) and the students in Class 2 (on day 24) were provided with a model concerning how to use the RAP Paraphrasing Strategy and verbal practice using it. The students in Class 1 (on day 15) and the students in Class 2 (on day 25) were provided with verbal practice and controlled practice with feedback using the RAP Paraphrasing Strategy. The students in Class 1 (on day 16) and the students in Class 2 (on day 26) were provided with controlled practice with feedback using the RAP Paraphrasing Strategy. The students in Class 1 (on day 17) and the students in Class 2 (on day 27) were provided with controlled practice and feedback and advanced practice and feedback using the RAP Paraphrasing Strategy. The students in Class 1 (on day 18) and the students in Class 2 (on day 28) were provided with advanced practice and feedback using the RAP Paraphrasing Strategy.

The students in Class 1 (on day 19) and the students in Class 2 (on day 29) were provided with advanced practice and feedback using the RAP Paraphrasing Strategy and

were posttested to investigate how well they could use the strategy. The students in Class 1 (on day 20) and the students in Class 2 (on day 30) were provided with additional posttesting and an opportunity to commit to generalizing the RAP Paraphrasing Strategy and a brief introduction on how to do so. On day 21, both groups of students were tested with the Comprehension Test of the Gates-MacGinitie Reading Test, Level 7/9, Form S (MacGinitie et al., 2000) after being instructed to use whatever strategy that they had been taught for the preceding 9 days to analyze the reading passages on the test. This assessment took approximately 60 minutes (as opposed to the suggested 35 minutes) to administer.

For Class 1 (on days 22 through 30) and for Class 2 (on days 12 through 20), lessons were provided using the semantic-mapping strategy for a total of approximately 540 minutes. The students in Class 1 (on day 22) and the students in Class 2 (on day 12) were pretested in their ability to semantically map paragraphs. The students in Class 1 (on day 23) and the students in Class 2 (on day 13) were provided with a reading comprehension test, test results (all feedback in this study was done via the group instead of individually to reduce the instructional time), a commitment to teach them the semantic mapping strategy, and a description of the strategy. The students in Class 1 (on day 24) and the students in Class 2 (on day 14) were provided with a model concerning how to use the semantic mapping strategy and verbal practice using it. The students in Class 1 (on day 25) and the students in Class 2 (on day 15) were provided with verbal practice and controlled practice with feedback using the RAP semantic mapping strategy. The students in Class 1 (on day 26) and the students in Class 2 (on day 16) were provided with controlled practice with feedback using the semantic mapping strategy. The

students in Class 1 (on day 27) and the students in Class 2 (on day 17) were provided with controlled practice and feedback and advanced practice and feedback using the semantic mapping strategy. The students in Class 1 (on day 28) and the students in Class 2 (on day 18) were provided with advanced practice and feedback using the semantic mapping strategy. The students in Class 1 (on day 29) and the students in Class 2 (on day 19) were provided with advanced practice and feedback using the semantic mapping strategy and were posttested to use see how well they could use the strategy. The students in Class 1 (on day 30) and the students in Class 2 (on day 20) were provided with additional posttesting and an opportunity to commit to generalizing the semantic mapping strategy and a brief introduction on how to do so.

On day 31 for the students in Class 1 and Class 2, both groups of students were tested with the Comprehension Test of the Gates-MacGinitie Reading Test, Level 7/9, Form T (MacGinitie et al., 2000) after being instructed to use either the RAP Paraphrasing Strategy or the semantic-mapping strategy to analyze the reading passages on the test. This assessment took approximately 60 minutes (as opposed to the suggested 35 minutes) to administer. On day 32, both groups of students were given a quiz to examine whether the student knew the steps of how to apply each of the two the strategies. This assessment took approximately 15 minutes to administer.

Steps were taken to ensure that students who were absent during the study still received the instruction provided to students who were not absent and that students who needed additional time were provided with this. The teacher participating in this study recorded all student absences. On Mondays, Tuesdays, Thursdays, and Fridays there was a 20-minute homeroom and on Wednesdays there was a 22-minute homeroom that was

available to review the material missed by absent students or to allow students with unfinished work to complete their assigned tasks. Since Mondays, Tuesdays, Thursdays, and Fridays were 85 minutes long and Wednesdays 70 minutes long, whereas the students in each class were normally given assignments (i.e., silent reading) outside of the study for the first 15 of each class on Mondays, Tuesdays, Thursdays, and Fridays, this time was used to cover the material for students that were still unable to finish in the homeroom.

Research Questions

1. To what extent was there a difference between pretest reading-comprehension skill scores for ELs with LD compared with FEPs with LD?
2. After traditional instruction, to what extent was there a change in pretest reading-comprehension skills scores to posttest 1 reading-comprehension skill scores for ELs with LD and FEPs with LD across classes?
3. After traditional instruction, to what extent was there a difference in the change from pretest reading-comprehension skills scores to posttest 1 reading-comprehension skill scores for ELs with LD compared with FEPs with LD?
4. After the first intervention (the RAP Paraphrasing Strategy for the first class and the semantic-mapping strategy for the second class), to what extent was there a difference in change from pretest reading-comprehension skills scores to posttest 2 reading-comprehension skill scores for ELs with LD and FEPs with LD separately for each class?

5. After the first intervention (the RAP Paraphrasing Strategy for the first class and the semantic-mapping strategy for the second class), to what extent was there a difference in the change from pretest reading-comprehension skills scores to posttest 2 reading-comprehension skill scores for ELs with LD compared with FEPs with LD in each class, ELs with LD from the first class compared with ELs with LD in the second class, and FEPs with LD in the first class compared with FEPs with LD in the second class?
6. After the second intervention (the semantic-mapping strategy for the first class and the RAP Paraphrasing Strategy for the second class), to what extent was there a difference in the combined treatment effects (from pretest to posttest 3) on the reading-comprehension skills scores for ELs with LD and FEPs with LD separately for each class?
7. After the second intervention (the semantic-mapping strategy for the first class and the RAP Paraphrasing Strategy for the second class), to what extent was there a difference in the change from pretest reading-comprehension skills scores to posttest 3 reading-comprehension skill scores for ELs with LD compared with FEPs with LD in each class, ELs with LD from the first class compared with ELs with LD in the second class, and FEPs with LD in the first class compared with FEPs with LD in the second class?

8. Following instruction in the RAP Paraphrasing Strategy and the semantic-mapping strategy, which steps for using these strategies did high-school ELs with LD and FEPs with LD remember?

Data Analysis

Due to the fact that there were small sample sizes, before using parametric tests (independent-samples *t* tests and paired-samples *t* tests), the researcher confirmed that the assumption of a normal distribution and the assumption of equal population were met. In order to address the first research question, one independent-samples *t* test was utilized to compare the pretest reading-comprehension skills scores (on the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) of the ELs with LD and the FEPs with LD across classes. The second research question was addressed by two paired-samples *t* tests across classes: one measuring the change in scores in scores from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 1 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T) for the ELs with LD across classes and one measuring the change in reading-comprehension skills scores from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 1 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T) for the FEPs with LD across classes. In order to address the third research question, one independent-samples *t* test was utilized to compare the change scores in reading-comprehension skills of the ELs with LD and the FEPs with LD across classes from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 1 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T).

The fourth research question, because of the fact that the results of the second research question were not statistically significant, was addressed by four paired-samples *t* tests to measure the change from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 2 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) for reading-comprehension skills scores: two tests for the first class (one for the ELs with LD and one for the FEPs with LD) and two tests for the second class (one for the ELs with LD and one for the FEPs with LD).

In order to address the fifth research question, four independent-samples *t* tests were utilized to compare the change in reading-comprehension skills scores between the ELs with LD and the FEPs with LD (for each class), between the ELs with LD in both classes and between the FEPs with LD in both classes from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 2 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S). Because the results of the second research question were not statistically significant, four paired-samples *t* tests (two tests per class) were used to addressed the sixth research question to measure the change in reading-comprehension skills scores from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 3 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T) for reading-comprehension skills scores: two tests for the first class (one for the ELs with LD and one for the FEPs with LD) and two tests for the second class (one for the ELs with LD and one for the FEPs with LD). Four independent-samples *t* tests were utilized to compare the change in reading-comprehension skills scores between the ELs

with LD and the FEPs with LD (for each class), between the ELs with LD in both classes, and between the FEPs with LD in both classes from pretest (on the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 3 (on the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T), addressing research question seven.

Descriptive statistics were used to answer research question eight. The mean number (and standard deviation) and percentage of steps that the students wrote down on the reading strategies steps quiz for each of the reading-comprehension strategies (the RAP Paraphrasing Strategy and the semantic-mapping strategy) and the frequency and percentage of students remembering each step for the RAP Paraphrasing Strategy and the semantic-mapping strategy were calculated for all of the students as a group, the ELs with LD and FEPs with LD across classes, and the ELs with LD and FEPs with LD within classes, and these numbers were presented.

CHAPTER IV

RESULTS

The twofold purpose of this repeated measures study was to assess the effectiveness of traditional instruction, the reading a paragraph, asking one's self what the main ideas and details about a paragraph are, and putting these ideas and details into one's own words (the RAP Paraphrasing Strategy, an auditory-language-dependent, cognitive strategy), the semantic-mapping strategy (a visually-dependent, cognitive strategy), and a combination of these three strategies on the reading comprehension skills of high-school-level, English-learners (ELs) with learning disabilities (LD) and fully-English-proficient students (FEPs) with LD in two high-school, mild-to-moderate, special-day class (SDC), English classes and to provide information on the knowledge of these strategies after the students have been taught the RAP Paraphrasing Strategy and the semantic-mapping strategy.

The results presented in this chapter address the eight research questions that were the basis of the present study. This chapter includes eight sections. Seven sections (the first seven research questions) correspond to inferential statistics pertaining to the efficacy of the previously mentioned strategies on the reading-comprehension of these students at baseline, after traditional instruction, after the first reading comprehension strategy was taught (the RAP Paraphrasing Strategy in Class 1 and the semantic-mapping strategy in Class 2), and after the second reading comprehension strategy was taught. The eighth section corresponds to how well these students remembered the steps for using these strategies (the final research question). Analysis in this section included descriptive statistics.

Data analysis was conducted using independent-samples *t* tests and paired-samples *t* tests. Because the raw scores for word decoding, word knowledge, vocabulary, comprehension, and total scores on the fourth edition of the Gates-MacGinite Reading Test, Level 7/9 Form S and Form T were equated using the equipercentile procedure, the comprehension scores used in this study are comparable. As the Gates-MacGinite Reading Test is a standardized test, the assumption of a normal distribution was met. The assumption of equal population variances was tested for the independent-samples *t* tests and was not statistically significant. In addition, descriptive statistics were used to describe how well these students remembered the steps for using these strategies.

Research Question 1

To what extent was there a difference between pretest reading-comprehension skill scores for ELs with LD (mostly Spanish-speakers) compared with FEPs with LD? This research question was investigated using an independent-samples *t* test to compare the pretest reading-comprehension skills scores on the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S (comprised of 48 multiple-choice items) of the ELs with LD and the FEPs with LD across classes. The range of scores possible for this assessment was 1 to 48. The means for high-school students taking Forms S and T of this level (Level 7/9) of the assessment were 35.6 and 35.2, respectively, when this assessment was normed (MacGinitie et al., 2002).

There was no statistically significant difference in pretest performance. The mean was higher for the FEPs with LD than the mean was for the ELs with LD; however; the scores of the FEPs with LD were located farther from the mean of the scores of the FEPs with LD than the scores of the ELs with LD were from the mean of the scores of the ELs

with LD. Both group means were way lower than the means of high-school students taking Forms S and T when the test was normed (see Table 3).

Table 3

Results of Independent-Samples t Test on Pretest Reading-Comprehension Skill Scores Comparing ELs with LD and FEPs with LD

Group	*n*	*M*	*SD*	*t*	*df*
All ELs with LD	11	15.36	6.39	1.19	17
All FEPs with LD	8	20.50	12.34		

Research Question 2

After traditional instruction, to what extent was there a change in pretest reading-comprehension skills scores to posttest 1 reading-comprehension skill scores for ELs with LD compared with FEPs with LD? This research question was investigated utilizing two paired-samples *t* tests across classes, one measuring the change in scores from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 1 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T) for the ELs with LD for both classes and one measuring the change in reading-comprehension skills scores from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 1 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T) for the FEPs with LD for both classes.

As per the paired-samples *t* test for ELs with LD, the difference between the pretest and posttest 1 scores for the ELs with LD across classes was not statistically significant. There was little difference between the pretest and posttest 1 means for the ELs with LD. The paired-samples *t* test for the FEPs with LD demonstrated that the difference between the pretest and posttest 1 scores across classes was not statistically

significant. As with the ELs with LD, there was little difference between the pretest and posttest 1 means. Thus, traditional instruction did not produce a statistically significant change in test scores for these students (see Table 4).

Table 4

Results of Paired-Samples t Tests for the Change in Pretest to Posttest 1 Reading-Comprehension Skill Scores for ELs with LD and for FEPs with LD

Group	*n*	Test	*M*	*SD*	*t*	*df*
All ELs with LD	11	Pretest	15.36	6.39	0.88	10
		Posttest 1	16.82	7.15		
All FEPs with LD	8	Pretest	20.50	12.34	1.28	7
		Posttest 1	21.75	10.07		

Research Question 3

After traditional instruction, to what extent was there a difference in the change from pretest reading-comprehension skills scores to posttest 1 reading-comprehension skill scores for ELs with LD compared with FEPs with LD? This research question was investigated using an independent-samples *t* test to compare the change in reading-comprehension scores of the ELs with LD from both classes as a group from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 1 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T) with the change in reading-comprehension scores in reading-comprehension skills of the FEPs with LD from both classes as a group from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 1 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T).

According to the results of the independent-samples *t* test, there was no statistically significant difference in the change in reading-comprehension scores. The mean change in scores was slightly higher for the ELs with LD than the mean change in

scores was for the FEPs with LD; however; the changes in scores of the ELs with LD were located farther from the mean change in scores of the ELs with LD than the changes in scores of the FEPs with LD were from the mean change in scores of the FEPs with LD (see Table 5).

Table 5

Results of the Independent-Samples t Test for the Change from Pretest to Posttest 1 Reading-Comprehension Skill Scores for ELs with LD Compared with FEPs with LD

Group	*n*	*M*	*SD*	*t*	*df*
All ELs with LD	11	1.45	5.48	0.10	17
All FEPs with LD	8	1.25	2.77		

Research Question 4

After the first intervention (the RAP Paraphrasing Strategy for Class 1 and the semantic-mapping strategy for Class 2), to what extent was there a difference in change from pretest reading-comprehension skills scores to posttest 2 reading-comprehension skill scores for ELs with LD and FEPs with LD separately for each class? Because the results of the second research question were not statistically significant, four paired-samples *t* tests were used to measure the change from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 2 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) for reading-comprehension skills scores, two tests for Class 1 (one for the ELs with LD and one for the FEPs with LD) and two tests for Class 2 (one for the ELs with LD and one for the FEPs with LD).

As per the paired-samples *t* test for the ELs with LD in Class 1, the difference between the pretest and posttest 2 scores was not statistically significant following the

RAP Paraphrasing Strategy. Nevertheless, this difference in the favor of the posttest 2 results was strong with a mean change of 5.20 (see Table 6).

Table 6

Results of Paired-Samples t Tests for Change in Pretest to Posttest 2 Reading-Comprehension Skill Scores for ELs with LD and FEPs with LD in Each of the Two Classes

Class	Students	*n*	Test	*M*	*SD*	*t*	*df*	*d*
Class 1 (RAP)	ELs with LD	5	Pretest	13.80	5.76	2.29	4	
			Posttest 2	19.00	4.64			
	FEPs with LD	3	Pretest	20.33	3.51	0.61	2	
			Posttest 2	23.00	4.36			
Class 2 (SM)	ELs with LD	6	Pretest	16.67	7.12	0.90	5	
			Posttest 2	19.00	7.35			
	FEPs with LD	5	Pretest	20.60	16.13	2.79*	4	1.25
			Posttest 2	26.00	16.60			

*Statistically significant at the .05 level.

The results of a paired-samples *t* test demonstrated that the difference between the pretest and posttest 2 scores for the FEPs with LD in Class 1 was not statistically significant following the RAP Paraphrasing Strategy. The mean was not substantially higher for the FEPs with LD at posttest 2 than the mean was for the FEPs with LD at pretest, and the scores of the FEPs with LD at posttest 2 were located farther from the mean of the scores of the FEPs with LD at posttest 2 than the scores of the FEPs with LD at pretest were from the mean of the scores of the FEPs with LD at pretest (see Table 6).

A paired-samples *t* test also demonstrated that the difference between the pretest and posttest 2 scores for the ELs with LD for Class 2 in favor of the posttest 2 scores was not statistically significant following the semantic-mapping strategy (see Table 6). Neither the means nor the standard deviations for pretest or posttest scores were substantially different. The difference between the pretest and posttest 2 scores following

the semantic-mapping strategy for the FEPs with LD for Class 2 was statistically significant in favor of the posttest 2 scores with a large effect size (see Table 6).

Research Question 5

After the first intervention (the RAP Paraphrasing Strategy for Class 1 and the semantic-mapping strategy for Class 2), to what extent was there a difference in the change from pretest reading-comprehension skills scores to posttest 2 reading-comprehension skill scores for ELs with LD compared with FEPs with LD in each class, the ELs from Class 1 compared with the ELs with LD in Class 2, and the FEPs with LD in Class 1 compared with the FEPs in Class 2? This research question was investigated using four independent-samples *t* tests to compare the change in reading-comprehension skills scores between the ELs with LD and the FEPs with LD (for each class), between the ELs with LD in both classes and between the FEPs with LD in both classes from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 2 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S).

The result of the first independent-samples *t* test was no statistical significance. Although in Class 1 the mean change in scores was higher for ELs with LD in Class 1, the changes in scores from pretest reading-comprehension skills scores to posttest 2 reading-comprehension skill scores of the ELs with LD and FEPs with LD in Class 1 were located far from their respective means (see Table 7).

According to the result of the second independent-samples *t* test, there was no statistical significance. For Class 2, there was a reversal of the results for Class 1. Although the mean change in scores was higher for FEPs with LD in Class 2, the changes

in scores from pretest reading-comprehension skills scores to posttest 2 reading-comprehension skill scores of the ELs with LD and FEPs with LD in Class 2 were not close to their means (see Table 7).

Table 7

Results of Independent-Samples t Tests for the Change in Pretest to Posttest 2 Reading-Comprehension Skill Scores for ELs with LD Compared with FEPs with LD within Classes and ELs with LD between Classes and FEPs with LD between Classes

Group	Students	*n*	*M*	*SD*	*t*	*df*
Class 1 (RAP)	ELs with LD	5	5.20	5.07	0.59	6
	FEPs with LD	3	2.67	7.57		
Class 2 (SM)	ELs with LD	6	2.33	6.38	0.91	9
	FEPs with LD	5	5.40	4.34		
All ELs with LD	Class 1 (RAP)	5	5.20	5.07	0.81	9
	Class 2 (SM)	6	2.33	6.38		
All FEPs with LD	Class 1 (RAP)	3	2.67	7.57	0.67	6
	Class 2 (SM)	5	5.40	4.34		

The result of the third independent *t* test was no statistical significance. Although the mean change in scores was higher for ELs with LD in Class 1 after being taught the RAP Paraphrasing Strategy than the ELs with LD in Class 2 after being taught the semantic-mapping strategy, the changes in scores from pretest reading-comprehension skills scores to posttest 2 reading-comprehension skill scores of the ELs with LD in Class 1 and ELs with LD in Class 2 were located far from their means (see Table 7).

The fourth independent-samples *t* test was not statistically significant. For the FEPs with LD after being taught the RAP Paraphrasing Strategy, there was a reversal of the results for ELs with LD after being taught the same strategy. Although the mean change in scores was higher for FEPs with LD in Class 2 after being taught the semantic-mapping strategy, the changes in scores from pretest reading-comprehension skills scores

to posttest 2 reading-comprehension skill scores of the FEPs with LD in Class 1 and FEPs with LD in Class 2 were not close to their means (see Table 7).

Research Question 6

After the second intervention (the semantic-mapping strategy for Class 1 and the RAP Paraphrasing Strategy for Class 2), to what extent was there a difference in the combined treatment effects (from pretest to posttest 3) on the reading-comprehension skills scores for ELs with LD and FEPs with LD separately for each class? In order to answer the sixth research question, because the results of the second research question were not statistically significant, four paired-samples *t* tests (two tests per class) were used to measure the change in reading-comprehension skills scores from pretest (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 3 (the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T) for reading-comprehension skills scores.

For the first paired-samples *t* test for the ELs with LD in Class 1, there was an increase in test scores following the semantic-mapping strategy. This increase was statistically significant with a very large effect size (see Table 8). The second paired-samples *t* test was not statistically significant. Nevertheless, this difference in the favor of the posttest 2 results was strong with a mean change of 5.00 (see Table 8).

The third paired-samples *t* test was statistically significant with a large effect size. There was an increase in test scores by the ELs with LD in Class 2 following the RAP Paraphrasing Strategy (see Table 8). There was an increase in test scores by the FEPs with LD in Class 2 following the RAP Paraphrasing Strategy. The result of fourth paired-samples *t* test was statistically significant with a very large effect size. This was

the only group with a mean close to that of the high-school students taking Forms S and T when the test was normed (see Table 8).

Table 8

Results of the Paired-Samples t Tests for Change in Pretest to Posttest 3 Reading-Comprehension Skill Scores between ELs with LD Compared with FEPs with LD within Each Class

Class	Students	*n*	Test	*M*	*SD*	*t*	*df*	*d*
Class 1 (SM)	ELs with LD	5	Pretest	13.80	5.76	4.36*	4	1.95
			Posttest 3	23.40	7.70			
	FEPs with LD	3	Pretest	20.33	3.51	2.17	2	
			Posttest 3	25.33	3.51			
Class 2 (RAP)	ELs with LD	6	Pretest	16.67	7.12	2.77*	5	1.13
			Posttest 3	23.83	5.88			
	FEPs with LD	5	Pretest	20.60	16.13	3.64*	4	1.62
			Posttest 3	30.20	14.55			

*Statistically significant at the .05 level.

Research Question 7

After the second intervention (the semantic-mapping strategy for Class 1 and the RAP Paraphrasing Strategy for Class 2), to what extent was there a difference in the change from pretest reading-comprehension skills scores to posttest 3 reading-comprehension skill scores for ELs with LD compared with FEPs with LD within each class, ELs from Class 1 compared with ELs with LD in Class 2, and FEPs with LD in Class 1 compared with FEPs in Class 2? In order to address the seventh research question, four independent-samples *t* tests were utilized to compare the change in reading-comprehension skills scores between the ELs with LD and the FEPs with LD (for each class), between the ELs with LD in both classes, and between the FEPs with LD in both classes from pretest (on the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form S) to posttest 3 (on the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Form T).

In Class 1, the ELs with LD had higher mean difference in scores between the pretest and posttest 3 than the FEPs with LD. The result of first independent-samples *t* test was not statistically significant. Although the mean change in scores was higher for ELs with LD in Class 1, the changes in scores from pretest reading-comprehension skills scores to posttest 3 reading-comprehension skill scores of the ELs with LD and FEPs with LD in Class 1 were located far from the mean changes in scores, respectively (see Table 9).

Table 9

Results of Independent-Samples t Tests Comparing the Change in Pretest to Posttest 3 Reading-Comprehension Skill Scores for ELs with LD Compared with FEPs with LD

Class	Students	*n*	*M*	*SD*	*t*	*df*
Class 1 (SM)	ELs with LD	5	9.60	4.93	1.36	6
	FEPs with LD	3	5.00	4.00		
Class 2 (RAP)	ELs with LD	6	7.17	6.34	0.65	9
	FEPs with LD	5	9.60	5.90		
All ELs with LD	Class 1 (SM)	5	9.60	4.93	0.70	9
	Class 2 (RAP)	6	7.17	6.34		
All FEPs with LD	Class 1 (SM)	3	5.00	4.00	1.18	6
	Class 2 (RAP)	5	9.60	5.90		

The group in Class 2 with the larger mean difference in scores was the FEPs with LD, which was the reverse of Class 1. Again, the result of the second independent-samples *t* test was not statistically significant. Although the mean change in scores was higher for FEPs with LD in Class 2, the changes in scores from pretest reading-comprehension skills scores to posttest 3 reading-comprehension skill scores of the ELs with LD and FEPs with LD in Class 2 were not close to their mean changes in scores (see Table 9).

The ELs with LD in Class 1 had a higher mean difference in scores between the pretest and posttest 3 than the ELs with LD in Class 2. This difference was not

statistically significant. The changes in scores from pretest reading-comprehension skills scores to posttest 3 reading-comprehension skill scores of the ELs with LD in Class 1 and ELs with LD in Class 2 were located far from their mean changes in scores (see Table 9).

The result of the fourth independent-samples *t* test was not statistically significant. The opposite pattern of mean difference in scores resulted for the FEPs with LD as for the ELs with LD. The changes in scores from pretest reading-comprehension skills scores to posttest 3 reading-comprehension skill scores for the LEPs with LD in Class 1 and FEPs with LD in Class 2 were not close to their mean changes in scores (see Table 9).

Research Question 8

Following instruction in the RAP Paraphrasing Strategy and the semantic-mapping strategy, which steps for using these strategies did high-school ELs with LD and FEPs with LD remember? In order to answer the eighth research question, descriptive statistics were used. The fact that the means were higher for all of the groups reported for the semantic-mapping strategy when compared with the RAP Paraphrasing strategy can be attributed to the fact that there were five steps pertaining to the semantic-mapping strategy (Read, Identify, Circle, Order, Show Links) as opposed to the three steps associated with the RAP Paraphrasing strategy (Read, Ask Questions, Put into Your Own Words).

All students in both classes remembered almost an equal percentage of steps for the RAP Paraphrasing Strategy and the semantic-mapping strategy. The ELs with LD in both classes remembered a higher percentage of the steps of the RAP Paraphrasing Strategy than the semantic-mapping strategy (although the ELs with LD in Class 2

obtained nearly the same percentage of steps of this strategy as they did with the semantic-mapping strategy), whereas the FEPs in both classes remembered a higher percentage of the steps of the semantic-mapping strategy than the RAP Paraphrasing Strategy (see Table 10).

Table 10

Means and Standard Deviations of Number of Steps Broken Down by Classes and ELs with LD and FEPs with LD for the Reading Strategies Steps Quiz

		RAP				Semantic Mapping			
Group	Students	*n*	Mea	%	SD	*n*	Mean	%	SD
Both Classes	All Students	3	2.21	0.74	1.18	5	3.79	0.76	1.78
Both Classes	ELs with LD	3	2.36	0.79	1.03	5	3.27	0.65	2.15
Class 1	ELs with LD	3	2.40	0.80	0.89	5	2.60	0.52	2.41
Class 2	ELs with LD	3	2.33	0.78	1.21	5	3.83	0.77	1.94
Both Classes	FEPs with LD	3	2.00	0.67	1.41	5	4.50	0.90	0.76
Class 1	FEPs with LD	3	2.33	0.78	1.16	5	4.67	0.93	0.58
Class 2	FEPs with LD	3	1.80	0.60	1.64	5	4.40	0.88	0.89

The Read step was remembered by the greatest frequency of students with LD in both classes, whereas the Ask Questions step was remembered by the lowest frequency of students with LD in both classes (see Table 11). Nevertheless, the Ask Questions step was still remembered more than two-thirds of the time (see Table 11). The ELs with LD in both classes were better able to remember the steps associated with the RAP Paraphrasing Strategy. The Read step was remembered by the greatest frequency of ELs with LD, whereas the Ask Questions and Put into Your Own Words steps were remembered by the lowest frequency of ELs with LD. The Ask Questions and Put into Your Own Words steps, however, were still remembered more than two-thirds of the time. Although the Read step was remembered by the greatest frequency of ELs with LD in Class 1, the Ask Questions step was remembered by the lowest frequency of ELs with LD in Class 1. In addition, the Read and Ask Questions steps were remembered by the

greatest frequency of ELs with LD in Class 2, the Put into Your Own Words step was remembered by the lowest frequency of ELs with LD in Class 2. Nevertheless, the Put into Your Own Words step was still remembered more than two-thirds of the time (see Table 11).

Table 11

Frequencies and Percentages of ELs with LD and FEPs with LD Remembering the RAP Paraphrasing Strategy Broken Down by Classes

				Remembering	
Class	Students	Step	*n*	*f*	%
Both Classes	All Students	Read	19	15	78.9
		Ask Questions	19	13	68.4
		Put into Your Own Words	19	14	73.7
Both Classes	ELs with LD	Read	11	10	90.9
		Ask Questions	11	8	72.7
		Put into Your Own Words	11	8	72.7
Class 1	ELs with LD	Read	5	5	100.0
		Ask Questions	5	3	60.0
		Put into Your Own Words	5	4	80.0
Class 2	ELs with LD	Read	5	5	100.0
		Ask Questions	5	5	100.0
		Put into Your Own Words	5	4	80.0
Both Classes	FEPs with LD	Read	8	5	62.5
		Ask Questions	8	5	62.5
		Put into Your Own Words	8	6	75.0
Class 1	FEPs with LD	Read	3	2	66.7
		Ask Questions	3	2	66.7
		Put into Your Own Words	3	3	100.0
Class 2	FEPs with LD	Read	5	3	60.0
		Ask Questions	5	3	60.0
		Put into Your Own Words	5	3	60.0

The Put into Your Own Words step was remembered by the greatest frequency of FEPs with LD whereas the Read and Ask Questions steps were remembered by the lowest frequency of FEPs with LD (see Table 11). This pattern was consistent for the FEPs with LD in Class 1 but not the FEPs with LD in Class 2. The Read and Ask Questions steps, however, were still remembered more than two-thirds of the time in

Class 1. For the FEPs with LD in Class 2, all three steps were remembered with the same frequency (see Table 11).

The Read step was remembered by the greatest frequency of students with LD in both classes, whereas the Identify and Show Links steps were remembered by the lowest frequency of students with LD in both classes. Nevertheless, the Identify and Show Links steps were still remembered more than two-thirds of the time. The Read and Circle steps were remembered by the greatest frequency of ELs with LD, whereas the Identify step was remembered by the lowest frequency of ELs with LD. The Read, Circle, and Order steps were remembered by the greatest frequency of ELs with LD in Class 1, whereas the Identify and Show Links steps were remembered by the lowest frequency of ELs with LD in Class 1. The Read, Circle, and Show Links steps were remembered by the greatest frequency of ELs with LD in Class 2, whereas the Identify and Order steps were remembered by the lowest frequency of ELs with LD in Class 2. The Identify and Order steps, however, were still remembered more than two-thirds of the time (see Table 12).

The FEPs with LD in both classes were better able to remember the steps associated with the semantic-mapping strategy. The Read and Order steps were remembered by the greatest frequency of FEPs with LD, whereas the Show Links step was remembered by the lowest frequency of FEPs with LD. Nevertheless, the Show Links step was still remembered more than two-thirds of the time. The Read, Identify, Circle, and Order steps were remembered by the greatest frequency of FEPs with LD in Class 1, whereas the Show Links step was remembered by the lowest frequency of FEPs

with LD in Class 1. The Show Links step, however, was still remembered more than two-thirds of the time (see Table 12).

Table 12

Frequencies and Percentages of ELs with LD and FEPs with LD Remembering the Semantic-Mapping Strategy Broken Down by Classes

				Remembering	
Classes	Students	Step	*n*	*f*	%
Both Classes	All Students	Read	19	16	84.2
		Identify	19	13	68.4
		Circle	19	15	78.9
		Order	19	15	78.9
		Show Links	19	13	68.4
Both Classes	ELs with LD	Read	11	8	72.7
		Identify	11	6	54.5
		Circle	11	8	72.7
		Order	11	7	63.6
		Show Links	11	7	63.6
Class 1	ELs with LD	Read	5	3	60.0
		Identify	5	2	40.0
		Circle	5	3	60.0
		Order	5	3	60.0
		Show Links	5	2	40.0
Class 2	ELs with LD	Read	6	5	83.3
		Identify	6	4	66.7
		Circle	6	5	83.3
		Order	6	4	66.7
		Show Links	6	5	83.3
Both Classes	FEPs with LD	Read	8	8	100.0
		Identify	8	7	87.5
		Circle	8	7	87.5
		Order	8	8	100.0
		Show Links	8	6	75.0
Class 1	FEPs with LD	Read	3	3	100.0
		Identify	3	3	100.0
		Circle	3	3	100.0
		Order	3	3	100.0
		Show Links	3	2	66.7
Class 2	FEPs with LD	Read	5	5	100.0
		Identify	5	4	80.0
		Circle	5	4	80.0
		Order	5	5	100.0
		Show Links	5	4	80.0

The Read and Order steps were remembered by the greatest frequency of FEPs with LD in Class 2, whereas the Identify, Circle, and Show Links step were remembered by the lowest frequency of FEPs with LD in Class 2. Nevertheless, the Identify, Circle, and Show Links steps were still remembered more than two-thirds of the time (see Table 12).

Summary of Results

This study, using a repeated measures design with alternating treatments, was designed to measure the effectiveness of traditional instruction, the RAP Paraphrasing Strategy, the semantic-mapping strategy, and a combination of these instructional strategies on the reading comprehension of ELs with LD and FEPs with LD in two high-school, mild-to-moderate, SDC, English classes. In addition, this study attempted to provide data on the knowledge of these strategies following the RAP Paraphrasing Strategy and the semantic-mapping strategy.

For the first research question, the results of the initial independent-samples *t* test indicated that there was no statistically significant difference between the pretest scores of the ELs with LD and the FEPs with LD at baseline. For the second research question, the results from the first paired-samples *t* test indicated that the ELs with LD did not have statistically significantly higher scores following traditional instruction. For the second paired-samples *t* test, the FEPs with LD did not obtain statistically significantly higher scores following traditional instruction. For the third research question, as per the results of an independent-samples *t* test, there was no statistically significant difference in the change in reading-comprehension scores between the ELs with LD and FEPs with LD after traditional instruction.

For the fourth research question, as per the results of the first and second paired-samples *t* tests, the ELs with LD and FEPs with LD in Class 1 did not obtain statistically significantly higher scores following the RAP Paraphrasing Strategy (but the scores were still strong). The results of the second and third paired-samples *t* tests suggested that the ELs with LD in Class 2 did not obtain statistically significantly higher scores following the semantic-mapping strategy, whereas the FEPs with LD in Class 2 had statistically significantly higher scores with a large effect size after the semantic-mapping strategy.

For the fifth research question, as per the results of the first independent-samples *t* test, there was no statistically significant difference in the change in reading-comprehension scores between the ELs with LD and the FEPs with LD in Class 1 after the RAP Paraphrasing Strategy. The second independent-samples *t* test indicated that there was no statistically significant difference in the change in reading-comprehension scores between the ELs with LD and the FEPs with LD in Class 2 after the semantic mapping strategy. For the third independent-samples *t* test, there was no statistically significant difference in the change in reading-comprehension scores between the ELs with LD in Class 1 after the RAP Paraphrasing Strategy and ELs with LD in Class 2 after the semantic mapping strategy. The results of the fourth independent-samples *t* test suggested that there was no statistically significant difference in the change in reading-comprehension scores between the FEPs with LD in Class 1 after the RAP Paraphrasing Strategy and the FEPs with LD in Class 2 after the semantic mapping strategy.

For the sixth research question, as per the results of the first and second paired-samples *t* tests, after the second intervention, the ELs with LD in Class 1 had statistically significantly higher scores with a very large effect size, whereas the FEPs with LD in

Class 1 did not obtain statistically significantly higher scores (but the change in scores was still strong). The results of the third and fourth paired-samples *t* tests indicated that the ELs with LD and FEPs with LD in Class 2 had statistically significantly higher scores following the second intervention with large and very large effect sizes, respectively.

For the seventh research question, as per the results of the first paired-samples test, following the second intervention, the mean difference in scores between the pretest and posttest 3 between ELs with LD and FEPs with LD in Class 1 was not statistically significant. The result of the second paired-samples test suggested that the mean difference in scores between the pretest and posttest 3 between ELs with LD and FEPs with LD in Class 2 was not statistically significant. For the third paired-samples test, the mean difference in scores between the pretest and posttest 3 between the ELs with LD in Class 1 and ELs with LD in Class 2 was not statistically significant. The results of the fourth paired-samples test indicated that the mean difference in scores between the pretest and posttest 3 between the FEPs with LD in Class 1 and FEPs with LD in Class 2 was not statistically significant.

Only the posttest mean of the FEPs in Class 2 after the second intervention was taught came close to the level of the mean for high-school students taking the fourth edition of the Gates-MacGinite Reading Test, Level 7/9 when it was normed. Nevertheless, the effect sizes that resulted from the statistically significant tests were all large or very large. If there was a question regarding a possible Type I error, these effect sizes would indicate otherwise.

For the eighth research question, a further analysis indicated that the ELs with LD in both classes were better able to remember the steps associated with the RAP

Paraphrasing Strategy, whereas the FEPs with LD in both classes were better able to remember the steps associated with the semantic-mapping strategy. In most groups of students with LD (except for the ELs with LD in Class 1, the FEPs with LD in both classes, and the FEPs with LD in Class 2), each of the steps for the RAP Paraphrasing Strategy were remembered by more than two-thirds of the students. In addition, in most groups of students with LD (except for the ELs with LD in both classes and the ELs with LD in Class 1), each of the steps for the semantic-mapping strategy were remembered by more than two-thirds of the students.

CHAPTER V

SUMMARY, LIMITATIONS, DISCUSSION, IMPLICATIONS, AND CONCLUSIONS

This study, using a repeated measures design with alternating treatments, was designed to measure the effectiveness of traditional instruction, the reading a paragraph, asking one's self what the main ideas and details about a paragraph are, and putting these ideas and details into one's own words strategy (the RAP Paraphrasing Strategy, an auditory-language-dependent, cognitive strategy), the semantic-mapping strategy (a visually-dependent, cognitive strategy), and a combination of these instructional strategies on the reading comprehension skills of high-school English-language learners (ELs) with learning disabilities (LD) and fully English-proficient students (FEPs) with LD in two high-school, mild-to-moderate, special-day (SDC), English classes. In addition, this study attempted to provide information on the knowledge of the steps of these strategies after the students had been provided with the RAP Paraphrasing Strategy and the semantic-mapping strategy. This chapter is comprised of the following sections: summary, limitations, discussion, implications, and conclusions.

Summary of the Study

The ELs with LD and the FEPs with LD in both classes made gains in reading comprehension scores after every method of instruction (traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy) was utilized. From pretest to posttest 1, after traditional instruction, all of the groups made gains, although not statistically significant. One group (the ELs with LD in Class 1) made strong gains from pretest to posttest 2 following the first intervention (the RAP Paraphrasing Strategy),

whereas one group (the FEPs with LD in Class 2) made statistically significant gains from pretest to posttest 2 with a large effect size following the first intervention (the semantic-mapping strategy). The other two groups (ELs in Class 2 and the FEPs in Class 1) did not make statistically significant gains. Three groups (the ELs with LD in Class 1, the ELs with LD in Class 2, and the FEPs with LD in Class 2) made statistically significant gains with large to very large effect sizes from pretest to posttest 3 after the second intervention, whereas the remaining group (the FEPs with LD in Class 1) made strong but not statistically significant gains.

The ELs with LD in both classes remembered a higher percentage of the steps of the RAP Paraphrasing Strategy than the semantic-mapping strategy (although the ELs with LD in Class 2 remembered nearly the same percentage of steps of this strategy as they did with the second intervention strategy), whereas the FEPs in both classes remembered a higher percentage of the steps of the semantic-mapping strategy than the RAP Paraphrasing Strategy.

Two-thirds or more of the students in four of seven the groups (all students in both classes, the ELs with LD in both classes, the ELs with LD in Class 2, and the FEPs with LD in Class 1) were able to remember each of the steps of the RAP Paraphrasing Strategy, and two-thirds or more of the students in five of the seven groups (all students in both classes, the ELs with LD in Class 2, the FEPs with LD in both classes, the FEPs with LD in Class 1, and the FEPs with LD in Class 2) were able to remember each of the steps of the semantic-mapping strategy.

Limitations

This study took place in two intact SDC classrooms, resulting in limitations that must be taken into account when interpreting the research results. Although such classrooms can serve as authentic settings for educational research, researchers are not able to control all key aspects of such research. Limitations that may have affected the present study include the following: lack of random assignment, a small sample size, possible classroom effects, and the use of a standardized assessment.

The present study was of a quasi-experimental design. Practical limitations prevented the random assignment of students to treatment groups. A convenience sample in the form of two intact high-school classes, each containing ELs with LD and FEPs with LD was used instead. A true experimental design could not be utilized in this study. Thus, the generalizability of the research results of this study is limited.

The current study utilized the reading comprehension scores of 19 student participants. This sample size was below the recommended sample size for an experimental study (approximately 30 students) by Creswell (2008). This small sample size presents the possibility of a sampling error.

Time constraints may have been a limitation for students. In addition to traditional instruction, two complex cognitive strategy instruction strategies (the RAP Paraphrasing Strategy and the semantic-mapping strategy) each were taught to students over a period of 9 days. Although this instructional time period was greater than the amount of time used by other studies to teach successfully each of these two interventions strategies to general education students that have been followed by strong results (Asan, 2007; Guastello, Beasley, & Sinatra, 2000) and ELs (Hayati & Shariatifar, 2009),

opportunities to both practice and process such strategies strengthens the mental connections needed for later retrieval (Willis, 2009). Thus, there is the possibility that had the participants been provided with additional time to practice these strategies, the results of this study may have been different.

As is unavoidable, there were other time constraints. In addition to weekends, during holiday breaks portions of the study had to be postponed until the students returned to school. There also were two days of standardized testing during the second intervention, which postponed the study. There is the possibility that breaking the continuity of the study might have affected the efficacy of the results.

Possible classroom effects may have impacted the results of the present study. In Class 1, most of the students were older than the students in Class 2. In addition, Class 1 was held at the beginning of the school day, whereas Class 2 was held at the end of the school day.

Utilizing a standardized assessment may have limited the magnitude of the reading-comprehension gains observed in this study. As is frequently the case with standardized assessments, the questions that the students score well on are removed from a test to increase variance and ultimately the assessment's reliability (Popham, 2000). Thus, a nonstandardized assessment may have been more sensitive to the gains the students made in this study.

The limitations related to the present study, including lack of random assignment, small sample size, time constraints, possible classroom effects, and the use of a standardized assessment may have an influence on the results of this study and should be considered when examining the data.

Discussion

Various studies have indicated that the RAP Paraphrasing Strategy may have a positive effect on the reading-comprehension skills of general education students (Hagaman, et al., 2012; Hagaman & Reid, 2008; Koolen, 2008; Lee & Von Colln, 2003), ELs (Karbalaei & Amoli, 2010; Munro, 2005), and students with disabilities (Blume, 2010; Hall, 2004; Mothus & Lapadat, 2006). Other studies have indicated that the semantic-mapping strategy may have similar results for general education students (Asan, 2007; Bulunuz & Jarrett, 2010; Goss, 2009; Guastello et al., 2000; Joseph, 2002; Willits, 2002), ELs (Hayati & Shariatifar, 2009; Khajavi & Ketabi, 2010; Shaul, 2011; Supramaniam, 2011; Tateum, 2007), and students with LD (Dexter, 2010). Nevertheless, none of these studies had investigated the effects of these instructional strategies against one another or in combination with traditional instruction on the reading comprehension skills of ELs with LD and FEPs with LD at the secondary level. In addition, there had been no attempt to ascertain whether or not the students provided with the RAP Paraphrasing Strategy or the semantic-mapping strategy could remember all of the steps to utilizing these strategies.

This section is divided into four subsections concerning the analysis of the data obtained in the present study: traditional instruction, the first intervention, the combined intervention, and the Reading Strategies Steps Quiz. The traditional instruction section discusses the difference between the baseline reading comprehension scores of the ELs with LD and FEPs with LD in both classes and the scores of the same students following traditional instruction. The first intervention section considers the change in the baseline reading comprehension scores of the ELs with LD and FEPs with LD in both classes and

the scores of these students after the first intervention (the RAP Paraphrasing Strategy in Class 1 and the semantic-mapping strategy in Class 2). The combined intervention section explains the difference between the baseline reading comprehension scores of the ELs with LD and FEPs with LD in both classes and the scores of these students after the second intervention (the semantic-mapping strategy in Class 1 and RAP Paraphrasing Strategy in Class 2). Finally, the Reading Strategies Steps Quiz section discusses which steps of the RAP Paraphrasing Strategy and the semantic-mapping strategy the ELs with LD and FEPs with LD in both classes remembered after being taught these interventions.

Traditional Instruction

The first level of postinstructional analysis was designed to measure the difference between the reading comprehension scores on the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9 at baseline and after the students had been taught to comprehend what they were reading using the traditional instruction strategy. Even though the results of the two paired-samples *t* tests comparing pretest to posttest scores after traditional instruction were statistically nonsignificant, on average, both ELs with LD and FEPs with LD made gains in reading comprehension scores. This lack of statistical significance for traditional instruction, however, is similar to the lack of such significance in previous studies when compared with semantic mapping for general education students from pretest to posttest (Asan, 2007).

An additional type of analysis was used to examine the difference in the change in reading comprehension scores following traditional instruction. The results of one statistically nonsignificant independent-samples *t* test demonstrated that the differences in

the increase in scores for both ELs with LD and FEPs with LD were consistent between the two language groups.

Thus, there were statistically nonsignificant increases from baseline to traditional instruction in the means of the ELs with LD for FEPs with LD in both classes. These results are consistent with those of prior research (Asan, 2007), where statistical significance was not attained when using traditional instruction. One, however, should not discount the fact that the increases were consistent for all groups following traditional instruction.

The First Intervention

The next level of analysis was conducted to measure the difference between the reading comprehension scores on the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9 at baseline and after the students had been taught to understand what they were reading using the RAP Paraphrasing Strategy in Class 1 and the semantic-mapping strategy in Class 2.

The results of two paired-samples *t* tests measuring the efficacy of the RAP Paraphrasing Strategy following traditional instruction were not statistically significant, although the scores for both ELs with LD in Class 1 and FEPs with LD in Class 1 did increase. In fact for the ELs with LD in Class 1, this increase was strong. Time constraints may have limited the efficacy of the RAP Paraphrasing Strategy for these two groups of students. Excluding most of the generalization stage (and taking to account the suggested days for each stage and the suggested time for each stage), Schumaker, Denton, and Deschler (1984) would recommend that students be taught the RAP Paraphrasing Strategy for a minimum of approximately 300 minutes (for the steps that

were followed in this study), nearly 240 minutes less than students were taught the same strategy in this study. Nevertheless, these researchers suggest that additional time may be required for some students to learn the RAP Paraphrasing Strategy. Thus, it appears that the instructional time used to teach the RAP Paraphrasing Strategy in this study may not have been enough for this strategy to contribute to additional gains in reading comprehension.

In addition, even though Schumaker, Denton, and Deschler (1984) state that low-achieving students frequently struggle with writing tasks, students did their paraphrasing in written form in this study in order to maximize the use of time. Previous research had demonstrated statistically significant results when written paraphrases were utilized in teaching the RAP Paraphrasing Strategy to postsecondary ELs (Karbalaei and Amoli, 2010) and secondary students with LD (Mothus and Lapadat, 2006). Nevertheless, having the students write their paraphrases may still have negatively impacted their performance.

Only the results one of two additional paired-samples *t* tests focusing on the semantic-mapping strategy following traditional instruction were statistically significant, for the FEPs with LD in Class 2 (as opposed to the ELs with LD in Class 2) even though the reading comprehension scores increased for both groups. The average amount of instructional time used in studies that demonstrated statistically significant differences in favor of teaching semantic mapping to the ELs in this study was approximately 240 minutes, approximately 300 minutes less than students were taught the same strategy in this study (approximately 540 minutes). Thus, time by itself does not appear to have been a factor.

Nevertheless, there are various factors that may have affected the outcome of semantic mapping on reading comprehension scores of the ELs in Class 2. First, the amount (five steps) and complexity of the steps that the students had to learn for this strategy may have hindered their ability to effectively use this strategy. Second, some paragraphs that the students were to have semantically mapped may not have provided enough information (schema) to be mapped to provide an adequate level of understanding. Third, although prior research had suggested that reading comprehension may be improved with the use of visual aids in general (Hayati & Shariatifar, 2009) and semantic mapping in particular (Hayati & Shariatifar, 2009; Khajavi & Ketabi, 2010; Shaul, 2011; Supramaniam, 2011; Tateum, 2007), it may be possible that students need to have a certain level of English proficiency for semantic mapping to be successful due to the fact that this instructional strategy still requires the use of language. After all, most of the ELs in Class 2 were early-intermediate ELs (see Table 1).

Four independent-samples *t* tests also were performed at this level to investigate the difference in the change in reading comprehension scores following the first intervention, none of which were statistically significant. Thus, although reading comprehension scores increased for the ELs with LD and the FEPs in each class, the amount of increase in scores was not substantially larger for any of the four groups. Thus, there was a consistent increase in scores between language proficiency groups in each class as well as between language proficiency groups across classes (each receiving one of the intervention strategies).

Previous research (Mothus & Lapdat, 2006) had found a statistically significant difference in the change of reading comprehension scores for the RAP Paraphrasing

Strategy (combined with the PAR Writing Strategy) when compared with the learning assistance intervention strategy (but not when compared with traditional instruction) for eighth-grade students with LD in favor of the RAP Paraphrasing Strategy (combined with the PAR Writing Strategy). One study (Hayati & Shariatifar, 2009) had found a statistically significant difference in the change of reading comprehension scores in favor of the semantic-mapping strategy when compared with reading a passage by themselves for post-secondary ELs. In addition, other studies (Khajavi & Ketabi, 2010; Tateum, 2007) had found a statistically significant difference in the change of reading comprehension scores in favor of the semantic-mapping strategy when compared with traditional instruction for undergraduate ELs.

Additional time for students to learn and practice the RAP Paraphrasing Strategy and the ability to verbally paraphrase may have increased the efficacy of this strategy for the ELs with LD and the FEPs with LD in Class 1 as these groups did not make statistically significant gains following this strategy. Furthermore, it may have been that the ELs with LD in Class 2 needed to have a higher level of language proficiency and schema, as well as additional time in order to learn the potentially complex steps of and to practice the semantic-mapping strategy as they did not make statistically significant gains following the semantic-mapping strategy. The opposite was true for the FEPs with LD, who demonstrated a statistically significant growth in scores following the semantic-mapping strategy.

The Combined Intervention

The third level of analysis concerned the difference between the reading comprehension scores on the Comprehension Test of the Gates-MacGinitie Reading

Tests, Level 7/9 at baseline and after the students had been taught to understand what they were reading using the second intervention. Nevertheless, the effects of traditional instruction prior to the effects of both intervention strategies also must be taken into consideration when analyzing the cumulative effects of instruction when compared with baseline reading comprehension scores.

Paired-samples *t* tests revealed statistically significant increases in scores for three groups: the ELs with LD in Class 1 (this time taught with the semantic-mapping strategy), the ELs with LD in Class 2 (this time taught with the RAP Paraphrasing Strategy), and the FEPs in Class 2 (this time taught with the RAP Paraphrasing Strategy). The result of the fourth such test, although statistically nonsignificant, was strong for the FEPs with LD in Class 1 (this time taught with the semantic-mapping strategy).

In order to measure the difference of these increases, four independent-samples *t* tests were utilized; the results of were not statistically significant. Nevertheless, it may have been possible that since the ELs in Class1 had an average change in scores that was higher than the scores of the ELs in Class 2, that having the ELs in Class 1 learn the steps of the RAP Paraphrasing Strategy first, prepared them for learning the steps of the semantic mapping strategy. For the FEPs in Class 2, learning the steps of the semantic-mapping strategy may have prepared them for learning the steps of the RAP Paraphrasing Strategy as their average change in scores was larger than that of the FEPs in Class 1.

The Reading Strategies Steps Quiz

The final point of analysis examined which steps for using the RAP Paraphrasing Strategy and semantic-mapping strategy high-school ELs with LD and FEPs with LD remembered. Previous studies on general education students, ELs, and students with LD,

regarding the knowledge of using one of these strategies had focused on such question as whether or not students stated that they were comfortable using these strategies, whether these strategies were easy to use, whether the strategies were useful, how these strategies may have affected students' comprehensive reading, or whether students enjoyed using these strategies (Asan, 2007; Dexter, 2010; Hall, 2004; Shaul, 2011; Supramaniam, 2011; Willits, 2002). The present study added to this research by asking ELs with LD and FEPs with LD to list the particular steps associated with the RAP Paraphrasing Strategy and the semantic-mapping strategy after the students had been taught both strategies.

In general, the students as one group remembered almost an equal percentage of steps for the two strategies. The ELs with LD remembered a higher percentage of the steps of the RAP Paraphrasing Strategy than the semantic-mapping strategy, although the ELs with LD in Class 2 remembered nearly the same percentage of steps of this strategy as they did with the semantic-mapping strategy. For the FEPs with LD, the results were the opposite. This group remembered a higher percentage of the steps of the semantic-mapping strategy than the RAP Paraphrasing

In four of seven of the groups (all students in both classes, the ELs with LD in both classes, the ELs with LD in Class 2, and the FEPs with LD in Class 1) most of the students were able to remember each of the steps of the RAP Paraphrasing Strategy, and in most of the groups (all students in both classes, the ELs with LD in Class 2, the FEPs with LD in both classes, the FEPs with LD in Class 1, and the FEPs with LD in Class 2) most of the students were able to remember each of the steps of the semantic-mapping strategy. Thus, most of the students remembered the steps of the two intervention strategies. An expectation would be that if students know the steps of a strategy, they

would be better able to utilize effectively that strategy. Hopefully, this would have resulted in higher reading comprehension scores.

Nevertheless, remembering the steps associated with these strategies did not translate to higher reading comprehension scores as the means of the scores of the ELs in Class 1, the FEPs in Class 1, the ELs in Class 2 (but not the FEPs with LD in Class 2) were still well below the means of the high-school students taking the two forms of the Comprehension Test of the Gates-MacGinitie Reading Tests, Level 7/9, Fourth Edition (MacGinitie et al., 2002) when the assessment was normed. This result is important because ELs with LD and FEPs with LD are being held accountable for their testing performance (Individuals with Disabilities Education Improvement Act, 2004; No Child Left Behind Act, 2001).

This study added to prior research by asking the students to name the steps of the RAP Paraphrasing Strategy and the semantic-mapping strategy after these strategies were taught. The ELs with LD named a higher percentage of the steps of the RAP Paraphrasing Strategy, whereas the FEPs with LD named a higher percentage of the steps of the semantic-mapping strategy. In most groups, most of the students were able to remember the steps associated with these strategies. Nevertheless, although most of the students could remember these strategies, there is still opportunity for improvement with regard to reading comprehension scores.

Implications

There are various implications for future research and educational practice based on the methods and results of the present study. First, this section will discuss unresolved questions and provide directions for future research. Second, future recommendations for

teachers will be presented with an emphasis on assisting teachers with carrying out the instructional interventions utilized in this study.

Research Implications

The results of the present study suggest that providing high-school-level students with LD, both ELs and FEPs, with more than one form of reading comprehension instruction cumulatively raises reading comprehension ability. The ELs with LD and the FEPs with LD in Classes 1 and 2 all made gains from pretest to posttest 1, 2, and 3 (with some statistically significant gains in reading comprehension scores in posttests 2 and 3). It is recommended that a future study be conducted to ascertain if these gains in reading comprehension scores are sustained. This study would have to include maintenance tests in addition to pretests and posttests.

In addition, testing to learn if the students can use a strategy is not sufficient. Even though the students were taught using traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy, it was not evident to what extent the students actually were using the intervention strategies when testing. Future studies should utilize direct observation or think-alouds to ascertain whether or not the students can effectively carry out these strategies.

Although each of the intervention strategies (the RAP Paraphrasing Strategy and the semantic-mapping strategy) was taught using amount of instructional time found successful in improving the reading comprehension skills of students in some of the research studies presented in Chapter II, there is the possibility that the amount of minutes is not the only important time factor to consider when teaching new strategies to students. Students in this study were taught each strategy for the 9 days in blocks for a

total of approximately 540 minutes. There is the possibility that the students could have shown greater increases in test scores if the same (or more) instructional time was extended for additional days. Students with LD may require multiple opportunities to memorize and apply new information before it is learned (Swanson, 1999). In addition, students with LD benefit from having learning broken down into smaller steps (Swanson, 1999). ELs also can be assisted in learning concepts by providing them with multiple opportunities to practice speaking and writing (Haneda, 2012). Similar research in the future should be conducted by extending the instructional time for additional days (i.e., a total of approximately 540 minutes for 18 days instead of the 540 minutes for 9 days used to teach each reading comprehension strategy as was done in this study).

A series of unresolved questions are left to be examined through future research. After the first intervention, why did the ELs with LD in Class 1 have a strong, positive change in test scores following the RAP Paraphrasing Strategy and the FEPs with LD in Class 2 have a statistically significant, positive change following the semantic-mapping strategy, when the FEPs with LD in Class 1 and the ELs with LD in Class 2 failed to make similar gains? These are questions that must be answered to ensure that all ELs with LD and FEPs with LD benefit equally from reading comprehension instruction. Future studies should be directed toward other factors that may affect the efficacy of reading comprehension interventions for ELs with LD and FEPs with LD by utilizing a single reading comprehension strategy to eliminate the type of instruction as a factor in reading comprehension ability.

The ELs with LD and the FEPs in Class 1 were taught the RAP Paraphrasing Strategy first and the semantic-mapping strategy second, whereas the ELs with LD and

the FEPs in Class 2 were taught the semantic-mapping strategy first and the RAP Paraphrasing Strategy second. Why was it that overall, the ELs with LD in both classes could name a higher percentage of the steps pertaining to the RAP Paraphrasing Strategy than the semantic mapping strategy, whereas the FEPs in both classes were able to name a higher percentage of the steps of the semantic-mapping strategy than the RAP Paraphrasing Strategy? Future studies should be conducted to investigate if a pattern emerges regarding the types of strategies that ELs with LD and FEPs with LD more easily remember the steps to. These studies could be conducted with multiple reading comprehension strategies using a similar instrument as the one utilized in the present study (The Reading Strategies Steps Quiz).

It is possible that the ELs came from traditional educational systems and lacked exposure to visually-oriented material (graphic organizers, semantic maps, etc.) and that the RAP Paraphrasing Strategy may be more in line with traditional instruction. In connection, could it be a possibility that having the ELs in Class 1 learn the RAP Paraphrasing Strategy prior to semantic mapping prepared these students for learning the second strategy because they were used to learning steps? Could it also be a possibility that having the FEPs in Class 2 learn the semantic-mapping strategy prior to the RAP Paraphrasing Strategy prepared these students for learning the second strategy because they were used to learning steps? Future research should focus on studying the possible interaction effects between these strategies so that these students may be able to benefit more from RAP Paraphrasing Strategy and the semantic-mapping strategy by following the steps of the current study.

What other reading comprehension strategies may work better for high-school level ELs with LD and for high-school level FEPs with LD? This study only examined the efficacy of traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy against each other and against their combined effects for high-school ELs with LD and FEPs with LD, but more reading comprehension strategies remain to be researched for these students. Future studies employing the steps used in the current study could be repeated with other reading comprehension strategies.

Why were some steps in both strategies remembered more than others? Does the number of steps involved in a reading comprehension strategy have an effect on how well students with LD remember it? Future studies should be focused on comparing multiple strategies with differing number of steps. How would different levels of ELs with LD respond to various reading comprehension strategies? The present study partly examined the effectiveness of three reading comprehension strategies on ELs with LD as a whole and not as subgroups based on proficiency in English. Future research could be conducted in a similar manner as in the present study. Nevertheless, a larger sample size would be required so that the ELs with LD could be disaggregated into separate levels of English proficiency.

Finally, because most of the ELs with LD each came from the one primary-language group (Spanish), would the results of this study be consistent for students from other primary-language groups? Similar studies should be conducted with students from other primary-language groups. Hopefully, these questions will provide a direction for future research.

Practical Implications

In this study, the ELs with LD were more successful at remembering the steps of the RAP Paraphrasing Strategy, whereas the FEPs with LD were better able to recall the steps of the semantic-mapping strategy. In addition, in most of the groups, at least two-thirds of the students were able to remember each of the steps associated with the RAP Paraphrasing Strategy and the semantic-mapping strategy, but this ability to remember the steps did not equate to high reading comprehension scores for the most part. Thus, it appears that just teaching the steps to these strategies is not enough. In the future use of the RAP Paraphrasing Strategy and the semantic-mapping strategy, students should be given additional opportunities to memorize the steps associated with these strategies. Most importantly, however, students should be provided with more time to practice and apply these strategies.

There are a number of practical steps that a teacher can do to ensure that students have learned to use the RAP Paraphrasing Strategy and the semantic-mapping strategy effectively. First, teachers must observe the students while they are using these strategies. Second, teachers could ask other teachers to implement these strategies in their classrooms. Third, teachers can send assignments home with students that would have them make use of these strategies. The latter two suggestions would provide extra reinforcement in learning these strategies.

The ELs with LD and the FEPs would normally be working on their reading comprehension using traditional instruction. In order to teach the RAP Paraphrasing Strategy and the semantic-mapping strategy, these strategies had to be added to this instruction. Adding two new strategies required that the teacher implementing these

strategies be provided with 4 days of training regarding how to carry them out. In addition to the training sessions, this teacher was observed on multiple occasions teaching both classes using traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy. Both the trainings and the classroom observations contributed to the fidelity of instruction. Future instruction using the RAP Paraphrasing Strategy and the semantic-mapping strategy would need to ensure that teachers are trained adequately and supported before they can implement these strategies.

As is unavoidable, in addition to weekends, during holiday breaks portions of the study had to be postponed until the students returned to school. In addition, there were days of state standardized testing on which the study could not be conducted. There is the possibility that breaking the continuity of the study might have affected the efficacy of the results. Nevertheless, because holiday and weekend breaks, and standardized testing are a normality throughout an academic year, having such breaks in instruction is more or less an authentic situation that teachers must adapt to and does not detract from the merit of the study.

Conclusions

Even though there are remaining questions and limitations discussed in this chapter, various findings extending previous research resulted from the present study. Previous research did not compare the efficacy of the RAP Paraphrasing Strategy with that of the semantic-mapping strategy nor did it attempt measure these strategies with high-school ELs with LD versus FEPs with LD. The present study examined traditional instruction, the RAP Paraphrasing Strategy, the semantic-mapping strategy, and a combination of these strategies, resulting in three major findings.

First, the ELs with LD taught with the RAP Paraphrasing Strategy following traditional instruction made on average considerably higher gains on the reading comprehension assessment than those of the ELs with LD taught with traditional instruction followed by the semantic-mapping strategy (after the first intervention was taught). In addition, overall, the ELs with LD were able to remember a greater percentage of the steps associated with the RAP Paraphrasing Strategy than the semantic-mapping strategy.

In connection with this finding, the FEPs with LD taught with the semantic-mapping strategy after traditional instruction made on average considerably higher gains on the reading comprehension assessment than those of the FEPs with LD taught with traditional instruction followed by the RAP Paraphrasing Strategy (after the first intervention was taught). In addition, the FEPs with LD were able to remember a greater percentage of the steps associated with the semantic-mapping strategy than the RAP Paraphrasing Strategy.

Finally, all of the groups together (ELs in Class 1, FEPs in Class 1, ELs in Class 2, and FEPs in Class 2) only made strong to significantly significant gains in reading comprehension after the students learned the three forms of instruction provided in the present study: traditional instruction, the RAP Paraphrasing Strategy, and the semantic-mapping strategy. This finding suggests that these (and possibly other) strategies have a stronger effect when taught in combination.

The present study was based on over a quarter of a century of research on cognitive strategy instruction. The results of this study provide information on the efficacy of traditional instruction, the RAP Paraphrasing Strategy, the semantic-mapping

strategy, and a combination of the three strategies on the reading comprehension skills of high-school ELs with LD and FEPs with LD; however, many research questions remain. Future studies are necessary to further the research on cognitive strategy instruction in general and the RAP Paraphrasing Strategy and the semantic-mapping strategy in particular, ascertaining with teaching methods will be the most effective means for increasing the reading comprehension skills of secondary-level ELs with LD and FEPs with LD.

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Appendixes

Appendix A

Lesson Plan Check-Off Sheets

Lesson Plan Check-Off Sheet (IDEA Oral Language Proficiency Test)

I. Write the student's name on the answer sheet. ❑
II. Go over the introduction to the test with each student. ❑
III. Go over the sample questions with each student. ❑
IV. Score each student's responses as either "correct" or "incorrect." ❑
V. Collect tests. ❑
VI. Blank out student names and label each student's test with a number.❑

Lesson Plan Check-Off Sheet (Gates-MacGinitie Reading Tests)

I. Enter Identifying Information
   A. Hand out the answer sheets. ❑
   B. Have the students write their names and put the date on their answer sheets. ❑

II. Administer the reading-comprehension test.
   A. Remind students to use the applicable cognitive strategy ❑
   B. Hand out the test booklets. ❑
   C. Go over the first sample question. ❑
   D. Go over the second sample question. ❑
   E. Go over the final instructions. ❑
   F. Have the students begin the test. ❑
   G. Supervise the test. ❑
   H. End the test 35 minutes after starting the test. ❑
   I. Collect the test. ❑

III. Score Test
   A. Score each test. ❑
   B. Blank out student names and label each student's test with the same number used for the IDEA Oral Language Proficiency Test. ❑

Lesson Plan Check-Off Sheet (Reading Strategies Steps Quiz)

I. Hand out the quiz. ❑
II. Have the students put their names on the quiz. ❑
III. Go over the directions with the students for completing the quiz. ❑
IV. Supervise the students taking the quiz. ❑
V. Collect the quizzes when the students are finished. ❑
VI. Blank out student names and label each student's test with the same number used for the previous tests. ❑

Lesson Plan Check-Off Sheet (Traditional Instruction Days 1-9)

I. Prereading
   A. Review vocabulary or concepts on the whiteboard from the previous day (if any). □
   B. Introduce new vocabulary or concepts and their definitions on the whiteboard and have students write these in their notebooks.□

II. Reading
   A. Have a student read a paragraph out loud. □
   B. Ask two to three questions out loud about the paragraph for the students to answer out loud. □
   C. Repeat the reading stage until every student has read a paragraph.□

III. Postreading
   A. Review important points from the text on the whitebo□d.

Lesson Plan Check-Off Sheet (RAP Paraphrasing Strategy Day 1)

I. Pretest and make commitments

A. Provide the students with an advanced organizer for the paraphrasing test. ☐
B. Give the students the materials for the paraphrasing test. ☐
C. Provide instructions for the paraphrasing test. ☐
D. Plan the comprehension test. ☐
E. Ask for and answer any questions.☐
F. Monitor students while they are taking the paraphrasing test.☐
G. Pick up materials for the paraphrasing test. ☐
H. Score the students' paraphrasing test results. ☐

(Instructional sequence taken from Schumaker, Denton, & Dechler, 1984)

Lesson Plan Check-Off Sheet (RAP Paraphrasing Strategy Day 2)

I. Pretest and make commitments
   A. Provide the students with an advanced organizer for the comprehension test. ☐
   B. Give the students the materials for the comprehension test.☐
   C. Provide instructions for the comprehension test. ☐
   D. Ask for and answer any questions.☐
   E. Monitor students while they are taking the comprehension test. ☐
   F. Pick up materials for the comprehension test. ☐
   G. Score the students' comprehension tests.☐
   H. Share the test results with the students. ☐
   I. Tell the success formula to students. ☐
   J. Make a commitment to students to teach the students the RAP Paraphrasing Strategy. ☐
   K. Have the students make a commitment to learn the RAP Paraphrasing Strategy. ☐
   L. Put student names in the management chart. ☐

II. Describe the strategy
   A. Provide the students with an advanced organizer. ☐
   B. Talk about the reasons for using the RAP Paraphrasing Strategy. ☐
   C. Talk about the descriptions of situations and sample situations where the RAP Paraphrasing Strategy can be used. ☐
   D. Give information regarding the outcomes that the students can expect.
   E. Establish goals. ☐
   F. Discuss the steps of the RAP Paraphrasing Strategy. ☐
   G. Discuss the mnemonic device "RAP." ☐
   H. Discuss the characteristics of a strong paraphrase. ☐
   I. Compare the RAP Paraphrasing Strategy to the students' previous reading strategies. ☐
   J. Encourage the students to work quickly. ☐
   K. Provide the students with a post-organizer. ☐
   L. Ask the students if they have any questions. ☐
   M. Record the completion date for this stage (2). ☐

(Instructional sequence taken from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (RAP Paraphrasing Strategy Day 3)

I. Model the Strategy
   A. Go over the strategy. ☐
   B. Provide the students with an advanced organizer. ☐
   C. Make sure that the students can see the reading passage. ☐
   D. Show students how to use the RAP Paraphrasing Strategy. ☐
   E. Have students participate in the demonstration. ☐
   F. Provide the students with a post-organizer. ☐
   G. Ask the students if they have any questions. ☐
   H. Write down the completion date for the stage (3). ☐

II. Verbal Practice
   A. Go over the steps of the RAP Paraphrasing Strategy. ☐
   B. Provide the students with an advanced organizer. ☐
   C. Carry out the verbal elaboration exercise. ☐
   D. Start the rapid-fire verbal practice exercise. ☐
   E. Discuss what to say. ☐
   F. Manage the verbal rehearsal exercise with cues if necessary. ☐
   G. Manage the verbal rehearsal exercise without cues. ☐
   H. Provide time for review. ☐
   I. Carry out oral quizzes. ☐
   J. Give feedback. ☐

(Instructional sequence taken from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (RAP Paraphrasing Strategy Day 4)

I. Verbal Practice
   A. Review the steps of the RAP Paraphrasing Strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Carry out the verbal elaboration exercise. ❑
   D. Start the rapid-fire verbal practice exercise. ☐
   E. Discuss what to say. ☐
   F. Manage the verbal rehearsal exercise with cues if necessary. ☐
   G. Manage the verbal rehearsal exercise without cues. ☐
   H. Provide time to review. ☐
   I. Carry out oral quizzes. ☐
   J. Give feedback. ☐

II. Controlled Practice and Feedback
   A. Go over the RAP Paraphrasing Strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Hand out the materials. ❑
   D. Let the students know that they will be tested. ❑
   E. Have the students start practicing. ❑
   F. Manage individual practice. ❑
   G. Pick up the materials. ❑
   H. Score the students' paraphrases. ❑

(Instructional sequence taken from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (RAP Paraphrasing Strategy Day 5)

I. Controlled Practice and Feedback
   A. Give the comprehension test. ❑
   B. Score the comprehension test. ❑
   C. Give feedback to students. ❑
   D. File finished products. ❑

II. Controlled Practice and Feedback
   A. Go over the RAP Paraphrasing Strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Hand out the materials. ❑
   D. Let the students know that they will be tested. ❑
   E. Have the students start practicing. ❑
   F. Manage individual practice. ❑
   G. Pick up the materials. ❑
   H. Score the students' paraphrases. ❑

(Instructional sequence taken from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (RAP Paraphrasing Strategy Day 6)

I. Controlled Practice and Feedback
   A. Give the comprehension test. ❑
   B. Score the comprehension test. ❑
   C. Give feedback to students. ❑
   D. File completed products. ❑

II. Advanced Practice and Feedback
   A. Go over the RAP Paraphrasing Strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Hand out the materials. ❑
   D. Let the students know that they will be tested. ❑
   E. Have the students start practicing. ❑
   F. Manage individual practice. ❑
   G. Pick up the materials. ❑
   H. Score the students' paraphrases. ❑

(Instructional sequence taken from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (RAP Paraphrasing Strategy Day 7)

I. Advanced Practice and Feedback
   A. Give the comprehension test. ❑
   B. Score the comprehension test. ❑
   C. Give feedback to students. ❑
   D. File completed products. ❑

II. Advanced Practice and Feedback
   A. Go over the RAP Paraphrasing Strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Hand out the materials. ❑
   D. Let the students know that they will be tested. ❑
   E. Have the students start practicing. ❑
   F. Manage individual practice. ❑
   G. Pick up the materials. ❑
   H. Score the students' paraphrases. ❑

(Instructional sequence taken from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (RAP Paraphrasing Strategy Day 8)

I. Advanced Practice and Feedback
   A. Give the comprehension test. ❑
   B. Score the comprehension test. ❑
   C. Give feedback to students. ❑
   D. File completed products. ❑

II. Posttest and Make Commitments
   A. Provide the students with an advanced organizer. ❑
   B. Give the materials for the paraphrasing test. ❑
   C. Provide instructions for the paraphrasing test. ❑
   D. Plan the comprehension test. ❑
   E. Ask for and answer questions. ❑
   F. Monitor the students' work. ❑
   G. Pick up the paraphrasing test materials. ❑
   H. Score each student's paraphrases. ❑

(Instructional sequence taken from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (RAP Paraphrasing Strategy Day 9)

I. Posttest and Make Commitments
   A. Provide students an advanced organizer for the comprehension test. ❑
   B. Give the material for the comprehension test. ❑
   C. Provide instructions for the comprehension test. ❑
   D. Ask for and answer questions. ❑
   E. Monitor the students' work. ❑
   F. Pick up the comprehension test materials. ❑
   G. Score the comprehension test. ❑
   H. Share test results to students. ❑
   I. Congratulate the students. ❑
   J. Talk about the generalization process. ❑
   K. Give reasons for generalization. ❑
   L. Have the students make a commitment to generalize. ❑
   M. Tell the students of your commitment. ❑
   N. Write down the completion date. ❑

II. Generalization (Orientation)
   A. Provide an advanced organizer. ❑
   B. Talk about situations where the strategy is applicable. ❑
   C. Talk about using the strategy flexibly. ❑
   D. Talk about textbooks in other courses. ❑

(Instructional sequence taken from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (Semantic-Mapping Strategy Day 1)

I. Pretest and make commitments

A. Provide the students with an advanced organizer for the semantic-mapping test. ☐
B. Give the students the materials for the semantic-mapping test. ☐
C. Provide instructions for the semantic-mapping test. ☐
D. Plan the comprehension test. ☐
E. Ask for and answer any questions.☐
F. Monitor students while they are taking the semantic-mapping test. ☐
G. Pick up materials for the semantic-mapping test. ☐
H. Score the students' semantic-mapping test results.☐

(Instructional sequence adapted from Schumaker, Denton, & Dechler, 1984)

Lesson Plan Check-Off Sheet (Semantic-Mapping Strategy Day 2)

I. Pretest and make commitments
   A. Provide the students with an advanced organizer for the comprehension test. ☐
   B. Give the students the materials for the comprehension test.☐
   C. Provide instructions for the comprehension test. ☐
   D. Ask for and answer any questions.☐
   E. Monitor students while they are taking the comprehension test. ☐
   F. Pick up materials for the comprehension test. ☐
   G. Score the students' comprehension tests.☐
   H. Share the test results with students. ☐
   I. Tell the success formula to students. ☐
   J. Make a commitment to students to teach the students the semantic-mapping strategy. ☐
   K. Have students make a commitment to learn the semantic-mapping strategy.☐
   L. Put student names in the management chart. ☐

II. Describe the strategy
   A. Provide the students with an advanced organizer. ☐
   B. Talk about the reasons for using the semantic-mapping strategy. ☐
   C. Talk about the descriptions of situations and sample situations where the semantic-mapping strategy can be used. ☐
   D. Give information regarding the outcomes that the students can expect.
   E. Establish goals. ☐
   F. Discuss the steps of the semantic-mapping strategy. ☐
   G. Discuss the mnemonic device "RICOS". ☐
   H. Discuss the characteristics of a good semantic map. ☐
   I. Compare the semantic-mapping strategy to the students' previous reading strategies. ☐
   J. Encourage the students to work quickly. ☐
   K. Provide the students with a post-organizer. ☐
   L. Ask the students if they have any questions. ☐
   M. Record the completion date for this stage (2). ☐

(Instructional sequence adapted from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (Semantic-Mapping Strategy Day 3)

I. Model the Strategy
   A. Go over the strategy. ☐
   B. Provide the students with an advanced organizer. ☐
   C. Make sure that the students can see the reading passage. ☐
   D. Show students how to use the semantic-mapping strategy ☐
   E. Have students particicpate in the demonstration. ☐
   F. Provide the students with a post-organizer. ☐
   G. Ask the students if they have any questions. ☐
   H. Write down the completion date for this stage (3). ☐

II. Verbal Practice
   A. Go over the steps of the semantic-mapping strategy. ☐
   B. Provide the students with an advanced organizer. ☐
   C. Carry out the verbal elaboration exercise. ☐
   D. Start the rapid-fire verbal practice exercise. ☐
   E. Discuss what to say. ☐
   F. Manage the verbal rehearsal exercise with cues if necessary. ☐
   G. Manage the verbal rehearsal exercise without cues. ☐
   H. Provide time for review. ☐
   I. Carry out oral quizzes. ☐
   J. Give feedback. ☐

(Instructional sequence adapted from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (Semantic-Mapping Strategy Day 4)

I. Verbal Practice
   A. Review the steps of the semantic-mapping strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Carry out the verbal elaboration exercise. ❑
   D. Start the rapid-fire verbal practice exercise. ❑
   E. Discuss what to say. ❑
   F. Manage the verbal rehearsal exercise with cues if necessary. ❑
   G. Manage the verbal rehearsal exercise without cues. ❑
   H. Provide time to review ❑
   I. Carry out oral quizzes. ❑
   J. Give feedback. ❑

II. Controlled Practice and Feedback
   A. Go over the semantic-mapping strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Hand out the materials. ❑
   D. Let the students know that they will be tested. ❑
   E. Have the students start practicing. ❑
   F. Manage individual practice. ❑
   G. Pick up the materials. ❑
   H. Score the students' semantic maps. ❑

(Instructional sequence adapted from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (Semantic-Mapping Strategy Day 5)

I. Controlled Practice and Feedback
   A. Give the comprehension test. ❑
   B. Score the comprehension test. ❑
   C. Give feedback to students. ❑
   D. File completed products. ❑

II. Controlled Practice and Feedback
   A. Go over of the semantic-mapping strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Hand out the materials. ❑
   D. Let the students know that they will be tested. ❑
   E. Have the students start practicing. ❑
   F. Manage individual practice. ❑
   G. Pick up the materials. ❑
   H. Score the students' semantic maps. ❑

(Instructional sequence adapted from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (Semantic-Mapping Strategy Day 6)

I. Controlled Practice and Feedback
   B. Give the comprehension test. ❑
   C. Score the comprehension test. ❑
   D. Give feedback to students. ❑
   E. File completed products. ❑

II. Advanced Practice and Feedback
   A. Go over the semantic-mapping strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Hand out the materials. ❑
   D. Let the students know that they will be tested. ❑
   E. Have the students start practicing. ❑
   F. Manage individual practice. ❑
   G. Pick up the materials. ❑
   H. Score the students' semantic maps. ❑

(Instructional sequence adapted from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (Semantic-Mapping Strategy Day 7)

I. Advanced Practice and Feedback
   A. Give the comprehension test. ❑
   B. Score the comprehension test. ❑
   C. Give feedback to students. ❑
   D. File completed products. ❑

II. Advanced Practice and Feedback
   A. Go over the Semantic Mapping Strategy. ❑
   B. Provide the students with an advanced organizer. ❑
   C. Hand out the materials. ❑
   D. Let the students know that they will be tested. ❑
   E. Have the students start practicing. ❑
   F. Manage individual practice. ❑
   G. Pick up the materials. ❑
   H. Score the students' semantic maps. ❑

(Instructional sequence adapted from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (Semantic-Mapping Strategy Day 8)

I. Advanced Practice and Feedback
   A. Give the comprehension test. ❑
   B. Score the comprehension test. ❑
   C. Give feedback to students. ❑
   D. File completed products. ❑

II. Posttest and Make Commitments
   A. Provide an advanced organizer. ❑
   B. Give the materials for the semantic-mapping test. ❑
   C. Provide instructions for the semantic-mapping test. ❑
   D. Plan the comprehension test. ❑
   E. Ask for and answer questions. ❑
   F. Monitor the students' work. ❑
   G. Pick up the semantic map test materials. ❑
   H. Score each student's semantic maps. ❑

(Instructional sequence adapted from Schumaker et al., 1984)

Lesson Plan Check-Off Sheet (Semantic-Mapping Strategy Day 9)

I. Posttest and Make Commitments
   A. Provide students an advanced organizer for the comprehension test. ❑
   B. Give the materials for the comprehension test. ❑
   C. Provide instructions for the comprehension test. ❑
   D. Ask for and answer questions. ❑
   E. Monitor the students' work. ❑
   F. Pick up the comprehension test materials. ❑
   G. Score the comprehension test. ❑
   H. Share test results to students. ❑
   I. Congratulate the students. ❑
   J. Talk about the generalization process. ❑
   K. Give reasons for generalization. ❑
   L. Have the students make a commitment to generalize. ❑
   M. Tell the students of your commitment. ❑
   N. Write down the completion date. ❑

II. Generalization (Orientation)
   A. Provide an advanced organizer. ❑
   B. Talk about situations where the strategy is applicable. ❑
   C. Talk about using the strategy flexibly. ❑
   D. Talk about textbooks in other courses. ❑

(Instructional sequence adapted from Schumaker et al., 1984)

Appendix B

Advanced Organizer for the RAP Paraphrasing Strategy

Advanced Organizer for the RAP Paraphrasing Strategy

"We need to find out how well you understand and remember what you are asked to read in your classes. For that reason, you will be taking a reading test that has two parts. The first part, which you are about to take, will indicate how well you understand written information. The second part, which you will take tomorrow, will show how well you remember the information you have read today," (Schumaker, Denton, & Dechler, 1984, p. 12).

Appendix C

Advanced Organizer for the Semantic-Mapping Strategy

Advanced Organizer for the Semantic-Mapping Strategy

"We need to find out how well you understand and remember what you are asked to read in your classes. For that reason, you will be taking a reading test that has two parts. The first part, which you are about to take, will indicate how well you understand written information. The second part, which you will take tomorrow, will show how well you remember the information you have read today," (Schumaker, Denton, & Dechler, 1984, p. 12).

Appendix D

Sample of the RAP Paraphrasing Strategy

Sample of the RAP Paraphrasing Strategy

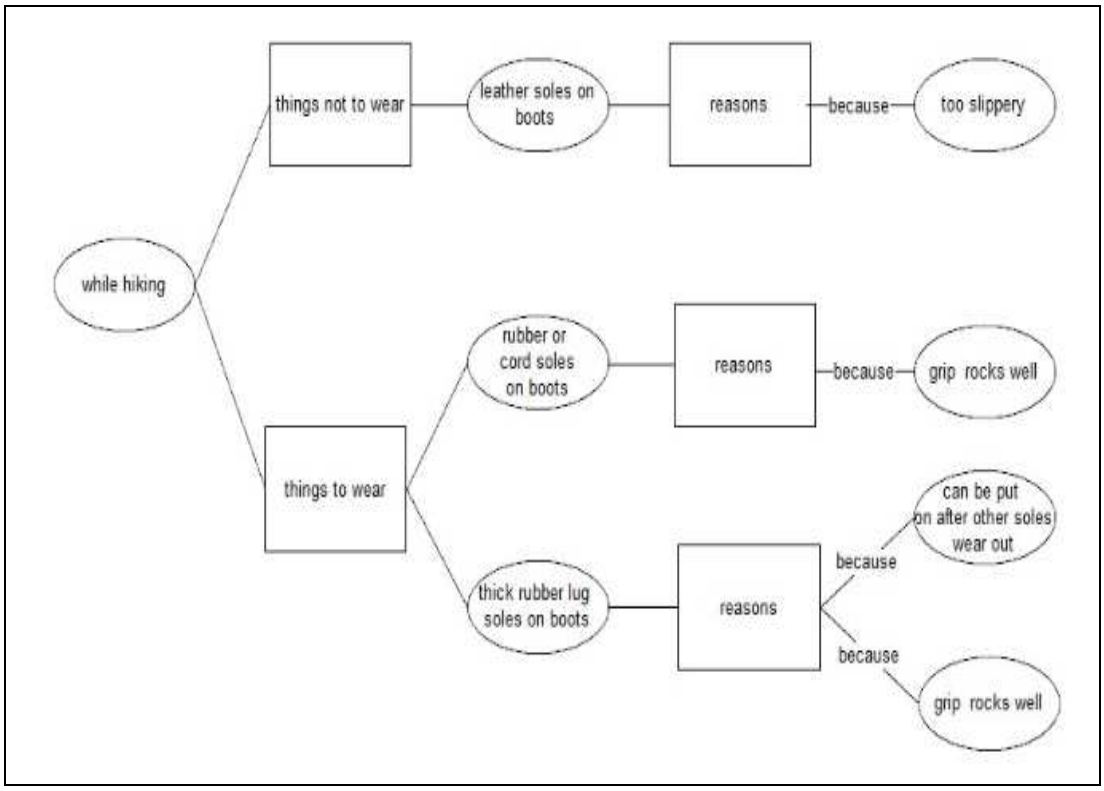
"Read the first paragraph orally.
'O.K., now that I've read it [the Read step], I need to do the 'A' step [the Ask Questions step]. I ask myself 'What are the main ideas and details in this paragraph? I need to look back over the paragraph and think about what I learned. I need to look for the main idea and some details.'
Skim through the paragraph.
'What is the paragraph about? I think this paragraph is about backpacking because the main idea in the first sentence of the paragraph is 'backpacking.' I'll look in the next sentence to check that, and I find the word 'hiking,' which is a synonym for 'backpacking,' so I must be on the right track.'
'What does the paragraph tell me about backpacking? To answer this question, I'll look at the detail statements that follow the first sentence and summarize them. Hmmm...They tell me all the things you don't have when you're backpacking.'
'Now, I need to find some details. There's no piped water, no shelter, no tables, no grills, no pots and pans, and no trail signs.'
'Now that I've found the main ideas and details, I'll do the 'P' step [the Put into My Own Words step] by looking away from the paragraph and putting the main ideas and details into my own words.'
'This paragraph is about the things you don't have when you go backpacking. For example, you don't have running water or a house.
You don't have furniture or a stove to cook on. You don't have signs to tell you where to go, so you have to know how to read a map.'"

(Instructional script adapted from Schumaker, Denton, & Dechler, 1984, p. 24, using text from Spargo, 1998)

Appendix E

Sample of Semantic Map to Be Drawn By Students

Sample of Semantic Map to Be Drawn By Students



(Text used for this semantic map adapted from Spargo, 1998)

Appendix F

The Reading Strategies Steps Quiz

The Reading Strategies Steps Quiz

List the three steps of the RAP Paraphrasing Strategy

1) _____

2) _____

3) _____

List the five steps of the semantic-mapping strategy

1) _____

2) _____

3) _____

4) _____

5) _____