Summer 2012

The effects of training in self-regulated learning and achievement orientations in lower socioeconomic elementary students

Ashley N. Carroll

THE EFFECTS OF TRAINING IN SELF-REGULATED

LEARNING AND ACHIEVEMENT ORIENTATIONS

IN LOWER SOCIOECONOMIC ELEMENTARY

STUDENTS

by

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A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

COLLEGE OF EDUCATION
LOUISIANA TECH UNIVERSITY

August 2012

UMI Number: 3532945

UMI®

Dissertation Publishing

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LOUISIANA TECH UNIVERSITY

THE GRADUATE SCHOOL

April 10, 2012
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Date

We hereby recommend that the dissertation prepared under our supervision

by_ Ashley N. Carroll _____

entitled_____

The Effects of Training in Self-Regulated Learning and Achievement

Orientations in Lower Socioeconomic Elementary Students

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be accepted in partial fulfillment of the requirements for the Degree of

Doctor of Philosophy

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Supervisor of Dissertation Research

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Head of Department

Psychology and Behavioral Sciences
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Department

Recommendation concurred in:

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Advisory Committee

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Approved:

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Director of Graduate Studies

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Dean of the College

Approved:

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Dean of the Graduate School

ABSTRACT

Previous research has explored the development of the self-regulated learner. The majority of these studies have focused on high school and college students (Hofer & Yu, 2003). This study explored this concept at the elementary school level with lower socioeconomic students. This study was designed to determine the effectiveness of a short intervention teaching self-regulatory and metacognitive learning strategies to these elementary students. The researcher designed a learning intervention for fifth-grade students that included various cognitive strategies and study skills. The intervention group was compared to a control group of fifth-graders. The students' self-efficacy, self-regulation, and achievement orientation were assessed before and after the intervention. It was hypothesized that (1) students in the experimental group as compared to controls would have a greater increase in their self-regulation and self-efficacy, (2) students with high mastery-approach achievement goals would also have high self-regulation and self-efficacy, and (3) students in the experimental group would increase their mastery-approach achievement orientation. Results showed no overall significant differences in self-regulation and self-efficacy between the control group and the intervention group. In both groups, students with higher mastery-approach goals had higher self-regulation and self-efficacy scores. Students in the learning intervention group did not increase their mastery-approach achievement orientation. An unexpected finding was that across groups scores decreased on the posttests for all measures. This may be due to the

unusually high initial scores. Further research is needed with other students from lower socioeconomic status groups and in elementary grades.

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DEDICATION

This is dedicated to my beautiful, loving, and inspiring grandmother, Lucille Pointer, who always believed that I could accomplish anything. She endured the burden for her grandchildren to be able to achieve success.

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CHAPTER ONE

INTRODUCTION

When students learn how to become self-regulated learners, their academic performance and achievement is greatly increased (Pintrich, 2000). Through the learning of various regulatory processes, students may begin to change their cognitions, regulate their motivation and behavior, and finally reach their goals. Self-regulated learning is the "active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment" (Pintrich, 2000, p. 453). These students are aware of what is demanded of them by the tasks as well as of the ability they have to meet these demands. They have high efficacy in terms of learning while they also attribute outcomes to factors under their control as opposed to factors due to the external environment. They are also able to appropriately apply effective strategies for problem solving and learning. Self-regulated learning is the opposite of a learning approach known as defensive or self-handicapping (Perry, 1998). According to Perry, when students adopt this approach to learning, they tend to have a lower efficacy for learning, avoid tasks that may bring failure and damage their self-esteem, postpone tasks or avoid work completely. Needless to say, when students use a defensive learning approach, their academic success is usually hindered. Even though students of different ages may use different techniques and strategies to enhance learning, self-regulated learning may be applicable at all levels of education. The impetus for

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research in the past focused on identifying general and domain-specific components of self-regulation, including cognitive, meta-cognitive, motivational, and behavioral strategies, by which students can actively and strategically control and modify their learning to achieve desired academic outcomes. This study focused on the effects of training in self-regulated learning and achievement motivation in lower socioeconomic elementary students. Research regarding self-efficacy, self-regulation, including learning strategies to help develop self-regulation and strategies for teaching self-regulation, and achievement motivation was used as a basis for this study.

Self-Efficacy

Usher and Pajares (2008) posited that simply knowing certain strategies that help with self-regulation does not mean that students will use them effectively; students must also possess the belief that they can use them effectively. Students' belief that they can self-regulate their learning is a predictor of how successful they will be in using skills and strategies in school (Usher & Pajares, 2008). Self-efficacy beliefs are an individual's judgments of his or her capabilities to organize and execute courses of action required to attain designated types of performance. These beliefs provide the foundation for human motivation, well-being, and personal accomplishment. Self-efficacy attitudes can improve one's achievements and well-being. These attitudes influence the decisions one makes and the course of action that is chosen to reach goals. People tend to choose certain tasks and activities in which they feel competent and confident to succeed while avoiding those in which they do not. Research has shown that without believing their actions will produce the consequences they desire, people will not be motivated enough to participate in those activities (Usher & Pajares, 2008). In short, the factors that are at

play to influence human behavior originated in the core belief that one can accomplish that behavior (Usher & Pajares, 2008). The level of self-efficacy people have helps determine the amount of effort they will apply toward a task, how much effort will be put forth when obstacles are present, and how resilient they may be when challenged (Usher & Pajares, 2008). That is, self-efficacy, effort, persistence, and resilience appear to be correlated. Those who have a high level of competence view a difficult task as something they can master instead of a threat that should be avoided. They have a higher level of intrinsic interest, set challenging goals, and maintain strong commitments to these goals. All of these characteristics correspond with characteristics of an effective self-regulated learner, including the ability to quickly recover their sense of efficacy after failures or disappointments.

In addition to influencing decision making and motivation, self-efficacy beliefs affect how one thinks and reacts emotionally (Caprara et al., 2008). According to these researchers, when one has high self-efficacy, he or she has more confidence when faced with difficult tasks. This may result in a belief that promotes anxiety, stress, depression, and limited insight on problem solving. Caprara et al. (2008) explained that certain self-efficacy beliefs control how much is accomplished. A self-fulfilling prophecy may develop when one accomplishes what he or she believes can be accomplished. The determination to succeed combined with higher levels of self-efficacy leads to higher performance, resulting in an increase of efficacy. Low motivation has been related to lower self-efficacy, a lack of achievement, and less confidence (Caprara et al., 2008).

Children's self-efficacy is important for learning. The higher the self-efficacy children have regarding performance in school, the more motivated they will become in

their efforts to succeed in their career aspirations (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). Children with low levels of self-efficacy may not perform well in school, thereby influencing the outcomes of their future aspirations. When children are discouraged and feel as though no matter how much effort they apply, they may not succeed in school, and they may eventually cease to try to reach academic goals. Furthermore, these children may soon cease to set academic goals altogether. Metallidou and Vlachou (2007) completed research that suggests a decline in self-efficacy beliefs that begins in the elementary school years. They suggested that future research and interventions be designed with the purpose of increasing young students' sense of competence in school.

Bandura and Locke (2003) further explored self-efficacy by investigating negative self-efficacy and goal effects. They recommended a sociocognitive theory of self-regulation in which self-efficacy beliefs coincide with goal systems. They further discussed how one's perceived sense of self-efficacy and goals increase motivation and performance. According to Bandura and Locke, social cognitive theory is based on the view that people can anticipate what may happen, can approach tasks with a purpose, and can engage in self-evaluating practices. According to this theory, people are seen as proactive regulators of their motivation and actions. Attitudes of self-efficacy control performance through motivational, cognitive, affective, and decisional processes. These attitudes and beliefs affect the degree to which individuals cognitively function and perform in self-enhancing ways that better themselves or in self-debilitating ways that hinder their progress and success. These beliefs also affect how effectively individuals motivate themselves and continue to work hard in a difficult situation. Emotional health

and susceptibility to depression and anxiety may be affected by self-efficacy beliefs. Bandura and Locke explored nine meta-analyses that were consistent in supporting that efficacy beliefs influence an individual's motivation and performance. They predicted how at different levels of efficacy over time, people behave differently and show changes in functioning. Individual variation linked with tasks performed and those avoided or failed are also predicted by one's efficacy beliefs.

Bandura and Locke (2003) discussed the role of the negative effects of an elevated sense of personal efficacy and how self-efficacy can take on a conditional view. They used the following example to explain. The functional value of high perceived self-efficacy differs in matters regarding preparation and performance aspects of completing a task. While preparing for challenging tasks, some self-doubt about one's performance can be beneficial. It can provide incentives to learn more skills and gain more knowledge needed to overcome the challenges. Yet, individuals should be able to differentiate between different factors of perceived self-efficacy. In the skills development phase of a task, an increased level of self-efficacy in learning serves as something that is positive and encouraging. When one needs to develop his or her skills in a certain area, believing that one is capable of learning the skills is a positive feature of the overall development. Thus, peer modeling can raise children's beliefs in their own efficacy for learning. If children feel they can teach another, their belief in their ability to learn increases. This predicts both how well they progress in their learning and their future academic capabilities (Bandura & Locke, 2003). Therefore, even in the preparatory phase of teaching mastery of a task, one should realize the potential of the sense of efficacy to

motivate a child's investment in activities. On the other hand, a child develops competency when his or her sense of learning efficacy increases.

In regard to motivation, students with high self-efficacy in a task are more likely to make more of an effort and persist longer than those with low efficacy (Schunk, 1990). The stronger the self-efficacy, the more effort the individual will exert. According to Schunk (1990), low self-efficacy can lead people to believe tasks are harder than they actually are; this often results in poor task planning, as well as increased stress. People with high self-efficacy often take a wider perspective of a task in order to take the best avenue of action. A student with high self-efficacy may attribute failure to external factors, where a student with low self-efficacy may attribute failure to low ability (Bandura, 1997).

The following review of previous literature on self-regulation and learning begins with the discussion of sources of self-regulation and the failures of self-regulated learning. Next, learning strategies to help improve self-regulation and the teaching of those strategies are further explored.

Self-Regulation and Learning

Miller (2000) researched the development of self-regulated learners. He studied personal attributes and learning strategies of self-regulated learners. Some researchers (e.g., Pintrich & de Groot, 1990), studied individual variation among a wide selection of strategies that increase self-regulation in learning while others (Zimmerman & Martinez-Pons, 1988) contrasted the different learning strategies of high achieving and low achieving students. However, there is a dearth of information available on how one develops his or her perception of his or her capabilities in self-regulated learning.

Additionally, due to the many differences in self-regulated learning across a variety of disciplines, the development of one's capability beliefs in self-regulated learning is domain-specific. Miller's study investigated and identified how students develop perceptions of their capabilities in their English and mathematics classes. Miller's goal was to enhance how one understands the concept of self-regulation.

Miller (2000) administered ACT practice examinations and Bandura's self-regulated learning subscale to high school students. Results found that these students depend primarily on external comparisons rather than on internal comparisons in determining their self-regulated learning perceptions. However, prior research on this issue has traditionally sought to identify the personal attributes and strategies used by effective self-regulated learners. According to Miller, internal comparison occurs in the classroom when students infer their ability in one area by comparing their performance in another area. External comparison occurs when students evaluate their own capabilities with respect to the attainments of peer groups in similar academic settings. Miller's work was helpful to this study by laying a framework of how to approach a student with self-regulation strategies both individually and within a peer group. Exploring how one becomes a self-regulated learner, as well as, how one fails to become a self-regulated learner is essential in this discussion.

Failure of Self-Regulation

Bandura (1996) explored reasons one fails to become a self-regulated learner. His theory of self-regulation failure is grounded in the negative feedback-loop model. According to this model, if an individual perceives a discrepancy between feedback and an internal standard, then adjustments are made by the individual to reduce the

incongruity. However, the negative feedback model does not fully explain the self-regulatory process (Bandura, 1996). People are also proactive and set goals, overcome challenges, and master certain areas of interest. Therefore, self-regulation requires proactive control as well as reactive control. Proactive control refers to individuals taking initiative in their learning without instruction; whereas, reactive control refers to individuals taking initiative only after being instructed (Bandura, 1996). According to Bandura, when a person experiences a lapse of personal control, breakdown of self-regulation may occur. He identified three ways in which this breakdown ensues: the fatigue model, the attentional model, and a lack of self-efficacy model.

In the fatigue model (Bandura, 1996), failures in self-regulation come from insufficient norms, faulty techniques in monitoring oneself, or limitations in overriding an activated response sequence. The overriding dysfunction has its foundation in an energy model. People only have a certain amount of energy to spare. They must evenly distribute their energy to avoid not having enough to regulate their behavior. Therefore, a breakdown in self-regulation is the result. Apathy and attentional transcendence are suggested as predictors of self-regulatory failure. It is easier to control behavior early than when it has evolved into its later phases. Bandura (1996) cited the example of the behavior of a heavy drinker. It is easier for an alcoholic to suppress his drinking urges when he is not in an environment where he can see and smell alcohol all around him and where he can watch others engage in drinking behaviors. The environmental conditions, rather than the underlying apathy of behavior, hinder self-regulatory capability.

The attentional problem (Bandura, 1996) indicates that paying attention to the present moment weakens one's ability to self-regulate; however, focusing on the end goal

can positively reinforce self-regulation. There is truth to this in a few conditions, but in most endeavors, distal vision alone will not suffice. Bandura (1996) stated that under some conditions, success is best achieved by combining a long-range vision with proximal sub-goals that one can use as steps to reach that overall long-range vision or goal. Distal goals are too distant from the present to have any power over someone's existing behavior. When initial goals are not present to direct intentions and effort, people seem to postpone taking the needed steps to reach their goal, find distractions that detour them into other interesting activities, and remain unfocused when they finally get themselves back on track with the task at hand. Bandura (1996) stated that proximal goals, or subgoals, are designed to help one take steps to reach the end goal, to use self-reactive motivators that increase one's beliefs in him or herself, and to develop fulfillment and inherent desires as one completes each subgoal. Proximal goals also promote performance accomplishments. People increase their performance by using proximal goals and also prefer to set proximal goals as opposed to setting distal goals. When people are assigned distal goals, they modify and change them to proximal goals. They do this by breaking the goals down into smaller self-challenges to better guide and motivate their efforts as they work toward the end goal. Furthermore, those who do engage in this type of self-regulatory strategy tend to perform better than those who think in only distal terms when it comes to goal setting (Bandura, 1996).

A final factor that Bandura (1996) mentioned as a cause of the failure of self-regulation was lack of self-efficacy. He noted that perceived self-efficacy has been shown to be an adequate predictor of self-regulation. The lower an individual's self-efficacy, the less likely he or she is to display self-regulation. When obstacles are

encountered, individuals convince themselves of the uselessness of their effort. Those who have higher levels of efficacy initiate change in their behavior, are flexible with the skills and strategies they have learned and have ready to utilize, activate a high level of effort, and continue to persevere when challenged. They attribute failures to difficulties within the situation at hand and view them as obstacles that can be overcome. In addition, they put forth greater effort after failures, and show a high threshold for stress and depression when they experience hardships. People who have low perceived efficacy constantly convince themselves that their effort means nothing when they encounter obstacles and difficult tasks.

Sources of Self-Regulation

Human adaptation to changing situations is rooted in social systems (Bandura, 1996). Thus, self-regulation functions within an extensive system of sociostructural influences. Bandura (1996) believed that a model of self-regulation that focuses on an interactive ecological perspective would help increase comprehension of how individuals not only determine their life circumstances but how they are affected by them as well.

Many individuals successfully develop self-regulation. This success results in adoption of certain learning strategies. One area of self-regulated learning research focuses on the nature of such strategies. Theorists of self-regulated learning believe that children less than 10 years of age experience a difficult time organizing the cognitive and metacognitive processes that are helpful in completing extensive, multifaceted assignments (Perry, 1998). In addition, theory and previous research that focuses on motivation suggests that younger children lack defensive motivational tendencies that weakens self-regulated learning as they perceive their abilities in incremental terms, they

rate their ability higher than what is accurate, and they believe they will succeed when they try (Cain & Dweck, 1995; Paris & Newman, 1990). Nonetheless, current research indicates that there is a decrease in affective responses and non-persistence during failure (Perry, 1988). Perry (1988) found that attributions link outcomes to abilities and children age four to seven have lower expectations for success in the future. These findings lead researchers to maintain the hope of developing new techniques to motivate the learning of new abilities and outlooks linked with self-regulated learning in students' elementary school years. According to Perry, it is during the middle school years that students' attitudes and actions become more constant. If efforts to change self-regulating behaviors are ineffective, there will be greater hindrances to academic success.

Recent studies explored the instructional contexts that offer insight into this issue. Stipek, Feiler, Daniels, and Milburn (1995) evaluated students between the ages of four and six years old in child-centered classrooms and compared them to students in more teacher-directed classrooms. The differences between these classrooms were categorized based on how the children perceived themselves, their level of expectation in succeeding, their tendency to approach challenging tasks, and how much autonomy the children possessed. The level of independence was controlled by offering children choices from a group of activities and material that were diverse, giving children opportunities to make their own choices in an environment that fostered interaction. Teachers were viewed as showing their students more respect, having a more nurturing attitude, and remaining responsive and attuned to the students in their interactions when they implemented instructions that were meaningful to their students. Ultimately, the students led the learning experiences within the child-centered classrooms. In teacher-directed

classrooms, the teacher controlled the learning and focused her instruction on basic skills. There was a greater emphasis on performing well, and teachers often used external evaluations and rewards while making social comparisons among the students. Students in these classrooms perceived their abilities to be significantly lower, did not believe they would succeed as well on academic tasks, approached simple rather than challenging tasks, and felt they depended on the teacher more than students in the child-centered classrooms. Also, students in the teacher-directed classrooms showed less self-satisfaction in their academic accomplishments and demonstrated more stress and anxiety regarding school than those in child-centered classrooms.

Stipek et al. (1995) maintained that theories based on a sociocognitive perspective of learning encourage investigators and educators to consider how they practice evaluating students, how they impact students' perceptions of their learning efficacy, the ambitions and standards students create for themselves, and how they monitor and make necessary adjustments in their academic behavior. Advocates of these theories and models (Paris & Ayres, 1994; Pintrich, Smith, Garcia, & McKeachie, 1993; Turner, 1995) propose that for a student to develop effective forms of self-regulated learning, they need to involve themselves in complex and meaningful tasks, know how to choose the products and processes that will be evaluated, learn how to modify tasks and assessment criteria to gain the best challenging opportunity, receive support from their peers and evaluate their own work. In addition, advocates of this approach suggested that self-regulated learning will be enhanced when educators guide students by scaffolding instead of directing them in their learning. Taking on the role of a facilitator rather than a manager is much more helpful (Brown & Campione, 1994). By becoming facilitators,

teachers provide students with tools needed to function autonomously in school, to make proper decisions in their learning, to help them expand their self-efficacy in pursuing more complex and extensive tasks. The teachers also use evaluations to help students perceive mistakes as opportunities to learn rather than as failures.

Learning Strategies to Improve Self-Regulation

Loyens, Rikers, and Schmidt (2008) investigated the relationships between students' conceptions of constructivist learning and their regulation and processing strategies. Constructivism is "one view on learning that considers the learner as an active agent in the process of knowledge acquisition" (Loyens et al., 2008, p. 445). Constructivism has led to the development of several educational applications; it can be viewed as a theory of how individuals learn. According to this view, students become more effective learners by deciding what and how to learn, and taking responsibility for their own learning.

According to Loyens et al. (2008), constructivism is personified in many ways, but most views of constructivism are based on four core constructs that should be considered when creating learning environments for students. These constructs are known as (a) knowledge construction, (b) cooperative learning, (c) self-regulated learning, and (d) the use of meaningful, authentic problems in education (Loyens et al., 2008). First, the construction of knowledge refers to one's use of prior knowledge to help interpret new information. Second, cooperative learning refers to the concept that one's social interactions can help in the process of acquiring knowledge. Third, self-regulated learning assumes certain factors such as goal-setting, metacognition, and self-assessment and is viewed as a fundamental aspect to successful learning. Finally, the use

of meaningful problems in education challenges students to attempt complex problems that connect their learning to similar real-life situations that they may encounter. This will also promote transfer of knowledge to other areas. Constructivism learning environments have been rapidly accepted and practiced in areas of education (Tenenbaum, Naidu, Jegede, & Austin, 2001). Tenenbaum et al. (2001) argued that constructivist learning environments require much responsibility from the learner while also requiring learners to be socially competent, self-regulated knowledge constructors.

Of importance in current research is the idea that as learners, children are active agents, and they actively construct knowledge and contribute subjective beliefs to the process of learning. Loyens et al. (2008) brought this concept, also known as conception, to the forefront in educational research. A conception can be defined as "an individual's personal and therefore variable response to a specific idea" (Loyens et al., 2008, p. 446). Conceptions of learning are described as rational networks of knowledge and beliefs about learning and other related factors. Thus, conceptions of learning now seem to constitute a valuable element of research on student learning. Students have certain beliefs about the atmosphere in which they learn.

Loyens et al. (2008) used two hypothesized models that were tested with 98 psychology students, using a structural equation modeling approach. The first model used regulation and processing variables of the Inventory of Learning Styles (Vermunt, 1992), and the second model used the Motivated Strategies for Learning Questionnaire (Pintrich & de Groot, 1990). Results of the data analysis revealed structural relations between aspects of methods used during constructivist learning and methods of regulation and processing strategies. Overall, their results support the concept that

relationships exist between instructional conceptions of a constructivist learning environment and regulation and processing strategies. Additionally, Loyens et al. found that students who did not feel as confident with their learning ability were at a higher risk of developing regulation strategies that are less than adequate.

Ross, Green, Salisbury-Glennon, and Tollefson (2006) investigated whether college students adjust their study strategies to meet the cognitive demands of testing a self-regulatory skill. The researchers used a sample of 123 college students who completed the Study Process Questionnaire (SPQ; Biggs, 1987), a 42-item instrument including motivation and learning strategies. According to the model, this instrument is based on motives and strategies for learning which are divided into the following three levels: (a) surface-level strategies, emphasizing rote memory; (b) deep-level strategies, emphasizing meaning; and (c) achieving-level strategies, emphasizing organization of work and scheduling. The procedure included all students attending a 20-minute lecture on multiple-choice item writing. The students had the opportunity to memorize the principles and examples and were then asked to evaluate items. The presenter discussed these items while modeling the thinking processes used to evaluate them. This in-class evaluation of items provided students with an opportunity to practice complex thinking skills. Ross et al. randomly assigned students to two groups, a complex group and memory group. The students in the complex group were told to expect items requiring deep-level processing strategies on the test and to study accordingly. The students in the memory group were told to expect items requiring memorization and were provided an example of a memory item. After the 20-minute study period, students completed an examination and the SPQ.

Ross et al. (2006) demonstrated that students who expected exam items requiring deep-level processing emphasized deep-level study strategies more than the students who expected surface-level items. These results indicated that students did adjust their study strategies so that they could meet the examination demands. This study emphasized the importance of metacognition in self-regulatory learning. Once students learn how to think about their learning strategies and when to use them, they are better able to adjust their strategies for different subject areas and examinations.

Boulware-Gooden, Carreker, Thornhill, and Joshi (2007) also investigated the effects of metacognitive strategies on learning, but in regard to reading comprehension and vocabulary achievement in third graders. The purpose of their study was to determine the effectiveness of systematic direct instruction of multiple metacognitive strategies designed to assist students in comprehending text. The participants, 119 third-grade students, were studied to determine whether instruction that incorporated metacognitive strategies led to an increase in the reading comprehension of text and an improved vocabulary. Three of the third-grade classes were housed in the intervention school, and three classes were housed in the comparison school. The pretest and posttest battery involved multiple instruments, including the Word Attack, Letter-Word Identification, and Spelling subtests of the Woodcock Johnson III Tests of Achievement. These tests measured the academic skill level of the students before and after the intervention. The two tests that were used to measure the students' progress in reading comprehension and vocabulary were the 2000 Gray Silent Reading Test and a criterion vocabulary test. Students in both schools received 30 minutes of reading comprehension instruction a day for 25 days. Lessons in the intervention school were supplemented with

direct instruction of metacognitive strategies. The intervention group improved significantly over the comparison group in vocabulary and in reading comprehension. Therefore, the study of Boulware-Gooden et al. demonstrated that metacognitive strategies within learning are beneficial to younger students. In addition to meta-cognitive strategies, research has investigated how the use of certain strategies can predict course achievement.

Garavalia and Gredler (2002) investigated the extent to which 256 undergraduate college students' learning strategies, prior achievement, and aptitude predicted course achievement. Students completed an instrument on self-efficacy for self-regulated learning during the first week of classes and also reported their cumulative grade-point averages and SAT scores. At the end of the semester, instructors provided the percentage of total course points earned by each student as a measure course achievement. The authors concluded that those students who rated themselves high in general organization and planning, environment restructuring, recall ability, and typical study strategies were the same students with the highest course achievement. Therefore, students who have learned appropriate learning strategies tend to achieve at a higher level than students who have not.

Research has explored specific obstacles in learning in which students feel they have the greatest struggle. Rachal, Daigle, and Rachal (2007) explored the challenges college students face in learning. Their sample included 485 undergraduate students who completed an on-line version of the Learning Needs Questionnaire (Allsopp, Minskoff, & Bolt, 2005), which assesses students' behaviors related to studying and learning strategies. Students reported having difficulty learning or processing information in the

following areas: (a) writing, (b) quantitative reasoning, (c) reading comprehension, (d) executive study skills, (e) grammar, (f) quantitative word problems, (g) reasoning and problem solving, (h) information retrieval, (i) note taking, (j) test taking, (k) planning and organizing study skills, (l) test anxiety, (m) study skill forgetfulness, and (n) reading fluency. The results of Rachal et al. are important to this study because of the unique account of the students' perception of their needs. Techniques employed in this study can contribute to the learning development and preparation of younger students before they reach the high school level. One of the identified areas of weakness, executive study skills, has been isolated and investigated in further research (Allsopp et al., 2005).

Petersen, Lavelle, and Guarino (2006) explored the relationship between college students' executive functioning and study strategies, particularly self-regulated learning strategies. Self-regulation is a learner-directed process aimed toward promoting effective academic skills. If students are self-regulated in their learning, they approach learning in a proactive way and engage in self-generated thoughts, feelings, and behaviors that are aimed at meeting goals. Petersen et al. (2006) described executive functioning as independent behavior, comprised of skills in goal setting, planning, organizing needed resources, executing effective strategies, and making corrections when needed. In the Petersen et al. study, 81 undergraduate students who completed two measures during the first week of the semester, the Learning and Study Strategies Inventory and the Executive Functioning Rating Scale. Results revealed that students' learning strategies were related to their level of executive functioning. Specifically, self-regulatory strategies, time management, and concentration were related to deficits in executive functioning.

Petersen's study demonstrates the important impact that certain self-regulatory strategies have on a student's executive functioning in academics.

Teaching Self-Regulatory Strategies

Taking into consideration the effective strategies needed in learning, how one teaches these strategies to students should be explored. There are various models of self-regulated learning, but all share the assumption that students can actively regulate their cognition, motivation, or behavior and, through these processes, enhance performance and achieve educational goals. Hofer and Yu (2003) designed a study that addressed the impact of a semester course called Learning to Learn, an undergraduate psychology course designed to teach college students to be self-regulated learners. The purpose of Hofer and Yu's study was to examine whether students demonstrated changes in motivation and cognition through learning different strategies and techniques to become better learners.

A central component of the course was a weekly laboratory in which students applied course constructs to their learning (Hofer & Yu, 2003). The course targeted first- and second-year students who had experienced difficulty in coursework, who were disappointed in their academic performance, or who just wanted to become better learners. The course involved four hours of class time per week which included two hours in lecture and two hours in a laboratory/discussion format. The instructor presented principles, concepts, and research findings within his lectures. The laboratory assistants provided the link between concepts and students' learning using demonstrations, group work, and activities to enhance application and practice in self-regulated learning.

The first goal of Hofer and Yu's (2003) course instruction was to teach concepts of cognitive and motivational psychology. The purpose was to help students understand the mental processes involved in their learning, memory, and problem solving and to help students learn how and when to use various learning strategies. The second goal was to increase students' effectiveness as learners by developing a catalog of learning strategies. Participants were 70 students, enrolled in one of three laboratory sections, who voluntarily completed both the pre-course and post-course measures. Materials included a cognitive psychology textbook and a practical study skills book. The students' progress was assessed through the use of two short quizzes, two unit tests, and a final examination. In addition, students kept a journal with responses to questions that prompted reflection on readings, lecture, and laboratory. The measures used to assess the variables included The Motivated Strategies for Learning Questionnaire (MSLQ) which is a self-report questionnaire that consists of 72 items on student motivation and strategy use. Students completed the MSLQ during the first and last class periods.

Following the Learning to Learn course, students in Hofer and Yu's (2003) study increased their scores in mastery orientation and self-efficacy for learning, increased scores indicating their valuing of the course, and decreased their scores on test anxiety. Students also increased their cognitive strategy use in one term. At the end of the semester, motivational beliefs and strategy use were positively correlated. Hofer, Yu, and Pintrich (1998) introduced some concerns for consideration in designing an intervention such as the Learning to Learn course. One concern was the components and design of the intervention. One can teach either domain specific strategies or more general cognitive and self-regulatory strategies. Hofer, et al. (1998) encouraged

designers to consider the scope, content, and timeframe of their programs. Interventions

that rely on using one specific strategy had the largest effect on student performance.

However, "general multistrategy programs had weaker but still reasonable effects"

(Hofer et al., 1998, p. 59). The content of a program can range from general memory and

learning strategies to intellectual and problem solving skills and domain-specific

strategies (i.e., strategies specific to writing). Motivational strategies (i.e., adaptive

attributions) can also be useful.

In their meta-analysis, Hattie, Biggs, and Purdie (1996) reported that programs

with three content areas that included (a) memory skills; (b) structural aids or various

cognitive and metacognitive strategies for planning, summarizing, elaborating, and

organizing material; and (c) adaptive attributions had good outcomes. Based on their

meta-analysis, Hattie et al. summarized recommendations for program development.

They contended that interventions should focus on both a cognitive and motivational

strategies. The timeframe of an intervention sets constraints on the scope and content of

a program. Elementary students, who are just developing their general metacognitive

knowledge about strategies as well as their general self-regulatory capabilities, would

likely need more time and practice in the use of cognitive and metacognitive strategies

than college students. More research is needed to determine if strategy instruction

programs for younger students should involve long-term programs that last longer than a

few months. College and university students benefited less from learning skills programs

than students in K-12 settings (Hattie et al., 1996).

The second issue identified by Hofer et al. (1998) was integrated versus adjunct

course design. Adjunct course interventions offer learning strategy instruction as a

separate course at the postsecondary level. In contrast, integrated programs attempt to embed or infuse strategy instruction throughout the curriculum. Integrated programs increase the likelihood that transfer of strategies will occur. Elementary teachers teach all subject areas and spend four-to-six hours per day with their students. Therefore, it would be easier to implement integrated programs at the elementary level.

The third issue identified by Hofer et al. (1998) was the issue of transfer. If general strategies are taught to the students, it must be possible for them to transfer these strategies from one discipline or subject to another. The increase in self-efficacy within a child who learns to succeed in all areas as opposed to just one subject area can be beneficial to his or her academic success. The format constructed in this type of intervention, which takes into account all three issues previously mentioned, is designed based on a distinct conceptual framework which will be discussed in the following paragraphs.

Hofer et al.'s (1998) conceptual framework was based on a general social-cognitive model of motivation and cognition that emphasizes the importance of integrating both motivational and cognitive components of learning. Knowledge beliefs and strategies used for regulation are the two general organizing constructs. Within these constructs are two general domains: cognitive and motivational. Cognitive learning strategies relevant to academic performance in the classroom include rehearsal, elaboration, and organizational strategies (Weinstein & Mayer, 1986). Most models of metacognitive control or self-regulatory strategies include three general types of strategies: planning, monitoring, and regulating (Hofer et al., 1998).

Hofer et al. (1998) discussed the importance of using motivational strategies within this framework. They highlighted the importance of self-knowledge in terms of knowing about strengths and weaknesses as a learner, self-efficacy for various academic tasks and disciplines, as well as general goal orientation to learning, and personal interest and value for academic tasks. In terms of motivational strategies, the importance of adaptive attributional patterns and avoiding self-handicapping strategies, such as procrastination, can protect self-worth (Hofer et al., 1998).

Developing self-regulated learners through a course format has been investigated in other research as well. Tinnesz, Ahuna, and Kiener (2006) posited that students should take a more energetic and active approach, referred to as Dynamic and Active Learning Strategies, if they are to become self-regulated learners. Unfortunately, many individuals do not develop this sense of learning in elementary, middle, or even high school. Therefore, when they reach the college level, they are not prepared. Tinnesz et al. identified two of the main problematic issues that are seen in college today: the under-preparation of undergraduate students and the high numbers of those who do not complete their degree. Many high school graduates are not prepared academically for a rigorous college curriculum. Tinnesz et al. noted that in 2001, close to half of college freshmen had not taken the basic high school courses that were needed to help them reach a successful college career. Furthermore, in 1998, one-third of undergraduate students were required to take a basic skills course in reading, writing, or math. In addition, 73% of deans reported more students who needed remedial education before continuing their coursework. According to the National Center for Educational Statistics (2002), remedial programs were made available to freshman at 80% of four-year public colleges and 98%

of two-year public colleges. This would imply that there is a lack of preparation for college in among incoming college students. In addition, many college students do not know how to adequately study to become successful students. The American Council on Education Survey revealed that only 34% of college students are spending six or more hours per week completing homework assignments (National Center for Educational Statistics, 2002). With greater emphasis being placed on improving children's experience in the classroom, the need to motivate their active involvement in and outside of the classroom is vital when it comes to improving their learning experiences. Astin (1993) completed a study on college students that focused on defining active learning as students becoming engaged in their schoolwork while taking responsibility for their own learning. These active learning techniques impacted retention of students positively and included classroom presentations, essay exams, and working on projects with faculty.

In response to these concerns, Tinnesz et al.'s (2006) designed a Methods of Inquiry course to overtly teach students that they need to be active in their own learning in order to become successful in school. Tinnesz et al. stated that for this to occur, students must have a basic understanding of their courses by (a) being able to distinguish one field of study from another by discerning the questions pertaining to each course and the process used to answer the questions; (b) engaging with the subject matter; (c) taking the perspective of the teacher; and (d) monitoring their comprehension as they learn. They stated that students can learn how to implement these active strategies necessary to succeed by learning to use strategies such as taking notes, elaborating on concepts, using concept maps, reading, and creating and using practice exams to take before the real

exam. Knowing and implementing the active strategies is important because active learning has a significant positive effect on student success in many ways.

Active learning develops knowledge and understanding of academic content and students who use active learning techniques are found to engage in class discussions more, as well as perform better on exams (McCarthy & Anderson, 2000). When students make an effort to participate in class, they feel more incorporated into the culture of the campus and are more committed to the institution (Braxton, Miller, & Sullivan, 2000). Therefore, the Tinnez et al.'s (2006) Methods of Inquiry course offered students concrete ways to make this active involvement a reality.

In the Tinnesz et al. (2006) Methods of Inquiry course, each week, students attended two lectures and one individual meeting with a peer monitor. During the lectures, 680 students were exposed to theories, strategies, and techniques for learning and thinking. Their assignments were to apply the techniques to their other classes. Most of the students who took part in the study were freshmen. During the first and last weeks of the course, all participants completed pretest and posttest measures of the Revised Experimental Version of the Dynamic and Active Learning Inventory (Iran-Nejad & Chissom, 1992). Results of this study showed that active and dynamic strategies can be explicitly taught and subsequently implemented by students in other areas. The researchers discussed how students who are not fully prepared for academic success can increase their success and improve their classroom performance once taught active and dynamic learning strategies. Students in this course had a 6% greater rate of retention for graduating within a five-year period than their counterparts. The results of Tinnesz et al. (2006) are important because they indicate that learning strategies are transferable across

subject areas. In the Methods of Inquiry course, students learned how to evolve into self-regulated learners and how to take initiative in their own learning. By making the dynamic characteristics part of their learning process, students can increase their desire to learn. By learning the active strategies, students are provided with the tools they need to succeed academically. In addition, learning these strategies can affect students' academic self-esteem in a positive way, which results in improving their dynamic approach to learning. If students can learn how to become active and dynamic learners earlier in their education, these skills may strengthen by the time they reach the college level, and learning may not seem as difficult and taxing.

In addition to the design and foundation of an effective intrusion, there are certain other factors to consider when designing and implementing a learning intervention. Schunk and Zimmerman (1998) discussed some common components of self-regulation interventions. The first component was strategy teaching. Students who learn a systematic approach for working on academic material are able to apply it independently. They stated that strategy learning raises motivation because students who believe they can apply an effective strategy will feel more successful about performing well; this, in turn, raises their self-efficacy. Two other key components are practice of self-regulatory strategies and feedback on strategy effectiveness. Schunk and Zimmerman posited that these two aspects enhance learning and motivation by conveying learning progress and also promoting strategy transfer and maintenance. A fourth component is monitoring; it is important that students monitor their application and use of the strategy, its effectiveness in solving tasks, and ways to modify it to coincide with different subject areas or concepts. When students can learn how to monitor their progress, they enhance

their self-efficacy and motivation. A fifth aspect is social support from others as students learn and acquire these new skills. Most of this social support comes from the teachers; however, many interventions include peer support, as well. Even though social support is beneficial, the withdrawal of social support is also necessary. Scaffolding, or gradually removing assistance, must occur for the student to learn how to eventually regulate themselves (Schunk & Zimmerman, 1998). A final common component noted by Schunk and Zimmerman emphasized the importance of self-reflective practice, where students practice skills and reflect on their performances. This can be achieved through journal writing or discussing the pros and cons of learning the process of becoming a self-regulated learner.

Self-reflective practice is a vital element of self-regulated learning, but there have been few efforts made to integrate it with interventions (Schunk & Zimmerman, 1998). According to Schunk and Zimmerman (1998), when students practice self-reflection to evaluate how well they are improving due to the new strategies being used, they adjust their approach to learning as needed and make adjustments to factors within their environment and social settings in order to establish a context that is advantageous to learning. The need for self-reflective practice may be greater in some settings than in others. Students in some settings need the concept of self-reflective practice more than others. Self-reflective practice may be less important where feedback is provided regularly, and self-assessment is simple. In less structured environments, self-reflection plays a more valuable role. Systematic forethought, such as adopting a learning goal orientation, prepares a student for the best forms of self-reflection. Thus, self-reflection can be systematically developed by training in forethought and performance. Schunk and

Zimmerman recommended that self-reflective processes be assessed during practice efforts and when dysfunctional patterns, such as unreasonable self-evaluation are detected, instructors should intervene at the outset of the self-regulatory cycle.

Lenz (2006) discussed eight critical characteristics that are essential to providing and maintaining quality instruction in learning strategies. The first critical characteristic is that instruction is provided to all students, with more explicit, intensive instruction given to students who have difficulty with learning strategies. The second essential characteristic is that strategy content includes teaching students how to use cognitive and metacognitive processes. The third characteristic is that strategies must contain elements that ensure generalization. The fourth critical characteristic is that in both instruction and practice, students must be able to see how using these strategies create success. The fifth aspect is that learning strategy instruction is guided by ongoing assessment and feedback. The sixth component is that strategies are taught and used in all subject areas. The seventh critical characteristic is that teachers should have different expectations regarding content mastery, and these expectations should be based on the content's importance for helping students meet standards. In addition, students must master critical content. The final critical characteristic is that the school supports and promotes widespread use of instruction in learning strategies. These are the components that make learning strategy instruction effective across the greatest number of learners. Researchers (Crowley & Siegler, 1999; Gersten, Fuchs, Williams, & Baker, 2001; Mastropieri & Scruggs, 1997; Pressley, Borskowski, & O'Sullivan, 1984; Pressley, Borkowski, & Schneider, 1987, 1989; Swanson, 2001) have repeatedly cited these eight characteristics as being especially important in teaching learning strategies.

Achievement Motivation

Motivation has also been linked to an individual's level of self-regulation and self-efficacy. Meece, Blumenfeld, and Hoyle (1988) found that it is difficult for teachers to motivate students to fully engage in the learning process, which involves incorporating information, categorizing novel information, and creating meaning. The focus of Meece et al.'s study was on how motivational processes increase student's involvement in activities within the classroom setting.

Meece et al. (1988) contended that the determination of a student's involvement in certain projects in which he or she can succeed is based on goals involving many factors. One explanation of differences in students' achievement behavior is contrasting goal orientations, such as mastery versus ability focused, learning versus performance, and task-involved versus ego-involved. Each set of goals differs based on how the students perceive their learning; students can perceive their learning as valuable and providing enough intrinsic satisfaction or as a way to achieve an external goal outside of the task, such as recognition, gaining approval, feeling superior to others, or avoiding negative evaluations. These researchers concluded that individuals seek certain achievement goals based on personal needs, competencies, and situational demands. Depending on the goal that is most important to students at that time, the choice of tasks in which they pursue success, the way they define and attribute academic success, and the way they decide what learning or problem-solving strategies to use is affected.

According to Meece et al. (1988), each student adopts a certain motivational orientation when achieving. Behind these orientations lie the reasons students choose to pursue a successful academic outcome. Two such orientations are mastery goals and

performance goals. Mastery goals refer to goals associated with increasing competence while emphasizing a concern with learning, understanding, and mastering the task (Meece et al., 1988). If students have mastery goals, they focus on self-improvement and skill development. Meece et al. identified performance goals as those which focus on demonstrating ability and emphasizing a concern with appearing smart and able and not appearing unable. They distinguished between approach and avoidance orientations within mastery and performance goals. Approach orientations focus on the likelihood of success, and avoidance orientations focus on the likelihood of failure.

Hofer and Yu (2003) stated that it has often been questioned whether or not one can teach another individual motivation to learn and how to become a self-regulated, self-efficacious learner. However, researchers in the area of learning and motivation have found reasons to believe that self-regulated learning and motivation can be taught. Most previous studies focused on motivating high school and college students to become better learners (Kitsantas, Reiser, & Doster, 2004). The aim of this study, however, was to determine if an intervention for students younger than the middle-school level promoted self-regulated learning.

Achievement Goal Orientations

An important assumption in most models of self-regulation is that students' motivation plays a crucial role in their adaptive engagement in the various phases of self-regulated learning. Zimmerman (2000) argued that "self-regulatory skills are of little value if a person cannot motivate themselves to use them" (p. 17). Students' motivational beliefs, such as their self-efficacy for the task and for the use of self-

regulation strategies or their valuing the task for its own sake, are crucial for their actual and successful engagement in self-regulated learning.

Meece et al. (1988) defined two goal orientations: mastery goals orientation and performance goals orientation. Mastery goals refer to a goal with the purpose of increasing competence and to a concern with learning, understanding, and mastering the task. Performance goals refer to a goal with the purpose of demonstrating ability and thus to a concern with appearing smart and able and not appearing unable. Researchers (Kaplan, Lichtinger, & Gorodetsky, 2009; Meece et al., 1988) also made a distinction between approach and avoidance orientations within mastery and performance goals; approach orientations refer to a focus on the likelihood of success, and avoidance orientations refer to a focus on the likelihood of failure. Therefore, mastery-approach goals refer to learning with the orientation toward increasing competence; whereas, mastery-avoidance goals refer to learning with an orientation toward avoiding the decline of competence or of missing opportunities for learning. Performance-approach goals refer to learning with the orientation toward demonstration of high ability and seeming more capable than others; whereas, performance-avoidance goals refer to learning with the orientation to avoid demonstration of low ability or embarrassment.

Prior research findings have found that achievement goals are associated differently with the various factors of self-regulated learning. The research literature strongly suggests that mastery-approach goals are associated with initiation of self-regulation, choice of learning strategies, high self-monitoring and control of cognition during learning, persistence in the face of difficulty, interpretation of feedback in relation to progress, and self-evaluation of comprehension (Pintrich, 2000). It has also been

found that performance-avoidance goals are negatively associated with adaptive self-regulated learning and are associated positively with avoidance of effort and with self-handicapping strategies (Urdan & Midgley, 2001).

Kitsantas et al. (2004) examined how two types of goal setting (process vs. outcome), self-evaluation, and organizational signals affected student ability to perform a set of procedural skills. They also examined how these three variables influenced students' self-efficacy, satisfaction with their performance, evaluation of the instruction, and attributions of success or lack of success in acquiring the skills. Certain methods have been used to help promote student self-regulation; an example of these methods is asking students to focus on process goals.

In many studies examining self-regulated learning, students have been instructed to set either a process goal or an outcome goal for themselves (Kitsantas et al., 2004). Students who set process goals are encouraged to concentrate on methods and strategies that can help them master a skill; whereas, students who set outcome goals are encouraged to concentrate on attaining the desired outcome. Process goals can be equivalent to mastery-goal achievement and outcome goals can be seen as the equivalent to performance-goal achievement. Kitsantas et al. (2004) found that high school students in the process-goal condition reported a higher degree of self-efficacy, more satisfaction with their performance, and more strategic attributions than students in the outcome-goal condition. Student self-evaluation, "involves having students compare their performance against a standard or norm and adjust their learning activities depending on their informed perceptions of the quality of their work" (Kitsantas et al., 2004, p. 270). Self-evaluation judgments were correlated with both achievement outcomes and one's self-

satisfaction and attributional views. Self-satisfaction consists of one's satisfaction or dissatisfaction with performance outcomes. These are critical factors because those who are satisfied about their performance will continue pursuing the task. On the other hand, Kitsantas et al. also noted that those who find that their pursuit of a task leads to dissatisfaction and disappointment will not pursue the task in the future. Attributions are important evaluative judgments because attributing errors to ineffective strategies helps one maintain motivation even in the face of obstacles; whereas, attributing errors to ability discourages learners from attempting to complete the task successfully. Self-evaluation also had a positive effect on student skill acquisition, especially for students in the outcome goal condition (Kitsantas et al., 2004).

Research on self-evaluating during learning indicates that students who engage in these activities usually outperform those who are not motivated to use these strategies. When a learner has process-oriented goals, he or she also receives reinforcement toward mastery approaches which are then used for self-evaluation since overall mastery requires that the learner first master tasks in sequential order (Kitsantas et al., 2004). Kitsantas et al. (2004) noted that much of the research that has explored the effects of goal setting and self-evaluation has focused on the effects of goal setting and self-evaluation on learning rules or motor skills. However, educators expect students to have procedural skills. These skills require students to properly implement a sequence of actions that form the entire task. Because of the stepwise nature of these skills, Kitsantas et al. believed that it would help to motivate those students who participate in these tasks to focus on two self-regulated learning processes, process goals and self-evaluation, that help learners focus on the steps needed to carry out a skill.

Research has shown that encouraging students to have a positive outlook on implementing process goals increases their self-efficacy, increases their ability to internalize their interests, and leads to more satisfaction in their achievements (Kitsantas et al., 2004). This study noted that a focus on outcomes before one has mastery of a skill increases the difficulty of the task, negatively affecting how motivated a student is in persisting in the task. Furthermore, Kitsantas et al. (2004) found that students who evaluated their progress found that it was more likely for them to attribute poor performance to their choice of strategies and skills rather than to their effort or ability. This led them to look for alternative ways to enhance learning.

The current research at an elementary level was designed to determine if success can be attributed to learning methods and strategies, to explore how those strategies relate to the development of better learners, and to determine if those strategies result in students viewing themselves as better learners. If setting process goals can help a student become a better learner, then orienting toward a mastery-goal achievement style will likely affect one's ability to regulate his or her learning.

Goal Orientation and the Classroom

Meece et al. (1988) investigated the relationship between students' goal orientations and cognitive engagement in classroom activities. By using a series of structural equation analyses, they tested a model in which students' goal orientations were hypothesized to directly influence cognitive engagement. A group 275 fifth- and sixth-grade students who had learned various learning strategies throughout their elementary school years were sampled. They assessed students' goal orientations and engagement patterns during science lessons in each classroom. At the beginning of the

study and following the completion of six science activities, students completed self-report surveys that measured their goal orientation and cognitive engagement patterns. The results supported the hypothesis that students who placed a stronger emphasis on mastery approach goals reported more active cognitive engagement in learning activities. The students in the Meece et al. (1988) study sought to independently master and to understand their work. Those students who were more oriented toward social goals, such as pleasing teachers or peers, and those who indicated that they avoided work placed little effort on the learning task. Since students who are mastery oriented tend to have more regulation strategies in their learning; helping them become self-regulated learners, requires teaching certain cognitive skills. In addition to cognitive engagement implemented by Meece et al., other classroom factors with achievement orientation have been explored.

Ames and Archer (1988) investigated achievement goals in the classroom and how those goals related to learning strategies and motivation processes. They tested 176 students in grades 8-11. Students reported characteristics of goal orientation, learning strategies, perceived ability, and attitude toward class by completing several self-report measures, such as the Learning and Study Strategy Inventory and other measures designed by the researchers. Ames and Archer concluded that "a mastery goal orientation may foster a way of thinking that is necessary to sustain student involvement in learning as well as increase the likelihood that students will pursue tasks that foster increments in learning" (p. 264). Students, who perceived an emphasis on mastery goals in their classrooms, reported using more effective strategies, preferred challenging tasks, had a more positive attitude toward school, and had a stronger belief that success would

follow their sustained effort. However, students who perceived performance goals as the most important focused on their ability, evaluated their ability negatively, and attributed failure to their lack of ability. Ames and Archer's findings are of great importance because they found that the degree to which a classroom climate emphasizes mastery goals is predictive of how students choose to approach tasks and engage in learning. The classroom environment has also been shown to affect a student's use of motivational strategies.

In addition to previous research, Turner et al. (2002) investigated how the classroom environment can enhance or decrease a student's use of avoidance strategies. They predicted that perceptions of an emphasis on mastery goals in the classroom would be negatively related to the use of avoidance strategies, and perceptions of an emphasis on performance goals in the classroom would be positively related to the use of avoidance strategies. They also investigated the relationship between supportive instructional, motivational discourse, avoidance strategies, and perceptions of a mastery goal structure. The sample included 1,197 sixth-grade students who completed surveys assessing the avoidance of help seeking along with scales from the Patterns of Adaptive Learning Survey (Midgley et al., 1998). Students reported using avoidance strategies significantly less in classrooms where the emphasis was on learning, understanding, effort, and enjoyment. In addition, students reported less use of avoidance strategies in classrooms where teachers provided instructional and motivational support for learning. The study conducted by Turner et al. (2002) suggested that "a mastery goal environment appears to consist of both cognitive and motivational, or affective, components" (p. 103). Learning in different educational environments has also been explored as a consideration.

More recently, Kaplan et al. (2009) investigated the relationship between achievement goal orientations and self-regulation in writing within two different educational environments. They hypothesized that different achievement goal orientation for a specific writing task would incorporate different learning and self-regulation strategies. The sample consisted of 211 ninth-grade students from 11 classes in two high schools in the southern region of Israel. One school provided a traditional environment that was geared toward excellence, while the second school provided an authentic environment geared toward turning the school into an environment that was relevant to students' lives. Participants completed a writing assignment in their classrooms and completed scales from the Pattern of Adaptive Learning Survey (Midgley et al., 1998) and on their learning strategies. Results indicated that self-regulation and writing strategies were perceived as elements within goal orientations, suggesting an integration of motivation and self-regulation of writing. The findings also highlighted the possibility that motivational orientations may portray something different for students who learn in different educational environments with various levels of ability, and these differences may drive students to use different types of strategies for engagement.

Children From Low-Income Families

Several researchers have explored the likelihood that poor academic achievement among children from low-income families may originate from motivational factors (Howse, Farran, & Boyles, 2003). This theory is grounded in the correlations among early school failure, low self-efficacy, lack of competence, and decreased motivation to try to succeed. Because young, economically disadvantaged children have a lack of support from family and community for the importance of academic success, these

children experience more difficulties in school than their more advantaged peers do. These disadvantaged children may have a lower sense of self-efficacy along with more negative feelings toward school. This results in poorer motivation for their academics during their early school years.

Stipek and Ryan (1997) assessed children's motivation using a diverse set of measures. The measurement assessed feelings related to success in school, thoughts about school, and feelings related to challenges, tasks, and performance in school. Two important findings were identified in their study. The first finding was that on average, preschool students and kindergarten students sustain motivation during the school year. Another finding was that pre-assessments of the students' cognitive abilities rather than motivational variables were better able to predict how successful students would be by the end of the year. Significant correlations found between the motivational measures and academic competence accounted for very small amounts of achievement variance. Results indicated that by the time most children, regardless of economic level, begin their education, they had positive attitudes toward school and more of a motivational orientation. Students' economic level seems to have very little impact on this phenomenon.

Howse et al. (2003) studied economically deprived children and found that motivation did not have much value on the achievement of younger children if behavioral regulation was not a factor. Lange, Farran, and Boyles (1999) studied at-risk children and found that those children's self-regulation skills, such as intentional attempts to self-regulate behaviors while engaging in a task, improved achievement to a point beyond that which can be explained by intrinsic motivation. They completed a study in which ratings

were gathered from teachers of students' general motivational tendencies and self-regulatory behaviors for two groups of low income students. The younger cohort were first observed while they were enrolled in Title I prekindergarten programs, and the older cohort were observed while they were enrolled in Title I prekindergarten programs and while they completed the first grade. Motivational descriptors were level of competitiveness, self-starting tendencies, ability to stimulate own interest, and ability to choose difficult tasks over less difficult tasks. Students' self-regulation and task-engagement behaviors were identified by the ability (a) to use external resources to help them succeed with no prompts, (b) to be careful and reflective in their behavior, and (c) to be organized in planning and setting goals. These abilities promoted the development of independence in their tasks. Lange et al. concluded that the ratings of the students' tendencies to monitor themselves and engage in self-regulatory behaviors at school were predictors of early achievement scores. This research is relevant because it demonstrates that young children do possess the capabilities to engage in self-regulatory behavior for learning.

Relevant research gives more evidence of the importance of self-regulated behaviors for outcomes in children. Martin, Drew, Gaddis, & Moseley (1988) found that it is the behavioral factors associated with approach-withdrawal, the amount of intensity one exerts in his or her learning process, the ability to be distracted, and the level of persistence that are related to the achievement scores of young children. Some children fail to engage in the self-regulatory behavior needed to help them successfully complete activities even though many may seem highly motivated in school. Borkowski & Thorpe (1994) argued that the failure of self-regulation is evident in underachievers who are not

aware of how to properly use the skills and strategies, planning methods, and reflection to achieve intended outcomes. These children seem to be more easily distracted from tasks, which usually leads to poorer academic mastery behaviors and lower levels of educational achievement.

Howse et al (2003) explained that the difficulties children experience in avoiding distractions and maintaining their attention is related to action control. For young children to successfully complete their tasks and activities, they must have the ability to control their actions while ignoring competing stimuli. An example of the ability to use action control lies within a common work-play conflict situation where young children use three strategies to manage their actions: focusing their attention on a specific task, reflecting on the aspects of the task that makes the work positive, and continuing to express a feeling of contentment throughout the task.

This Study

In summary, the existing literature supports the efficacy of certain learning strategies and shows the benefits of teaching those learning strategies in developing students' self-regulation. When learners are active agents and take responsibility for their own learning, they become more effective. The acquisition of metacognitive processes also aids students in evaluating themselves and their progress as they learn. Certain common strategies, such as emphasizing meaning, organization of work, and scheduling, are also helpful. To be effective, a cognitive component must be included in this teaching of the strategies if students are to understand their cognitive processes (Hofer et al., 1998). Self-regulation positively correlates with self-efficacy; those students who rate themselves as mastery oriented tend to have increased levels of self-regulation and

self-efficacy. In addition, achievement orientation plays a major factor in a student's self-regulation. Existing literature supports the theory that those with mastery orientations tend to be more self-regulated in their learning than those who embrace a performance orientation style to achieving (Meece et al., 1988).

Most of the literature regarding self-regulation interventions employed college students or students at the high school or middle school level and included multiple interventions over the course of several months. The goal of this study was to explore teaching self-regulation to students at the elementary age. If this is possible, elementary students should also raise their level of self-regulation after being exposed to similar strategies as those of college students in previous research. If the benefits of becoming a self-regulated learner can be instilled in the minds of elementary students, they can embrace these concepts, possibly change their goal orientations, and become more successful in school. Another goal of this study was to confirm previous findings that students who are self-regulated in their learning tend to have more of a mastery approach orientation in their achievement.

Hypotheses

Hypothesis One

It was hypothesized that the self-report of self-regulation and self-efficacy of students in the experimental group would increase significantly more than that of students in the control group.

Justification for hypothesis one. Prior research has supported the notion that students who have advanced levels of metacognitive abilities when it comes to learning should have higher levels of self-regulation and self-efficacy in their learning abilities

(Boulware-Gooden et al., 2007; Hofer & Yu, 2003, & Ross et al., 2006). The intervention was centered on teaching students metacognitive skills with the expectation of producing more self-regulated learners with high self-efficacy in their abilities to learn.

Hypothesis Two

It was hypothesized that students in both groups who report a mastery-approach goal orientation would rate themselves significantly higher on self-regulation and self-efficacy.

Justification for hypothesis two. According to the literature (Ames & Archer, 1988; Kaplan et al., 2009; Kitsantas et al., 2004; Meece et al. 1988; Pintrich, 2000; & Urdan & Midgley, 2001) students who are successfully self-regulated in their learning usually have an internal drive to achieve. They seek out intrinsic rewards, such as pride in their accomplishments, rather than extrinsic rewards of acknowledgment. Because mastery goals demonstrate a focus on internal rewards when it comes to achieving, students with high levels of mastery goals should also have high levels of self-regulation and self-efficacy.

Hypothesis Three

It was hypothesized that students in the experimental group who initially reported themselves high in the performance-approach goal orientation would significantly increase in their mastery-approach goal orientation scores after the intervention.

Justification for hypothesis three. As self-regulation increases, mastery approach goals should also increase. As explained with hypothesis two, students who are more self-regulated tend to have higher mastery goals (Ames & Archer, 1988; Kaplan et al., 2009; Kitsantas et al., 2004; Meece et al. 1988; Pintrich, 2000; & Urdan & Midgley,

2001). The goal of the intervention was to have the students become more self-regulated by the completion of the intervention.

CHAPTER TWO

METHOD

Participants

Participants in the study were fifth-grade students at a rural elementary school in the southern part of the United States. The elementary school included grades pre-kindergarten through fifth-grade. The total school enrollment was 486. The racial make-up of the school was as follows: 20% Caucasian/White, 78% African-American/Black, .04% Hispanic, .06% Asian, and .02% American Indian. Special education students made up 21% of the school's population. This school, a Title I school, receives governmental funds that aim to bridge the gap between low-income, at-risk students, and other students.

A power analysis was completed to determine and confirm that the number of participants in this study was sufficient (Soper, 2009). Data from college students was used for the MSLQ because no data was found for elementary students using this measure. Based on the power analysis, 16 participants would be needed in each group to detect significant effects. There were 17 students in the experimental group and 16 students in the control group. Participants were in two different fifth-grade classes taught by the same teacher. The control group consisted of six males and 10 females with four identifying themselves as Caucasian/White and 12 identifying themselves as African-American/Black. Demographic information for the experimental group included seven

males and 10 females with six identifying themselves and Caucasian/White and 11 identifying themselves as African-American/Black.

Measures

Participants were issued a packet of surveys. The packet contained a demographic questionnaire including personal characteristics, family characteristics, personal history, and academic related questions, two scales from the Motivated Strategies for Learning Questionnaire (MSLQ), and the Patterns of Adaptive Learning Survey (PALS).

Motivated Strategies for Learning Questionnaire (MSLQ). The MSLQ was constructed by Pintrich and de Groot (1990) in order to assess one's self-regulation in learning. It is a 44-item measure presented in a 7-point Likert scale with options ranging from 1 (*Not at all true of me*) to 7 (*Very true of me*). The measure consists of the five following subscales: Self-Efficacy, Intrinsic Value, Test Anxiety, Cognitive Strategy Use, and Self-Regulation. For the purposes of this study, only two of the five scales were used, the Self-Efficacy scale (nine items) and the Self-Regulation scale (nine items). The Self-Efficacy scale ($\alpha = .89$) has nine items regarding perceived competence and confidence in performance of class work, such as, "I expect to do very well in this class," (p. 40). The Self-Regulation scale ($\alpha = .74$) has nine items constructed from metacognitive and effort management type items, such as, "I ask myself questions to make sure I know the material I have been studying," (p. 40). These two subscales are most relevant to the study and avoided having a child at the fifth-grade age level respond to a lengthy list of questions.

Pintrich et al. (1993) explored the predictive validity of the original MSLQ. They found that self-efficacy was a positive predictor of final grade in a sample of 380 college students. The learning strategies subscale (Self-Regulation subscale) was a positive predictor of course grade. Students who relied on deeper processing strategies like elaboration, organization, critical thinking, and metacognitive self-regulation were more likely to receive higher grades in the course. The motivational and learning strategies scales were correlated in the expected directions. The positive motivational beliefs of self-efficacy and control of learning were positively associated with the use of cognitive, metacognitive, and resource management strategies.

The Patterns for Adaptive Learning Survey (PALS). The PALS was constructed by Midgley et al. (1998) in order to assess students' achievement goal orientation. It is an 18-item measure that is presented in a *True/False* format. Each of the scales on the measure was developed over an eight-year period by a group of researchers. The PALS assesses goal orientation and contains three scales with six items on each scale. The first scale, Task Goal Orientation, assesses a mastery approach goal orientation in students. This scale poses items such as, "I like school work that I'll learn from, even if I make a lot of mistakes," (p. 128). The second scale, Ability-Approach Goal Orientation, assesses a performance approach goal orientation in students. This scale contains items such as, "I would feel really good if I were the only one who could answer the teachers' questions in class," (p. 128). The final scale on the PALS is the Ability-Avoid Goal Orientation scale. This scale assesses the extent to which a student adopts a performance approach goal orientation for fear of appearing incapable. Items on

this scale are similar to, "It's very important to me that I don't look stupid in my classes," (p. 128).

Midgley et al. (1998) used the results of studies conducted with seven different samples of elementary and middle school students to describe the internal consistency and construct validity of the scales. Comparisons of these scales with those developed by another researcher provide evidence of convergent validity (Midgley et al., 1998). In all samples used to construct the PALS, Cronbach's alpha for the scale assessing a task goal orientation was greater than .70 and was often greater than .80 (Midgley et al., 1998). The alpha coefficients for the scales assessing an ability-approach goal orientation were somewhat lower in the samples but were always greater than .60 (Roeser, Midgley, & Urdan, 1995). In the largest and most recent sample, the internal consistency for each of the three scales was .84 (Middleton & Midgley, 1997).

Construct validity was tested based on the degree to which the goal orientation scales of the PALS correlated with other constructs in ways that are predicted by theory and consistent with other research. To provide evidence of construct validity, researchers related them to academic efficacy, reported use of adaptive and maladaptive learning strategies, and affect at school. In reference to academic efficacy, researchers found that task goals were positively related (Schunk, 1996; Wolters, Yu, & Pintrich, 1996) and ability goals were sometimes positively related (Midgley & Urdan, 1995), sometimes negatively related (Anderman & Young, 1994), and sometimes unassociated (Kaplan & Midgley, 1997) with academic efficacy. In regard to learning strategies, Anderman and Young (1994) found that task goals were positively correlated with deep strategy use while ability goals were negatively correlated with deep strategy use. Ability goals were

positively associated with surface level strategy use. Based on affect, task goals have been related to positive affect and ability goals have either been negatively related or unrelated to affect (Meece et al., 1988; Nicholls, Patashnick, & Nolen, 1985; Nolen & Haladyna, 1990; Roeser et al., 1996).

Convergent validity is based on evidence that different measures of a construct yield similar results. The scales on the PALS were compared to scales developed by Nicholls et al. (1985) to assess task and ego goals. The alpha coefficients for both task goal scales were .83. The correlations between Nicholls' scales and the scales on the PALS were positive and significant (.63 for ego-orientation and ability-approach goal orientation; .67 for the two task-orientation scales).

Discriminant validity is determined by evidence that a construct can be differentiated from other constructs. Midgley et al. (1998) conducted a statistical procedure, known as confirmatory factor analysis, to determine if the three goal scales could be differentiated from each other. The scale assessing a task goal orientation has six items (α = .83), including "An important reason I do my work in school is because I want to get better at it," (p. 128) and "An important reason I do my work in school is because I like to learn new things," (p. 128). The scale assessing an ability-approach goal orientation has six items (α = .86), including "I want to do better than other students in my classes," (p. 128) and "I'd like to show my teachers I'm smarter than the other students in my classes," (p. 128). The scale assessing an ability-avoid goal orientation has six items (α = .74) including "One of my main goals is to avoid looking like I can't do my work," (p. 128) and "The reason I do my school work is so my teachers don't think I know less than others," (p. 128).

Procedure

Before the study began, it was approved by the Institutional Review Board of

Louisiana Tech University (see Appendix A). The principal of the elementary school

involved in the intervention also sent a letter of approval for the study (see Appendix B).

Participation in this study was strictly voluntary. At the launch of the study, the legal

guardians of all participants read and signed consent forms. Students read an assent form

as the researcher also orally described their rights as participants. Following collection of

the consent and assent forms, participants in both the control and experimental groups

completed the packet of surveys. After the completion of the surveys, the students in the

experimental group participated in the six-session intervention designed to increase their

self-regulated learning and self-efficacy. After a two-week interval, the researcher

returned to the intervention class to further address the information covered during the

intervention. After one week, the researcher returned to administer the posttest measures

to both the control and experimental groups. The packet of surveys contained a

demographic questionnaire including personal characteristics, family characteristics,

personal history, academic related questions, the two scales from the MSLQ and the

PALS. The design of the study is a quasi-experimental design because the participants

were not randomly assigned to their groups.

To ensure confidentiality of responses, the teacher of the students collected both

sets of surveys and matched the student's name with another code identifier before

presenting them to the researcher. Only the researcher had access to the surveys and non-

identifying participant information. At the end of the school year, the researcher returned

to reward the participants with an ice cream party in appreciation of their participation.

Intervention

The researcher designed the intervention used in the study using various resources (Frender, 2004; Gaskins & Elliot, 1991; Kruger, 2006). These sources include the six core concepts of the intervention along with handout materials and activities for the students. The six concepts taught and discussed during the intervention were as follows: (1) Intelligence, (2) Learning Styles, (3) Cognitive Strategies, (4) Taking/Studying Notes, (5) Test Preparation/Test Taking, and (6) Time Management/Goal Setting. The reader can find a more detailed outline of the intervention in which the students participated in Appendix C of this manuscript.

Each of the six sessions lasted approximately 30-45 minutes and involved positive and fun interactions with the students as opposed to a lecture format. The concepts of the intervention were integrated into their social studies class, which helped them further apply the material. Students had opportunities throughout the intervention to actively participate by answering questions and receiving incentives. In addition, the activities in which the students engaged helped them apply the information on a personal level and helped them reflect on their own learning.

CHAPTER THREE

RESULTS

Verification of Assumptions

After the subscales of each measure were totaled, dependent variables were evaluated for normality. Due to differences in the direction of skewness on pretest and posttest measures, difference scores were evaluated for normality. Transformations were necessary to be performed on the difference scores (posttest minus pretest) of the following four variables: self-efficacy, mastery goals, performance approach goals, and performance avoidance goals. Based on Field's (2005) recommendations, transformations were made to the variables. A reflection and a logarithm was applied to the self-efficacy variable, an inverse of squared reflection was applied to the mastery goals variable, and a reflection and inverse was applied to both the performance approach goals and performance avoidance goals variables. Mahalanobis Distance indicated one significant multivariate outlier which was excluded in the data set of the experimental group.

Descriptive Statistics

Means, standard deviations, and confidence intervals for each scale are presented in Table 1. Possible range for self-efficacy and self-regulation was 9-63. Possible range for the achievement goal subscales was 0-6 on each subscale.

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Table 1

Descriptive Statistics of Variables

Scale	Control			Intervention		
	M	*SD*	*95% CI*	*M*	*SD*	*95% CI*
Pretest						
SR	47.94	11.57	42.82-53.04	49.25	8.14	44.14-54.35
SE	55.62	6.75	53.03-58.22	58.06	2.46	55.46-60.65
MG	5.19	1.28	4.64-5.73	5.50	.82	4.95-6.04
P.App	4.75	1.69	3.95-5.54	3.81	1.42	3.01-4.61
P.Avoid	4.44	1.63	3.56-5.31	2.88	1.79	2.00-3.74
Posttest						
SR	49.78	10.10	44.99-54.56	48.19	8.58	43.40-52.97
SE	53.81	8.57	50.34-57.28	57.06	4.37	53.59-60.53
MG	4.44	1.63	3.68-5.19	4.68	1.30	3.93-5.44
P.App	4.50	1.79	3.61-5.68	3.94	1.69	3.04-4.82
P.Avoid	3.88	1.89	2.94-4.81	3.06	1.77	2.12-3.99

Note. SR = self-regulation; SE = self-efficacy; MG = mastery goals; P. App = performance approach goals; and P. Avoid = performance avoidance goals.

Correlations

There were significant pretest correlations between self-efficacy and self-regulation, $r = .538$, $p < .01$, between self-regulation and mastery goals, $r = .452$, $p < .01$, and between performance approach and performance avoidance goals, $r = .755$, $p < .01$. Posttest significant correlations were found between the following dependent variables:

self-efficacy and self-regulation, $r = .505, p < .01$; self-regulation and performance

avoidance goals, $r = -.366, p < .05$; and performance approach goals and performance

avoidance goals, $r = .620, p < .01$. These correlation scores can be found in Table 2.

Table 2

Correlations Among Variables

	SE	SR	MG	P. App	P. Avoid
Pretest					
SE	–	.538**	.263	.037	-.279
SR		–	.452**	.129	-.087
MG			–	.167	.062
P.App				–	.755**
P.Avoid					–
Posttest					
SE	–	.505**	.347	.054	-.224
SR		–	.283	-.271	-.366*
MG			–	.217	.162
P.App				–	.620**
P.Avoid					–

Note. SR = self-regulation; SE = self-efficacy; MG = mastery goals; P. App = performance approach goals; and P. Avoid = performance avoidance goals.
* $p < .05$, ** $p < .01$

Hypothesis One

It was hypothesized that the self-report of self-regulation and self-efficacy of

students in the experimental group would increase significantly more than that of students

in the control group. A multivariate analysis of variance (MANOVA) was performed on

the two dependent variables being studied – self-regulation of learning and self-efficacy;

the independent variable was the learning intervention group. Difference scores between

posttest and pretest measures were analyzed. Using Box's Test of Equality, it was

determined that the assumption of homogeneity of covariance matrices was not violated.

Using Levene's Test of Equality of Error Variances, it was determined that the

assumption of homogeneity of error variances was not violated as well. There was no

overall significant difference between groups on the dependent variables, self-efficacy

and self-regulation; *Wilks' Lambda* = .919, $F(2, 29) = 1.28$, $p = .294$, partial $\eta^2 = .081$.

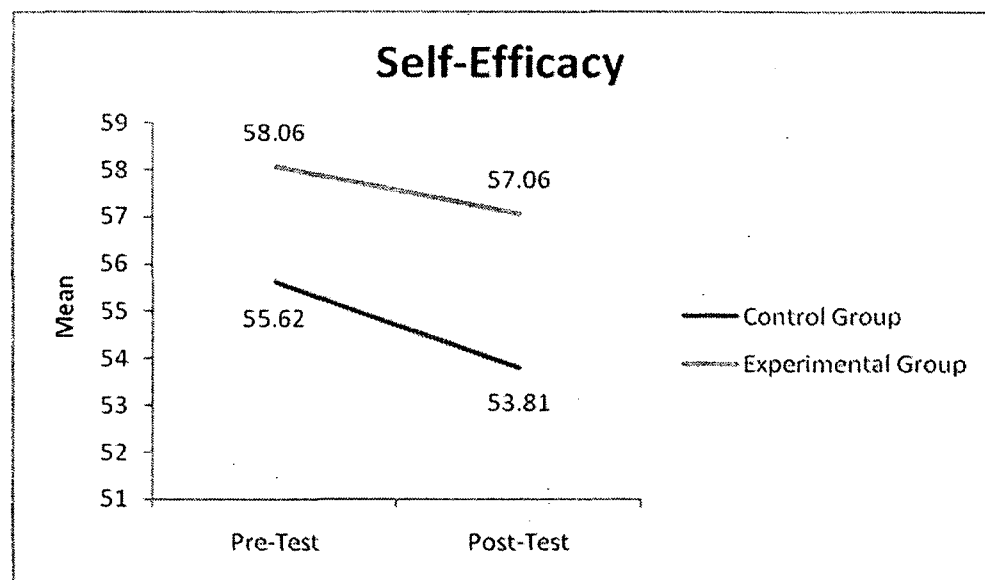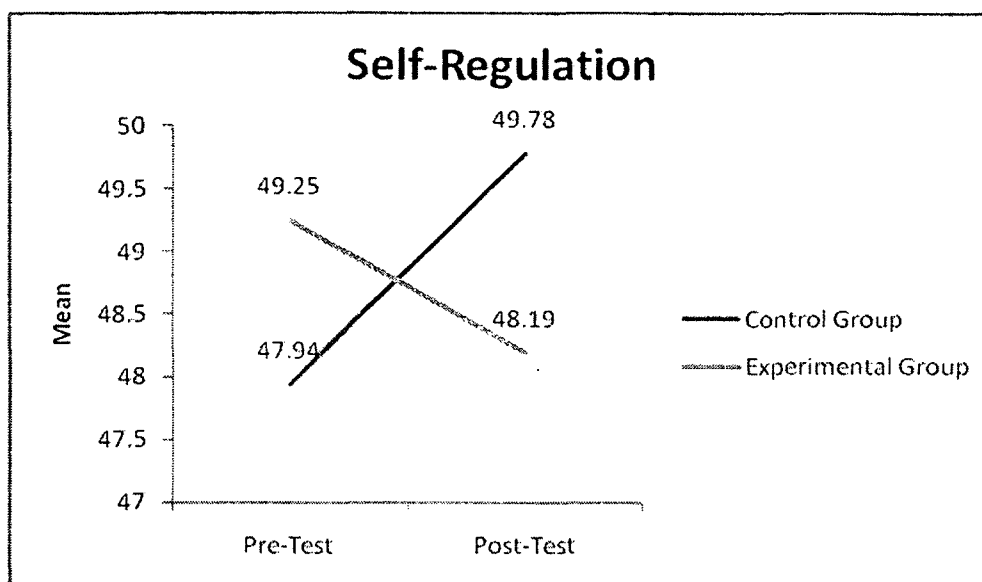Graphs of the change in variables over time can be viewed in Figures 1 and 2.

Figure 1. Self-Efficacy Means from Pretest to Posttest

Figure 2. Self-Regulation Means from Pretest to Posttest

Hypothesis Two

It was hypothesized that students in both groups who reported a high mastery-approach goal orientation would rate themselves significantly higher on self-regulation and self-efficacy than students who reported a low mastery-approach goal orientation. This hypothesis was supported and showed a small to medium effect. The mastery goals scores were divided into two groups separated by the median. There were 11 students in the low group and 21 students in the high group. The means and standard deviations of these groups can be viewed in Table 3.

Table 3

Self-Regulation and Self-Efficacy in Relation to Mastery Goals

	Low MG		High MG	
Variable	M	SD	M	SD
SR	43.27	9.01	51.38	9.3
SE	54.63	3.8	58	5.46

Note. SR = self-regulation; SE = self-efficacy; and MG = mastery goals.

Using Box's Test of Equality, it was determined that the assumption of homogeneity of covariance matrices was not violated. Using Levene's Test of Equality of Error Variances, it was determined that the assumption of homogeneity of error variances was not violated as well. Self-regulation was significantly higher for those students higher in mastery-approach goals, *Wilks Lambda* = .776, $F(1, 30) = 5.59$, $p = .025$, partial $\eta^2 = .224$. Self-efficacy was significantly higher for those students higher in mastery-approach goals, *Wilks Lambda* = .776, $F(1, 30) = 6.51$, $p = .016$, partial $\eta^2 = .224$. There was a significant positive correlation between self-regulation and mastery goals, $r = .452$ as well as a positive correlation between self-efficacy and mastery goals, $r = .263$.

Hypothesis Three

It was hypothesized that students in the experimental group who initially reported themselves high in the performance-approach goal orientation would significantly increase in their mastery-approach goal orientation scores after the intervention. This

hypothesis was not supported as shown by the univariate analysis of variance, $F(1, 14) =$ 2.75, $p = .120$, $\eta^2 = .164$. Again, the performance approach scores were divided into high and low groups divided by the median. Due to the small sample size, the analyzed groups fell into two categories. The low group consisted of six students, and the high group consisted of 10 students. These results can be viewed in Figure 3.
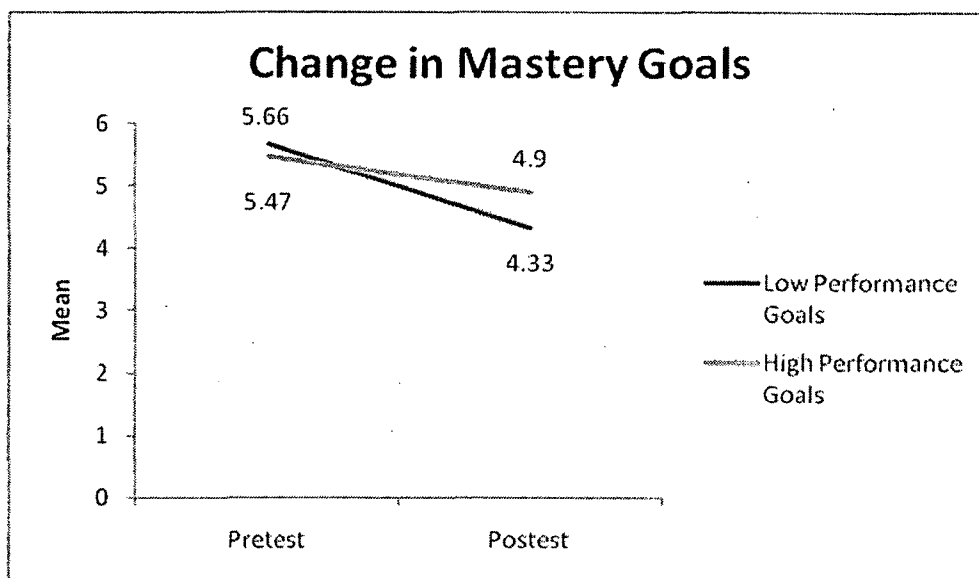

Figure 3. Mastery Goals As Related to Performance Goals in the Experimental Group

CHAPTER FOUR

DISCUSSION

Hypothesis One

The first hypothesis for this study proposed that the self-report of self-regulation and self-efficacy of students in the experimental group would increase significantly more than that of students in the control group. However, there was no increase in self-regulation or self-efficacy. At the pretest, the experimental group had slightly higher self-efficacy and self-regulation scores than the control group. Interestingly, pretest and posttest correlations showed that students with higher self-regulation scores did have high self-efficacy scores.

One explanation for why findings did not support the first hypothesis can be found in the results of Ross et al. (2006) who found college students adjust their study strategies to meet cognitive demands, a metacognitive skill of self-regulated learning. Perhaps children as young as 10 years old have not yet reached the capability to perform such cognitive functions in such a short period of time. Boulware-Gooden et al. (2007) found that teaching self-regulatory skills to a group of 7- and 8-year-old children was beneficial in their learning; however, these children received the instruction for 30 minutes a day for 25 days. Possibly, children this young can perform these cognitive functions but only after a more intense, long-term intervention rather than through a brief intervention such as this study provided. Hofer et al. (1998) did state that, "general multistrategy programs had weaker but still reasonable effects" (p. 59). This study provided a multistrategy

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intervention program indicating a small effect, partial $\eta^2 = .081$, which further supports their research.

Elementary students who are just developing their general metacognitive knowledge about strategies as well as their general self-regulatory capabilities would likely need more time and practice in the use of cognitive and metacognitive strategies than college students. It is possible that the intervention made the participants more aware of how much they do not know about how to regulate their academic behavior. Based on the results of this study, it seems clear that for younger students, strategy instruction programs should involve long-term programs that last longer than a few months.

In this sample, the self-efficacy scores were high on the pretest. It may be that students were responding in a socially desirable manner. Toshio, Kazunori, and Hidetoshi (1982) explored the degree to which second, third, and fifth-grade students presented themselves to certain strangers who evaluated them. They found that in the case of the fifth-graders, self-presentation depended on the target person. Students based their self-presentation on the target person's knowledge of them and presented an enhanced view of themselves to the target persons who did not know them.

The results support Bandura's (1996) findings that individuals who are self-regulated tend to have higher self-efficacy. As in Bandura's study, this study found a significant positive correlation between students' self-regulation and self-efficacy. Bandura believed that the degree of self-efficacy is a predictor of self-regulation, and that the lower an individual's self-efficacy, the more likely it will be that the participant will be vulnerable to relapse into a breakdown of self-regulation.

Even though self-efficacy and self-regulation decreased, avoidance motivation also decreased. This could support the reasoning that the intervention was not long enough. It is possible that the intervention may have reduced the students' avoidance motivation, but was not long enough to build their self-efficacy and self-regulation.

Hypothesis Two

The second hypothesis proposed that students in both groups who reported a mastery-approach goal orientation would rate themselves significantly higher on self-regulation and self-efficacy. This hypothesis was supported.

Multivariate analyses showed that those students who had high mastery goals also had high self-regulation and self-efficacy. There was also a significant positive correlation between self-regulation and mastery goals, $r = .452$ as well as a significant positive correlation between self-efficacy and mastery goals, $r = .263$. These findings support the hypothesis as well as the previous literature that found that individuals who adopt a mastery goal orientation usually have high levels of self-regulation and self-efficacy that helps make this possible (Ames & Archer, 1988; Kaplan et al., 2009; Kitsantas et al., 2004; Meece et al., 1988; Pintrich, 2000; Turner et al., 2002; Zimmerman, 2000).

The results of this study suggest that motivation may play a crucial role for active engagement in learning, which is consistent with the work of Zimmerman (2000). Results are also consistent with Meece et al.'s (1988) statement that students who place an emphasis on mastery approach goals are more active in their cognitive engagement in learning. In this situation, students may seek to independently master and understand their work. They also tend to use more regulation strategies in their learning. Turner

(2002) suggested that the classroom environment may facilitate decreased use of avoidance strategies.

Hypothesis Three

The third hypothesis proposed that students in the experimental group who initially reported themselves as high in the performance-approach goal orientation would significantly increase in their mastery-approach goal orientation scores. This hypothesis was not supported due to the decrease in mastery-goals over time. One possible explanation for this is that many students reported themselves high in mastery at the beginning of the study. It is possible that the decrease in mastery-approach scores is due to a regression toward the mean. Perhaps the students' expectations of themselves were unrealistically positive before the intervention, and the intervention helped them realize how much work is involved in self-regulation (i.e., studying, taking notes). Those with high performance approach scores also had high performance avoidance scores. Some researchers (Murayama, Elliot, & Yamagata, 2011) contend that performance approach and performance avoidance goals are the same construct. The achievement of students exposed to a learning intervention may be due to intrinsic motivations; whereas, the achievement of students not exposed to the learning intervention may be due to a view that achievement is outperforming others or avoiding appearing incompetent.

Another possibility is the presence of external barriers to academic performance and self-regulation. Perhaps, low socioeconomic status and poverty dampens their self-efficacy beliefs. For example, if students do not have the financial ability to buy addition and subtraction flashcards and believe that they need these items in order to succeed, their confidence may decrease.

Previous research findings strongly suggest that mastery-approach goals are associated with initiation of self-regulation, choice of learning strategies, high self-monitoring and control of cognition during learning, persistence in the face of difficulty, interpretation of feedback in relation to progress, and self-evaluation of comprehension (Pintrich, 2000). Also, previous research strongly suggests that performance-avoidance goals are negatively associated with adaptive self-regulated learning and are associated positively with avoidance of effort and with self-handicapping strategies (Urdan & Midgley, 2001). Therefore, the results of this study support the previous research in this area because students who had higher mastery goals from the beginning of the study did not drop in their scores as much as the students who began with lower scores of mastery goals. It is possible that students with higher levels of mastery goals did, in fact, have high levels of self-regulation and were able to maintain their level of motivation for achievement.

It is possible that the group of students exposed to the learning intervention had higher scores of mastery approach goals due to the exposure to the intervention, which has been shown to promote self-regulation, including the use of learning strategies, and high self-monitoring and control of cognition. It is also possible that the control group had higher levels of performance related goals because they were not exposed to these factors. However, because these results were not significant, these possible explanations for the pattern of results are only assumptions.

This study supports the findings of Kitsantas et al. (2004) in demonstrating that students who learn how to focus on the process of learning in order to master a skill tend to have higher mastery approach scores than those who do not learn this concept, such as

the control group. Meece (1998) believed that those who are mastery oriented tend to have more regulation strategies in their learning; therefore, to teach a student to become a self-regulated learner requires lessons in using certain cognitive skills.

Ames and Archer's (1988) findings are of great importance to this subject area because they showed that the degree to which a classroom climate emphasizes mastery goals is predictive of how students choose to approach tasks and engage in learning. The classroom environment has also been shown to affect a student's use of motivational strategies. It is possible that the experimenter affected the students' achievement orientations by entering the classroom of the experimental group and modifying the classroom climate to focus more on how one engages in learning. It is possible that, at first, the students wanted to impress the researcher, but over time they revealed a more accurate measurement of their beliefs. The results of this study are consistent with Turner et al. (2002) who predicted that when a person perceives mastery goals to be emphasized in the classroom he or she is less likely to use avoidance strategies. Alternately, when a person perceives that performance goals are used in the classroom, he or she is more likely to use avoidance strategies.

Limitations

One of the main limitations of the study was that both groups endorsed high scores on the pretest, so their decrease in scores after the intervention could be due to a regression toward the mean. One way the experimenter could have identified this problem is to have included a desirability scale in the measures. A method of rectifying this problem could have been to have follow-up data to determine if given a longer

amount of time to utilize the methods and strategies learned during the intervention, the students would produce a significant difference in scores.

A second factor that seemed to limit the effectiveness of the study was the length of the intervention. Much of the research suggests that to perform an effective learning intervention with children of this age group, the intervention must last several months and be quite extensive. However, research evaluating interventions with elementary students over a short period of time was not found. This experimenter's goal in developing an effective brief intervention with elementary students may not be as efficient as hypothesized.

Another factor could be the demographics of the sample. The participants were mostly African-American students growing up in a very rural area. Perhaps, if the sample were more representative of the real world, some differences in results could have been found. It may be that the students initially wanted to impress the researcher by rating themselves very high.

The lack of participation and feedback from the teachers of the students involved in the study could also have been an issue. It is possible that the teachers were modeling apathy for the students, so that they lost confidence in their abilities. There is a need to explore classroom differences in academic performance as any differences can be attributed to instruction. When follow-up feedback forms were presented multiple times to the three teachers of these students, none of the teachers made an effort to return them to the experimenter even though they agreed to do so before the study began. Therefore, information on the students' end of the year performance was not obtained.

Areas of Future Research

There are a number of areas within the scope of self-regulated learning with elementary subjects that could benefit from further research. One area is studying interventions that are longer than six sessions in length. Prior research by Hofer & Yu (2003) has shown that it is possible that students of this age need a longer intervention for the particular cognitive strategies to become useful and applicable within their learning. Because most children this age feel it is important to tell people what they want to hear or make a good impression, the use of a desirability scale could help identify any extreme high endorsements that may result in a regression toward the mean phenomenon.

Another area that could use more research is studying the effects of self-regulated learning interventions with larger, more diverse samples. The sample used in this study was limited and not representative of the normal population of fifth-grade students. A larger sample size, using several schools from different areas of the state, may help correct some of the initial issues with normality of the data.

Controlling certain extraneous variables was a problem in the current study. Future research could better control for any effects of the teacher discussing aspects of the intervention with the control group or possibly implementing strategies discussed during the intervention to the control group. Another possibility is the students of the experimental group discussing any aspects of the intervention with friends in the control group. Future research in this area may consider the use of control groups and experimental groups in different schools to limit the possibility of any discussion of the intervention.

Changes in academic performance were not explored in this study. This study focused on the psychological aspects of self-regulation, self-efficacy, and reasons for academic achievement, exploring changes in academic performance from before the intervention to after may have demonstrated some change or effect due to the learning intervention.

Other research recommended by Kitsantas et al. (2004), such as implementing instructional approaches that encourage students to focus their attention on correctly performing each of the steps required for that skill rather than just making them aware of the skill, may help in solidifying internal regulatory processes. Also, making available frequent opportunities for self-evaluation shows promise and can be studied more extensively with elementary students.

Future researchers may also consider employing different and specific subject strategies. Boulware-Gooden et al. (2007) found that specific reading strategies helped improve students' self-regulatory process in the areas of reading and writing. If students have specific learning and metacognitive strategies for each subject, they may feel fully self-regulated in their learning. Lenz (2006) stated that teachers must describe the cognitive and metacognitive processes as part of strategy instruction. If teachers begin implementing these strategies within their lesson plans, students are more likely to grasp the concepts better.

One final area that could use additional research is the effective use of interventions aimed at modifying attributions and training of learning strategies within a classroom environment that actually supports internal attributions. Many elementary school environments reward academic achievements; this could lead students to strive for

recognition for their success rather than internal gratification. If these strategies are taught within an environment or context that constantly promotes a mastery approach rather than a performance approach orientation, it is more likely to foster long-term use of learning strategies and a belief that success is related to one's effort (Ames & Archer, 1988).

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL

LOUISIANA TECH
U N I V E R S I T Y
MEMORANDUM

OFFICE OF UNIVERSITY RESEARCH

TO: Ms. Ashley Carroll and Dr. Alice Carter

FROM: Barbara Talbot, University Research

SUBJECT: HUMAN USE COMMITTEE REVIEW

DATE: February 22, 2010

In order to facilitate your project, an EXPEDITED REVIEW has been done for your proposed study entitled:

**"The Promotion of Self-regulated Learning: A Brief Intervention
Designed for Elementary Students"**

 # HUC-737

The proposed study's revised procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

Projects should be renewed annually. *This approval was finalized on February 22, 2010 and this project will need to receive a continuation review by the IRB if the project, including data analysis, continues beyond February 22, 2011.* Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

If you have any questions, please contact Dr. Mary Livingston at 257-4315.

APPENDIX B

HOMER ELEMENTARY SCHOOL APPROVAL

Homer Elementary

624 Pelican Drive, Homer, Louisiana 71040
318-927-2393, Fax: 318-927-2302

Patrice Lee, Principal
June 11, 2009

To Whom It May Concern:

The purpose of this letter is to confirm permission and support granted to Ashley N. Carroll of Louisiana Tech University to conduct her dissertation research within Homer Elementary School in Homer, Louisiana.

Her plans are to administer skills and techniques which we hope will teach two groups of our lower academic performing fifth-grade students how to become better and more motivated learners.

I am looking forward to having Ashley conduct her studies here and am anxiously awaiting the results of her findings. If I can be of further assistance to her or you, please don't hesitate to call.

Sincerely,

Patrice S. Lee

APPENDIX C

INTERVENTION OUTLINE

I.   Cognitive Strategies 1

    A.   Concepts from cognitive psychologists

        1. Thinking about what you know makes it easier to remember what you read.

        2. Making images when you read makes it more likely that you will notice when you misread.

    B.   What is Intelligence?

        1. Power to learn and understand.

        2. Is it inherited? Are we born smart, sort of smart, not smart, or real smart?

        3. Intelligence is knowledge – having knowledge – gained little by little.

        4. Eight Different kinds of intelligence (Kruger, p. 2-9).

    C.   Intelligent Behavior

        1. What you know – basic facts.

        2. Knowledge about strategies you employ to take charge of your learning, thinking, and problem solving.

        3. Motivation.

    D.   Different Categories of Knowledge

        1. Facts – things learned in school.

        2. Strategies and knowing when and where to use them.

        3. Knowledge about yourself.

    E.   Control

        1. You are the "boss."

F.   Effort

    1. Two kinds of effort.

       (a) Effort to get good grades.

          (1) Memorizing and forgetting.

          (2) Why do you want good grades?

       (b) Effort to learn (motivation).

          (1) Comes from within.

          (2) Depends on your goals.

          (3) Understanding – asking questions and seeking clarification.

**Discussion Topic: Do your goals motivate you in a positive way to be a learner, thinker, and problem solver, or do your goals motivate you to get by with as little effort as possible?

G.   Formula for Intelligent Behavior

    1. Intelligent Behavior = Knowledge + Control + Motivation

    2. Knowledge = Knowledge of Facts + Knowledge of Strategies + Knowledge of Self

II.   Cognitive Strategies Part 2

A.   Seven Cognitive Secrets

**Activity: Groups of two and combine notes to come up with 3-5 cognitive secrets or main points from what they have learned (examples in Gaskins & Elliot, p. 114-115).

B.   Factors Affecting Success (Gaskins & Elliot, p. 115-116)

    1. Person variables.

2. Task variables.

3. Environmental variables.

4. Strategy variables.

**Activity: Have students come up with variables in each category. Give scenarios of students and learning and have students choose what aided in their success.

III. Taking and Studying Notes (Kruger, p. 83-91).

A. Prime Your Brain

1. Read about the topic in your textbook before class.

(a) Develops background information.

(b) Increases your ability to focus.

(c) Also able to ask questions.

2. If you are not able to read before class, have your book open while the teacher is lecturing.

3. As your teacher is lecturing, constantly ask yourself one key question – How does this information relate to the main topic?

4. Many of these strategies will cut your study time in half!

B. Taking Notes

1. Date every page.

2. Fold the left 1/3 of the paper for summary questions.

3. Take notes when a teacher:

(a) Says "This will be on the test."

(b) Say "This is an important point."

(c) Writes information on the board.

(d) Repeats the same information twice.

(e) Slows down as she speaks, giving you time to write.

(f) Talks with exaggerated hand gestures.

(g) Explains the same concept in several different ways.

(h) Says "This is not in your textbook, but it is important."

4. Other considerations:

(a) When possible, draw visuals (sketches, diagrams, charts, symbols) as you take notes.

(b) If you miss something, draw a blank line as a place holder and clarify later.

(c) Keep it short. Write as little as possible. Abbreviate as many words as you can; your notes only have to make sense to you!

(d) Use as much space as you need to create clear notes for yourself.

5. Use 3"x5" note cards

C.   Studying Notes

1. Review all notes within 24 hours of class.

2. Record any information or visuals you remember from class but did not have time to write down.

3. Create questions that summarize important points in your notes.

4. Review your notes by reading them out loud.

D.   Studying Math Notes (Kruger, p. 91)

1. ALWAYS put the page number and problem numbers at the top of the page.

2. Use a new page for each new assignment and use plenty of space to NEATLY do your work.

3. If you encounter a problem that you do not know how to do, REMAIN CALM. Look back in the lesson for clues. If after five minutes you still have no clue, MOVE ON. Work all of the problems that you can do, then come back to the problems you skipped.

4. If you get to the end of the assignment and you only have a few problems that you cannot answer, leave them and ask your teacher about them the next day.

5. Most teachers begin math class by correcting homework from the night before and asking, "Are there any questions from last night's homework?" Make sure you raise your hand and get your questions answered.

6. When it is time to prepare for a test, go back through your homework from the chapter and redo the problems with which you had trouble.

IV. Test Preparation and Test Taking

A. Test Prep (Frender, p. 211)

1. In School

(a) Study the teacher for clues to what is important.

(b) In class, intend to learn, listen carefully, take good notes, review them often, ask good questions, condense and capture ideas, complete Test Review Sheets (p. 214).

(c) Get information from other students.

2. At Home

(a) A few days before the test, list concepts you think are important and ask

the teacher if these are appropriate topics.

(b) Gather all of the study materials you will need.

(c) Review any class/reading notes, handouts, study sheets, cards, texts,

course outlines, out-of-class assignments, old tests, etc.

(d) Make 3" x 5" note cards including vocabulary, definitions, formulas,

lists of causes/effects, pros/cons, and summaries of concepts.

(e) Turn chapter headings (and sub-headings within the chapter) into

possible test questions.

(f) Have someone quiz you over the material.

(g) Quickly review the material before you go to sleep.

(h) Get a full night's sleep before the test.

(i) Have a positive attitude!

B. Test Taking (Kruger, p. 99)

**Activity: The TEST Test (pp. 93-98).

1. Have a watch or clock available to pace yourself.

2. Do an overview of the entire test by quickly reading each question.

3. If you get to a question that you don't know, don't waste your time and

energy; mark the question, skip it, and move on.

4. When you first receive the test, immediately write down any information

you needed to memorize, such as formulas, specific dates, names, etc.

5. Multiple Choice Tests.

   (a) After reading the question, try to think of the correct answer BEFORE you read your options.

   (b) Read all answers first.

   (c) Cross out items that you know are wrong and then choose your answer from the remaining options.

   (d) Answer with phrases like "all of the above" and "both a & b" are likely to be the correct choices, but only use this clue if you are stuck.

   (e) The longest answers are also likely to be the correct choices, but again, only use this clue if you do not have any other ideas.

6. Fill-in-the-Blank Question.

   (a) Look for grammar clues that may give hints, like "an" or something that indicates a plural word.

   (b) Sometimes the length and/or number of blanks may be a hint.

   (c) After you have filled in the blank, reread the statement with your answer to make sure that your answer makes sense in the sentence.

7. Essay Questions.

   (a) Write a brief outline of the major points you want to include in your answer.

   (b) Begin your answer by restating the question. Remember, get to the point quickly.

   (c) Write neatly.

V.   Time Management and Organization (Frender, p. 33-43)

A. Time Management

    1. Create weekly and monthly calendars.

        (a) List ALL upcoming tests, assignments, papers, projects, etc.

    2. Use "To Do" lists daily.

    3. Post reminder notes to yourself.

    4. Set up a time schedule daily.

    5. Reinforce yourself for sticking to your schedule.

    6. Study notes from class the same night as you take them.

    7. Eliminate excuses.

B. Organize

    1. Locker

        (a) Use shelves to best divide available space.

        (b) Use post it notes to write reminders to be taken with you.

    2. Backpack

        (a) Use for transport, not storage.

        (b) Take 5 minutes each week to clean and reorganize.

        (c) Keep minimal notebooks, binders, texts, extra paper, and supplies.

    3. Binder

        (a) Three-ring binder is best.

        (b) Use assignment sheets (p. 51).

        (c) Use colored and clear divider pages.

            (1) Different color for each subject.

(2) Use clear tabs behind subjects to label class notes, handouts, homework, and any extras.

4. Home Desk Top

(a) Place computer to one side to allow room to your study.

(b) Use a pen/pencil holder.

(c) Use a four section paper tray for quick, easy access to: notebook paper, scratch paper, unlined paper, and special paper.

(d) Create a reference section – a dictionary and a thesaurus.

5. How to Organize Anything!

(a) Desk.

(b) Trash.

(c) Elsewhere.

VI.   Goal Setting (Kruger, p. 11-25)

A. Establish Priorities

1. Rock Priorities – Things you have to do.

2. Pebble Priorities – Things that you really enjoy and want to spend more time doing.

3. Water Priorities – "If I get to them, great. If not, oh well!" priorities.

**Activity: What Are Your Priorities? Worksheet.

B. Identify Your Goals

1. Identify your top priorities.

2. Turn your priorities into goals.

3. Create a plan for achieving Your Goals (Goal Ladder, p. 24).

(a) Write down each goal at the top of the tree ladder.

(b) Think about every little step you will need to accomplish in order to reach your goal. List the steps in the sections under each specific goal.

C. Schedule Time to Take Action

1. Using a Planner (sample p. 31)

(a) Initial planner set up.

(b) Sunday night.

(c) During class.

(d) End of school day, before going home.

(e) At home, after school.

(f) Before bedtime.

(g) Keeping a good balance.

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