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THE EFFECTS OF A STUDY SKILLS PROGRAM ON SELF-EFFICACY AND SELF-REGULATED LEARNING STRATEGIES USE

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Abstract

This study examined the impact of a study skills program utilizing daily journal writing and weekly peer-group discussions to facilitate the acquisition of effective learning strategies and to enhance perceptions of self-efficacy. A quasi-experimental, pretest-posttest, control group study with random assignment utilizing a 2 X 2 factorial design was conducted. Instructional method with two levels (Study Skills Program Participation and Non-Participation) and students' grade point average with two levels (High GPA and Low GPA) were the independent variables. Posttest measures for perceptions of self-efficacy and self-regulated learning strategies use were the dependent variables with pretest measures used as covariates. The sample consisted of sixth grade students (n = 83) from a suburban, northeastern, public middle school. The Self-Efficacy and Self-Regulated Learning Strategies subtests of the *Motivated Strategies for Learning Questionnaire* (MSLQ), Middle School Level, were administered as pretests and posttests to measure potential benefits of study skills instruction; two-way ANCOVAs ($p = \leq .05$) were conducted to analyze the data collected for each of the two dependent variables. Data analysis revealed that for self-efficacy there was a significant main effect for group where the treatment group showed significant growth over the control group; as well as a significant interaction where the low GPA students in the treatment group showed significant growth over each of the other three cells. No significance effect was measured for the dependent variable of self-regulated learning strategies use.

APPROVAL PAGE

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Doctor of Education Dissertation

The Effects of a Study Skills Program on Self-Efficacy and Self-Regulated Learning Strategies Use

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You know a dream is like a river, ever changin' as it flows;

And the dreamer's just a vessel that must follow where it goes.

Trying to learn from what's behind you and never knowing what's in store,

Makes each day a constant battle just to stay between the shores.

(Brooks & Shaw, 1991)

Earning this doctorate has been a dream of mine for many years; and now that it has become a reality, there are a few people whom I wish to thank:

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DEDICATION

In loving memory of my father, Ezio Bufalini,

who taught by example: the value of family; the strength of mind, body, and soul;

the meaning of character; and the power of unconditional love.

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CHAPTER ONE: INTRODUCTION

Most schools' mission statements include the goals of promoting academic growth and creating lifelong learners. However, these goals may remain unrealized unless schools foster the development of the antecedents that underlie academic success and the motivation to pursue intellectual challenges. Equipping students with the intellectual tools, self-beliefs, and self-regulatory capabilities to educate themselves throughout their lifetime will enable them to cultivate skills and gain new knowledge in a world filled with rapid technological change because, "Individuals who can adapt their thinking to a variety of situations in a flexible manner are much better prepared to be life-long learners" (McKeachie, Pintrich, & Lin, 1985, p. 153).

Zimmerman described students as self-regulated to the degree to which they "self-generate thoughts, feelings, and actions for attaining academic goals" (1998, p. 73). Thus, self-directed learning requires motivation as well as the ability to use cognitive and metacognitive strategies (Bandura, 1993). "It is not enough for parents [and teachers] simply to set academic standards for their children. Unless parents [and teachers] also build their children's sense of efficacy, they are likely to view high standards as beyond their reach and disregard them" (p. 137). Recognizing the importance of being a self-regulated learner and having feelings of self-efficacy for academic success, it becomes evident that more needs to be done at the elementary level to help students develop in these areas because, "Self-regulated learning is an important aspect of student academic performance and achievement . . ." (Hofer & Yu, 2003, p. 30).

Theoretical Rationale

Results of numerous studies have supported the link between self-efficacy and achievement since Bandura first hypothesized that "expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences" (1977, p. 191). The relationship between self-efficacy beliefs (Bandura, 1977, 1982, 1986) and academic performance has been shown to be positive and statistically significant across a wide variety of subjects and experimental designs. It has continued to be supported over the last 30 years (Bandura, 1977; Bandura & Schunk, 1981; Gallagher, 1988; Jinx & Morgan, 1996, 1999; Lynch, 2006; Stiggins, 1994; Wachholz & Etheridge, 1995; Zimmerman, Bandura, & Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990; Zimmerman & Ringle, 1981). Self-efficacy has also been shown to be positively related to students' use of self-regulated learning strategies (Hofer & Yu, 2003; Lynch, 2006; Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990). One such example is provided by Pintrich and DeGroot (1990) who conducted a study with 173 seventh graders from 8 science and 7 English classes and found that students who believed they were capable were more likely to report the use of self-regulated learning strategies.

A number of study skills programs have been developed to improve student learning and academic achievement: Informed Strategies for Learning (Paris, Cross, & Lipson, 1984); Self-Instructional Training (Chan, 1991); and Self-Regulated Strategy Development (Zimmerman & Martinez-Pons, 1986, 1988). Studies from the field of educational psychology consistently show that high-achieving students display a significantly greater use of self-regulated learning strategies than their low-achieving peers (Zimmerman & Martinez-Pons,

1986). Most study skills programs are predicated on developing effective strategies used by successful learners. Study skills programs are often based on the information-processing framework presented by Weinstein and Mayer (1985), which consists of four levels of information to be learned: (a) practice of content, (b) developing procedures, (c) making connections, and (d) metacognitive skills. The objective of all the aforementioned study skills programs is to help learners progress from level one to level four strategy use.

Level one is the most basic and involves the strategies of repetition, rereading, and rehearsal. These are considered to be the easiest to learn and are taught to young children in the early grades during basic reading and math instruction. Level two involves procedural or organization-based study skills, which include time management, organization, and the development of consistent study routines. Level three is composed of cognitive-based study strategies, which require the integration of new information with existing knowledge. Creating this network of connected facts and concepts is known as developing schemata. Graphic organizers or semantic maps are visual representations of strategies at this level. Level four, the highest level of the information-processing framework, is composed of metacognitive-based study skills. While cognitive-based strategies relate to how learners process information, metacognitive strategies relate to how learners effectively select, use, and monitor their studying to achieve academic success.

One way to help students develop metacognitive learning strategies is through journal writing (Cisero, 2006; Connor-Greene, 2000; Wong, Kuperis, Jamieson, Keller, & Cull-Hewitt, 2002). Journal writing has been perceived by students to be a valuable assignment that fosters understanding and application of concepts by enabling students to make connections between the course material and their lives (Connor-Greene, 2000). Journal

writing has also been shown to be "an effective method to engage students in the process of thinking and learning" (p. 46). The use of journal writing to enhance the learning process is supported by research from a variety of research domains. From the field of psychotherapy, Brand (1999) suggests:

> Students make peace with themselves by writing about their experiences; they understand what is happening around them. . . . If learning and memory are defined by the capacity to make changes and remember them, then healing through language has evolved from the ability of the brain to modify thoughts, feelings, and behavior. (p. 13)

Another way to help students develop metacognitive learning strategies is through peer-group discussions (Cook & Kaffenberger, 2003; Patrick & Middleton, 2002; Zimmerman & Blotner, 1979; Zimmerman & Ringle, 1981). Relationships with peers have a strong influence on a student's emotional and motivational response to school (Wentzel, 1991). Peer-group discussions provide the opportunity for deeper thinking and self-reflection through shared experiences. Wentzel (1991) suggests that, "… positive relationships with peers can provide emotional security and incentives to achieve" (p. 10). Peer-group discussions are also supported by Bandura's (1977) research regarding psychological changes achieved by different modes of treatment. Bandura derived expectations of personal efficacy from four principal sources of information: enactive (performance accomplishments), vicarious experience (peer identification through role models), exhortative (verbal persuasion), and emotive (emotional states).

Additionally, support for the educational value of journal writing and peer-group discussions comes from research in the area of the brain, neuroscience, which also has

implications for metacognition. The human brain is uniquely sensitive to experience. "Every perceived interaction can have considerable and cumulative impact. . . . Indeed, the most useful learning nowadays is acquired, social knowledge – with its notions of observation, modeling, and corrections" (Brand, 1998, p. 305).

Problem Statement

Research and theory suggest that students differ in the extent to which they believe they can control the outcomes of their own learning, i.e., their sense of their own efficacy (Thomas & Rohwer, 1986). There appears to be a consensus among researchers in the field of self-regulated learning that self-regulated learning instruction has a positive effect on self-efficacy and achievement in the specific domain where the training has taken place (Bandura & Schunk, 1981; Graham, Harris, & MacArthur, 1993; Hofer & Yu, 2003; Hofer, Yu, & Pintrich, 1998; Lynch, 2006; Mason, 2004; Pintrich, McKeachie, & Lin, 1987; VanderStoep & Pintrich, 2003; Wachholz & Etheridge, 1995; Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990). However, self-monitoring of skills employed requires reflective practice, and students at the elementary level have been shown to be limited in their knowledge of metacognition (Flavell, 1979; Paris & Byrnes, 1989; Paris & Newman, 1990); and although metacognitive training has been found to aid academic learning, students do not necessarily transfer the skills spontaneously (Bandura, 1993; Montague, 2006).

According to Pressley (1995), "There are many reasons for failures of self-regulated use of new strategic and conceptual knowledge . . ." (p. 209). One reason is that having procedural knowledge by learning how to do something does not ensure having the conditional knowledge to understand when and where to do it. Another possible reason that

students do not use the learning strategies that they have been taught is that they are "typically taught discrete tactics for implicit, singular local goals" (p. 712) instead of tactics that will facilitate learning in various contexts (Chan, 1991; Hadwin & Winne, 1996; Paris, Cross, & Lipson, 1984; Zimmerman & Martinez-Pons, 1986, 1988).

Many universities and colleges have developed courses to teach study skills to their entering freshmen students to facilitate the development of adaptable strategies and abilities with which to pursue knowledge and solve academic problems (Hofer & Yu, 2003; Hofer, Yu, & Pintrich, 1998; Pintrich, McKeachie, & Lin, 1987; VanderStoep & Pintrich, 2003). The incoming students are increasingly asked to take responsibility for directing and self-assessing their learning and motivation. Recognizing the influence that these factors have on a learners' academic endeavors and the fact that there are students graduating from high school lacking the learning strategies necessary to be successful at the postsecondary level, it becomes evident that more needs to be done at the elementary and secondary levels to develop these learning strategies and cultivate self-regulated learners.

The social cognitive approach to self-regulated learning identifies two key processes through which self-regulated learning is achieved, self-efficacy perceptions and strategy use (Zimmerman, 1989a). Hadwin and Winne (1996) suggest that students acquire and practice study tactics across different content areas and in different contexts "to engage [students] in mindful abstraction that underlies transfer" (p. 713). They also encourage the use of productive self-regulation (framing goals, considering techniques, and strategically selecting and adapting tactics) within the context of day-to-day work in their courses. Recognizing the need for further research in this area, this study examined the effects of a study skills program designed to provide self-regulated learning instruction to sixth grade students utilizing daily

journal writing and weekly peer-group discussions to facilitate the acquisition of effective strategies and enhance perceptions of self-efficacy.

Significance of the Study

Developing self-regulation and self-efficacy are important goals in improving student learning. To enable students to cultivate skills and gain new knowledge in an ever-changing world, it is essential that students develop the intellectual tools, the self-beliefs, and the self-regulatory capabilities that underlie academic success. The apparent deficit in preparation for postsecondary education experienced by some students is evident; therefore, it is important to conduct research to discover effective means by which these valuable educational goals can be achieved with students at the elementary and secondary level.

Definition of Key Terms

The following terms are relevant to this study. The definitions that follow each term apply to the use of the term in this particular study.

1. *Metacognition* is the "monitoring of one's own memory, comprehension, and other cognitive enterprises" (Flavell, 1979, p. 906).
2. *Metacognitive Strategies* refer to "cognitive monitoring to increase the quantity and quality of metacognitive knowledge and monitoring skills through systematic training" (Flavell, 1979, p. 910).
3. *Self-Efficacy* refers to "people's judgments of their capabilities; it is concerned not with the skills one has but with the judgments of what one can do with whatever skills one possesses" (Bandura, 1986, p. 391).
4. *Perceived Self-Efficacy* directly influences efficacy expectations which "determine how much effort will be expended and how long one will persist in the face of

obstacles and aversive experiences; the stronger the perceived self-efficacy, the more active the efforts" (Bandura, 1977, p. 194).

5. *Self-Regulated Learning* is defined as "self-generated thoughts, feelings, and actions for attaining academic goals" (Zimmerman, 1998, p. 73).

Related Literature

Although struggling students are most recognized for not having developed effective study strategies, capable, achieving students also may go through school without having acquired effective approaches for studying (Nicaise & Gettinger, 1995). Rohwer (1984) noted that one of the most neglected topics in the field of education was academic studying. Although students are expected to apply study skills in completing homework or preparing for tests, teachers typically devote little time to providing explicit instruction in such skills (Zimmerman, 1998). Even students who develop study skills on their own can learn to study more effectively and efficiently through explicit instruction (Wood, Woloshyn, & Willoughby, 1995). Research indicates that students, indeed, require explicit instruction in study skills; individuals assigned randomly to control conditions tend not to acquire or use study strategies on their own without training (Schunk & Zimmerman, 1994, 1998).

Strategy Use/Study Skills Programs

The *Informed Strategies for Learning* (ISL) program (Paris, Cross, & Lipson, 1984) was designed to increase children's awareness and use of effective reading strategies. Results of a study conducted by these authors found that although children in the experimental ISL classes generally had greater knowledge about reading strategies than children in control classes and performed better on cloze and error detection tasks, they did not perform significantly better on standardized, norm-referenced tests of reading comprehension. This

study did, however, demonstrate that metacognition could be promoted through direct instruction in classrooms and that increased awareness could lead to better use of reading strategies.

The *Self-Instructional Training* technique (Chan, 1991) was designed to teach students to identify the main idea in reading passages through the use of a self-questioning strategy. Chan found that although *Self-Instructional Training* utilizing the self-questioning strategy improved the ability of students to identify main ideas, it failed to transfer to more general reading comprehension measures. Results did however support the benefit of explicit strategy instruction to enhance reading skills.

Another study skills program, which followed a scaffolding approach to instruction utilizing teacher modeling, explaining, assisting whenever necessary, and gradually withdrawing help as students become increasingly adept at using the strategy was called *Self-Regulated Strategy Development* (SRSD) (Harris & Graham, 1992). Although noted to have been used in the areas of reading (Johnson, Graham, & Harris, 1997) and mathematics (Case, Harris, & Graham, 1992), the research of Graham, Harris, and MacArthur (1993) focused on improving story writing of 40 grade 5 and grade 6 students by including greater detail and elaboration. Findings showed that although the quality and structure of students' stories improved immediately following instruction, over time, and in a new setting, no significant differences were found in the stories composed by students who received instruction in using the goal setting and self-monitoring procedures as compared to those who did not. Additionally, adapting strategies to different writing genres, such as from expository to narrative writing, caused difficulty for some, prompting direct and assisted practice to accomplish such transfer.

Elementary, Middle, and High School Level Research

Research on self-regulated learning instruction through study skills instruction has also been conducted at the elementary, middle, and high school levels, in grades 5, 8, and 11, respectively (Zimmerman & Martinez-Pons, 1986, 1988, 1990). These studies focused on mathematics and English classes only. Additionally, a study involving high school social studies students also was conducted (Zimmerman, Bandura, & Martinez-Pons, 1992). The results demonstrated that students did show improvement in levels of self-efficacy and end-of-the-term grades in the specific courses implementing study skills instruction, yet, "there is no question that the lack of knowledge about how to foster transfer of effective study skills from one context to another is a significant gap that merits forceful address" (Hadwin & Winne, 1996, p. 712).

College Level Research

Research conducted at the college level (Hofer, Yu, & Pintrich, 1998; Pintrich, McKeachie, & Lin, 1987; VanderStoep & Pintrich, 2003), demonstrated that self-regulated learning instruction provided through study skills courses could improve students' knowledge of studying techniques, as well as enhance students' levels of self-efficacy; however, there are small observable changes in students' overall grade point averages. Consequently, there are "oft-heard concerns about the limited transfer of tactics from study skills courses to degree-related postsecondary courses" (Hadwin & Winne, 1996, p. 711).

Hofer and Yu (2003) conducted one such study at the college level to examine the impact of self-regulated learning instruction provided through a semester-long course called, *Learning to Learn*. The course was designed to teach college level students to be self-regulated learners. The *Motivated Strategies for Learning Questionnaire* (MSLQ) (Pintrich,

Smith, Garcia, & McKeachie, 1993) was used as a pretest and posttest with 78 undergraduate psychology students at the University of Michigan. Of the 78 students, 55% were women, and 73% were first- or second-year students. The course's goal was to teach concepts of cognitive and motivational psychology to help students understand the mental processes involved in learning, memory, and problem solving. Students were instructed in how to learn, how to remember and think, and how to motivate themselves. In addition, students were required to report on their learning and motivation in one of their courses, referred to as a target course, upon which they were to record their progress.

The researchers noted that although there was no control group, the one-semester course did appear to have positive effects in developing motivation and strategy skills for self-regulated learning. Furthermore, "the increase in self-efficacy and the correlation between self-efficacy and cognition suggested by this study support the importance of self-efficacy in cognitive engagement and its possible mediational role in performance" (p. 33). There was concern with regard to effective transfer of cognitive strategies to other courses and sustained change over time, although it was not explored. It was indicated that since college instructors may be unlikely to teach general learning strategies to their students, there is value in a stand-alone course in learning to learn at the college level.

Overview of Methodology

This study examined the impact of a study skills program utilizing daily journal writing and weekly peer-group discussions on the perceptions of self-efficacy and the acquisition of self-regulated learning strategies. Acknowledging that educators must be cognizant of the differentiated needs of their students and that instructional methods that may prove beneficial for one group of students may not be so for another, the research questions

were posed to evaluate the effectiveness of the Study Skills Program between students with high and low grade point averages (GPAs).

Research Questions and Hypotheses

Research Question #1: Is there a significant difference in perceived self-efficacy for students who have high and low grade point averages who have also participated in the Study Skills Program as compared to those who have not participated in this type of program?

a. Is there a significant difference in perceived self-efficacy for students who have participated in the Study Skills Program as compared to those who have not participated in this type of program?

   Directional Hypothesis: Students who participate in the Study Skills Program will demonstrate significantly improved levels of perceived self-efficacy as compared to those who have not participated in the program.

b. Is there a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to their perceived self-efficacy?

   Non-directional Hypothesis: There will be a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to perceived self-efficacy.

Research Question #2: Is there a significant difference in self-regulated learning strategies use for students who have high and low grade point averages who have also participated in the Study Skills Program as compared to those who have not participated in this type of program?

a. Is there a significant difference in self-regulated learning strategies use for students who have participated in the Study Skills Program as compared to those who have not participated in this type of program?

   Directional Hypothesis: Students who participate in the Study Skills Program will demonstrate significantly improved levels of self-regulated learning strategies use as compared to those who have not participated in the program.

b. Is there a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to self-regulated learning strategies use?

   Non-directional Hypothesis: There will be a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to their self-regulated learning strategies use.

Description of Setting, Subjects, and Instrumentation

The sample for this study was drawn from the population of a suburban, northeastern, public middle school, which houses approximately 1,600 students in grades 5 through 8. Student ethnicity is 85% White, non-Hispanic; 10% Hispanic; 3% Black, non-Hispanic; 1% Asian/Pacific Islander; and <1% American Indian. Student subgroups include 9% eligible for free or reduced-price lunch program; 12% IEP students; 0% migrant students; and <1% limited English proficient. The attendance rate is 95%, and the student per teacher ratio is 13:1 for this school. The participants in this study included 83 sixth grade students drawn from a population of 368 students from three sixth grade teams. Each of the sixth grade teams was composed of approximately 123 students, 6 teachers, 1 special education teacher, and 1

teaching assistant. The participants (n = 83) ranged in age from 10.75 to 12.25, with a mean age of 11.5 years.

The *Motivated Strategies for Learning Questionnaire* (MSLQ), Middle School Level Self-Efficacy subscale and Self-Regulated Learning Strategies subscale (Pintrich & DeGroot, 1990), were used for this study. The Middle School Level MSLQ is a 56-item, self-report instrument consisting of motivational subscales and learning strategies subscales, which were designed to be used singly or in combination to fit the needs of the research. Students are instructed to respond to the items on a 7-point Likert scale (1 = *not at all true of me* to 7 = *very true of me*).

Factor analysis was used to guide scale construction, resulting in exclusion of some of the items from the scales because of a lack of correlation or stable factor structure. Following the factor analysis, the authors calculated internal consistency estimates of reliability (Cronbach's alpha). The Self-Efficacy subscale (alpha = .89) consists of 9 items regarding perceived competence and confidence in performance of academic work. The Self-Regulated Learning Strategies subscale (alpha = .83) consists of a total of 22 items; 13 items pertaining to cognitive strategy use and 9 items constructed from metacognitive and effort management items.

In terms of validity, social desirability bias is considered a significant threat to the construct validity of all self-report instruments; however, the authors of the MSLQ have found that measures of response bias did not account for any significant amount of variance and did not change their results. To determine predictive validity, the MSLQ scores were correlated with students' final course grades and were found to demonstrate significant predictive validity. The Self-Efficacy scale showed r = .41, $p \leq .001$; and the Self-Regulated

Learning Strategies scale showed r = .30, $p \leq .001$. In its entirety, "the instrument was designed to be given in class and takes approximately 20-30 minutes to administer" (Duncan & McKeachie, 2005, p. 119). The MSLQ has been translated into multiple languages and has been used by hundreds of instructors throughout the world including 56 empirical studies between 2000 and 2004 (Duncan & McKeachie, 2005).

Description of the Research Design and Data Analysis

A quantitative, quasi-experimental, pretest-posttest, control group study with random assignment utilizing a 2 X 2 factorial design was conducted. Instructional method (Study Skills Program participation or non-participation) and students' grade point averages (High GPA or Low GPA) were the independent variables. The dependent variables for the study were self-efficacy perceptions and self-regulated learning strategies use as measured by the Self-Efficacy subscale and the Self-Regulated Learning Strategies Use subscale of the *Motivated Strategies for Learning Questionnaire* (MSLQ), Middle School Level, (Pintrich & DeGroot, 1990).

A two-way ANCOVA ($p = \leq .05$) was conducted to analyze the data collected for each of the two dependent variables, utilizing pretest scores for self-efficacy perception and self-regulated learning strategies use from the MSLQ as covariates. The two-way ANCOVAs were conducted with posttest scores from the MSLQ for self-efficacy perception and self-regulated learning strategies use to determine whether there was a statistically significant main effect for each of the independent variables as well as a statistically significant interaction between the two factors being evaluated.

Limitations of the Study

Population validity, an external validity threat, is a concern because the sample was drawn from an accessible population making it impossible to generalize the research results from this study to the target population of all sixth graders nationwide; however, the participants in this study are most likely representative of students in school districts with similar demographics. Additionally, since parental permission was required before conducting this study with a sample composed of sixth grade students, the Hawthorne effect may have influenced the experimental group subjects. The Hawthorne effect refers to "an observed change in research participants' behavior based on their awareness of participating in an experiment, their knowledge of the researchers hypothesis, or their response to receiving special attention" (Gall, Gall, & Borg, 2003, p. 626).

Internal validity threats are also a concern. One type of internal validity threat is history. History threats can occur when "experimental treatments extend over a period of time, providing opportunity for other events to occur besides the experimental treatment" (Gall, Gall, & Borg, 2003, p. 370). Tutoring support, which some students may have received outside of school, falls into this category of concern. Another internal validity threat is compensatory rivalry, also known as the John Henry effect. The John Henry effect may have influenced the performance of the control group. This occurs when "the control group participants perform beyond their usual level because they perceive that they are in competition with the experimental group" (Gall, Gall, & Borg, 2003, p. 373).

The MSLQ contains its own limitations. Although recognized for its reliability and successful use in numerous studies over the years, it is a self-reporting instrument, and social desirability bias must be considered a threat to the construct validity of all self-report

instruments. Also, repeated use of the instrument over a relatively short period of time can be seen as a limitation due to the test-retest threat to internal validity. Therefore, random assignment to group was conducted in an effort to control for the validity concerns so noted.

CHAPTER TWO: REVIEW OF THE LITERATURE

Literature selected for review addresses research on self-regulated learning, including the two key processes through which self-regulated learning is believed to be achieved, i.e., self-efficacy perception and strategy use (Zimmerman, 1989a). The review of the literature explored methods to develop the metacognitive abilities that are essential to become a self-regulated learner. Zimmerman (1989b) stated that, "students can be described as self-regulated to the degree that they are metacognitively, motivationally, and behaviorally active participants in their own learning process" (p. 4).

This review of research and literature initially explored the first process area of self-efficacy, both the theory (Bandura, 1977) and a sampling of 30 years of research that supports its influence on students' academic performance and motivation (Bandura & Schunk, 1981; Jinks & Morgan, 1996, 1999; Wachholz & Etheridge, 1995). Second, this review took a closer look at strategy use, including a number of study skills programs that have been developed to improve student learning and academic performance: Informed Strategies for Learning (Paris, Cross, & Lipson, 1984); Self-Instructional Training, (Chan, 1991); Self-Regulated Strategy Development (Zimmerman & Martinez-Pons, 1986, 1988). Third, the relationship between self-regulated learning and self-efficacy was explored (Hofer & Yu, 2003; Lynch, 2006; Mason, 2004; Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992; and Zimmerman & Martinez-Pons, 1990). Lastly, an examination of how metacognitive abilities develop through journal writing (Cisero, 2006; Connor-Greene, 2000; Wong, Kuperis, Jamieson, Keller, & Cull-Hewitt, 2002) and peer-group discussions (Cook & Kaffenberger, 2003; Fremouw & Feindler, 1978; Patrick & Middleton, 2002; Zimmerman & Ringle, 1981) were presented with the implications that led to this study being conducted.

Self-Efficacy Theory

The Self-Efficacy Theory explains how the power of perception predicts performance. It refers to the sense of confidence each person possesses when faced with various tasks in life. “Efficacy expectations determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences. The stronger the perceived self-efficacy, the more active the efforts” (Bandura, 1977, p. 194). Efficacy information is gained from experience and refers to what people believe they can do with whatever skill they have, rather than their actual ability or skill (Bandura, 1986).

Expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained. Bandura (1977) derived expectations of personal efficacy from four principal sources of information: enactive (performance accomplishments), vicarious experience (peer identification through role models), exhortative (verbal persuasion), and emotive (emotional states).

Enactive sources of information refer to performance accomplishments “achieved by enlisting a variety of response induction aids, including . . . graduated tasks, enacted over graduated temporal intervals . . . to reduce the likelihood of feared consequences . . .” (p. 196). Salvia and Ysseldyke (2001) found that to strengthen struggling learners, teachers need to select tasks well within struggling learners’ abilities, sequence tasks from easy to difficult, help struggling learners realize they have the skills to succeed, provide them with help and encouragement whenever needed, and show them how to correct their mistakes. Salvia and Ysseldyke (2001) also demonstrated the importance of introducing difficult tasks only when they are no longer difficult due to having mastered the prerequisites on which success depends. This very basic principle of scaffolding information and concepts to be learned from

simple to complex is essential for the struggling learner and methodologically sound for learners at all levels.

Vicarious sources of information refer to experience through modeling; seeing others perform threatening activities without adverse consequences can generate expectations in observers that they too will improve if they intensify and persist in their efforts. “Vicarious experience, relying as it does on inferences from social comparison, is a less dependable source of information about one’s capabilities than is direct evidence of personal accomplishments” (Bandura, 1977, p. 197). The need for peer identification is essential because studies have shown that to be effective, role models cannot be drastically discrepant in ability from those who would be motivated by them (Schunk, 1987).

Exhortative sources of information refer to verbal persuasion attempts to lead people, through suggestion, into believing they can cope successfully with what has overwhelmed them in the past. “In the face of distressing threats and a long history of failure in coping with them, whatever mastery expectations are induced by suggestion can be readily extinguished by disconfirming experiences” (Bandura, 1977, p. 198). For this reason, opportunities for success must be provided regularly.

Emotive sources of information refer to emotional states and fear arousal. “It is often the case that fears and deficits are interdependent. Avoidance of stressful activities impedes development of coping skills, and the resulting lack of competency provides a realistic basis for fear” (Bandura, 1977, p. 199). As fear becomes a barrier to engagement, and therefore achievement, fear also negatively affects one’s self-efficacy. Providing an environment where students feel free from intimidation, both physical and intellectual in nature, is the key toward

building success personally and academically. Students must possess a sense of confidence in order to participate in class discussions and to ask questions when they do not understand.

The Relationship between Self-Efficacy Beliefs and Academic Performance

The relationship between self-efficacy beliefs (Bandura, 1977, 1982, 1986, 1993) and academic performance has been shown to be positive and statistically significant across a wide variety of subjects and experimental designs over the last 30 years. Reviewed here are three studies, which address self-efficacy and academic performance in the subject areas of mathematics (Bandura & Schunk, 1981), writing (Wachholz & Etheridge, 1995), and science (Jinx & Morgan, 1996, 1999).

Self-Efficacy Beliefs and Academic Performance in Mathematics

Bandura and Schunk (1981) conducted a study in the area of mathematics to test the hypothesis that "self-motivation through proximal goal setting serves as an effective mechanism for cultivating competencies, self-perceptions of efficacy, and intrinsic interest" (p. 586). Children who exhibited deficits and disinterest in mathematical tasks pursued a program of self-directed learning under conditions involving either proximal subgoals, distal goals, or no goals. The subjects were 40 children of predominantly middle-class backgrounds, ranging in age from 7.3 to 10.1 years, with a mean age of 8.4 years. There were 21 males and 19 females distributed equally by age and sex across conditions.

Children identified by their teachers as displaying deficits in arithmetic skills and a low interest in mathematical activities were drawn from six elementary schools. A pretreatment test was administered to the children to determine whether their arithmetic skills were sufficiently deficient to qualify for the experiment. The pretreatment test consisted of 25 subtraction problems graded by level of difficulty and ranging from two to six columns. The

test problems were specifically designed to tap each of the seven subtraction operations that were included in the treatment phase of the study. Children who solved more than four problems correctly were excluded from the sample. The selected sample was composed of children who exhibited gross deficits; one third could not solve a single problem, and another third could only solve one. The children's deficiencies in arithmetic skills were further confirmed by standardized measures of their mathematical ability on the *Metropolitan Achievement Test* (Durost, Bixler, Wrightstone, Prescott, & Balow, 1970) obtained from their school districts.

Before measuring the strength of students' mathematical self-efficacy, students first needed to become familiar with the efficacy assessment format, which required that they rate their degree of certainty regarding their perceived capability on a 100-point scale. Students practiced rating their capabilities with regard to jumping varying distances. Then students were asked to judge their capability to solve subtraction problems of varying difficulty.

Seven sets of instructional materials were designed, incorporating the various subtraction operations. Materials were organized to allow the children to work independently at their own pace over a series of seven 30-minute sessions. The first page of each set contained a full explanation of the subtraction operation required, along with two examples illustrating how the solution strategies were applied. The following six pages contained sets of problems to be solved using the designated operations. Pretesting showed that if children worked at a steady pace, they could complete each self-instructional set in about 25 minutes. If the children asked for assistance, the experimenter simply reread the instructions without supplementing them in any way.

Children were assigned to one of three treatment conditions or to a nontreated control group: proximal goals, distal goals, no goals, or no treatment. In the proximal goal treatment, the experimenter suggests students set a goal of completing six pages during each session. In the distal goal treatment, the experimenter suggests that students consider completing the entire 42 pages of instruction by the end of the last (the seventh) session. In the no goals treatment, the experimenter suggests nothing other than completing as many pages of instruction as possible. In the no treatment group, students were administered the full set of assessment procedures without any exposure to the instructional material. This group provided a control for any possible effects of testing and general classroom instruction.

The children's mathematical self-efficacy was measured at the end of treatment and after the posttest of subtraction performance. Additionally, the children's intrinsic interest in subtraction problems was measured in a separate session scheduled the day after the posttreatment assessment. Students were provided with two activities to be engaged in for the 25-minute session; one activity was 60 subtraction problems of varying difficulty; the other activity involved filling in rows of empty squares with symbols corresponding to the digits appearing above each square. These digit-symbol problems were adapted from the *Wechsler Intelligence Scale for Children* (Wechsler, 1974). The number of subtraction problems the children solved under these permissive choice conditions was used to measure intrinsic interest.

Results were analyzed in three area: perceived self-efficacy, mathematical performance, and intrinsic interest. No significant sex differences were found on any of the measures, so the data were therefore pooled across sex for the primary analyses. Perceived self-efficacy analysis showed that the main effect of treatment, $F(3, 36) = 10.13$, $p < .001$,

and the interaction between treatment and experimental phases, $F(6, 72) = 5.96$, $p < .001$, were highly significant. Intragroup comparisons of changes in strength of self-efficacy, evaluated by the t-test for correlated means, yielded no significant differences for children in the control group. Children in the proximal goals group substantially increased their perceived self-efficacy, while children in the distal goals group displayed a moderate increase in self-efficacy. Self-directed learning without goals produced a modest increase at a borderline level of significance. In separate comparisons between treatments, the proximal group exceeded all others in strength of perceived self-efficacy, while children in the distal condition also exceeded the controls in self-efficacy, they did not differ significantly from those who set no goals for themselves. Additionally, conditions of treatment also affected the level of accuracy with which children appraised their mathematical efficacy, $F(3, 36) = 3.06$, $p < .05$. Children in the distal (54%), no goals (51%), and control (60%) conditions displayed moderate congruence between their self-judged efficacy and their performance. In contrast, children who developed their skills under proximal goals were highly accurate in their self-appraisals of efficacy (80%).

Mathematical performance analysis showed that the main effect of treatment was highly significant, $F(3, 36) = 12.80$, $p < .001$, as was the interaction between treatment and experimental phases, $F(3, 36) = 12.55$, $p < .001$. Self-directed instruction promoted mastery of subtractive operations in all three groups, whereas the controls remained at a loss on how to subtract numbers from each other. In pairwise comparisons, children who had employed proximal subgoals surpassed all the other groups in subtractive skills. Children who engaged in self-directed learning either with distal or no goals did not differ significantly from each other, but both groups outperformed the controls. In comparing the children's subtractive

skills before and after treatment, all three groups that engaged in self-directed instruction achieved significant gains beyond the $p < .001$ level of significance: whereas the controls, who solved only 5% of the problems on the pretest and only 8% on the posttest, remained grossly deficient in this regard. Contrast between means of the different treatment conditions showed the children in the proximal condition to be much more skilled than those in the distal ($p < .01$), no goals ($p < .01$), or control ($p < .01$), conditions. Children who pursued the self-learning with distal ($p < .01$) or no goals ($p < .01$) were also more skilled than the controls, but the former two groups did not differ from each other.

Intrinsic interest analysis, revealed through an analysis of variance of the number of subtraction problems that children chose to solve on their own, yielded a significant treatment effect, $F(3, 36) = 3.57$, $p < .05$. Children in the proximal goal condition exceeded all three comparison groups, which did not differ from each other. Indeed, 90% of the children who developed their arithmetic skill through the aid of proximal goals performed subtraction problems under the free-choice conditions; whereas only about 40% of the children in the other groups did so.

Results of the study supported the general thesis in all three areas. Findings revealed the following: (a) skills cultivated through proximal standards of competency built interest in disvalued activities, (b) perceived self-efficacy was accompanied by high-performance attainments and perseverance, and (c) regardless of conditions of treatment, persistency increased the likelihood of success.

Self-Efficacy Beliefs and Academic Performance in Writing

Wachholz and Etheridge (1995) conducted a study in the area of writing where they conducted interviews among five high- and five low-apprehensive writers to compare writing

self-efficacy beliefs and previous experiences of the two groups. Subjects for the study were drawn from 43 second-semester developing freshman writers from two mid-South junior colleges situated in a rural area.

The study consisted of three phases. First, data were obtained by administering the *Writing Apprehension Test* (WAT) (Daly & Miller, 1975), a 26-item test designed to measure levels of writing apprehension. The WAT is a Likert-type instrument with items dealing with writing apprehension in general, as well as, writing self-efficacy, reported success in previous writing courses, and writing apprehension generated by evaluation of writing by teachers, peers, and professionals (i.e., magazine editors or publishers). Students whose WAT scores were more than one standard deviation above or below the mean were selected for further study.

In phase two, students were asked to conceptualize their perceptions by describing, in writing, what they felt were the specific characteristics of a "good writer." In addition, they composed a writing profile, describing what they were like as writers; how confident they felt in their writing skills, and what previous experiences, in school or otherwise, had contributed to their attitudes.

In phase three, the differences in writing self-efficacy beliefs and previous experiences of high- and low-apprehensive writers were examined. During this phase, 30-minute interviews were conducted with five high- and five low-apprehensive writers. The content of the interviews was subjected to analysis to identify response patterns for the two groups.

Results of analyses of the data collected showed that four sources of writing self-efficacy beliefs were most frequently mentioned, (a) previous success or failure in writing; (b) previous preparation, i.e., previous opportunities for writing; (c) prior writing assessment

experiences; and (d) current level of writing skills. Collected data showed that high-apprehensive students tend to be evaluated less positively by instructors than are student who exhibit a confidence and value in their writing. High-apprehensive writers are seen by teachers as less successful and less likely to succeed in the future. The following student comments are examples to illustrate their view:

> *Low Apprehensive Writer:* "I like to write. I've always been good at it and I enjoy it."
>
> *High Apprehensive Writer:* "In English, I had an F on my first essay, and I then knew my college career was doomed." (p. 8)

Students in this study mentioned teacher response to writing as confirmation of their writing success or failure, with high-apprehensive writers citing negative teacher feedback as a cause of their lack of confidence and low-apprehensive writers citing teacher support of their efforts as a reason for their competence. The following student comments are examples:

> *High Apprehensive Writer:* "I'm unsure about my writing skills. In all my English classes I've done poorly. My teachers always made the class feel dumb."
>
> *Low Apprehensive Writer:* "Due to my past experiences in English classes, I have developed a certain affinity for writing. During my senior year English class is when I probably first began to feel this way. My teacher and I had a good relationship and he was supportive as well as appreciative of my work." (p. 9)

Results also showed that student's perceptions of what constitutes a "good writer" varied according to their apprehension level. Low-apprehensive writers described the good writer as someone who has a good imagination, who writes with clarity and variety, and who develops ideas skillfully. In contrast, high-apprehensive writers referred to innate ability and often claimed to have talents in areas other than writing.

This investigation revealed important differences between high- and low-apprehensive writers' self-efficacy beliefs. Although the sources students perceived as having influenced their beliefs were similar in nature, their experience with these sources differed. Low-apprehensive writers reported more positive and successful experiences with the categories of influence, while high-apprehensive writers reported more failure and negative experiences. In addition, there was a distinct difference in the perceptions of high- and low-apprehensive writers regarding the nature of writing and writers. High-apprehensive writers seemed to have a misconception about the nature of writing; specifically, they believed that the ability to produce good writing was an innate quality rather than a process requiring a great deal of effort.

Self-Efficacy Beliefs and Academic Performance in Science

Jinks and Morgan (1996) conducted a study in the area of science to compare the academic efficacy beliefs of seventh and eighth graders from an inner city K-8 school with those from a suburban junior high school. Subjects were students in two separate school districts. The first school was part of a district located in a major Midwestern urban setting. The K-8 building consisted entirely of an African-American population, was considered 100% low-income based on a federally sponsored free lunch program, and experienced a 53% mobility rate during a typical academic year. The second district was located in a Midwestern suburban setting. The school building housing grades 6-8 consisted of 88% Caucasian students, with the remaining 12% consisting of African-American, Hispanic, Asian, and Native American students. This school was considered 19% low-income based on a federally sponsored free lunch program, and experienced a 15% mobility rate during a typical academic

year. The instrument used to measure students' efficacy beliefs regarding school success was the *Morgan-Jinks Student Efficacy Scale* (MJSES).

A total of 570 responses were obtained from these two schools. The first step in analyzing the data from the two schools was a t-test, which revealed no differences between them. Next, students' performance in science, as indicated by their self-reported science grade, was examined as it related to self-efficacy as measured by the MJSES. The correlation between science grades and academic self-efficacy beliefs was .53 at the $p \leq .000$ level. The correlation indicated that the relationship between science performance and self-efficacy is positive and significant. Demographically and environmentally, these schools are very different; yet a similarity exists among the efficacy beliefs of the two groups of students. The results support the initial premise that students' efficacy beliefs may be a contributing factor to grade performance.

Summary

While summarizing the research on the relationship between self-efficacy beliefs and academic performance, three main points that supported the present study emerged. First, a learner's sense of academic efficacy, as it exists and develops within the context of the schooling experience, is an important factor in achievement (Jinks & Morgan, 1996). Second, because effort and persistence appear to be greater among individuals who attribute their performance to internal and controllable causes rather than to external or uncontrollable causes, teachers may be able to reverse or prevent negative self-efficacy beliefs by (a) consistently demonstrating through words and actions the belief that students are capable of being successful, and (b) by helping students to focus on what they can do rather than on what they cannot do in order to negate expressions of inability (Wachholtz & Etheridge, 1995).

Thirdly, learners have little basis for judging how they are doing without standards against which to measure their performance. Therefore, setting and attaining proximal goals are essential to provide an indication of mastery, unlike distal goals, which are too far removed in time to provide sufficiently clear markers of progress along the way to ensure a growing sense of self-efficacy (Bandura & Schunk, 1981).

Strategy Use/Study Skills Programs

Capable students at all grade levels may experience difficulty in school, not because they lack ability, but because they lack good study skills. Although struggling students are most recognized for not having developed effective study strategies, capable, achieving students may also go through school without having acquired effective approaches for studying (Nicaise & Gettinger, 1995). Even students who develop study skills on their own can learn to study more effectively and efficiently through explicit instruction (Wood, Woloshyn, & Willoughby, 1995). Research indicates that students tend not to acquire or use study strategies on their own without training and, indeed, do require explicit instruction in study skills (Schunk & Zimmerman, 1994, 1998). This section of the literature review takes a closer look at strategy use, as taught through various study skills programs: (a) *Informed Strategies for Learning* (Paris, Cross, & Lipson, 1984); (b) *Self-Instructional Training* (Chan, 1991); and (c) *Self-Regulated Strategy Development* (Zimmerman & Martinez-Pons, 1986, 1988) that have been designed to improve student learning and academic achievement.

Informed Strategies for Learning

Paris, Cross, and Lipson (1984) conducted a study using an experimental curriculum, *Informed Strategies for Learning* (ISL), that was designed to increase children's awareness and use of effective reading strategies to improve reading comprehension. Their intention to

increase children's metacognition regarding the use of reading strategies was defined as stimulating greater awareness of declarative, procedural, and conditional knowledge regarding reading comprehension. For example, declarative knowledge was demonstrated by knowing that making a chapter summary can aid recall; procedural knowledge was demonstrated by knowing how to perform various actions such as skimming and summarizing; while conditional knowledge was demonstrated by knowing when and why to use particular strategies. The program was designed to teach children how, when, and why to use the various comprehension strategies to become independent readers. Six fundamental comprehension activities were taught over 14 weeks: (a) understanding the purposes for reading, (b) activating relevant background knowledge, (c) allocating attention to main ideas, (d) critical evaluation, (e) monitoring comprehension, and (f) drawing inferences.

The subjects in the study were 87 third graders (mean age = 8 years, 5 months) and 83 fifth graders (mean age = 10 years, 5 month) from eight intact classes. Two third-grade and two fifth-grade classes received training, and the remaining four classes served as controls. Separate schools were chosen for experimental and control classes in order to prevent teachers and students from sharing their knowledge gained from training with the control groups. As a result, one third-grade and one fifth-grade class from each of four schools were assigned randomly to either the treatment or the control condition. Prior to assigning the experimental conditions, the schools were matched roughly on demographic and achievement data. Each classroom had nearly equal numbers of boys and girls, and classrooms had similar ethnic representation, approximately 65% Caucasian and 35% Black, Asian, and Native American.

Four measures were given as pretests and posttest, each at the appropriate level for third graders and fifth graders: The comprehension subtest of the *Gates-McGinitie Reading*

Tests (MacGinitie, 1978), the paragraph reading subtest of the *Tests of Reading Comprehension* (V. Brown, Hammill, & Wiederholt, 1978), and versions of the *Cloze Procedure* (McKenna & Robinson, 1980), and *Error Detection Tasks* (Wagoner, 1983). In addition, a 20-question multiple-choice posttest was administered to measure how well children learned the information included in the ISL lessons.

Analyses of covariance (ANCOVA) was used to determine if effects due to treatment, grade, and the Grade X Treatment interaction were significant. For the comprehension subtest of the *Gates-McGinitie Reading Tests*, both the treatment effect, $F(1, 162) = 1.33$, $p = .25$; and the Grade X Treatment interaction were not significant. For the *Tests of Reading Comprehension*, both the treatment effect $F(1, 155) + 3.00$, $p < .09$, and the Grade X Treatment interaction was not significant. For the *Cloze Procedure*, the grade effect, $F(1, 159) = 15.61$, $p < .001$, and the treatment effect $F(1, 159) = 22.47$, $p < .001$, were significant; but the Grade X Treatment interaction was not. For the *Error Detection Tasks*, both the grade effects, $F(1, 165) = 8.24$, $p < .005$, and the treatment effect, $F(1, 165) = 11.44$, $p < .001$, were significant; but the Grade X Treatment interaction was not. Results on the multiple-choice test showed that children's knowledge about reading strategies in the ISL program was related strongly to their levels of reading proficiency on some tasks. Based on these analyses, the researchers inferred that the students had used the instructed strategies, such as using surrounding context to supply unknown words and monitoring consistency and sensibility of text, to succeed on these tasks that required comprehension strategies.

Results of this study found that although children in the experimental ISL classes generally had greater knowledge about reading strategies than children in control classes and performed better on cloze and error detection tasks, they did not perform significantly better

on standardized, norm-referenced tests of reading comprehension. This study did, however, demonstrate that metacognition could be promoted through direct instruction in classrooms and that increased awareness could lead to better use of reading strategies.

Self-Instructional Training

Chan (1991) conducted a study to evaluate the effectiveness of *Self-Instructional Training* techniques to promote reading comprehension by providing instruction in the use of a self-questioning strategy for the identification of main ideas. The identification of main ideas was chosen to be the focus of instruction because it is believed to be a critical skill for both reading comprehension and learning from text. Subjects were tested in both a cued and an uncued condition. A 3 X 2 X 3 repeated-measures of analysis of variance (ANOVA) design was employed, with testing condition being the within-subjects factor and two Helmert contrasts for comparing the cued with the uncued condition. The first 3 in the research design represented the Subject Group: reading disability, chronological age (CA) match, and reading ability (RA) match. The 2 represented Instructional Type: standard instruction and generalization induction. The later 3 represented Testing Condition: pretest and posttests (cued, and uncued).

A total of 60 subjects from three different schools in Newcastle, Australia, participated in the study. The student population in all three schools came from families of low-average income, with few ethnic minorities. There were 20 Grade 5 and 6 students with reading disabilities (reading disability group), 20 average readers in Grade 3 (RA-match group), and 20 average readers in Grades 5 and 6 (CA-match group). Subjects in the reading disability group were 14 boys and 6 girls receiving remedial assistance from resource teachers on a part-time withdrawal or team teaching basis. They had no subnormal IQs or primary physical,

sensory, or emotional disabilities, but were reading at a level 2 or more years below average expectations for chronological age as assessed on the *St. Lucia Graded Word Reading Test* (Andrews, 1973) and the *GAP Reading Comprehension Test*, Form B3 (McLeod, 1977). The RA-match group students, consisting of 10 boys and 10 girls, were third-grade average readers who had word recognition ability comparable to that of the reading disability group. The CA-match group, consisting of 12 boys and 8 girls, were fifth- and sixth-grade average readers who were comparable to the disability group on chronological age.

Instructional and assessment materials used in this study were all written at the third-grade readability level. The pretest and posttests for identifying the main idea of a paragraph and reading comprehension were presented in multiple-choice format. Students were randomly assigned to either a standard instruction condition or a generalization induction condition. Instruction was provided in five daily 40-minute sessions. In the standard instruction condition, students were provided with a demonstration of how to ask themselves a designated set of questions while reading and how to look for answers to questions. They were then allowed to practice the strategy on their own. In the generalization induction condition, self-instructional training techniques were employed. The procedures involved the teacher explaining how, why, and when the self-questioning strategies could be used, followed by these five stages:

1. Cognitive modeling – the teacher verbalized the self-questions and answers by thinking aloud.
2. Overt external guidance – the teacher and students read through the given text together using overt self-questions and answers.

3. Overt self-guidance – the students read through the text by themselves while verbalizing the self-questions and answers aloud, providing the teacher the opportunity to monitor the students' use of the strategy.
4. Faded self-guidance – the students read the text while whispering the self-questions, which still allowed the teacher to monitor them.
5. Covert self-guidance – the students read the text using covert self-questions.

Students were post-tested on two separate occasions during the week following the completion of the instructional program, under a cued and an uncued condition. In the cued condition, students were prompted to employ the self-questioning strategy they had learned, while no such prompts were provided in the uncued condition.

Results in the identification of main ideas indicated the following: a significant subject group main effect, $F(2,54) = 14.25$, $p < .001$; a significant instruction type main effect, $F(1,54) = 3.87$, $p < .05$; a significant testing condition main effect, $F(2,108) = 20.88$, $p < .001$; and a significant Instruction Type x Testing Condition interaction, $F(2, 108) = 4.36$, $p < .02$. The significant interaction was located in the interaction among the reading disability versus RA-match contrast, instruction type, and cued versus uncued generalization contrast, $F(1,54) = 5.49$, $p < .03$. Findings showed that for the reading disability group, cued generalization was demonstrated by subjects in both instruction types, but uncued generalization was observed only in those subjects receiving self-instructional training.

An examination of the multiple choice comprehension results showed that the standard instruction and generalization induction instruction did not have differential effects on comprehension performance. Only the subject group main effect was significant, $F(2, 54) = 3.91$, $p < .03$. Of the two contrasts, only the comparison of the reading disability group with

the CA-match group showed significance, $F(1,54) = 6.30$, $p < .02$; the comparison of the reading disability group with the RA-match group did not.

In general, for all three groups, students taught to use the self-questioning strategy for identifying main ideas by the self-instructional training technique achieved higher mean scores on the identification of main ideas than those taught through the standard procedure. However, it appears that the effects of this self-instructional training were restricted to identification of main ideas and failed to transfer more generally to reading comprehension.

Self-Regulated Strategy Development

Zimmerman and Martinez Pons (1986) investigated students' use of self-regulated learning strategies in naturalistic settings. *Self-Regulated Strategy Development* was defined as actions directed at acquiring information or skill, such as, goal-setting, environmental structuring, self-consequences (self-rewarding and self-punishment), and self-evaluating. It was hypothesized that students selected from a high achievement track in a public high school would display greater use of self-regulation strategies than would students chosen from lower achievement tracks. Of particular interest was the identification of those self-regulation strategies that were most extensively used by high achieving students.

The randomly selected sample, drawn from a high school serving a middle-class suburban community of a large metropolitan area, consisted of 40 sophomores (25 boys and 15 girls) from the advanced achievement track and 40 sophomores (19 boys and 12 girls) from lower tracks. Students were assigned to achievement tracks according to their entrance test scores, grade point average prior to entering high school, and teachers' and counselors' recommendations. As a check on the achievement differences of the two groups of students, their *Metropolitan Achievement Test* (MAT) scores were compared. The mean level of

achievement for the high group was 82.3 in English and 88.6 in mathematics. The mean level of achievement for the low group was 71.83 in English and 60.93 in mathematics. The students ranged in age from 14 to 16, with a mean age of 15.

The researchers conducted interviews where students were asked to indicate the methods that they used to participate in class, to study, and to complete their assignments in six different learning contexts. The following example was given for the testing context:

> Most teachers give tests at the end of marking periods, and these tests greatly determine report card grades. Do you have any particular method for preparing for this type of test in English or history? . . . What if you are having difficulty? Is there any particular method you use? (p. 617)

A graduate student who was unaware of the students' achievement levels conducted the interviews in a separate room. Answers were recorded verbatim during the interview that lasted approximately 15 minutes. Teacher recorded the interviewed student's achievement track later. The number of strategies that the students mentioned for each of the six learning contexts varied greatly. Some students failed to mention a single strategy, while others offered as many as eight strategies. The interviewer also asked the students to rate the consistency with which each of the strategies noted were used based on a four-point scale, ranging from *seldom* to *most of the time*. Strategies were then coded into 15 categories and then further identified under strategy used (SU), strategy frequency (SF), and strategy consistency (SC). Strategy frequency recorded how many times the strategy was mentioned overall, while strategy consistency recorded the students' weighting of each strategy based on the four-point scale.

Using a discriminant function analysis, the researchers found that 91% of the students in the sample could be correctly classified into the high and low achievement groups based on their self-regulated learning measures. The results indicated that the SC measure was the most effective, although all three discriminant function coefficients were significant: SU = $F(1,78) = 37.18$, $p < .001$; SF = $F(1,78) = 95.94$, $p < .001$; and SC = $F(1, 78) = 118.30$, $p < .001$. A closer look at the SC measure revealed that high achieving students relied more heavily on social sources of assistance, i.e., 50% of high achievers asked for assistance from peers and 35% requested help from adults, while only 23% of lower achieving students sought assistance from peers, and just 8% solicited help from adults. However, the measurement of non-verbal data was found to be significant as well.

The findings from the Zimmerman and Martinez-Pons (1986) research were validated in the Zimmerman and Martinez-Pons (1988) study when the researchers relied on a similar format but added the classroom teachers' rating of the students' use of observable self-regulated learning strategies to the students' self-reported measures. This follow-up study using 44 male and 36 female high school students found that the students' reports of using self-regulated leaning strategies during a structured interview correlated .70 with the obtained teachers' rating factor, thus further supporting their original hypothesis that students from high achievement tracks utilize self-regulated learning strategies more than do students in lower achievement tracks.

Summary

Literature reviewed in this section supports the hypothesis that poor performance among students is the result of deficits in self-regulated strategy use, rather than the inability to acquire and execute specific strategies (Harris, 1986). First, Paris, Cross, and Lipson

(1984), in their study using *Informed Strategies for Learning* (ISL) to increase children's awareness and use of effective reading strategies to improve reading comprehension, found that the strategies that were taught were effectively used by students to execute specific tasks, i.e., the *Cloze Procedure*, in which training was received, but were not transferred to improve general reading comprehension.

Like Paris, Cross, and Lipson (1984), Chan (1991), in a study using *Self-Instructional Training* techniques, also found that students could be taught to use a strategy for a specific purpose, i.e., employing self-questioning to finding the main idea of a paragraph; but students did not naturally utilize this skill to improve their overall reading comprehension. Lastly, Zimmerman and Martinez-Pons (1986, 1988) revealed in their study using *Self-Regulated Strategy Development* that high achievement track students displayed a greater use of self-regulation strategies than did lower achievement track students thereby providing additional support for the hypothesis that deficits in self-regulated strategy use, not lack of knowledge regarding specific strategies, is responsible for poor student performance.

The Relationship between Self-Regulated Learning and Self-Efficacy

The research reviewed in the previous section supported relationships between self-regulated learning strategy use and academic performance, and between self-efficacy beliefs and academic performance. The following studies explore the relationship between self-regulated learning and self-efficacy that was conducted at the elementary, middle, and high school levels (Zimmerman, Bandura, & Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990); as well as at the college level (Hofer & Yu, 2003; Lynch, 2006; Zimmerman & Bandura, 1994).

Elementary, Middle, and High School Level Research

Based on the previous Zimmerman and Martinez-Pons (1988) study, which showed that students' mathematics and verbal achievement were highly correlated with their use of many self-regulated learning strategies, Zimmerman and Martinez-Pons (1990*)* decided to assess students' academic self-efficacy in these same two content areas. It was hypothesized that measures of students' verbal and mathematical efficacy would predict their use of self-regulated learning strategies. The study participants were chosen from one gifted and three regular schools in New York City. In both the gifted and regular schools, students came from generally middle-class homes and were equally varied in race. The randomly chosen research sample, with an equal number of boys and girls, was composed of Black, White, Hispanic, and Asian students. From the gifted school, 30 fifth-graders, 30 eighth-graders, and 30 eleventh-graders were chosen. The same representative sample was chosen from the regular public elementary, middle, and high school in the same city.

Using the same methodology as had been used in their previous (Zimmerman & Martinez-Pons, 1988) study, structured interviews were conducted with each of the subjects to evaluate the use of self-regulated learning strategies in eight different learning contexts that were described to each of the students. To measure academic efficacy levels in the areas of mathematics and verbal comprehension, the researchers composed 10 items of increasing difficulty for each of the two general areas. The words for the verbal efficacy scale were taken from the Thorndike and Lorge (1944) word frequency list, and the mathematics efficacy scale was composed of problems ranging from simple arithmetic to algebra, probability, and statistics. Before answering each one of the verbal and mathematical problems, students were

asked to rate their efficacy in being able to solve the problem on a 100-point percentage scale, with 0% meaning completely unsure, and 100% meaning completely sure.

To determine the relationship between students' perceptions of self-efficacy and their use of self-regulated learning strategies, two multiple regression analyses were performed in which students' self-regulated learning strategies were used to predict their verbal and mathematical efficacy separately. Results showed that both students' perceptions of mathematical efficacy were correlated with their use of self-regulated learning strategies, $r = .41$, $F(14, 165) = 2.31$, $p < .01$; and students' perceptions of verbal efficacy were correlated with their use of self-regulated learning strategies, $r = .42$, $F(14, 165) = 2.55$, $p < .01$.

The results also indicated that the gifted students made a greater use of certain self-regulated learning strategies than did regular students, especially in the areas of organizing and transforming information. Additionally, the gifted students were associated with high levels of academic efficacy, and the size of this effect was large ($r = .59$), which accounted for 35% of the variance in students' academic efficacy. The gifted students' verbal and mathematical efficacy means were 73% and 72%, respectively, whereas the means for regular students were 54% for verbal efficacy and 64% for mathematical efficacy. Generally, results showed that students displayed greater perceptions of efficacy and use of learning strategies as they advanced in school, however, a different developmental pattern of mathematical and verbal efficacy occurred for regular and gifted students. The gifted students showed an increase in verbal efficacy between grade 5 and grade 8, whereas regular students displayed a significant increase in verbal efficacy between grade 8 and grade 11.

Based on these results, the hypothesis that measures of verbal and mathematical self-efficacy would each be predictive of students' use of self-regulated learning strategies was

accepted. The findings indicated that students' efforts to strategically regulate their learning were associated with higher self-perceptions of mathematical and verbal efficacy. The researchers also suggested that teachers might wish to use self-efficacy measures to better understand students with little motivation as well as to better identify areas of students' giftedness.

The correlation between self-regulated strategy use and perceived self-efficacy that was found in the study conducted by Zimmerman and Martinez-Pons (1990) led to an investigation of the causal role of self-efficacy to self-regulate studying with high school students using path analysis procedures (Zimmerman, Bandura, & Martinez-Pons, 1992). Bandura developed a multi-dimensional self-efficacy scale that included two subscales related to academic studying; (a) self-efficacy for self-regulated learning, and (b) self-efficacy for academic achievement. The self-efficacy for self-regulated learning scale was designed to evaluate the use of study strategies while the self-efficacy for academic achievement scale was intended for use in a wide range of academic subjects, such as math, science, and social studies.

It was hypothesized that self-efficacy to regulate learning would be linked causally to self-efficacy for academic achievement. Also of special interest was the role of academic goal setting. The goal measure used in this study involved the students' expected grade in their social studies course. It was expected that self-efficacy for academic achievement would predict the grade goals that students set for themselves. It was hypothesized that self-efficacy would be directly linked to the grades the students attained at the end of the academic year as well as indirectly predictive of the grades through the types of goals they set for themselves.

The following path coefficients for significant paths between variables represent the results of the study and support the three main hypotheses. With $p < .05$, self-efficacy for self-regulated learning was significantly linked to self-efficacy for academic achievement (.51); which in turn was predictive of the students' grade goals (.31); which were predictive of final grades (.43). Self-efficacy for academic achievement was also indirectly predictive of students' final grades through the goals they set. This study showed that self-beliefs regarding regulatory efficacy were directly linked to perceived self-efficacy regarding academic outcomes.

College Level Research

In an effort to generalize the Zimmerman, Bandura, and Martinez-Pons (1992) findings regarding the link between self-beliefs of regulatory efficacy and perceived self-efficacy for academic achievement that had been conducted with high school students in a social studies course, Zimmerman and Bandura (1994) conducted a similar study with college students in a writing course. Despite the differences in course content and the age of the students, this second path analytic study found a very similar pattern of results. With $p < .05$, once again self-efficacy for self-regulated learning was significantly linked to self-efficacy for academic achievement (.36); which in turn was predictive of the students' grade goals (.31); which were predictive of final grades (.40). The researchers found that self-beliefs of efficacy in writing and goal setting played a major role in enhancing college students' writing achievement just as they did with high school students' achievement in social studies. Clearly, the causal link between self-efficacy for academic self-regulation and self-efficacy for academic achievement had been supported.

Hofer and Yu (2003) also conducted a study at the college level. Their focus was to examine the impact of self-regulated learning instruction provided through a semester-long course called, *Learning to Learn*. The course was designed to teach college level students to be self-regulated learners. The *Motivated Strategies for Learning Questionnaire* (MSLQ) (Pintrich, Smith, Garcia, & McKeachie, 1993) was used as a pretest and posttest with 78 undergraduate psychology students at the University of Michigan. Of the 78 students, 55% were women, and 73% were first- or second-year students. The course's goal was to teach concepts of cognitive and motivational psychology to help students understand the mental processes involved in learning, memory, and problem solving. Students were instructed in how to learn, how to remember and think, and how to motivate themselves. In addition, students were required to report on their learning and motivation in one of their courses, referred to as a target course, upon which they were to record their progress.

This study examined whether students in the *Learning to Learn* course showed changes in motivation and cognition from the beginning of the course to the end. With an alpha level set at .003, paired t-tests showed significant increases in three motivational variables: intrinsic goal orientation, utility, and self-efficacy. Intrinsic goal orientation reflected a concern with learning and mastery, utility was concerned with beliefs about the usefulness of the course content, and self-efficacy reflected perceptions of the capability to learn and understand course material.

The researchers noted that although there was no control group, the one-semester course did appear to have positive effects in developing motivation and strategy skills for self-regulated learning. Furthermore, they stated, "the increase in self-efficacy and the correlation between self-efficacy and cognition suggested by this study support the importance of self-

efficacy in cognitive engagement and its possible mediational role in performance" (p. 33). There was concern with regard to effective transfer of cognitive strategies to other courses and sustained change over time, although it was not explored. It was indicated, however, that since college instructors may be unlikely to teach general learning strategies to their students, there was value in a stand-alone course in learning to learn at the college level.

Building upon the findings from the Hofer and Yu (2003) study, Lynch (2006) investigated the association between motivational factors and course grades for freshman and upper level college students as measured by the *Motivated Strategies for Learning Questionnaire* (MSLQ) (Pintrich, Smith, Garcia, & McKeachie, 1993). The study was conducted in the fall with 501 freshman and upper class undergraduates from a mid-Atlantic private university. The student sample included 28 different courses taught by 26 professors. Approximately half of the subjects (N = 264, males = 127; females = 137) responded to the MSLQ in their freshman seminar courses. These courses addressed a variety of academic topics representing all curricular areas in the university. Undergraduates identified as upper level students (N = 237, males = 109; females = 127) were from 300 level courses representing a wide range of curricular subjects.

The instrument used in this study, the *Motivated Strategies for Learning Questionnaire* (MSLQ), is a self-report instrument where students respond to the items on a seven-point Likert scale (1 = *not at all true of me* to 7 = *very true of me*). The MSLQ is composed of subtests that are sensitive to different aspects of motivation, learning strategies, and resource management. This study focused on the motivational scales, which includes self-efficacy measurements as well as intrinsic and extrinsic goal orientation; the learning strategies scales, which includes metacognition and self-regulation; and resource management

scales, which includes time management and effort. The MSLQ was administered near the mid-point of the semester.

Correlations between motivational, learning strategies, and resource management along with course grades by level were conducted. Results showed that for freshman, self-efficacy was the largest correlation, slightly larger than effort regulation. Effort regulation, self-efficacy, and time/study regulation were the three largest correlations for upper level participants. A stepwise multiple regression analysis was conducted to identify the combinations of variables that may predict course grades. Using the data from all students, effort, self-efficacy, and extrinsic goal orientation yielded a significant $r = .41$, $F(3, 418) = 27.851$, $p = .000$. However, a closer look revealed that upper level students' grades were predicted with effort and self-efficacy, $r = .434$, $F(2, 169) = 19.637$, $p < .000$; whereas for freshman, self-efficacy and extrinsic goal orientation scores predicted students' grades, $r = .405$, $F(3, 246) = 16.066$, $p < .000$.

The researcher's interpretation of the results explained that freshman would more likely follow the learning patterns that they had acquired in high school, which likely included external controls from parents and teachers. However, with more advanced courses, the upper class students must have discovered the importance of effort. It was noted that freshman students were unlikely to be fully aware of their academic strengths and weaknesses due to underestimation of academic proficiency because of one bad experience in secondary school, or overestimation of academic proficiency because of previous success in secondary school as a passive learner. The results of this study led to the recommendation that university faculty spend time helping students to become more aware of their self-beliefs regarding learning and their study strategies.

Summary

In sum, review of both qualitative and quantitative studies suggests that there is a significant correlation between study strategy use and self-efficacy beliefs. Good studiers at all grade levels (elementary, middle, high school, and college) have been shown to see themselves as able to control their academic performance through self-regulated learning strategies and, therefore, have been motivated to devote effort and attention to studying (Hofer & Yu, 2003; Lynch, 2006; Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990).

Successful students have been described as active learners, those who self-initiate studying and are self-motivated, not passive recipients of information. Research has shown that self-efficacy perception is a key component to this self-motivation (Bandura & Schunk, 1981). This motivational attribute, noted in the research cited above, has been highly associated with academic achievement. Less successful students, on the other hand, may hold negative perceptions of their abilities and lack the motivation to do well or implement strategies to make their studying more effective (Schunk & Zimmerman, 1994).

Metacognition

"Metacognition is the monitoring and control of thought" (Martinez, 2006, p. 696). Believing that metacognitive ability can be taught, Martinez suggests that practice, modeling, and self-regulation are essential components in metacognitive development. First, students must be placed in situations that require metacognition. Second, cognitive modeling can be provided by the teacher through thinking aloud (making thinking audible during a demonstration of problem solving), and by working with other students to think critically together and discuss their reasoning aloud. Third, on the self-regulatory side, persistence in

the face of difficulty can be supported by teaching students to coach themselves. Self-talk (saying things such as, “Stay on track.”; “Don’t give up.”; “Concentrate.”; “I can do this.”) can reinforce the idea that with enough effort, learning will occur.

Peer-group discussions have been shown to help students develop metacognitive strategies. Brown (1988) explained it this way:

> Deep understanding is most likely to occur when students are required to explain, elaborate, or defend their positions to others; the burden of explanation is often the push needed to make students evaluate, integrate, and elaborate knowledge in new ways. (p. 316)

Studies that explore the relationship between peer-group discussions and metacognitive development are presented in this section of the review of the literature (Cook & Kaffenberger. 2003; Patrick & Middleton, 2002; Zimmerman & Blotner, 1979; Zimmerman & Ringle, 1981).

Consistent with the recommendations made by Martinez (2006), cited above, a math program specifically designed to teach students the cognitive processes and self-regulation strategies for problem solving in mathematics was created by Montague (2003). Believing that teaching self-regulation strategies as a component of cognitive strategy instruction helps students to take control of their actions, make appropriate decisions, and become independent problem solvers, Montague’s strategies facilitate math problem solving through self-instruction, self-questioning, and self-checking. Self-instruction requires that students tell themselves what to do; self-questioning requires that students ask themselves questions as they go about solving problems, and self-checking requires that students check themselves throughout the problem-solving process.

Self-checking, which requires that students reflect upon the appropriateness of the paths selected, is a key feature of self-regulated strategy use and self-monitoring, as well as an essential component of metacognitive development. This raises the question of when students should optimally self-report on their learning process. Brown and Kane (1988) concluded that the timing of self-reporting is critical. They found that the worst action was to ask students to describe how they would behave in hypothetical situations. Reporting in retrospect on what had just been done after the fact was a little better; however, on-line commentaries on actions and thoughts as they occurred was clearly preferable to help learning.

A series of studies have been conducted that support the use of timely self-reporting through journal writing to facilitate metacognitive development (Cisero, 2006; Connor-Greene, 2000; Wong, Kuperis, Jamieson, Keller, & Cull-Hewitt, 2002). These studies also are presented in this section of the review of the literature.

Journal Writing and Metacognitive Development

The benefits of journal writing have been explored for many years. Emig (1983) explained journal writing's benefits in the following way: "Writing, through its inherent reinforcing cycle involving hand, eye, and brain, marks a uniquely powerful multi-representational mode for learning" (p. 126). Progoff (1975) suggested that personal opinions, beliefs, and feelings could be clarified through conversations with the inner self by journal writing. Years later, Strong (1983) stated that the journal writing process was an integration of mind and body and that journal writing was "a means – perhaps the best means – to make knowledge personal, connected, and accessible to the self" (p. 36). This belief that personal involvement, learning, thinking, and writing are interrelated is the basis for the studies reviewed in this section (Cisero, 2006; Connor-Greene, 2000; Wong et al., 2002).

Connor-Greene (2000) conducted a study to evaluate the effectiveness of journal writing to increase student learning as measured by test grades in a college course on personality theories. The course focused on the historical perspective of 15 different theories. Each journal entry identified a theorist, described a specific concept from that theory, and explained how a character from a book or a movie illustrated the concept.

The participants consisted of three classes of approximately 68 students each. All three classes met on different days of the week in the same classroom at the same time of day and used the same textbook. One class completed 15 journal entries, one class completed 5 journal entries, and the third class did not write journal entries. Five tests were administered, consisting of a mix of multiple-choice, definitions, true-false with explanation, and essay questions.

The results were analyzed using an ANOVA, which did indicate a significant difference in test scores among classes. The grades in the 15-journal entry class ($M = 79.75$, $SD = 10.52$) were significantly higher than those in the no-journal class ($M = 73.84$, $SD = 12.07$), $t(118) = 4.42$, $p < .01$. Likewise, grades in the 5-journal entry class ($M = 81.86$, $SD = 7.78$) were significantly higher than those in the no-journal class, $t(123) = 4.41$, $p < .001$. There was no difference between the test grades of the two classes that wrote journals; however, it was noted that perhaps other benefits, such as improved writing skills, might have been realized that were not reflected in the grades received on the psychology tests. Overall, journal writing was found to be an effective method to foster understanding and application of concepts, to make connections between course material and real life, and to engage students in the process of thinking and learning.

Wong et al. (2002) investigated the effects of guided journal writing on students' understanding of themes and main characters in a complex novel. The study participants consisted of three grade 12 English classes that were randomly assigned to three different conditions. One class was assigned to a no writing condition, while the other two classes engaged in either writing focusing on character clues or writing focusing on general-response questions. Located in a suburban school district, the 23 male and 25 female students represented lower middle class to middle class socioeconomic levels. Reading comprehension, vocabulary, and total scores on the *Gates-MacGinity Reading Test* revealed through three one-way ANOVAs that no significant differences existed among the three groups of participants ($p > .05$) prior to the treatment. The three classes were taught by the same English teacher who facilitated class discussions about the class novel, *The Great Gatsby*, utilizing the same format and questioning techniques with all three classes.

The results of two posttests (one in-class and one take-home) showed that students who wrote guided response journals had superior test performances compared to students who did not write but participated in class discussions. Two separate one-way ANOVAs were computed on the data from the in-class and the take-home tests. Analysis of the scores from the in-class test revealed a significant main effect of conditions, $F(2, 45) = 8.62$, $p < .001$. The same pattern of results was evident in the data from the take-home test. There was a significant main effect of conditions, $F(2, 40) = 5.24$, $p < .01$. Post hoc comparisons, utilizing a Tukey-HSD test, indicated that the means of the two writing conditions differed significantly from the mean of the no-writing condition ($p < .05$) but that the means of the two writing conditions did not differ from each other ($p > .05$).

One week following the posttests, five students from each of the three conditions were randomly selected to participate in interviews regarding their experiences. Analysis of student interviews from the writing conditions provided information on how guided journal writing may have enhanced their literature learning. Analysis of student interviews from the non-writing group provided information regarding class discussions and whether class discussions helped with understanding of story themes and main characters. In sum, students who wrote guided-response journals felt that the act of writing made them think deeper about the story, triggered more ideas, clarified their thinking, and helped them retain information. Writing also helped students to clearly formulate the points that they wished to raise in class discussions and afforded them more confidence in presenting their views. The students who did not write, but who did participate in class discussions, said that the class discussions helped to clarify the text and its meaning along with providing the opportunity to hear multiple perspectives in story interpretations.

The researchers concluded that despite their focus on the contributions of writing to enhance literature learning, they were aware of the contributions of class discussions, which had been clearly voiced by the students. Their conclusion that writing encourages students' thinking supported their hypothesis and was in direct support of the findings of previous research on this topic.

Cisero (2006) investigated whether reflective journal writing would improve students' course performance in an educational psychology course that was taught by the same instructor over a period of three semesters. A total of 166 students from undergraduate sections served as the experimental group, while 317 students from previous semesters of the same course served as the comparison group. The course content and instructional format, i.e.,

lectures, discussions, and activities, were similar for the experimental and the comparison groups.

The course requirements involved three in-class exams, which were half multiple-choice and half short answer essay. The multiple-choice items assessed general knowledge and application of theories and principles, while the short answer essays focused on application and evaluation of learned material. The only difference in course requirements between the experimental and comparison groups was the journal assignment. Students in the experimental group were provided with a journal prompt for each chapter and were required to demonstrate their reflection on what they read either visually (through items such as charts or collages) or verbally (through autobiographies, explanations of opinions, interviews, and other materials).

The dependent measure was students' total performance across the three exams (0-100 percent). Students' scores were converted into letter grades and chi-square analyses were conducted to compare the groups on each of the letter grades. Results showed that the experimental group had significantly fewer students earning C and D grades than the comparison group [C grades, x2 (1, N = 165) = 19.69, $p < .001$; D grades, x2 (1, N + 82) = 12.49, $p < .001$]. The experimental group also had slightly more students with A and B grades than the comparison group; the percentage of F grades was similar for both groups.

The positive impact of journal writing was evident in the significantly lower percentage of C and D grades and in the slight increase in A and B grades. The researcher concluded that journal writing may benefit the average student but may not substantially help the good students or the struggling students. Acknowledging that journal writing does not eliminate the need for reviewing and studying for exams, journal writing can only be effective

in improving performance if students make the effort to engage in reflective thinking, thereby making learning more meaningful. It was found that some students demonstrated little reflective thinking in their journals.

In sum, it was found that for high achieving or intrinsically motivated students, journal writing may be unnecessary for meaningful learning to occur. For the remaining students, it may help them acquire the skill of self-reflection or press them to put more effort into learning. However, the researcher noted, "Reflective journal writing, like any other technique, can only be successful if students are willing to take an active part in the learning process and construct meaning for themselves" (p. 234).

Peer-Group Discussions and Metacognitive Development

Peer-group discussions, like other forms of cooperative learning, provide a forum for dialogue that promotes participation through help giving and help seeking (Paris & Newman, 1990).

> We believe that self-regulated learning is a desirable educational outcome that can be fostered by teachers who minimize academic competition, explain appropriate strategies, provide assistance during problem solving, and promote an atmosphere of collaboration in classrooms. (p. 87)

The following studies reveal the power of social interaction in the development of metacognitive knowledge, which like self-efficacy, is enhanced by positive interaction with others, practice, and reflective abstraction (Paris & Byrnes, 1989).

Zimmerman and Blotner (1979) examined the influence of modeling on young children's persistence during problem solving by conducting a study with 80 white, middle class first and second graders. These children were divided into four groups and asked to

witness an adult model attempting to separate two interlocking rings. One group of children witnessed the adult model persisting for a long duration (15 minutes) with no success, while another group of children witnessed the adult model persisting for a long duration (15 minutes) with the successful completion of the puzzle. A third group of children witnessed the adult model persisting for a short duration (30 seconds) with no success, while a fourth group of children witnessed the adult model persisting for a short duration (30 seconds) with the successful completion of the puzzle.

The children were then given similar wire puzzles to solve; however, these puzzles were purposely designed to be insolvable. The study was measuring the degree to which the models' behavior affected the children as measured by the length of time the children persisted at trying to solve the puzzle. Results showed that the model's duration of effort and the model's degree of success significantly affected the children's task persistence. Children exposed to the successful, persistent model made a significantly longer attempt to solve the puzzle than children in the control group did, whereas children exposed to the unsuccessful, nonpersistent model displayed a significantly shorter effort than their control group counterparts did. This study indicated that modeling experiences could improve as well as inhibit children's motivation to achieve.

A variation on the previous study was conducted by Zimmerman and Ringle (1981) in which the adult model verbally expressed optimism or pessimism at the possibility of solving the puzzle. The participants for this study consisted of 100 first and second grade black and Hispanic children from a lower socioeconomic level in an urban school. Children were evaluated on their persistence at solving the puzzle as was done in the previous study, as well as on an insolvable word puzzle to be attempted on the following day. Data were analyzed

using analysis of variance procedures. The initial analysis used a 2 (model duration: long, short) X 2 (model comments: confident, pessimistic) X 2 (sex) X 2 (grade: first, second) X 2 (task: wire puzzle, word puzzle). A 5 X 2 model was also utilized to compare the performance of each separate modeling group. The groups consisted of high persistence, confident; high persistence, pessimistic; low persistence, confident; low persistence, pessimistic; and control (no modeling was involved). The tasks were the insolvable wire puzzle and the insolvable word puzzle.

Results showed a main effect for the model's duration of persistence, $F(1, 64) = 5.22$, $p < .03$, with children exposed to the long modeling duration persisting longer on both puzzles (M = 210 sec.) than children exposed to the short duration (M = 147 sec.). A main effect for model comments was also found, $F(1, 64) = 34.38$, $p < .001$, with children who observed the confident model persisting longer (M = 259 sec.) than youngsters who observed the pessimistic model (M = 97 sec.). No other main effects and no interactions attained statistical significance.

The results for the performance of each separate modeling group also showed that the main effect for the experimental group attained statistical significance, $F(4, 80) = 10.17$, $p < .001$. The children who observed the high persistence, confident model persisted significantly longer than children in the control group, $F(1, 80) = 6.60$, $p < .05$. Children in the low persistence, pessimistic modeling group displayed nearly significantly less persistence than children in the control group, $F(1, 80) = 2.41$, $p < .07$, one tailed. The remaining two modeling groups, which received a combination of one positive and one negative modeling treatment, i.e., those observing the high persistence, pessimistic model or the low persistence, confident model, did not differ from the mean of the control group. Tukey tests revealed that

children in both confident modeling groups (the long and short durations) displayed significantly longer problem-solving persistence than children who observed the low persistence, pessimistic model (both *p*s < .05). No other cell mean comparisons attained statistical significance.

The findings in this study replicated the findings reported in the previous study conducted by Zimmerman and Blotner (1979); however, this study did provide evidence that motivation to achieve on one task could be generalizable to a very different type of task. The transfer results, obtained after a day's delay, indicated some degree of permanence in the children's motivational state. Zimmerman and Ringle noted that the verbal modeling in their 1981 study was shown to be more influential on the children's task persistence than the model's actual duration of performance, and that the model's expressed confidence about achieving a solution to a problem affected the learners' motivation to persist.

Patrick and Middleton (2002) sought to investigate metacognitive development and self-regulated learning through a qualitative lens. The researchers explained that two important qualitative methods are observation and interviews. They noted that observational research is useful because it can portray learners' actions rather than their recollections or beliefs; however, observations are limited to examination of behaviors and provide limited insight into how individuals make sense of events. Therefore, the researchers included open-ended questions to complement observations because they allow respondents to reveal and explain events and experiences in their own words and from their own perspectives.

Their research, conducted with seventh and eighth grade urban students, investigated cognitive, metacognitive, motivational, and collaborative engagement in an inquiry-based science program. Within each science class, the researchers focused on a subsample of 4-5

students for more intensive study. Their teacher, based on criteria of good attendance, average achievement level, and anticipated willingness to share their thoughts, nominated these target students. Seventh graders were engaged in a water-quality and air-quality curricula, and eighth graders were engaged in curricula about global warming. Classes spent approximately 10 weeks on a curricular topic.

Classroom observations were conducted by videotaping the classrooms of targeted participants approximately three times per week over the course of the unit. The researchers later created a detailed summary of each videotape, including descriptions of teacher and student behavior and conversations. From these observations, instances were noted when students responded in ways that indicated they were engaged cognitively, metacognitively, motivationally, or collaboratively; such as when they appeared from their talk or behavior to be thoughtful, strategic, reflective, involved, interested, or interactive. At the end of the unit, the researchers conducted individual 20-30 minute interviews with the target students to investigate their attitudes, beliefs, and perceptions about science in general and about their experiences during the recently completed science unit.

Although not all students viewed collaboration in ways that the teacher or researchers may have expected or wanted, i.e., passively relying on others to obtain the correct answer, or preferring to work alone for a faster and more accurate solution to the problem, there were positive results to report. The researchers were looking for evidence of students supporting each other toward becoming self-regulated, or engaging in co-regulation. Ideally, Patrick and Middleton (2002) believed that students would

> . . . monitor task engagement and each other's actions, contribute ideas, interpretations, and conclusions, develop strategic ways to approach problems,

> promote conceptual change and more complex understandings than [could have been] constructed independently, and sustain involvement through encouragement and support. (p. 32)

The researchers did observe instances in which students did engage in these behaviors. Most notably, students alluded to the encouragement from group members that seemed to support motivation and willingness to stick with tasks that were challenging and not met with initial success. Like the previously reviewed study conducted by Zimmerman and Ringle (1981), observing a model's persistence and statements of confidence significantly increased a learner's degree of persistence.

Cook and Kaffenberger (2003) conducted a quantitative study to evaluate the effectiveness of a counseling and study skills program, named *Solution Shop*. Believing that identifying at-risk students at the middle school level can prevent future school failure by addressing students' specific academic and social needs before high school, the researchers selected middle school students with two or more failing grades for the *Solution Shop* program. The program was designed for ten students to meet for one period a day, for one semester, with the professional school counselor. Each student in the program developed individual academic and personal goals. The students participated in solution-focused group counseling for a portion of the class period, study skill instruction for a portion of the class period, and received individualized tutoring during the remainder of the class period. Parents and teachers were involved in the referral and remediation process.

The goals of *Solution Shop* were to help students improve their grades and to develop positive feelings about their academic accomplishments. Students were expected to internalize successful behaviors, learn to use problem-solving skills, and to improve social interactions

with peers and teachers. The theoretical assumptions for the program were based on research conducted by Wilson (1986). Wilson reviewed research that had been conducted involving professional school counselor interventions with low achieving and underachieving K-12 students. Successful strategies that related to academic improvement were identified: (a) group counseling seemed more effective than individual counseling, (b) structured group programs were more effective than unstructured programs, (c) programs in which students volunteered for treatment were more successful than programs with nonvoluntary participants, and (d) programs that combined counseling and study skills were most effective.

Success in the *Solution Shop* program was measured by improvement in the student's overall quarterly grade point averages. Report cards and progress reports were used to establish each student's overall academic success level. Daily monitoring sheets were used to help students develop a greater awareness of how well they were doing in school. Teachers completed a point sheet in the form of a checklist at the end of each class period based on criteria such as being on time, being prepared, completing homework and class work, and exhibiting appropriate behavior. Parents signed the point sheets each night to remain informed of the student's daily progress. The point sheet was then returned to the program director the following day to involve all three parties and to strengthen the home-school connection.

Results of the study revealed that 75% of the students who participated in the program made some or significant changes, while 25% make little or no changes. The researchers noted that one of the most powerful benefits to Solution Shop was the empowerment of the student. Students were empowered to take responsibility for their own academic improvement. Students were expected to internalize successful behaviors, learn to use problem-solving skills, and to improve social interactions with peers and teachers.

Summary

Review of the studies on metacognition lends support to the hypothesis that metacognitive thought can be taught through the use of journal writing (Cisero, 2006; Connor-Greene, 2000; Wong et al., 2002), and through peer-group discussions (Cook & Kaffenberger, 2003; Patrick & Middleton, 2002; Zimmerman & Blotner, 1979; Zimmerman & Ringle, 1981). These activities have been shown to provide opportunities for thoughtful reflection, supportive interaction, and positive modeling to occur.

Research Implications and the Current Study

According to Paris and Newman (1990), ". . . self-regulated learning is an important educational goal for all students and an important topic for research in educational psychology" (p. 87). This literature review included research that explored the two key processes through which self-regulated learning is believed to be achieved, i.e., self-efficacy perceptions and strategy use (Zimmerman, 1989a), as well as methods to develop the metacognitive abilities that are essential to become a self-regulated learner. Zimmerman (1989b) stated that, "students can be described as self-regulated to the degree that they are metacognitively, motivationally, and behaviorally active participants in their own learning process" (p. 4).

First the area of self-efficacy was explored, both the theory (Bandura, 1977) and the relationship between self-efficacy beliefs (Bandura, 1977, 1982, 1986, 1993) and academic performance, which has been shown to be positive and statistically significant across a wide variety of subjects, including the subject areas of mathematics (Bandura & Schunk, 1981), writing (Wachholz & Etheridge, 1995), and science (Jinks & Morgan, 1996, 1999). There also has been a consensus among researchers that self-regulated learning instruction has a positive

effect on self-efficacy and achievement. Therefore, a closer look at a number of study skills programs was undertaken.

Most study skills programs are predicated on developing effective strategies used by successful learners. The following study skills programs were reviewed: (a) *Informed Strategies for Learning* (Paris, Cross, & Lipson, 1984); (b) *Self-Instructional Training* (Chan, 1991); and (c) *Self-Regulated Strategy Development* (Zimmerman & Martinez-Pons, 1986, 1988). Overall the findings consistently showed that students were capable of acquiring and executing the strategies that had been taught. However, students did not transfer the use of the strategies to other contexts. Essentially, students had developed procedural knowledge, but not conditional knowledge (Pressley, 1995). Students did learn how to execute a strategy, but they did not necessarily understand when and where the strategy could be applied. These findings led to the hypothesis that poor performance among students is the result of deficits in self-regulated strategy use, rather than an inability to acquire and execute specific strategies (Harris, 1986).

The studies cited above support a positive relationship between self-regulated learning and academic performance, and between self-efficacy beliefs and academic performance. For this reason, a review was conducted of studies that explored the relationship between self-regulated learning and self-efficacy (Hofer & Yu, 2003; Lynch, 2006; Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990). The research results in this area demonstrated through self-reports, qualitative, and quantitative means that there is a significant correlation between study strategy use and self-efficacy beliefs.

Acknowledging the powerful effects that perceived self-efficacy and self-regulated learning has on the ability of students to reach their full potential, thoughtful attention to the development of these factors is essential. However, cautious optimism is necessary as Paris and Newman (1990) warned that changes in student performance might be due to obedience and not an enduring belief in the use of the new strategies. Paris and Newman cautioned that unless students' truly adopt the new strategies and incorporate them into their own personal goals and theories, the observed beneficial effects on performance would not be sustained. As Zimmerman (1998) described, a self-regulated learner is one who "self-generate thoughts, feelings, and actions for attaining academic goals" (p. 73). More specifically, self-directed learning requires the ability to use cognitive and metacognitive strategies (Bandura, 1993).

"Metacognition is the monitoring and control of thought" (Martinez, 2006, p. 696). Believing that metacognitive ability can be taught, Martinez suggested that practice, modeling, and self-regulation are essential components in metacognitive development. Brown (1988) further explained that "Deep understanding is most likely to occur when students are required to explain, elaborate, or defend their positions to others . . . ." (p. 316).

The final section of the review of the literature focused on two methods of increasing metacognition and strategy use: (a) peer-group discussion, and (b) journal writing. Support for the value of peer-group discussions was further explored in studies conducted at the elementary, middle, and college level (Cook & Kaffenberger, 2003; Patrick & Middleton, 2002; Zimmerman & Blotner, 1979; Zimmerman & Ringle, 1981). Self-checking, a key feature of self-regulated strategy use and self-monitoring, is an essential component of metacognitive development, which also requires that students reflect upon the appropriateness of the paths selected. To investigate the usefulness of timely self-reporting, a review of

research regarding journal writing to facilitate metacognitive development was also conducted (Cisero, 2006; Connor-Greene, 2000; Wong et al., 2002).

Ultimately, it was the positive support found in the literature for the effectiveness of journal writing, with its integration of mind and body through personal involvement, learning, thinking and writing; and peer-group discussions, which provide opportunities for thoughtful reflection, supportive interaction, and positive modeling to occur that validated this current study's rationale. Paris and Newman (1990) stated, "The challenge for educators and researchers alike is to discover the social and cognitive conditions that enhance self-regulated learning among students" (p. 100). This current study hypothesized that a study skills program designed to teach self-regulated learning strategies, utilizing daily journal writing and weekly peer-group discussions, would overcome the problem of lack of transfer to other domains experienced by previous study skills programs, while successfully improving students' levels of self-efficacy and self-regulated learning strategy use through metacognitive development.

CHAPTER THREE: METHODOLOGY

This study examined the impact of a study skills program utilizing daily journal writing and weekly peer-group discussions on the perceptions of self-efficacy and the acquisition of effective learning strategies. Acknowledging that educators must be cognizant of the differentiated needs of their students and that instructional methods that may be beneficial for one group of students may not be so for another, the research questions have been posed to evaluate the effectiveness of the Study Skills Program between students with high and low grade point averages (GPAs). This chapter begins with the research questions and hypotheses; then it continues with a description of the subjects and sampling procedures used, a description of the research design, a description of the instruments used and the reliability and validity of those instruments, the data collection procedures, and a statement of ethics.

Research Questions and Hypotheses

Research Question #1: Is there a significant difference in perceived self-efficacy for students who have high and low grade point averages who have also participated in the Study Skills Program as compared to those who have not participated in this type of program?

a. Is there a significant difference in perceived self-efficacy for students who have participated in the Study Skills Program as compared to those who have not participated in this type of program?

   Directional Hypothesis: Students who participate in the Study Skills Program will demonstrate significantly improved levels of perceived self-efficacy as compared to those who have not participated in the program.

b. Is there a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to their perceived self-efficacy?

Non-directional Hypothesis: There will be a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to perceived self-efficacy.

Research Question #2: Is there a significant difference in self-regulated learning strategies use for students who have high and low grade point averages who have also participated in the Study Skills Program as compared to those who have not participated in this type of program?

a. Is there a significant difference in self-regulated learning strategies use for students who have participated in the Study Skills Program as compared to those who have not participated in this type of program?

Directional Hypothesis: Students who participate in the Study Skills Program will demonstrate significantly improved levels of self-regulated learning strategies use as compared to those who have not participated in the program.

b. Is there a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to self-regulated learning strategies use?

Non-directional Hypothesis: There will be a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and

students' grade point average (High GPA or Low GPA) with respect to their self-regulated learning strategies use.

Description of Setting and Subjects

The sample for this study was drawn from the population of a suburban, northeastern, public middle school, which houses approximately 1,578 students in grades 5 through 8. Student ethnicity is 83% White, non-Hispanic; 12% Hispanic; 3% Black, non-Hispanic; 2% Asian/Pacific Islander; and <1% American Indian. Student subgroups include 9% eligible for free or reduced-price lunch program; 12% IEP students; 0% migrant students; and <1% limited English proficient. The attendance rate is 95%, and the student per teacher ratio is 14:1 for this school. The participants in this study included 83 sixth grade students drawn from a population of 368 students from three sixth grade teams. Each of the sixth grade teams was composed of approximately 123 students, 6 teachers, 1 special education teacher, and 1 teaching assistant. The participants (n = 83) ranged in age from 10.75 to 12.25, with a mean age of 11.5 years.

This convenience sample was composed of sixth grade participants whose parents signed consent forms to allow their children to participate in the study and consisted of 43 females and 40 males. These participants were categorized initially by grade point average into High GPA (Upper 40% of the sample) or Low GPA (Bottom 40% of the sample). They were then randomly assigned to one of the two instructional methods, Study Skill Program participation (Treatment Group) or the non-participation (Control Group) so that their progress could be compared to that of other participants at the same GPA level.

Description of the Research Design and Data Analysis

A quantitative, quasi-experimental, pretest-posttest, control group study with random assignment utilizing a 2 X 2 factorial design was conducted. Instructional method (Study Skills Program Participation or Non-Participation) and students' grade point averages (High GPA or Low GPA) were the independent variables. The dependent variables for the study were self-efficacy perceptions and self-regulated learning strategies use as measured by the Self-Efficacy subscale and the Self-Regulated Learning Strategies Use subscale of the *Motivated Strategies for Learning Questionnaire* (MSLQ), Middle School Level, (Pintrich & DeGroot, 1990).

A two-way ANCOVA ($p = \leq .05$) was conducted to analyze the data collected for each of the two dependent variables, utilizing pretest scores for self-efficacy perception and self-regulated learning strategies use from the MSLQ as covariates. The two-way ANCOVAs were conducted with posttest scores from the MSLQ for self-efficacy perception and self-regulated learning strategies use to determine whether there was a statistically significant main effect for each of the independent variables as well as a statistically significant interaction between the two factors being evaluated.

Instrumentation

The *Motivated Strategies for Learning Questionnaire* (MSLQ), Middle School Level, (Pintrich & DeGroot, 1990), was used for this study. The Middle School Level MSLQ is a 56-item, self-report instrument consisting of motivational subscales and learning strategies subscales, which were designed to be used singly or in combination to fit the needs of the research. Students are instructed to respond to the items on a 7-point Likert scale (1 = *not at all true of me* to 7 = *very true of me*).

Factor analysis was used to guide scale construction, resulting in exclusion of some of the items from the scales because of a lack of correlation or stable factor structure. Following the factor analysis, the authors calculated internal consistency estimates of reliability (Cronbach's alpha). The Self-Efficacy subscale (alpha = .89) consists of nine items regarding perceived competence and confidence in performance of academic work. The Self-Regulated Learning Strategies subscale (alpha = .83) consists of a total of 22 items; 13 items pertaining to cognitive strategy use and 9 items constructed from metacognitive and effort management items.

In terms of validity, social desirability bias is considered a significant threat to the construct validity of all self-report instruments; however, the authors of the MSLQ have found that measures of response bias did not account for any significant amount of variance and did not change their results. To determine predictive validity, the MSLQ scores were correlated with students' final course grades and were found to demonstrate significant predictive validity. The Self-Efficacy scale showed r = .41, and the Self-Regulated Learning Strategies scale showed r = .30. "The instrument was designed to be given in class and takes approximately 20-30 minutes to administer" (Duncan & McKeachie, 2005, p. 119). The MSLQ has been translated into multiple languages and has been used by hundreds of instructors throughout the world including 56 empirical studies between 2000 and 2004 (Duncan & McKeachie, 2005).

Additionally, students were asked to provide feedback to the researcher regarding their evaluation of the usefulness of the strategies presented each week. These weekly feedback forms, entitled *Students' Rating of Study Strategies* (Appendix C, D, E, and F), were not

utilized quantitatively to answer this study's research questions, however, they were a source of additional data collection to provide the researcher with useful insight.

Data Collection Procedures and Timeline

In the Fall of 2007, during the first week of school, an informational letter (Appendix A) and consent forms (Appendix B) regarding the Study Skills Program were sent home to the parents of all 368 sixth graders in the school. Of the 368 consent forms distributed, 116 signed forms were returned. Upon receipt of each consent form, an ID number was assigned to the student so that teachers could confidentially provide data on each participant in their class to the researcher. If a student was absent from school during the administration of the pretest or the posttest, that student was removed from the research sample. All procedures used during data collection were approved by the Human Subjects Research Review Committee at Western Connecticut State University.

Approximately four weeks after the start of the first semester, the researcher distributed the Self-Efficacy assessment and Self-Regulated Learning Strategies assessment from the *Motivated Strategies for Learning Questionnaire* (MSLQ), Middle School Level, to the sixth grade homeroom teachers. Students in each sixth grade homeroom who had parental permission to participate in the study were asked to complete the instruments. All other students were given alternative assignments during the data collection process. Teachers distributed questionnaires and read the directions and each of the items on the MSLQ aloud to the students to compensate for any reading comprehension difficulties that might have interfered with a student's ability to complete the instrument accurately. Teachers then collected all forms. The entire process took 20-30 minutes.

Next, the researcher calculated grade point averages for each of the 116 confidentially identified student participants, based upon the grades they had received on their first 5-Week Report for the school year in the four major academic areas of English Language Arts (ELA), Mathematics, Science, and Social Studies. Overall grade point averages obtained from these 116 students ranged from a low of 70 to a high of 99. To establish a High GPA and a Low GPA group, the middle 20% (GPAs from 82 to 87) were removed. This resulted in the removal of 21 students from the sample.

The remaining participants, representing the upper 40% and the bottom 40% of the sample, were comprised of 54 students with High GPAs (88 to 99) and 41 students with Low GPAs (70 to 81). These participants were numbered from 1 to 54 for High GPAs and 1 to 41 for Low GPAs. Using a table of random numbers, the researcher randomly assigned 21 student participants with low grade point averages to the Low GPA Treatment group and 20 to the Low GPA Control group. In an effort to establish a comparable number of participants in each group, twelve student participants needed to be excluded from the High GPA group. Therefore, through a process of random selection, the researcher used a table of random numbers to randomly assign 21 student participants with high grade point averages to the High GPA Treatment group and 21 to the High GPA Control group resulting in the removal of 12 students with high grade point averages from sample.

To control for differences in presentation of the study skills treatment, the same instructor taught all of the study skills classes. To ensure that no academic periods were missed, these classes occurred during an activity session that was combined with the lunch periods. One day at the beginning of each of the five weeks, Monday or Tuesday, was used for learning strategies instruction; and one day at the end of each of the weeks, Thursday or

Friday, was used for peer-group discussions. The 2 experimental groups composed of 21 comparable subjects each brought their lunches to the Home and Careers room for a *Lunch Bunch* study skills period, twice-a-week, on either Monday and Thursday, or Tuesday and Friday.

The next five weeks of the study consisted of once-a-week focused self-regulated learning strategies instruction, and once-a-week peer-group discussions, along with daily journal writing by students to facilitate the development of metacognitive skills through consistent practice. Each student was provided with a pocket folder with brass fasteners to hold notebook filler paper for daily entries. A summary sheet of the current week's focus was also provided for students to individually evaluate the usefulness of each strategy. These weekly summary sheets, *Students' Ratings of Study Strategies* (Appendix C, D, E, and F), were submitted to the researcher at the Lunch Bunch meeting the following week.

Week One's lesson focused on the topics of *Time Management, Affirmations, and Learning Modalities*. Week Two's lesson focused on the topic of *Memory Techniques*. Week Three's lesson focused on the topics of *Mind Mapping* as a technique to assist with note taking, and *Networking* as a pre-writing technique. Week Four's lesson focused on the topic of *Active Reading Techniques*, including *SQ3R* for literal recall and *Questioning Strategies* for higher-order thinking skills. Week Five was used to make-up any missed information and to review any topics of concern noted by students. Authentic materials, i.e., sixth grade content area textbooks and trade books, were used to demonstrate each strategy along with brainstorming and discussion activities.

The journal writing and peer-group discussions were chosen as part of the instructional method due to their metacognitive focus and because of research that suggests

words change thoughts, and thoughts change behavior (Brand, 1999). The strategies were selected based on a college level self-regulated learning study conducted by Hofer and Yu (2003), which examined the effectiveness of a semester-long course, called *Learning to Learn*. The program focused on the following six cognitive constructs: (a) *Memorization* – use of basic rehearsal and memory strategies; (b) *Elaboration* – use of paraphrasing or summarizing strategies; (c) *Organization* – use of networking or outlining strategies; (d) *Planning* – goal setting and task analysis; (e) *Monitoring* – tracking attention when reading; and (f) *Deep Processing* – metacognition (planning and self-checking).

At the conclusion of the five-week program, students in each sixth grade homeroom who had parental permission to participate in the study were asked to once again complete the MSLQ Self-Efficacy assessment and Self-Regulated Learning Strategies assessment as posttest measures. Teachers followed the same procedure as with the pretest measures and collected all forms. Once the self-efficacy and self-regulated learning strategies use scores were calculated, and data analysis was conducted.

Statement of Ethics

Permission to conduct this study was granted by the school district's administrators, the district's Board of Education, the school's building administrators, as well as the sixth grade teachers involved, and the parents of all student participants. To assure confidentiality, each participant was assigned a confidential identification number. All data were stored in a fireproof, locked filing cabinet in the researcher's home or office and was maintained there until the findings had been published, accessible only to other researchers for whom the data proved useful in further comparative analyses and who were enrolled in Western Connecticut State University's Doctor of Education in Instructional Leadership Program.

CHAPTER FOUR: ANALYSIS OF DATA AND FINDINGS

To analyze the effect of the Study Skills Program on perceived self-efficacy level and self-regulated learning strategies use of participants with low and high GPAs, a two-way ANCOVA ($p = \leq .05$) was conducted for each of the two dependent variables. Pretest scores on self-efficacy perceptions and self-regulated learning strategies use as measured by the subscales of the *Motivated Strategies for Learning Questionnaire* (MSLQ), Middle School Level, were used as the covariate. The independent variables were grade point average (High GPA or Low GPA) and instructional method (Study Skills Program Participation or Non-Participation). The dependent variables for the study were the posttest scores on self-efficacy perceptions and self-regulated learning strategies use as measured by the subscales of the *Motivated Strategies for Learning Questionnaire* (MSLQ), Middle School Level.

Research Questions and Hypotheses

Research Question #1: Is there a significant difference in perceived self-efficacy for students who have high and low grade point averages who have also participated in the Study Skills Program as compared to those who have not participated in this type of program?

a. Is there a significant difference in perceived self-efficacy for students who have participated in the Study Skills Program as compared to those who have not participated in this type of program?

   Directional Hypothesis: Students who participate in the Study Skills Program will demonstrate significantly improved levels of perceived self-efficacy as compared to those who have not participated in the program.

b. Is there a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to their perceived self-efficacy?

   Non-directional Hypothesis: There will be a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to perceived self-efficacy.

Research Question #2: Is there a significant difference in self-regulated learning strategies use for students who have high and low grade point averages who have also participated in the Study Skills Program as compared to those who have not participated in this type of program?

a. Is there a significant difference in self-regulated learning strategies use for students who have participated in the Study Skills Program as compared to those who have not participated in this type of program?

   Directional Hypothesis: Students who participate in the Study Skills Program will demonstrate significantly improved levels of self-regulated learning strategies use as compared to those who have not participated in the program.

b. Is there a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to self-regulated learning strategies use?

   Non-directional Hypothesis: There will be a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and

students' grade point average (High GPA or Low GPA) with respect to their self-regulated learning strategies use.

Description of Analyses and Findings

To analyze the effect of the Study Skills Program on perceived self-efficacy level and self-regulated learning strategies use of middle school students with high and low grade point averages, two separate two-way Analysis of Covariance tests (ANCOVAs), with $p = \leq .05$, were conducted. Use of the two-way ANCOVA allowed the researcher to equate groups on the dependent variables prior to treatment and to investigate main effects of the study skills program and grade point average on the dependent variables while examining the interaction effects of the independent variables (treatment and grade point average). A between-subjects analysis was used because different individuals were assigned to different groups, or cells, in the design. This study, which represents a two-way factorial design with two independent variables (GPA and Group), contains 2 X 2, or 4, different combinations due to the Treatment and Non-Treatment conditions. The Non-Treatment condition for both GPA levels is referred to as the High GPA or Low GPA Control Group in this study. The analysis compared four cell means (High GPA Treatment Group; Low GPA Treatment Group; High GPA Control Group; and Low GPA Control Group).

Because data were analyzed using two separate two-way ANCOVAs, the Bonferroni adjustment procedure was used to avoid having an inflated Type I error rate (Huck & Cormier, 1996). A Type I error occurs when a researcher rejects the null hypothesis when it should have been accepted, thus finding significance when none exists. For this study, a Bonferroni adjustment procedure was used on the SPSS statistical analysis program to calculate an appropriately adjusted alpha level to avoid having an inflated Type I error rate.

According to Hinkle, Wiersma, and Jurs (1988, p. 270), the adjusted comparison-wise error rate, or level of significance, is computed as follows:

$\alpha_e = 1 - (1 - \propto)^c$

α_e = experiment-wise error rate

$\propto$ = probability or alpha rate

$c = \frac{k(k-1)}{2}$

k = the number of possible comparisons

If k = 2, then c = 1

For this study, $\alpha_e = 1 - (1 - .05)^1$

$\alpha_e = 1 - (.95)$

$\alpha_e = .05$

$c = \frac{2(2-1)}{2}$

$c = 1$

$\alpha = \frac{.05}{1}$

$\alpha = .05$

A more conservative researcher might have followed an alternate procedure for calculating the adjusted comparison-wise error rate offered by Huck & Cormier (1996), which divides the alpha level (.05) by the number of tests. With this method, the effect would be tested at the .025 level when using two separate two-way ANCOVAs. According to Hinkle, Wiersma, and Jurs (2003), "There has been a tendency in behavioral science research to guard against the Type I error, but some critics assert that this tendency has resulted in setting alpha levels that are too conservative" (p. 195). The .025 level seemed overly conservative, so the

calculation offered by Hinkle, Wiersma, and Jurs (1988, p. 270) was selected; and the .05 level was used as the adjusted comparison-wise error rate for this study.

To begin data analysis, all participants' pretest and posttest data was aligned and recorded utilizing confidential identification numbers; then the data cleansing process was initiated. Any data from participants who did not complete both the pretest and the posttest were eliminated from further analysis as were any pretests or posttests submitted with missing data. Cleansed data was then checked for assumptions of normality (skewness and kurtosis) and homogeneity (Levene's test). These results are reported in Table 1. While the Levine's test revealed that the error variance was equal across groups, the skewness and kurtosis indices (-1.200, 1.300) were slightly above the criteria of $\pm$ 1. Therefore, Box M was analyzed for the variables revealing that there were no outliers, so data analysis proceeded. Descriptive statistics for variables of interest in this study are reported in Table 2 and Table 3.

Table 1

Levene's Homogeneity of Variances and Indices of Skewness and Kurtosis

	Levene's Statistic				Indices	
	F	df1	df2	Sig.	Skewness	Kurtosis
Posttest Perceived Self-Efficacy	.674	3	71	.571	-1.200	1.300
Posttest Self-Regulated Learning	2.004	3	71	.121	-.690	.960

The error variance of both dependent variables is equal across groups.

Table 2

Descriptives: Perceived Self-Efficacy Posttest Scores

			Unadjusted		Adjusted	
GPA	Group	N	Mean	Std. Dev.	Mean	Std. Error
High (Upper 40%)	Treatment	18	6.370	.491	6.145	.104
	Control	20	6.411	.578	6.185	.099
	Total	38	5.318	.532	6.165	.073
Low (Bottom 40%)	Treatment	19	6.099	.678	6.380	.103
	Control	18	5.759	.866	5.939	.103
	Total	37	5.934	.783	6.160	.074
Total	Treatment	37	6.231	.602	6.262	.071
	Control	38	6.102	.790	6.062	.070
	Total	75	6.165	.702	6.162	.050

Table 3

Descriptives: Self-Regulated Learning Strategies Use Posttest Scores

			Unadjusted		Adjusted	
GPA	Group	N	Mean	Std. Dev.	Mean	Std. Error
High (Upper 40%)	Treatment	18	5.798	.595	5.538	.148
	Control	20	5.773	.769	5.486	.142
	Total	38	5.785	.684	5.391	.099
Low (Bottom 40%)	Treatment	19	5.258	.816	5.520	.144
	Control	18	4.992	.938	5.295	.149
	Total	37	5.129	.876	5.408	.107
Total	Treatment	37	5.521	.759	5.529	.100
	Control	38	5.403	.929	5.391	.099
	Total	75	5.461	.846	5.460	.070

In order to answer the first research question dealing with the effect of the Study Skills Program on perceived self-efficacy, the first two-way ANCOVA was conducted. In this analysis, perceived self-efficacy as measured by the posttest was the dependent variable; GPA (High or Low) and Group (Treatment or Control) were the independent variables; and perceived self-efficacy as measured by the pretest was the covariate. Table 4 reports results of the analysis.

Table 4

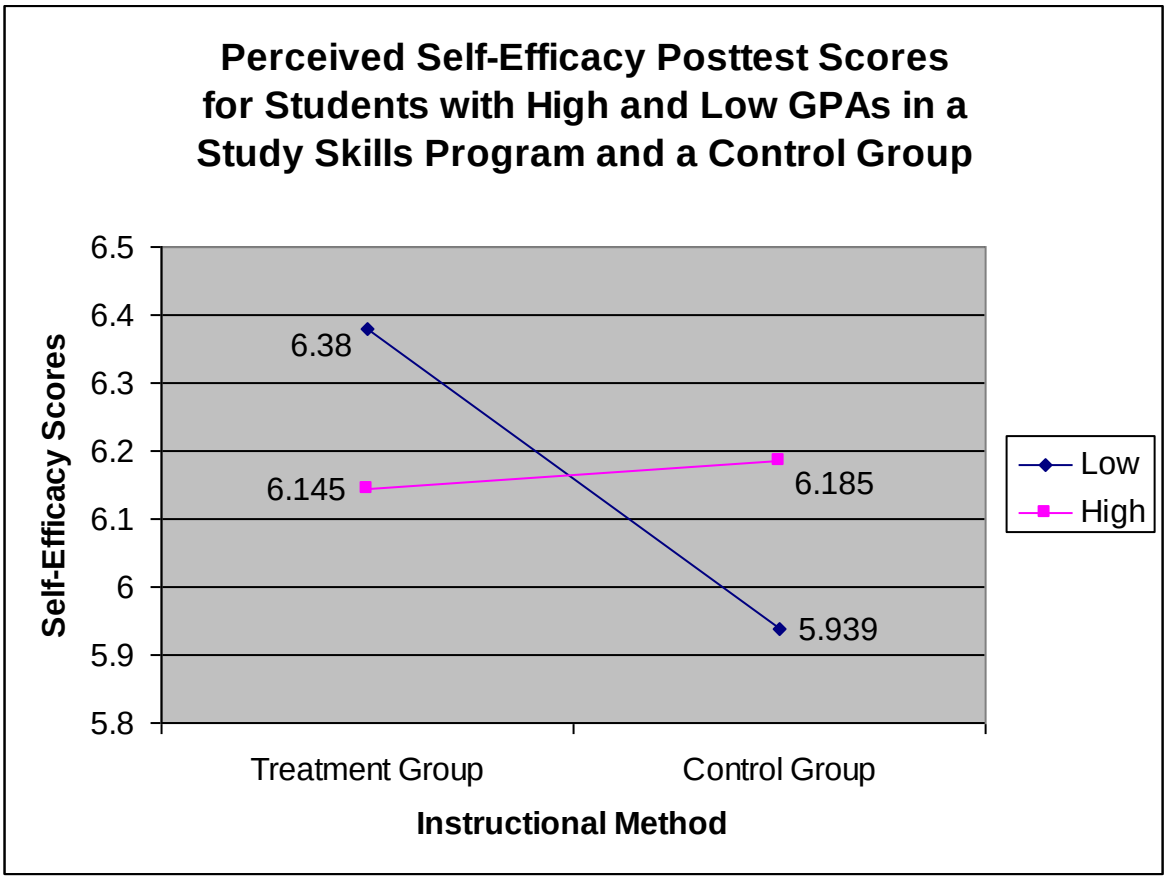
Two-Way ANCOVA: Posttest Scores for Perceived Self-Efficacy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Tests of Between-Subjects Effects						
GPA	.000	1	.000	.002	.962	.000
Group	.747	1	.747	4.035	.048(*)	.055
GPA*Group	1.082	1	1.082	5.846	.018(*)	.077
Error	12.957	70	.185			

**Significant at the .05 level with adjustment for multiple comparisons: Bonferroni..*

Utilizing an alpha level of .05, statistical significance exists if $p \leq .05$. Results of the analysis revealed no significant main effect for GPA (High versus Low), $p = .962$; however, there was a significant main effect for Group (Treatment versus Control), $p = .048$, as well as a significant interaction between GPA and Group, means, $p = .018$. This interaction is depicted in Figure 1.

Figure 1



In order to answer the second research question dealing with the effect of the Study Skills Program on self-regulated learning strategies use, a second two-way ANCOVA was conducted. In this analysis, self-regulated learning strategies use as measured by the posttest was the dependent variable; GPA (High or Low) and Group (Treatment or Control) were the independent variables; and self-regulated learning strategies as measured by the pretest was the covariate. Table 5 reports results of the analysis.

Table 5

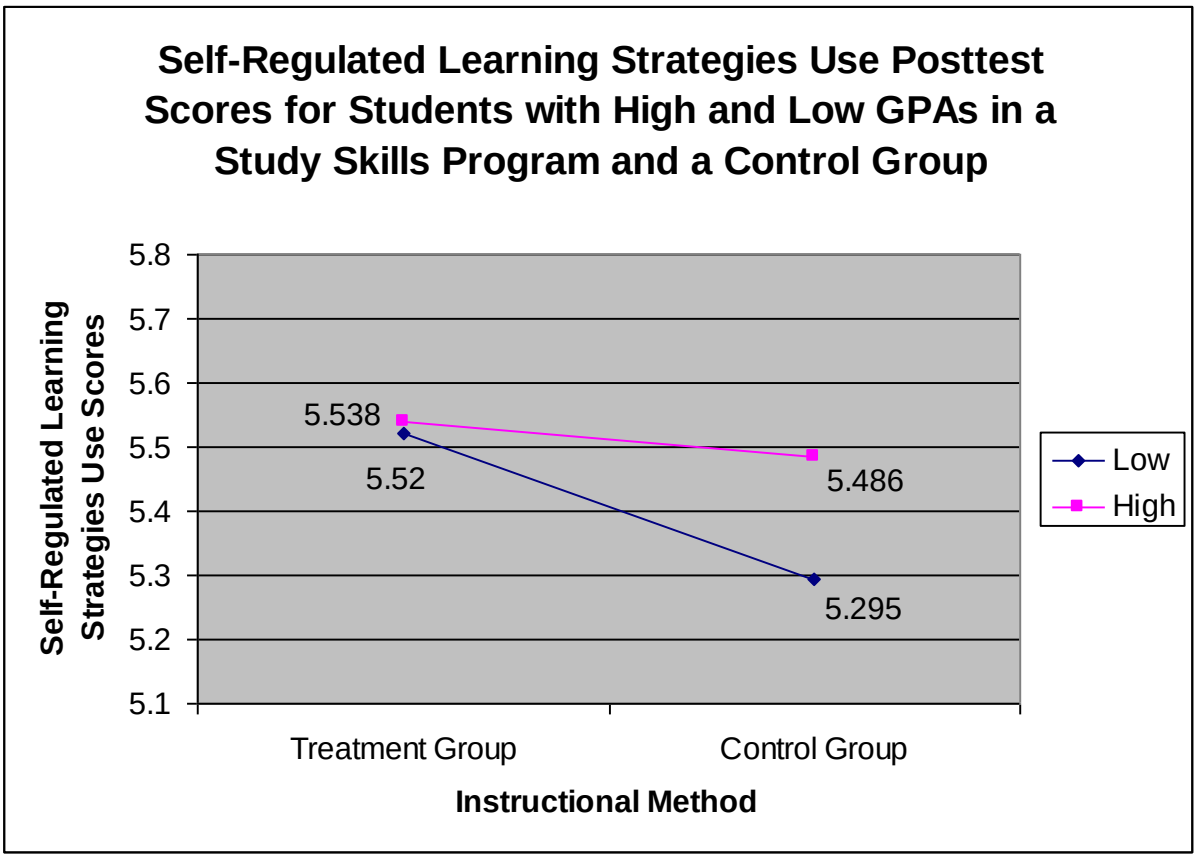
Two-Way ANCOVA: Posttest Scores for Self-Regulated Learning Strategies Use

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Tests of Between-Subjects Effects						
GPA	.155	1	.155	.420	.519	.006
Group	.358	1	.358	.973	.327	.014
GPA*Group	.141	1	.141	.382	.538	.005
Error	25.767	70	.368			

Utilizing an alpha level of .05, statistical differences exist if $p \leq .05$. Analysis of the data presented in Table 5 revealed that there was no significant main effect for GPA (High versus Low), $p = .519$; there was no significant main effect for Group (Treatment versus Control), $p = .327$, nor was there a significant interaction between GPA and Group,

p = .538. Self-regulated learning strategies use posttest means scores, as depicted in Figure 2, implied greater strategies use by the students in the Treatment group; however, the differences were not found to be statistically significant.

Figure 2



When discussing the outcome of a study, researchers must temper all statistically significant findings with the practical significance of the results. Decisions regarding practical significance can be guided by the Eta squared values of the data being analyzed. Eta squared is the proportion of the total variance that is attributed to an effect. Cohen (1988) interpreted effect size estimates relative to other effect sizes. He noted that large effects are frequently seen in fields characterized by good experimental control, i.e. economics; however, in studies

regarding social or psychological research, many effect sizes are small because of the subtlety of the issues involved. “Because some areas, like education, are likely to have smaller effect sizes than others . . . labels may be misleading” (Valentine & Cooper, 2003, p. 5). Therefore, caution should be used when interpreting the magnitude of effect sizes.

According to Sink and Stohr (2006),

> “The importance of effect size reporting and interpretation is widely recognized in the educational and counseling literature. . . . It is imperative that both consumers of research and those interested in conducting school studies understand the value of effect size as a measure of practical significance.” (p. 8)

The values presented in Table 6 were provided by Sink and Stohr (2006) to assist in the interpretation of effect size for partial Eta squared values produced by the SPSS statistical program for ANCOVA analysis in educational and counseling studies. Based on this interpretation, data analysis for this present study calculated that for the statistically significant dependent variable of perceived self-efficacy, the partial Eta squared value of the main effect for Group = .055 and for interaction of GPA*Group = .077, therefore classifying the magnitude of the effect size as small to medium.

Table 6

Effect Size Interpretation for ANCOVA Analysis in Educational and Counseling Studies

Partial Eta Squared Value and Interpretation
.01 ≥ Small
.06 ≥ Medium
.14 ≥ Large

(Sink & Stohr, 2006)

CHAPTER FIVE: SUMMARY AND CONCLUSIONS

Review of Purpose

The purpose of this study was to examine the effects of a study skills program designed to provide self-regulated learning instruction to sixth grade students utilizing daily journal writing and weekly peer-group discussions to enhance perceptions of self-efficacy and to facilitate the acquisition of effective strategies. In addition, this study was designed to evaluate whether the effects were different for students with high or low grade point averages (GPAs). This study was predicated on the belief that equipping students with the intellectual tools, self-beliefs, and self-regulatory capabilities to educate themselves throughout their lifetimes will enable them to cultivate skills and gain new knowledge in an ever-changing world. As stated by McKeachie, Pintrich, and Lin (1985), "individuals who can adapt their thinking to a variety of situations in a flexible manner are much better prepared to be life-long learners" (p. 153).

Research and theory suggest that students differ in the extent to which they believe they can control the outcomes of their own learning, i.e., their sense of their own efficacy (Thomas & Rohwer, 1986). There does appear to be a consensus among researchers in the field of self-regulated learning that self-regulated learning instruction has a positive effect on self-efficacy and achievement in the specific domain where the training has taken place (Bandura & Schunk, 1981; Graham, Harris, & MacArthur, 1993; Hofer & Yu, 2003; Hofer, Yu, & Pintrich, 1998; Lynch, 2006; Mason, 2004; Pintrich, McKeachie, & Lin, 1987; VanderStoep & Pintrich, 2003; Wachholz & Etheridge, 1995; Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990). However, self-monitoring of skills employed requires reflective practice, and students at the

elementary level have been shown to be limited in their knowledge of metacognition (Flavell, 1979; Paris & Byrnes, 1989; Paris & Newman, 1990); and although metacognitive training has been found to aid academic learning, students do not necessarily transfer the skills spontaneously (Bandura, 1993; Montague, 2006).

According to Pressley (1995), "There are many reasons for failures of self-regulated use of new strategic and conceptual knowledge . . ." (p. 209). One reason is that having procedural knowledge by learning how to do something does not ensure having the conditional knowledge to understand when and where to do it. Another possible reason that students do not use the learning strategies that they have been taught is that they are "typically taught discrete tactics for implicit, singular local goals" (p. 712) instead of tactics that will facilitate learning in various contexts (Chan, 1991; Hadwin & Winne, 1996; Paris, Cross, & Lipson, 1984; Zimmerman & Martinez-Pons, 1986, 1988).

Recognizing the need for further research in this area, this study examined the effects of a study skills program designed to provide self-regulated learning instruction to sixth grade students utilizing daily journal writing and weekly peer-group discussions to enhance perceptions of self-efficacy and to facilitate the acquisition of effective strategies. The research questions developed to explore the effectiveness of this type of study skills program are restated below:

Research Question #1: Is there a significant difference in perceived self-efficacy for students who have high and low grade point averages who have also participated in the Study Skills Program as compared to those who have not participated in this type of program?

a. Is there a significant difference in perceived self-efficacy for students who have participated in the Study Skills Program as compared to those who have not participated in this type of program?

   Directional Hypothesis: Students who participate in the Study Skills Program will demonstrate significantly improved levels of perceived self-efficacy as compared to those who have not participated in the program.

b. Is there a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to their perceived self-efficacy?

   Non-directional Hypothesis: There will be a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to perceived self-efficacy.

Research Question #2: Is there a significant difference in self-regulated learning strategies use for students who have high and low grade point averages who have also participated in the Study Skills Program as compared to those who have not participated in this type of program?

a. Is there a significant difference in self-regulated learning strategies use for students who have participated in the Study Skills Program as compared to those who have not participated in this type of program?

   Directional Hypothesis: Students who participate in the Study Skills Program will demonstrate significantly improved levels of self-regulated learning strategies use as compared to those who have not participated in the program.

b. Is there a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to self-regulated learning strategies use? Non-directional Hypothesis: There will be a significant interaction between instructional method (Study Skills Program Participation or Non-Participation) and students' grade point average (High GPA or Low GPA) with respect to their self-regulated learning strategies use.

Summary of Results

Data analysis has revealed the following findings with respect to this study's original research questions and hypotheses. Research Question #1 asked whether participation in the Study Skills Program would make a significant difference in students' perceived self-efficacy and whether having high or low grade point averages would make a difference in the program's overall effect.

The first main effect that was tested used grade point average with two levels (High GPA – Upper 40% of the sample and Low GPA – Bottom 40% of the sample) as the independent variable and perceived self-efficacy posttest mean scores as the dependent variable with perceived self-efficacy pretest mean scores as a covariate. This first main effect was not found to be significant. Results of data analysis required acceptance of the null hypotheses as no statistically significant difference in the mean posttest scores for perceived self-efficacy between students with High GPAs and Low GPAs were found.

The second main effect that was tested used instructional method with two levels (Treatment – Study Skill Program Participation and Control – Non-Participation) as the independent variable and perceived self-efficacy posttest means scores as the dependent variable with perceived self-efficacy pretest mean scores as a covariate. Analysis of the data showed that a statistically significant difference existed in perceived self-efficacy posttest mean scores between the Treatment group and the Control group with the mean posttest score for perceived self-efficacy for the Treatment group being significantly higher than that of the Control group. Therefore, the null hypothesis was rejected. Data analysis also revealed a significant interaction between GPA and Group with the Low GPA Treatment group cell's mean being significantly higher than the mean scores of any of the other three cells represented in this study's factorial design.

Research Question #2 asked whether participation in the Study Skills Program would make a significant difference in students' self-regulated learning strategies use and whether having high or low grade point averages would make a difference in the program's overall effect. Once again, two main effects and an interaction were tested.

The first main effect that was tested used grade point average with two levels (High GPA – Upper 40% of the sample and Low GPA – Bottom 40% of the sample) as the independent variable and self-regulated learning strategies use posttest mean scores as the dependent variable with self-regulated learning strategies use pretest mean scores as a covariate. This first main effect was not found to be significant. Results of data analysis required acceptance of the null hypotheses as no statistically significant difference in the mean posttest scores for self-regulated learning strategies use between students with High GPAs and Low GPAs were found.

The second main effect that was tested used instructional method with two levels (Treatment – Study Skill Program Participation and Control – Non-Participation) as the independent variable and self-regulated learning strategies use posttest means scores as the dependent variable with self-regulated learning strategies use pretest mean scores as a covariate. Analysis of the data showed no statistical difference in self-regulated learning strategies use posttest mean scores between the Treatment group and the Control group, as well as no significant interaction between GPA and Group. Therefore, the null hypothesis was accepted as no statistically significant differences between the cells' means were found.

Relationship to Review of the Literature

The review of the literature presented in Chapter Two included several studies that, like the present study, investigated the effects of a study skills program on learners' self-efficacy. One study was conducted by Hofer and Yu (2003). This study was conducted with 78 undergraduate psychology students at the University of Michigan; the researchers focused on a semester-long course, called *Learning to Learn*. The goal of the program was to instruct students in how to learn, how to remember and think, and how to motivate themselves in an effort to increase self-efficacy perceptions of their capability to learn and understand course material. Hofer and Yu analyzed their data using paired t-tests. Results showed a significant increase at the .003 alpha level in self-efficacy perception. Results of this present study are similar to those of the Hofer and Yu study in that participation in a study skills program did increase perceived self-efficacy levels to a significant degree. However, this present study is different from the Hofer and Yu study because this present study utilized a quasi-experimental design with a control group, while the previous study did not have a control group against which to measure results. Students in the present study were provided with a five-week

program, not a ten-week program; and the present study was conducted with a much younger population, sixth grade students, not college students.

Another study, designed to measure growth in self-efficacy perception with a younger population, was conducted by Bandura and Schunk (1981). Their sample was composed of 40 elementary school children, in grades 3 through 5, from predominantly middle-class backgrounds. The seven-session program was designed to measure the effect of setting proximal goals, distal goals, or no goals for engagement in mathematical problem solving activities. The study revealed that children in the proximal goals group substantially increased the strength of their perceived self-efficacy, while children in the proximal goals group displayed a moderate increase, and the students without goals produced a modest increase as measured by a t-test for correlated means; these effects were significant at the .05 level. The present study was similar to Bandura and Schunk's study in several ways: the age of participants, the brief duration of the program, and the positive effect on perceived of self-efficacy. The differences between the previous study and the present study include the focus of the program and the differentiated levels of the population. The previous study focused on goal setting in mathematics, whereas in the present study, goal setting was only one aspect of the program, which focused on all academic content areas. The previous study also measured results based upon a homogeneous group of students who exhibited gross deficits in arithmetic skills as measured by a standardized achievement test for mathematical ability; unlike the present study, which included both Low GPA and High GPA participants and differentiated results by level.

This present study also focused on the development of self-regulated learning strategies use. One previous study, focusing on the development of learning strategies, was

conducted by Paris, Cross, and Lipson (1984) using an experimental curriculum, *Informed Strategies for Learning* (ISL). The subjects in the study were 87 third graders and 83 fifth graders from eight intact classes. The program was designed to teach children how, when, and why to use the various comprehension strategies to become independent readers. Six fundamental comprehension activities were taught over 14 weeks: (a) understanding the purposes for reading; (b) activating relevant background knowledge; (c) allocating attention to main ideas; (d) critical evaluation; (e) monitoring comprehension; and (f) drawing inferences.

The results of the study showed that metacognition could be promoted through direct instruction in classrooms and that increased awareness could lead to better use of reading strategies; however, these researchers found improvement in only one out of the six strategies that were taught during their program. This present, substantially shorter, five-week program for sixth graders was unable to show significant improvement in the use of self-regulated learning strategies as measured by a posttest at the end of the five-week period. While Paris, Cross, and Lipson found a significant increase in the use of one strategy, they did not find a significant increase in five of the strategies taught. It may be that development of self-regulated strategy use is a slow process that requires more intense instruction than a 5-week, or even a 14-week, program can provide.

Another study designed to promote the growth of self-regulated learning strategies was conducted by Chan (1991). This study evaluated the effectiveness of a technique, called *Self-Instructional Training*, which promoted reading comprehension by providing instruction in the use of a self-questioning strategy. A total of 60 subjects from 3 different schools participated in the study. Like the present study, treatment effects were evaluated using different ability groups. Chan's study involved 20 Grade 5 and 6 students with reading

disabilities who were reading at a level of 2 or more years below grade level. There were 20 average readers from the same grades who were selected as a chronological age match; and there were 20 average readers from Grade 3 who were selected as a reading ability match for the students with reading disabilities from Grades 5 and 6. Students were randomly assigned to either a standard instruction condition or a generalization induction condition.

Instruction was provided in 5 daily 40-minute sessions. In the standard instruction condition, students were provided with a demonstration of how to ask themselves a designated set of questions while reading and how to look for answers to questions. They were then allowed to practice the strategy on their own. In the generalization induction condition, self-instructional training techniques were employed. The procedures involved the teacher explaining how, why, and when the self-questioning strategies could be used. Findings showed that for the reading disability group, cued generalization was demonstrated by subjects in both instruction types, but uncued generalization was observed only in those subjects receiving self-instructional training. The results showed that the standard instruction and generalization induction instruction did not have differential effects on comprehension performance.

In general, for all three groups, students taught to use the self-questioning strategy for identifying main ideas by the self-instructional training technique achieved higher mean scores on the identification of main ideas than those taught through the standard procedure. However, it appears that the effects of this self-instructional training were restricted to identification of main ideas and failed to transfer more generally to reading comprehension. As with the previous study conducted by Paris, Cross, and Lipson (1984), Chan experienced similar difficulties in developing self-regulated learning strategies that students were then to

apply more generally. Similarly, in this present study, students were taught self-regulated learning strategies, but when responding on the MSLQ Self-Regulated Learning Strategies posttest, students did not report a significant increase in their general use of the strategies. Unlike the two previous studies, the present study sought to measure students' ability to effectively use self-regulated learning strategies across academic domains, not for improvement in one domain, i.e., reading comprehension.

Studies investigating the use of self-regulated learning strategies also have been conducted at the high school level (Zimmerman & Martinez-Pons, 1986). Zimmerman and Martinez-Pons investigated students' use of self-regulated learning strategies in naturalistic settings. Their investigation into *Self-Regulated Strategy Development* was defined as actions directed at acquiring information or skill, such as, goal-setting, environmental structuring, self-consequences (self-rewarding and self-punishment), and self-evaluating. It was hypothesized that students selected from a high achievement track in a public high school would display greater use of self-regulation strategies than would students chosen from lower achievement tracks. Of particular interest was the identification of those self-regulation strategies that were most extensively used by high achieving students.

The randomly selected sample, drawn from a high school serving a middle-class suburban community of a large metropolitan area, consisted of 40 sophomores from the advanced achievement track and 40 sophomores from lower tracks. Students were assigned to achievement tracks according to their entrance test scores, grade point average prior to entering high school, and teachers' and counselors' recommendations. The researchers conducted interviews where students were asked to indicate the methods that they used to

participate in class, to study, and to complete their assignments in six different learning contexts.

Using a discriminant function analysis, the researchers found that 91% of the students in the sample could be correctly classified into the high and low achievement groups based on their self-regulated learning measures. The findings from the Zimmerman and Martinez-Pons (1986) research were validated in the Zimmerman and Martinez-Pons (1988) study when the researchers relied on a similar format but added the classroom teachers' rating of the students' use of observable self-regulated learning strategies to the students' self-reported measures. This follow-up study using 44 male and 36 female high school students found that the students' reports of using self-regulated leaning strategies during a structured interview correlated .70 with the obtained teachers' rating factor, thus further supporting their original hypothesis that students from high achievement tracks utilize self-regulated learning strategies more than do students in lower achievement tracks. These findings may help to explain why in the present study a significant increase in self-regulated learning strategies use for the students with high grade point averages was not measurable after participation in the five-week Study Skills Program. These findings also further emphasize how vitally important it is to find a self-regulated learning strategies program that will positively influence students with low grade point averages.

Feedback from Participants

In an effort to better understand students' cognitive and metacognitive engagement, students in the treatment group were asked to submit evaluations (Appendix C, D, E, and F) regarding the effectiveness of the strategies that they had employed during each week of the study. Weekly feedback revealed that students with high grade point averages did experiment

with new methods over the course of the Study Skills Program and that generally the alternate methods did work for them as well as their usual strategies. Recognizing that high achievers are already utilizing strategies that are personally effective, there is little incentive for them to change their methods. As explained by Jinks and Morgan (1999), "Someone with a higher level of self-efficacy might not be motivated to exert effort if he or she felt that there was little more to learn about the topic or that what was left to learn was of little value given what was already known" (p. 224). However, having these additional strategies at their disposal, these high achievers may choose to apply these new strategies in the future when academic content and educational demands increase in difficulty.

Weekly feedback from the students with low grade point averages generally revealed more dramatic results. One pertinent example comes from the experience of a low achieving student who experimented with controlling his environment while studying. This student shared with the group that he had attempted to study in three different locations in his home: in the family room with the television on; in the kitchen where he could hear only background noise from the other rooms; and in his bedroom where it was silent. He revealed that in the family room, he was unable to concentrate due to the distraction of the television. In the kitchen with background noise, he found that he was able to concentrate; and in his isolated bedroom, he found that he was unable to study due to his mind frequently wandering in the silence of his surroundings. When asked where he usually studied and completed homework, he replied that he usually worked in his silent bedroom.

This student's sharing of the realization that he had the ability to control his environment and ultimately control the effectiveness of his studying efforts was monumental. Individual discoveries made possible through the development of metacognitive awareness,

along with the impact of this type of sharing, may have made the significant difference for the students with low grade point averages in the treatment group. As previously noted by Zimmerman & Ringle (1981), ". . . a model's expressed confidence about achieving a solution to a problem affected a learner's motivation to persist . . . and a model's degree of success additively increased the children's motivation" (p. 491).

Limitations

Limitations to this study, which may restrict the generalization of the results, include the following. Population validity, an external validity threat, is a concern because the sample was drawn from an accessible population making it impossible to generalize the research results from this study to the target population of all sixth graders nationwide; however, the participants in this study are most likely representative of students in school districts with similar demographics.

Since parental permission was required before conducting this study with a sample composed of sixth grade students, the Hawthorne effect may have influenced the experimental group subjects. The Hawthorne effect refers to "an observed change in research participants' behavior based on their awareness of participating in an experiment, their knowledge of the researchers hypothesis, or their response to receiving special attention" (Gall, Gall, & Borg, 2003, p. 626). In addition, the students and parents who agreed to participate in the study may not be representative of the majority of sixth grade students and parents in general as their willingness to participate in a program designed to build study skills may imply that they are more highly motivated or that they place a higher value on education as a whole.

Internal validity threats are also a concern. One type of internal validity threat is history. History threats can occur when "experimental treatments extend over a period of

time, providing opportunity for other events to occur besides the experimental treatment" (Gall, Gall, & Borg, 2003, p. 370). Tutoring support, which some students may have received outside of school, falls into this category of concern.

During the 5-week period when the study skills program was conducted, sixth grade team teachers and consultant teachers were providing classroom instruction in the core subjects of English Language Arts, Social Studies, Mathematics, and Science. The curriculum covered in each content area during this time consisted of the following topics: *Nonfiction Reading and Writing* for English Language Arts; *Archeological Finds* dating back to prehistoric times in Social Studies; *Introduction to Geometry*, including shapes and formulas for area and perimeter in Mathematics; and *The Metric System*, including formulas for volume, mass, and density of objects in Science. As a matter of course in traditional classroom settings, teachers provide assistance to students as needed through a variety of means. The methods used to provide assistance range from helping students to organize their notebooks to providing suggestions for quiz and test preparation. All possible combinations of assistance provided to students by the 24 content area teachers in the sixth grade, not to mention the numerous special area teachers, are immeasurable. Recognizing that any additional assistance could have impacted the Treatment or the Control group, random assignment to group was conducted in an effort to control for the validity concerns so noted.

Another internal validity threat is compensatory rivalry, also known as the John Henry effect. The John Henry effect may have influenced the performance of the control group. This occurs when "the control group participants perform beyond their usual level because they perceive that they are in competition with the experimental group" (Gall, Gall, & Borg, 2003, p. 373). Hence, to overcome this threat, the Control group participants were assured that they

would be provided with another opportunity to participate in the *Lunch Bunch* program in a few weeks.

The MSLQ contains its own limitations as well; it is a self-report instrument, and social desirability bias must be considered a threat to the construct validity of all self-report instruments. Consequently, researchers must select instruments of this nature carefully, and the MSLQ has been recognized for its reliability and successful use in numerous studies over the years.

Finally, it is important to consider the difference between statistical significance and practical significance when talking about the outcome of a study. Researchers must be careful when stating that their findings are statistically significant. Gall (2001) voiced concerns regarding the fact that the word "significant" may mislead professional practitioners and lay public, as well as some researchers, into thinking that the research results are important because they are statistically significant; or conversely, that research results are not important because they are not statistically significant. Hinkle, Wiersma, and Jurs (2003) defined statistical significance as, ". . . the probability that the difference occurred by chance is less than the significance level (alpha level)" (p. 195). However, they also noted that finding statistical significance does not necessarily mean that the findings are of practical importance, often referred to as having practical significance.

> In the context of hypothesis testing, a significant finding is simply one that is not likely to have occurred if the null hypothesis is true. . . . It does not mean that the results are important or that the absolute difference between the sample data and the null hypothesis was found to be large. (Huck & Cormier, 1996, p. 186)

Significance is determined based upon the alpha level that was set prior to analyzing the data. The researcher sets the alpha level. In this present study, the selection of an appropriate level of significance was guided by the importance of guarding against making either Type I or Type II errors. Type I errors result in rejecting a true hypothesis by believing it to be false, while Type II errors result in accepting a false hypothesis by believing it to be true. The selection of the .05 level for this study was explained in Chapter Four.

At this .05 level, analysis of the data showed that a statistical difference existed between perceived self-efficacy posttest mean scores for the Treatment group and the Control group, as well as a significant interaction between GPA and Group. Thus, results showed that participation in the Study Skill Program produced significantly improved levels of perceived self-efficacy for students with low grade point averages. The posttest mean score for the Low GPA Treatment group was 6.38, while the posttest mean score for the Low GPA Control group was 5.939. Although statistically significant, a limitation to the study is that the actual difference between the scores is 0.44l, which some researchers may view as too small to be considered practically significant. However, as discussed in Chapter Four and represented in Table 6, decisions regarding practical significance can be guided by the partial Eta squared values of the data being analyzed. Therefore, based on the guidelines provided by Sink and Stohr (2006) to assist in the interpretation of effect size for partial Eta squared values produced by the SPSS statistical program for ANCOVA analysis in educational and counseling studies, the partial Eta squared value of the main effect for Group = .055 and for interaction of GPA*Group = .077 for the statistically significant dependent variable of perceived self-efficacy is classified as a small to medium effect size.

Conclusion and Suggestions for Additional Research

The findings of this study have revealed that the students in the Low GPA Treatment group demonstrated a statistically significant improvement in perceived self-efficacy over the 5-week period of this program, but that no statistically significant improvement in self-regulated learning strategies use was demonstrated by the Study Skills Program participants in the High GPA or the Low GPA Treatment or Control groups. However, long-term gains, as evidenced by the application of self-regulated learning strategies use over time, are unknown. Perhaps, the Low GPA Treatment group participants who now have an improved perception of self-efficacy may start to use more self-regulated learning strategies. Follow-up investigations are needed to make such an assessment. Participation in a program that is conducted for longer than five weeks could also be explored.

Additionally, students in the Treatment group have experienced a variety of self-regulated learning strategies on both an enactive (actively involved) and a vicarious (through the experiences of others) level. It is possible that the students in the Control group have begun to use these strategies as part of their core class requirements without having developed any profound understanding on a deeper personal level. Only through future research can this question regarding the long-term effects of immersion into self-regulated learning strategies instruction versus a cursory exposure through instructional assignments be addressed. An investigation into the level of understanding regarding the use of different learning strategies by students who participate in varying degrees of immersion into the study of self-regulated learning strategies use would be necessary.

Unlike high achievers who employ a variety of study tactics in a purposeful manner, low-achieving students have been found to use a restricted range of the same study skills for

all learning tasks, even if they are ineffective (Gettinger & Seibert, 2002). The question for future research is how to best help students to recognize that not all strategies are appropriate for all study tasks, and how teachers who may model study strategies as they present them within the context of their classroom instruction can help students to personalize study strategies.

Recognizing the required content material and time constraints classroom teachers have that may restrict the degree to which metacognitive instruction of this type can be provided, future research might explore the benefit of separate study skills classes versus within-class study skills instruction. The characteristics of the students may influence the findings of such a study, so a closer look at whether or not focused instruction regarding intense immersion into study skills strategies use is beneficial for all students is also an area worthy of future investigation, as is an exploration into ways to maintain and improve the self-efficacy levels of high achievers.

It should also be noted that the participants in this study were classified as High GPA or Low GPA based upon being in the top 40% or bottom 40% of the sample. Overall grade point averages obtained from the participants ranged from a low of 70 to a high of 99. The middle 20% (GPAs from 82 to 87) were removed. Therefore, even the students who qualified as members of the Low GPA group (GPAs from 70 to 81) were relatively successful students. Future research could be conducted to investigate the effect of study skills programs on students with grade point averages significantly lower than this study's population.

Replication of this study is recommended to provide more insight and support for the findings of this study. Suggestions for replication include the need for (a) increased sample size, (b) random selection of all participants, (c) longer duration of treatment program, (d)

other grade levels, (e) other demographic populations, and (f) other types of settings, i.e., urban and rural.

Finally, with regard to self-efficacy development, suggestions for future research could include any number of tangential topics where one's level of perceived self-efficacy has been found to exert influence. One possibility involves research by Bandura (1993), which has revealed that the impact of low self-efficacy on adolescent behavior is significant, in so much as, adolescent students with low perceived academic and self-regulatory self-efficacy were found to display more physical and verbal aggression. Hence, it might be prudent to conduct future research to evaluate whether improving adolescent students' levels of self-efficacy through active engagement in programs such as a study skills program has a significantly positive effect on personality, behavior, and social interactions.

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APPENDIXES

Appendix A: *Informational Letter to Parents*

September 2007

Dear Parents/Guardians,

My name is Annmarie Spatola. My professional experience as an educator covers 22 years and ranges from having taught Developmental and Remedial Reading to students in preschool through freshman year of college. At ----------, I have taught English and Reading in a block format every year, some years as a lone subject, and other years along with a variety of other subjects including Mathematics, Science, and Social Studies. During the summers, I have worked as the Director of a Testing, Reading, and Study Skills Program at a private boarding school in Connecticut for international high school students who are interested in attending school in the United States. In an effort to create lifelong learners, my message to my students throughout the years at all grade levels has remained constant: one should set goals and always strive for self-improvement. True to my beliefs, I am currently a doctoral candidate in Western Connecticut State University's Doctor in Instructional Leadership Program.

My reason for contacting you today is to ask for your permission for your child to participate in the research that I am conducting in partial fulfillment of the requirements for my doctoral degree. I will be conducting a study at ---------- to examine the impact of a study skills program designed to facilitate the acquisition of effective learning strategies and to enhance perceptions of self-efficacy of sixth graders. To protect against a loss of any academic class time, students participating in the program will bring their lunches to the Home and Careers room for a *Lunch Bunch* study skills period, twice a week, for five weeks.

Participation in this study will require that I, the researcher, have access to the student's grades on their Five-Week Report, as well as scores from a survey instrument designed to measure the student's use of study strategies and level of confidence when completing academic tasks. To assure confidentiality, each participant will be assigned a confidential identification number and all data will be reported only by group.

Please be assured that your child's participation in the Study Skills Research Program is strictly voluntary, that all scores/grades are confidential, and that failure to participate in the program will not affect their class grades. No information regarding individual participants will be reported to the district, nor will any information be recorded by the district on any individual participant's permanent record. This research proposal has been reviewed and approved by the Institutional Review Board at Western Connecticut State University, and you are welcome to request a copy of the final report of the project.

If you are willing to allow your child to participate in this study, please complete the attached consent form and have your child return it to their homeroom teacher no later than the end of next week. I will do my very best to include as many students as possible in the program. If you have any questions or concerns regarding the study, feel free to contact me by phone, or email, ----------, and I will get back to you as soon a possible.

Sincerely,

Annmarie Spatola

Appendix B: *Consent Form*

Western Connecticut State University
Institutional Review Board

Consent to Allow my Sixth Grade Child to Participate in the
Study Skills Research Program

I, _____, acknowledge that the researcher has explained to me the purpose of this research and offered to answer any questions I may have regarding the nature of the study. I voluntarily consent to allow my child to participate in this study and am aware that all information will remain confidential.

_____

Name of Student

_____

Signature of Parent/Guardian Date

Please have your child return the signed consent form to their homeroom teacher.

Appendix C: *Students' Ratings of Study Strategies* (Week One)

Name _____ **Week One**

"Students' Ratings of Study Strategies"

Please evaluate the information presented in this week's Lunch Bunch sessions based on its degree of usefulness to you as a student.

Very useful – Somewhat useful – Not useful

***Knowing Your Learning Modality (Visual – Auditory – Kinesthetic)**	**V**	**S**	**N**
***Knowing Your Personality and Your Learning Style**	**V**	**S**	**N**
***Keeping a Positive Attitude**	**V**	**S**	**N**
***Hourly Schedule Sheets for the Week**	**V**	**S**	**N**
***Long-Term Project's Planning Sheet**	**V**	**S**	**N**

Use the space below and the back of this page to record situations when you used the above strategies. Please be honest regarding the results you experienced. Your feedback is greatly appreciated.

Appendix D: *Students' Ratings of Study Strategies* (Week Two)

Name _____ **Week Two**

"Students' Ratings of Study Strategies"

Please evaluate the information presented in this week's Lunch Bunch sessions based on its degree of usefulness to you as a student.

Very useful – Somewhat useful – Not useful

***Memory Technique – Acrostics**	**V**	**S**	**N**
***Memory Technique – Acronyms**	**V**	**S**	**N**
***Memory Technique – Charting**	**V**	**S**	**N**
***Memory Technique – Visualization**	**V**	**S**	**N**
***Memory Technique – Association**	**V**	**S**	**N**
***Memory Technique – Rehearsal**	**V**	**S**	**N**

Use the space below and the back of this page to record situations when you used the above strategies. Please be honest regarding the results you experienced. Your feedback is greatly appreciated.

Appendix E: *Students' Ratings of Study Strategies* (Week Three)

Name _____ **Week Three**

"Students' Ratings of Study Strategies"

Please evaluate the information presented in this week's Lunch Bunch sessions based on its degree of usefulness to you as a student.

Very useful – Somewhat useful – Not useful

***Mind-Mapping (Graphic Organizers, Venn Diagrams, etc.)**	**V**	**S**	**N**
***Networking Paragraphs (to organize ideas before writing)**	**V**	**S**	**N**
***Networking Paragraphs (to improve your writing quality and style)**	**V**	**S**	**N**
***Using Transitions Lists (to improve the flow of your sentences)**	**V**	**S**	**N**

Use the space below and the back of this page to record situations when you used the above strategies. Please be honest regarding the results you experienced. Your feedback is greatly appreciated.

Appendix F: *Students' Ratings of Study Strategies* (Week Four)

Name _____ **Week Four**

"Students' Ratings of Study Strategies"

Please evaluate the information presented in this week's Lunch Bunch sessions based on its degree of usefulness to you as a student.

Very useful – Somewhat useful – Not useful

***SQ3R (Survey – Question – Read – Recite – Review)**	**V**	**S**	**N**
***Survey (Look over the entire piece for pictures, charts, graphs, etc.)**	**V**	**S**	**N**
***Question (Look at end-of-chapter questions or make up your own.)**	**V**	**S**	**N**
***Read with Questions in Mind (Seek to find the answers as you read.)**	**V**	**S**	**N**
***Recite Important Info. (Aloud or in Written Form in notes)**	**V**	**S**	**N**
***Review (Several hours later and days later before tests and quizzes.)**	**V**	**S**	**N**
***Strategies for Answering Questions:**	**V**	**S**	**N**
(1) Right There			
(2) Think and Search			
(3) In Your Head			

Use the space below and the back of this page to record situations when you used the above strategies. Please be honest regarding the results you experienced.
Your feedback is greatly appreciated.

_____

_____

_____

_____

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