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Effect of cooperative learning and traditional strategies on academic performance in middle school language arts

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2009

Abstract

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Ed.S, University of Georgia, Athens, 1992
MS, University of Georgia, Athens, 1988
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Dissertation Submitted in Partial Fulfillment of the
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Abstract

Research indicates that the use of cooperative learning techniques fosters higher order thinking and problem solving skills in students. However additional information is needed to determine how cooperative learning affects various groups of learners. Based in constructivist theory, this quasi-experimental study examined the effects of cooperative learning verses traditional teaching strategies on the academic performance of 216 6th grade language arts students in north central Georgia. The single stage convenience sample was divided into a control group that was instructed using traditional strategies; and a treatment group that was instructed using cooperative learning strategies. Pre and posttest scores from a standardized 73-item language arts benchmark test was used to assess the overall impact of instructional techniques across student use of conventions, literary elements, sentence structure, context clues, and vocabulary. ANOVA results indicated that the cooperative learning group made significantly greater gains than were observed for the traditional instruction group; however segmented subgroup analyses revealed no effect among economically disadvantaged students. It is recommended that educators pay added attention to the differential effects of teaching methods and strategies for specific student groups. The study contributes to positive social change by informing research-based selection of educational practices and techniques as tools for enhancing student achievement through strategic teacher training.

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CHAPTER 1:

INTRODUCTION TO THE STUDY

Background of the Problem

Educators face more challenges in classrooms than ever before (Levy & Murnane, 2004). They must meet the many needs of varied learners who populate educational systems in the United States. According to Hargreaves (2003), teachers work under strict mandates to raise test scores, make the grade, and make adequate yearly progress with their students, while also facing many other challenges.

The mandates from No Child Left Behind (NCLB; 2001) place strenuous demands on teachers in all fields. State-mandated testing holds educators responsible for showing improved yearly student achievement while meeting the needs of a diverse student population (Hargreaves, 2003, Jackson, 2004). Teachers have had to refine their strategies to meet the varied needs of the many students they face each day. Instructional strategies that were once effectively used in the past by educators may not be as appropriate for the learners of today, as they prepare to become the leaders of tomorrow (Gatto, 1999). Problem solving and higher-order thinking are being pushed in schools because present-day society is advancing more rapidly than ever before in the areas of technology and scientific research. The present and future job market

requires that students possess higher-order thinking skills and problem-solving abilities like no generation before.

Jobs in the global economy require computer literacy and technological expertise. Engler and Hunt (2004) wrote that because of the rapid pace of technological changes, students must be given appropriate tools for higher levels of learning to occur. According to Engler and Hunt, students must be prepared to compete in the global economy by establishing solid groundings in reading, writing, technological, and problem-solving skills. Wells and Langenfeld (n.d.) wrote, "The end of the twenty-first century is the age of knowledge. A new class within the workforce has been identified as the 'knowledge worker'; people whose primary function is the application . . . of knowledge" (p. 1). The jobs of today and the future will demand that workers be proficient in higher-order thinking and performance skills.

Many teachers teach as they themselves were taught, using traditional teaching methods in which the instructor is the deliverer of factual information. Other teachers find that cooperative learning and instructional strategies promote academic achievement and encourage students to become active learners. Instructional strategies must (a) meet the needs of students in a rapidly changing world, (b) promote higher-order thinking and problem solving, and (c) meet the needs of active learners in contemporary society. Current teaching strategies must be

examined and refined so that lifelong learning occurs. Society is demanding that citizens be higher-level thinkers and problem solvers as they enter the job market of the future therefore, life long learning is a vital skill (Costa & Kallick, 2004; West & Watson, 1996).

The demands of policy implementation in the teaching profession are compounded by other factors such as varied learning styles, beliefs, abilities, and backgrounds that students bring to the classroom. Paez (2006) posited that, in a complex, multicultural, and knowledge-based society, teachers need to understand not only the different ways in which their students think, but also their culturally distinct backgrounds in order to create learning experiences that will work for them and produce real learning. Educators must constantly refine their knowledge and understanding, as well as their teaching strategies, to meet the needs of a diverse student population (Holloway, 2000).

Today's students are the ever-changing mass-media generation. Passive learning that worked in the past may not meet student needs for various reasons. Cummings (2000) argued that today's students are the product of mass-media influences, and their learning styles are different from students of the past. According to Cummings, exposure to mass media in the early stages of human development causes learning styles, emotions, and behaviors distinct from previous generations of learners. Cummings noted that learning habits are shaped by the fast-paced

media to which young children are exposed. The author also found that exposure to mass media is detrimental to the development of a child's social and emotional skills.

Media exposure at an early age has been shown to: (a) increase characteristics of Attention Deficit Disorder (ADD), (b) increase childhood anger, and (c) correlate to a higher incidence of childhood depression (p. 122). These factors influence the general student population and make classroom management and instruction an intricate challenge. Cummings further attributed characteristics of (a) disorganization, (b) conflict seeking, (c) apathy, (d) short attention span, and (e) off-task behavior to this phenomenon.

An examination of educational strategies may be necessary to enable teachers to meet student needs that are the result of this mass-media phenomenon. Many educators teach as they were taught which might not be as effective for today's learners because traditional strategies require passive learning. Many educators are aware that traditional methods are not successful in turning out self-directed problem solvers. Traditional teaching methods might be failing to produce results because they simply do not engage today's learners. These instructional methods are not conducive to promoting higher-level thinking and problem-solving skills. Therefore, it is important that student-centered, active learning strategies be explored.

Proponents of social learning believe that active learning strategies best meet the needs of the students of the present generation (Costa & Kallick, 2004; Slavin1999). Even though many demands are placed upon educators, and many factors contribute to the diverse nature of learners, educational strategies promoting active learning must be examined. Instructional strategies must be implemented that take into account the necessary emergence of higher-order thinking abilities, while providing simultaneously for the extreme diversity exhibited among students (Daniels & Perry, 2003). Current teaching strategies must, furthermore, be congruent with governmental policies that teachers are required to implement, which makes teaching a rather challenging profession. Cummings (2000) noted that traditional strategies, in which the teacher is the imparter of information, are not effective because of the diverse learning styles of the current classroom. Gatto (1999) noted that traditional work in classrooms is simply irrelevant; teacher-centered instruction does not promote problem solving, nor does it provide real-world experiences. Traditional teaching strategies should be reevaluated and new techniques pursued.

A number of researchers reported that the traditional lecture in which the instructor imparts information and students are passive listeners is not real for students (Gatto, 1999; Slavin, 1996; West & Watson, 1996). Slavin (1996) stated that the structure of the traditional

classroom discourages students from working hard and is not conducive to problem solving. Dewey (1897/2001) posited that traditional education is not productive because that type of classroom is not perceived as a form of identity [community] and does not relate to the real world (¶ 11). Many theorists held constructivist views, in which social learning plays an important role (Dewey, 1897/2001; Glassersfeld, 1997; Vygotsky, 1934/1986). Many believed, in fact, that traditional methods of instruction were stifling student learning (Derry, 1996; Gagnon & Collay, 1990; Prawat, 1996; Cummings 2000).

Costa and Kallick (2004) argued that it is imperative for teachers to move from the role of disperser of information to the role of facilitator (p. 16). The use of cooperative learning techniques in which the teacher is the facilitator, and the students are actively involved is supported by many researchers and practitioners in the field. Researchers found that active engagement in learner-centered classrooms fostered a learning environment in which students became risk takers and welcomed a challenge (Collins,1996; Daniels & Perry, 2003; Savery & Duffy, 2001). Some studies have reported classroom success with the implementation of active learning strategies with students of varied ages (Johnson, 2001; Leal 1993; Palincsar & Herrenkol, 2002). These authors found that students begin to take ownership of their learning when active learning was implemented. Some practitioners reported that higher-order thinking

skills emerged through the use of cooperative learning strategies (Bromley & Modlo, 1997; Brown, 2002; Siegel, 2005). Problem solving was evident as students worked together in a non-threatening environment. Some practitioners reported that higher levels of interest and motivation were evident and that students expressed the desire to take ownership of projects and welcomed individual accountability (Adams, 2000; Siegel, 2005). As students took ownership of their own learning, self-directed learning characteristics began to emerge. Several researchers have pointed out that, as a result of active learning, self-directed learning characteristics were strengthened, and students began to self-monitor and self-manage their learning processes (Costa & Kallick, 2004; Garrison, 1997; Long, 1993). Such practices will turn students into continuous, lifelong learners and problem solvers.

Social Change

Educators must meet the needs of all the learners in their classrooms, as well as fulfill the federal mandates of educational policy. Positive social change and greater justice will occur when appropriate strategies are implemented and future leaders and responsible citizens are able to function as higher-order thinkers and skilled problem solvers (Cummings 2000; Hargreaves, 2003).

Problem Statement

As practitioners evolve in their understanding of student learning, they come to realize that many diverse attributes are emerging among today's learners. These attributes raise questions specifically related to student learning and optimal methods of instructional delivery (McCauley & McClelland, 2004; Siegel, 2005; West & Watson, 1996). While the learning styles of many students have changed, some teachers continue to use traditional teacher-centered methods as their primary mode of instruction, which may be wholly inadequate for current learners (Cummings, 2000; Gatto, 1999). Some researchers considered traditional methods of teaching such as lecture and note taking not to be as effective in today's learning culture as they were in the past. McCauley and McClelland (2004) reasoned that traditional methods of instruction are not effective because students are not encouraged to interact socially in a lecture-based instructional environment. Gatto (1999) believed that traditional methods of instruction do not promote problem-solving skills, which are necessary in today's work place.

Social interaction during learning can be a problem for some instructors. Many proponents of cooperative learning are convinced that active learning is more appropriate, but that some educators are not comfortable using interactive strategies (Daniels & Perry, 2003; Palincsar

& Herrenkol, 2002; Slavin, 1996). Although many school systems have started to train teachers through professional learning communities to incorporate various instructional strategies into their classroom delivery, many teachers continue to use traditional methods of lecture and note taking as their primary mode of instruction. There could be various reasons for this including time constraints. Many teachers continue to rely on traditional methods because they require less preparation time. Stevens (2003) found that cooperative learning sometimes failed because of inadequate preparation or inappropriate implementation. Battistich, Solomon, and Delucchi (1993) found that cooperative learning strategies were unsuccessful and disliked by some teachers because they were not implemented correctly.

This issue impacts students because they have diverse learning styles and some strategies may not be meeting their educational needs. Many factors contribute to this problem. One factor is the aforementioned exposure of young people to vast amounts of multimedia, which Cummings (2000) credited with many of the problems students bring to school. She also noted that this extensive mass-media consumption might be the source of varied learning styles, which children seem to develop in response to media exposure. Cummings believed that social interaction and varied instructional strategies are necessary for students to learn effectively.

Although many researchers maintained that cooperative learning strategies are more successful with students than traditional strategies, active learning methods also have their critics, who believe them to be detrimental to student achievement (Webb, Nemer, & Ing, 2006; Yecke, 2004). Yecke (2004) found through a review of cooperative learning studies that cooperative learning did not go as planned because it was overused. Yecke found that teacher preparation time was not given and the strategies were not properly implemented. Yecke reported that many studies revealed that students were merely placed in groups in which all students did not do their fair share. Most of the work was done by the stronger students in the groups due to inappropriate execution of the strategies. Therefore, Yecke warned that cooperative learning should not be the only teaching method used and that it should be implemented carefully. Webb, Nemer, and Ing (2006) also found that cooperative learning failed because teachers did not properly implement the correct methods for social learning. In this study, the sample consisted of four middle school mathematics classrooms in which teachers used direct recitation to deliver instruction. Students then were expected to work in groups. The study revealed that the students were not encouraged to verbalize learning and that the strong student in the group became like the teacher by mimicking the strategies of the teacher as the sole

facilitator of instruction. Students were working in groups but true cooperative learning was not taking place.

Numerous studies reported that student learning and higher-order thinking are evident when cooperative learning strategies are implemented (Daniels & Perry, 2003; Palincsar & Herrenkol, 2002; Slavin, 1996). Some researchers found that students responded to active learning and thrived in various cooperative learning settings (Collins 1996; Johnson 2001; Leal 1993). Other practitioners found that cooperative learning strategies worked well in various subject areas and with students of all ages (Adams, 2000; Bromley & Modlo, 1997; Nesbit & Rogers, 1997; Siegel, 2005).

The present study will inform educators about the importance of using social learning techniques as a method to prepare students to be higher-order thinkers. The study addressed this issue by investigating the effects of the use of cooperative learning strategies in relation to student achievement.

Nature of the Study

This quantitative study used a quasi-experimental design with pre- and post-testing. By analyzing test scores, the researcher compared the use of instructional strategies based on cooperative learning to those based on traditional teaching methods to determine if there was a significant difference in academic achievement of the students. This

nonequivalent control-group design with pre- and posttest compared the performance of students from two different groups in which different instructional strategies were implemented. The sample consisted of two sixth-grade language arts teams at a middle school in Georgia. The students ranged in age from 11 to 13 years, and the classes were heterogeneously grouped.

This convenience sample was selected because of the easy availability of naturally formed groups and because it served as the nature of the study. Pre- and posttests were administered to compare student performance and achievement gains. The use of test scores allowed the researcher to examine overall academic achievement as well as break out the academic achievement of students who comprised various subgroups. Subgroups were identified by the school's improvement plan. The test that was used was developed by members of a curriculum committee who patterned the test after the county curriculum maps. The curriculum maps were formulated according to the Georgia Performance Standards and provide a guide for teachers within the county so that specific material is covered by the teachers within the same time frame.

The independent variable of the study was the treatment variable in which one group of students was instructed with cooperative learning strategies, while the control group was not. The dependent variable was

the scores that were collected and analyzed by the researcher. Test scores were retrieved from the instructors of the two sixth-grade classes. Overall academic achievement and subset test scores were compared. Statistical analysis was conducted with the use of an ANOVA.

Threats to validity include student attitudes toward the learning environment. The validity of the study could be threatened as students matured during the time of the study (Creswell, 2003). The opposite might also occur because students sometimes become dispassionate about school in the spring. The students had the opportunity to talk with each other during connections classes and at other school functions which may cause threats to validity. Threats to internal validity may arise if the researcher draws incorrect conclusions from the data. Threats could also occur if the researcher generalizes the findings to groups not represented in the study. Creswell (2003) wrote that random sampling is a true characteristic of research. Therefore, the use of a convenience sample also presents a limitation to the study (p. 164).

The researcher was the third language arts teacher at the school where the study was implemented. The researcher did not work with the teachers on selecting the specific means for which they would deliver instruction. Lessons were created by using the state curriculum map but a different novel was used to teach these objectives. The traditional teacher selected her own methods of traditional delivery, while the

cooperative learning teacher did the same. The researcher assisted the cooperative learning teacher with selection of a cooperative learning model so that it was grounded in research. This method is discussed in more detail in the appendix of the study. The researcher met with the teachers and discussed objectives that had to be covered. During these meetings, field notes were constructed to report the strategies used by the teachers. Because the researcher is a teacher in the school where the research took place, levels of bias might be evident. However, by planning without the other teachers and using a completely different novel for teaching the objectives, bias was minimized.

Research Questions and Hypotheses

Research Question 1. How does the use of cooperative learning/teaching strategies affect academic achievement on the Georgia Performance Standards in language arts among sixth-grade students?

Null Hypothesis 1. There will be no significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students who were instructed with the use of cooperative learning strategies and those sixth-grade students who were instructed with the use of traditional teaching strategies. H_0: $\mu_1 - \mu_2 = 0$

Alternative Hypothesis 1. There is a significant difference between the academic achievement, as shown by the test scores on the Georgia

Performance Standards test in language arts, of sixth-grade students who were instructed with the use of cooperative learning strategies and those sixth-grade students who were instructed with the use of traditional teaching strategies. H_a: $\mu_1 - \mu_2 \neq 0$

Research Question 2. How does teaching with the use of cooperative learning strategies affect the academic achievement of sixth-grade students with disabilities on the Georgia Performance Standards test in language arts?

Null Hypothesis 2. There will be no significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students with disabilities who were instructed with the use of cooperative learning strategies and those sixth-grade students with disabilities who were instructed with the use of traditional teaching strategies. H_0: $\mu_1 - \mu_2 = 0$

Alternative Hypothesis 2. There is a significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students with disabilities who were instructed with the use of cooperative learning strategies and those sixth-grade students with disabilities who were instructed with the use of traditional teaching strategies. H_a: $\mu_1 - \mu_2 \neq 0$

Research Question 3. How does teaching with the use of cooperative learning strategies affect the academic achievement of sixth-

grade students who are categorized as economically disadvantaged on the Georgia Performance Standards test in language arts?

Null Hypothesis 3. There will be no difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students who were categorized as economically disadvantaged and instructed with the use of cooperative learning strategies and those sixth-grade students who were categorized as economically disadvantaged and instructed with the use of traditional teaching strategies. H_0: $\mu_1 - \mu_2 = 0$

Alternative Hypothesis 3. There is a significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students who were categorized as economically disadvantaged and instructed with the use of cooperative learning strategies and those sixth-grade students who were categorized as economically disadvantaged and instructed with the use of traditional teaching strategies. H_a: $\mu_1 - \mu_2 \neq 0$

Purpose of the Study

This quantitative study proposed to use a quasi-experimental nonequivalent control group design with pre- and posttest. The purpose of this research was to examine the effects of cooperative learning and teaching strategies and traditional teaching strategies on students' academic achievement. In this nonequivalent control group quantitative

design, the researcher attempted to determine the effects of two different teaching strategies on students' academic achievement. Critics of cooperative learning strategies such as Yecke (2004) and Webb (1994) pointed out that cooperative learning could be detrimental to student achievement because of the many factors present in the diverse student population found in today's schools. These critics maintain that traditional teaching strategies are more effective. In contrast, numerous studies have demonstrated that cooperative learning can raise student achievement while enhancing higher-order thinking abilities and problem-solving skills (Daniels & Perry, 2003; Palincsar & Herrenkol, 2002; Slavin, 1996).

Authors who are favorably disposed toward cooperative learning believe that social interaction promotes learning in ways that traditional methods, in which the teacher mainly lectures, do not. Johnson (2001), Collins (1996), and Leal (1993) credited the appropriate use of cooperative learning strategies with being the cause of increased student achievement. Others believed that the use of cooperative learning strategies enhance student achievement (Adams, 2000; Bromley & Modlo, 1997; Nesbit & Rogers, 1997; Siegel, 2005).

The present study examined the use of cooperative learning instruction and traditional instruction and their effect on student achievement, as shown by the test scores on the Georgia Performance

Standards test in language arts of sixth-grade students. The independent variable was the teaching strategy—either cooperative learning instruction or traditional instruction. The dependent variable was the test scores on the Georgia Performance Standards test in language arts. The statistical procedure applied was an ANOVA.

Theoretical Framework

The theoretical framework for the study was constructivism. Hein (1991) described constructivism as the idea that learners construct knowledge individually and socially and, further, that one constructs meaning as one learns. Many constructivists believed that learning is more effective when social parameters are used than when acquired through isolated learning techniques (Derry, 1996; Gagnon & Collay, 1990; Prawat, 1996). They based their beliefs on the tenets of Vygotsky (1934/1986), Piaget (1985), and Dewey (1897/2001). The constructivist pedagogy centers on social interaction and learning that is meaningful.

Proponents of the constructivist learning theory hold that learning occurs when students are actively involved in learning. They also hold that meaning is constructed through participation in engaging learning activities. They further embrace the belief that knowledge must be applied to real-world settings. Students thrive when they become part of a student-centered, social learning environment. As they interact socially, they use prior knowledge and learn from each other. Costa and

Kallick (2004) wrote that principles of constructivism promote self-directed learning. They stated that questioning emerges within the constructivist environment and that students strive to make meaning of learning. The authors further believed that constructivist teaching methods would increase cognition. Social settings provide students with opportunities to overcome fear of failure. Costa and Kallick also stated that student discussions and communication enhanced learning.

Vygotsky (1934/1986) found that a child's intellectual growth is contingent upon social means. However, traditional classroom practices do not allow for a great deal of social interaction. These practices might actually hinder the development of thought, language, and intellectual growth. Vygotsky wrote:

> Thought and language which reflect reality in a way different from that of perception are the nature of human consciousness. Words play a central part not only in the development of thought but in the historical growth of consciousness as a whole. A word is a microcosm of human consciousness. (¶109)

Vygotsky believed that thought and language was integral to development of the consciousness as a whole. Even though he wrote in the early part of the last century, his theories promote an understanding of social development in the modern era. His theories support active

learning where social interaction is vital for appropriate human development (Derry, 2004).

Glasserfeld (1997), a proponent of constructivism, wrote that human mental functioning is found within social interactions. Students must interact to increase mental functioning. However, traditional methods of classroom instruction, which are mainly teacher- directed information delivery, do not allow for increased socialization and construction of new meaning. If all instruction is teacher centered, higher-order thinking may not emerge.

Dewey (1897/2001) also was an advocate of constructivism; he stated:

> I believe that the only true education comes through the stimulation of the child's powers by the demands of the social situation through which he finds himself. . . . The human is a social individual from the start, and individual satisfaction and achievement can be realized only within the context of social habits and institutions that promote it. (¶2, ¶36)

Dewey also believed that responses made by others help one to see one's place within a group setting. He noted that education should promote individual interest and personal interest in shared activities. Dewey wrote, "I believe that education is a regulation of the process of coming to

share in the social consciousness". (¶ 56) When students can enhance individual interest, learning will occur. If students have a high interest level in what they are learning, they will take charge of their own learning. This does not always happen with traditional methods of delivery; thus, students are not successful. If humans are social individuals from the start, as Dewey noted, then passive learning will not be effective as a way to engage and truly educate students.

Dewey (1897/2001) advocated that education should promote individual interest through shared activities. Social constructivist theories provide the foundation and the stage upon which cooperative learning techniques can unfold within various learning environments. Constructivist scholars maintained that self-directed learning is promoted through social activity and social situations. According to the constructivist view, educators should make use of practices that enhance social learning environments through cooperative group activities, and students should be given the chance to examine, think critically, and solve problems in a social setting.

Definition of Terms

Connections classes: nonacademic classes attended by students on a daily basis such as (a) art, (b) music, (c) band, (d) agriculture, (e) Spanish, (f) physical education, (g) agricultural technology, (h) family and consumer science, and (i) keyboarding.

Constructivism: learning by which learners construct knowledge individually and socially and also construct meaning from this knowledge (Hein, 1991).

Cooperative learning: an instructional program in which students work together in small groups to promote academic achievement of educational curricula (Slavin, 1999).

Meaning making: used to indicate that, when a student learns something, the information is meaningful to him or her (Costa and Kallick, 2004).

Peer learning: defined as "the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions" (Topping, 2005, p. 631).

Professional learning communities: a community in which teachers work together to solve problems, write lesson plans, and analyze data regarding student achievement (Leonard & Leonard, 2001).

Reciprocal teaching: a method of instruction in which the teacher works with small groups of students to model an educational strategy (Slavin, 1996).

Self-directed learning: learning that is driven from within and becomes a lifelong goal. Self-directed learners are (a) self-managing, (b) self-monitoring, and (c) self-modifying (Costa & Kallick, 2004).

Traditional teaching strategies: teacher-centered, rather than student-focused, and consist of teaching methods in which the instructor is the imparter of information. Traditional methods include lecture and note taking. The learner is passive in this type of learning environment.

Assumptions and Delimitations

The present study was limited to a middle school in Georgia. The participants in the study were sixth-grade language arts students at this specific school. The students were members of two teams in which the teachers volunteered to participate in the study. It was bounded by pre- and posttest scores in language arts from a sample of sixth-grade students who attend this middle school. Both teachers used the same unit, but one instructed with cooperative learning strategies, while the other teacher used traditional teacher centered strategies. The teachers are required to have some group strategies within daily lesson plans but have had little instruction on true cooperative learning models. The teacher who instructed with traditional strategies prefers this manner of instruction and is much more comfortable with teacher centered lessons. However, the cooperative learning teacher implements various cooperative techniques throughout the year, and seeks models that best meet the needs of her students. Each teacher designed the instructional strategies for their own classrooms following required curriculum guidelines according to the Georgia Performance Standards.

Limitations

This study was confined to two learning environments: two sixth-grade language arts teams. Therefore, the study may not be generalizable to other areas or populations involved in teaching and learning. In addition, Creswell (2003) wrote that random sampling is a true characteristic of research (p. 164). The use of a convenience sample might, thus, represent a limitation of the study because the sample might not be representative of the population. A convenience sample was selected due to the availability of naturally formed groups.

A convenience sample was also used so that the learning environment of the students would remain the same and the participants were protected. The students were not singled out in any way, and their classroom instruction did not change drastically throughout the duration of the study. Thus, during the study, the students were in same basic environment as most any other time of the school year. Therefore, the participants were protected. However, Creswell writes that random sampling is most adequate because it insures that the population is strongly represented and that convenience sampling might pose as a limitation to the study.

Significance of the Study

Many researchers maintained that the use of cooperative learning strategies by teachers enhances student achievement (Daniels & Perry,

2003; Palincsar & Herrenkol, 2002; Slavin, 1996). Even though many studies support this idea, many teachers are reluctant to implement this type of educational strategy. Slavin (1999) reported that, despite the number of programs available for teacher training, cooperative learning strategies are implemented with varied success. He noted that issues with curriculum and teaching methods interfere with appropriate implementation of teaching strategies. Many practitioners and researchers found that, with proper training and materials, cooperative learning strategies did, indeed, enhance student achievement (Siegel, 2005; Slavin, 1996, 1999; Stevens, 2003).

This study will help inform educators about the importance of using cooperative learning techniques as a way of preparing learners to become higher-order thinkers. Second, as a result of the findings, teachers who are reluctant to use cooperative learning strategies might feel encouraged to implement these strategies in their daily instruction and planning. Lastly, the study will support educators by showing that success and proper implementation of strategies can happen only when educators are properly trained and given adequate tools and planning time to prepare for different methods of instruction.

Norton (2001) and Scheidler (1994) wrote that many teachers consider professional development a waste of time because it does not meet teachers' needs. Proponents of the professional learning

community, however, envisioned such learning communities as something quite different from those traditionally found in schools (Thompson, Gregg, & Niska, 2004). The professional learning community is a model in which teachers use collaboration to examine why students may or may not succeed. Leonard and Leonard (2001) argued that the practice of collaboration is vital to high achievement of a learning community. Creating a professional learning community would be especially helpful to educators who are reluctant to implement techniques with which they are not entirely comfortable. The significance of this study is that it will inform educational stakeholders regarding the potential use of cooperative learning techniques and their enhancement of student achievement and that appropriate teacher training is necessary for success.

Chapter Summary and Overview of the Study

Active learning is vital for students in today's media-saturated society. Constructivists have argued that passive learning is detrimental to student achievement and that active social learning is the way to ensure that learning does, in fact, occur. Researchers have found that active learning promotes higher-order thinking skills and problem-solving abilities, which are necessary in today's world and must be acquired by students who represent the future workforce of this country. Educators must reexamine their instructional strategies. Manual labor

jobs are declining and jobs that require higher-order thinking are on the rise. Strategies must be implemented to prepare students for the demands of the knowledge era (Hargreaves, 2003).

The use of cooperative learning strategies fosters active learning and promotes higher-order thinking and problem solving (Slavin, 1999). The problem is that some educators are reluctant to implement these strategies because they do not have proper understanding of or training for adequate implementation.

This study proposes to investigate the effects of cooperative learning on student achievement. Two teams of sixth-grade language arts students from a suburban middle school in Atlanta, Georgia participated. One group was instructed with cooperative learning strategies, while the other was instructed with traditional methods. Pre- and posttest data were compared, and statistical analysis examined if a significant difference exists in student achievement. The results of the study will indicate to education stakeholders whether cooperative learning strategies are measurably more effective in preparing students for the challenges of present-day society than traditional methods of instruction. With proper training, teachers—especially those who are reluctant to give up the more traditional models of instruction—can be led to adopt new strategies. Adequate preparation time for the teacher is also vital (Slavin, 1999).

Chapter 2 reviews relevant literature regarding the age of problem solving and the teaching methods designed to meet the new challenges. Chapter 3 presents the research method, including research design and approach, setting and sample, data collection and data analysis, and a discussion of participants' rights. The results of the study are presented in Chapter 4 and conclusions were drawn based on the findings. Chapter 5 presents a summary and conclusion on of the study. Recommendations are also offered for practical application and future research.

CHAPTER 2:

LITERATURE REVIEW

Introduction

The global economy of the present world requires citizens that are problem solvers and higher order thinkers for a competitive job market. . While some manual laborers are still needed, most jobs of the present society require more in depth thinkers and problem solvers (Hargreaves, 2003; Jackson, 2004). Educational systems are constantly faced with the perplex task of producing this type of learner while meeting many various needs of these students in daily learning experiences. Some researchers believe that active, social learning that is attained through cooperative learning strategies is the answer for meeting the afore mentioned challenges (Slavin, 1999; Costa and Kallick, 2004). Some scholars have found the opposite to be true (Webb, Nemer, & Ing, 2006). However, many other scholars have found that the proper use of cooperative learning has a positive affect on student achievement, thus producing higher order thinkers and problem solvers that are so needed in the present global economy (Paez, 2006; Slavin, 1996).

Paez (2006) argued that modern society is so complex that teachers, in order to be effective, will need to be aware not only of cultural differences, but also of how students think. Cummings (2000) wrote that students have varied learning styles partly because they are

members of the mass-media generation. As products of this mass-media influence, students are conditioned to obtain the things they want quickly. Cummings (2000) believed that student learning habits are shaped by the multimedia to which students are exposed, especially in the early stages of human development. Cummings credited the increased anger observed in students as well as symptoms of attention deficit disorder to these influences. Active, rather than passive learning might be one beneficial strategy for engaging children of the multimedia generation (Cummings).

Many researchers noted that traditional methods of teaching such as lecture and note taking are not as effective in today's learning culture as they were in past cultures (Hargreaves, 2003; Levy & Murnane, 2004). McCauley and McClelland (2004) pointed out that traditional methods of instruction are not effective because students are not encouraged to interact socially in those settings. Gatto (1999) also found that traditional methods of instruction did not promote the problem-solving skills necessary for today's society.

Yecke (2004) and Webb, Nemer, & Ing (2006) argued that active learning was detrimental to student achievement. These scholars reported that cooperative learning was overused and improperly implemented within teaching methods. The teachers had only a dim view of true cooperative learning models, hence causing failure among student

groups. Instructors were trying to replace traditional teaching strategies with model in which they had limited knowledge. Therefore, the implementation of cooperative learning proved detrimental to student achievement.

The findings of several studies were that cooperative learning strategies seem to be more successful with students than traditional strategies in developing higher-order thinking skills and problem-solving abilities (Daniels & Perry, 2003; Palincsar & Herrenkol, 2002; Slavin, 1996). Many education researchers are convinced that cooperative learning techniques are necessary tools to promote higher-order thinking and problem-solving skills in schools (Johnson, 2001; Leal, 1993; Palincsar & Herrenkol, 2002).

Many researches have shown that traditional methods of delivery do not promote higher-order thinking or problem solving, whereas cooperative learning techniques tend to promote these increasingly necessary skills (Daniels & Perry, 2003; Gatto, 1999; McCauley & McClelland, 2004). The problem is that many teachers rely on traditional methods of instructional delivery, rather than using active learning techniques. Cooperative learning was defined by Slavin (1999) as an instructional program in which students work together in small groups to promote academic achievement in educational curricula. Proponents of the constructivist theory maintain that social learning takes place in

these small groups, and that this is critical for higher-order thinking to emerge (Costa & Kallick, 2004; Dewey, 2001/1897; Glassersfeld, 1997; Vygotsky, (1934/1986).

The purpose of this review was to examine research pertaining to the concepts of cooperative learning, problem-based learning, active learning, constructivist theory, and the professional learning community. Sources reviewed in preparation for this paper were selected from an electronic search through the Walden library, relevant Internet sites, the ERIC database, and Academic Search Premier. Some information was obtained from books, professional journals, and materials located in the school library. Some studies were obtained by searching and investigating references found during the reading of relevant articles.

This review is divided into five sections. The first section discusses background and inspiration for inquiry as related to the research questions and hypotheses of this study. The second section presents the theoretical framework driving the study. The third section reviews various studies on the implementation of cooperative learning strategies and their effect on academic achievement. The fourth section elaborates on the importance of self-directed learning. The final section presents the professional learning community and discusses the importance of teacher training as the basis for correct implementation of teaching strategies necessary to meet the needs of today's student population.

Background

The Age of Problem Solving

Jobs in the new global economy demand strong critical thinking skills and more technological expertise than ever before. Hargreaves (2003) stated that, because of the rapid pace of technological advances, students must be given appropriate tools for higher levels of learning to occur. Wells and Langenfeld (n.d.) wrote, "The end of the twenty-first century is the age of knowledge. A new class within the workforce has been identified as the 'knowledge worker,' people whose primary function is the application . . . of knowledge" (p. 1). The jobs of today and the future will demand that workers be proficient in higher-order thinking and performance skills.

Traditional Strategies

Traditional ways of preparing students for the workforce and the world are no longer effective. Educational stakeholders seek better ways to prepare students for the future. Educational leaders must make choices and implement strategies that produce self-directed problem solvers. West and Watson (1996) wrote, "As leaders of major teaching institutions, we must move away from traditional didactic models and implement educational initiatives to cultivate a learning environment that fosters self-directed, lifelong learning and reinforces healthy

interactions between academia and the applied world" (p. 2). Cummings (2000)) noted that educators are facing a more diverse population than ever. Cummings also stated that students must cover and retain more concepts and material than ever.

Traditional teaching strategies that have been used for years are not getting the job done with the concepts and the amount of material that must be covered today. Traditional educational strategies are typically teacher centered. They rely on lecture, note taking, and handouts. Thomas (1993) noted that traditional teaching methods produce only minimal knowledge in students. These instructional methods pose low-level demands on a student's cognitive processing ability, and the use of handouts does not provide an opportunity for higher-level learning to occur. West and Watson (1996) wrote that traditional lecture techniques do not allow for knowledge acquisition. Memorized information from traditional lecture and note taking is stored in short-term memory (McCauley & McClelland, 2004). Traditional teaching practices require only a minimal level of processing to take place (Jackson, 2004; Mann 2004). Wells and Langenfeld (n.d.) reported that traditional educational practices are not producing workers for the highly technological world in which we live.

Active Learning

Many experts believe that, in order to promote higher-order thinking skills in students, active learning must occur (Costa & Kallick, 2004; Slavin 1999). They also hold that what is learned should be meaningful. West and Watson (1996) reported that "professional education programs and courses in the Americas must prepare self-directed, life-long learners who strive to identify and solve problems and succeed in diverse and evolving environments" (p. 3). Costa and Kallick (2004) stated that the critical role of teachers is to merge from an approach where information is dispensed to one of inquirer where the teacher becomes the facilitator, problem solver, model, and questioner (p. 16). Taylor (1995) wrote that teachers must change their roles and become collaborative partners and guides in the learning process, and that changing the mindset of some educators would be critical toward the development of new concepts.

Theoretical Framework

The theoretical framework used for this study is constructivism. Hein (1991) described constructivism as the idea in which learners construct knowledge individually and socially; they construct meaning as they learn. Constructivists such as Derry (1996), Gagnon and Collay (1990), and Prawat (1996) argued that learning is more effective when social parameters are used rather than isolated learning techniques.

They based their opinions on the tenets of Vygotsky (1934/1986), Piaget (1985), and Dewey (1897/2001). Constructivist concepts involve social interaction and learning that is meaningful.

Vygotsky (1934/1986) wrote that thought and language is a key component of a child's development and that social activities play a vital role in learning and meaning making. Glasserfeld (1997), a proponent of constructivism, believed that students must interact socially to enhance mental functioning and learning. Glasserfeld maintained that traditional methods of delivery of instruction are not effective because of the nature of individualism. Dewey (1897/2001) also wrote that true stimulation of a child's mind comes through social interaction while learning. He argued that education should promote individual interest through shared activities. Social constructivist theories provide the foundation for cooperative learning techniques within learning environments.

Traditional methods of teaching are failing because these methods of teaching do not meet the needs of today's learner, nor do they promote higher-level problem-solving abilities. Slavin (1996) stated that the structure of the traditional classroom discourages students from working hard. He observed that the traditional classroom setting is not conducive to appropriate adolescent development and peer norms. He (1996) wrote: Adolescents crave responsibility and abhor playing a passive role. Little wonder, then, that so many of them seek responsibility, authority, active

peer-oriented participation, and adult-like roles in antisocial arenas: delinquency (which among adolescents almost always involves groups or gangs), drug abuse, early sexual experimentation, early parenthood, and so on (p. 1). Slavin, therefore, believes that active learning in which all members take part is necessary for appropriate development.

Children in today's world do not function well while playing a passive role. They must be given chances to interact socially in order to promote appropriate social and emotional development. Dewey (1897/2001) noted that traditional schools are places where information is given out and certain lessons and habits are formed. He wrote:

> I believe that much of present education fails because it neglects this fundamental principle of the school as a form of community life. It conceives the school as a place where certain information is to be given, where certain lessons are to be learned . . . the value of [which] is conceived as lying largely in the remote future; the child must do these things for the sake of something else he is to do. . . . As a result they do not become a part of the life experience of the child and so are not truly educative (¶ 11).

Dewey also believed that students should interact verbally for optimal learning to occur and for appropriated social and emotional development to take place.

Constructivists hold that cooperative learning fosters active learning, which is a vital learning tool for students in the current educational system. The concept of active learning is not new, but one that constructivists have promoted for decades. The following studies review the effects of cooperative learning on student achievement.

Cooperative Learning

Cooperative, student-centered learning has been widely explored and is becoming a frequently used instructional strategy. Many practitioners have reported that cooperative learning strategies enhance academic achievement (Costa & Kallick, 2004; Slavin, 1999). However, some educators still consider cooperative learning strategies to be ineffective. The reason for this might be improper implementation of this widely used strategy because many reports tell of greater student achievement when cooperative learning strategies are used and properly implemented. Students must be given the opportunity to develop self-confidence, and group learning contingencies appear to promote this. Self-directed learning emerges when students work with peers (Johnson, 2001; Savery & Duffy, 2001).

Many classroom practitioners report increased student achievement as a result of implementation of group contingencies. Cooperative learning offers the chance for differentiation of learning to emerge. Palincsar and Herrenkol (2002) reported that differentiation of

skills and activities began to emerge when students were given the opportunity to work with peers. Collins (1996) noted that low performing readers showed academic gains through cooperative learning activities. Students began to appreciate the differences of each learner and their learning techniques as they worked together. Collins also stated that when student-centered activities were provided upon completion of a task, the students showed a strong interest in completing the task so they could move to the next one. This seemed to indicate that student interests emerge when they are given choices and when learning is meaningful to them.

Both Johnson (2001) and Leal (1993) reported gains in academic achievement as a result of implementation of cooperative learning strategies with writing and reading. Students have the opportunity to become risk takers when they feel a sense of trust and have some part in controlling the decisions of the group. Brown (2002) reported that eighth-grade students were highly motivated when they could determine what they learned, how they learned it, and how they would demonstrate what they knew. He observed an eighth-grade program in Pennsylvania where students were first given trust-building activities. As they worked through the program, they developed their own curriculum, study methods, and assessments. Students were highly involved because the learning belonged to them. This study provided evidence that

achievement increases when students assume part-ownership in learning.

Bromley and Modlo (1997) maintained that various models of cooperative learning instruction can help students to be successful in school as well as prepare them for careers in the real world. They reported that students felt good about being within cooperative learning groups. The authors noted that teachers were trained on various models of cooperative learning, and these teachers found that implementation of the varied strategies increased learning in reading and writing. This evidence shows that students experience success when given opportunities to work with peers.

Nesbit and Rogers (1997) observed how various cooperative learning strategies were used to support students' reading and writing skills in science instruction. They wrote:

> One of the goals of science education is to prepare a scientifically literate citizen who can problem-solve everyday science-related societal issues. . . To do so, citizens must develop their critical thinking skills, read the pros and cons of controversial issues, and then make the most rational, defensible decision they can. Cooperative learning is an especially effective method to use with any problem-solving task, because it encourages people to express divergent points of view (p. 2).

Therefore, cooperative learning through science instruction promoted life long decision making skills in the learners.

Nesbit and Rogers found that cooperative learning strategies did not simply enrich reading and writing abilities of students, but that their problem-solving abilities emerged as well. Some of the strategies included group rewards while others did not.

Adams (2000) also reported on the effectiveness of a cooperative learning lesson in science. The strategies were used to track monarch butterflies. Students became not only involved in discussions and questioning with their peers, but also worked through a database and participated in an ongoing research project. This activity was real and accessible by computer; therefore, it was authentic for the students. This evidence shows that the learning activity provided high levels of interest because the lesson was made real for students because it applied to a real life situation. Students gained knowledge by working not only with others within their own classroom, but also with other students through the database. Students were able to take charge and make meaning of their learning.

Siegel (2005) studied an eighth-grade math teacher's implementation of cooperative learning strategies and personal definition of constructivism. The data were gathered through interviews and

observations. She noted positive differences in individual accountability and behavior between groups that used traditional teaching methods and cooperative learning groups. She concluded, however, that this result was due to the fact that the teacher-leader was considered an expert in cooperative learning and, consequently, not a typical teacher. These results show that cooperative learning does promote academic achievement and individual accountability. It also confirms the fact that educators must be properly trained to implement cooperative leaning strategies. Proper implementation does not just happen; therefore, proper induction of teachers to cooperative learning strategies is fundamental to success (Slavin, 1999).

Slavin (1999) wrote about two programs that incorporated cooperative learning strategies in all areas of the curriculum, called Success for All and Wings and Roots. Here, teachers were trained through extensive professional development and given classroom-tested materials. These programs were created so that proven methods of high-quality instruction in cooperative learning were utilized. Slavin (1999) stated that this program has been successfully used in many schools and student achievement gains were noted. This is another example of the use of cooperative learning strategies and increase in student gains. It is important to note that the educators were provided with appropriate

training as well as materials that were well-developed for this type of instruction.

Stevens (2003) noted achievement gains among middle school students in high-poverty urban areas through the implementation of the Student Team Reading and Writing program. Language arts instruction was implemented through research-based procedures. Teachers received extensive training in the program. Literature was used as the basis of instruction. Cooperative learning strategies were implemented, and reading and writing were integrated. Stevens credited the social interaction around the materials that students had read with promoting retention of information. He wrote that it was not just the use of cooperative learning strategies that caused the increase in academic achievement, but also the appropriate implementation of these strategies. Adequate teacher training was identified as the key to success (Stevens).

Battistich, Solomon, and Delucchi (1993) concluded that the effects of cooperative learning on academic achievement and social development were determined by the quality of group interaction. Limitations of this study lie in the fact that data did not focus on individual students. Johnson, Johnson, and Stanne (2000) reviewed 158 studies regarding the use of cooperative learning techniques and concluded that "the current research findings present a promise that if

cooperative learning is implemented effectively; the likelihood of positive results is high" (p. 14). Proper teacher training and implementation will assure a much higher success rate with cooperative learning as an effective tool in the classroom. Without this proper training many scholars report failure with the method (Webb, Nemer, & Ing 2006).

Riley and Anderson (2006) reported findings that students who were exposed to cooperative learning situations showed an increase in self-study habits in a Web-based graduate-level course. Bilgin (2006) conducted a quantitative study in which he found that a hands-on science approach fostered greater academic gains compared to more traditional methods of teaching. Through case studies, Kaderavek and Rabidoux (2004) learned that children with atypical communication skills became independent learners after exposure to cooperative learning settings.

Many experts came to the conclusion that cooperative learning enhances student achievement; yet, some practitioners have found the opposite to be true. Webb, Nemer, and Ing (2006) conducted a qualitative study that did not indicate significant differences in academic achievement through the implementation of cooperative learning strategies. These researchers found that teachers did not deviate enough from traditional standards, yet expected students to problem solove and be help givers without appropriate modeling. Students were not able to

work together but became help givers to other students. Yecke (2004) argued that cooperative learning could backfire and be detrimental to student achievement. Yecke reviewed many studies in which cooperative learning was overused and not properly implemented. As a result, the cooperative learning strategies were not effective with student achievement. Many experts stated that incorrect implementation of cooperative learning strategies can, indeed, have detrimental effects on student achievement (Johnson & Johnson, 1998; Slavin, 1999). Many experts have found that with proper implementation of cooperative learning strategies, student performance is positively affected (Johonson & Johnson, 2000; Bilgin, 2006). These findings relate to the present study in which the results will be discussed in Chapter 4.

Self-Directed Learning

Self-directed learning can materialize through individual or cooperative learning strategies. Through cooperative components, self-directed tendencies are targeted for development (Collins, 1996; Johnson, 2001; & Leal, 1993). Self-directed learning emerges when students work with peers. Learners have different abilities and learning styles, which requires differentiation in learning tasks. Palincsar and Herrenkol (2002) reported on their observations of differentiation of skills and activities within peer activities. Students began to take charge and displayed a strong appreciation of their peers while working in a setting

in which everyone had a job. Higher levels of student thinking and problem solving were observed. Students wanted to share their ideas and meanings. The structure of the projects allowed students to be comfortable, which encouraged them to become risk takers.

Collins (1996) noted that low-performing readers thrived within peer learning experiences. Students came to realize that people read differently and that their interpretation of reading materials might be based on subjective views and prior knowledge. Collins also found that collaborative projects done upon completion of reading assignments gave students a reason to read the assignment, and it reduced the apprehension of poor readers. Collins wrote that students with low reading abilities showed improvement as a result of peer group interaction.

Johnson (2001) found that peer writing activities increased writing skills in 11th-grade students who were members of a remedial writing class. Students were instructed to become peer evaluators and editors of the writing assignments. They were taught how to evaluate pieces of writing using rubrics and checklists. The students worked with each other to determine the competency level of a piece of writing. They also critiqued the writing of students in groups outside their own. Johnson reported that this classroom experiment offered a challenge for top level writers. Weaker writers were able to see what the better writers were

doing. Students were able to identify their own writing weaknesses and self-correct. The author stated that self-directed learning strategies were used, student-centered learning emerged, and students' abilities increased.

Leal (1993) found that peer group discussion of books among third-grade students was related to student improvement. She wrote that they helped each other to modify and extend individual interpretations of their reading. Leal wrote, "When children are provided the opportunities to work with peers, good things can happen" (pp. 114-115). She concluded that peer group discussions of literature were extremely beneficial. Three different types of texts were read to each group: a storybook, an information book, and an informational storybook. By using these three types of books, readers remained engaged because they moved back and forth from visual and efferent reading stances. Efferent reading stances are related to cognitive, analytical, and logical aspects of meaning. The author noted that, through student discussions, personal and authentic purposes for learning emerged. A group of fifth-grade students used prior knowledge to activate ideas. One student's implications of a concept in the book produced questions, explanations, and predictions. First-grade students shared knowledge and gathered information from other students. Leal reported that, although the first-

graders did not develop full understanding, a sense of ownership began to emerge.

Leal (1993) made an interesting observation: children's discussions were 26% longer when they discussed the informational story book as opposed to the story book and information book. She stated that the combination of information with storytelling caused students to be left with uncertainties that could not be quickly concluded. This fostered longer discussion periods. Leal concluded that peer-group discussions had powerful abilities to enhance classroom learning. In this study, the groups were described as first-, third-, and fifth-grade students. The findings emerged from teacher observations of student interactions. Leal wrote:

> Peer-group discussions of all types of text have the potential to be a powerful tool for enriching classroom learning. This two-sided toll provides teachers with a wealth of information about the prior knowledge their students already possess as well as providing a place for children to negotiate textual meaning through collaboration. So useful a tool belongs in every classroom. (p. 120)

Social interaction through peer group discussions provided enhancement for classroom learing.

Students can become academic risk takers when they develop a sense of trust and have some part in controlling the decisions of the group. Brown (2002) reported that eighth-grade students were highly motivated when they could determine what they learned, how they learned it, and how they would demonstrate what they knew. He observed an eighth-grade program in Pennsylvania where students were first given trust-building activities. As they worked through the program, students developed their own curriculum, study methods, and assessments. Students were highly involved because the learning belonged to them (Brown).

Savery and Duffy (2001) concluded that peer work that uses problem-based learning sharpens metacognitive processes. The authors thought that students learned because they felt part-ownership in the problem. They were encouraged to think critically and to become academic risk takers without the threat of being embarrassed. Savery and Duffy found that students used self-directed strategies while working with peers. They noted that social interaction seemed to cause learning to increase. Hicks (1991) reported an increase in responsibility and self-confidence with reluctant readers when cooperative strategies were used.

Other components of self-directed learning stem from intrinsic motivation and self-regulated learning. Perry, Nordby, and VandeKamp (2003) examined differences between two first-grade students' home-and-

school literacy connections in regards to self-regulating abilities in reading and writing. The two first-grade students were in a class that used self-regulated learning strategies. One student was a high achiever, the other a low achiever. The goal of the research was (a) to compare the parents' view of learning to read and write with messages students were exposed to in the classroom, (b) to compare consistency of parents' and teachers' ratings of students, (c) to determine how teachers' judgment of students' motivational characteristics compared with students' beliefs, and (d) to determine how differences in home and school approaches to literacy tasks were reflected in how students' approached literacy tasks at school. Both students came from similar home backgrounds. They were two of 17 students in a first-grade classroom.

Researchers conducted observations of the students as they participated in classroom learning activities. Parent questionnaires and teacher ratings were used. Perry et al. (2003) summarized that reading and writing were presented as meaning-making activities that provided chances for students to develop self-regulated learning tendencies. Students were given opportunities to make choices, control challenge, and evaluate learning. They were encouraged to persist and become risk takers. Further findings indicated that both home and school did much to promote self-regulated learning and the students' approaches to writing and reading showed this as well. Some discrepancies were

evident between home and school. The highly motivated student showed self-regulated learning tendencies, whereas the low-achieving student gravitated toward performance-based rewards. However, when asked to how he would go about helping a classmate who was struggling, the latter answered by discussing steps of self-regulating strategies.

In a study of kindergarten children, Hwang (1998) concluded that successful children used self-regulating strategies such as planning, monitoring, and self-evaluating more often than did less successful learners. The successful children seemed to posses a deeper understanding of the performance task and used elements of self-regulated learning to achieve their goals. Less successful children used some self-regulated strategies, but seemed to strive only for achievement of temporary goals. They spent time on task in a performance mode rather than a planning and evaluating mode. Forty kindergarten children participated in the study with 21 students being high self-regulating learners, and the other 19 being low self-regulating learners. The study was conducted through observations as students completed performance tasks. The purpose of the study was to determine the theoretical implications for self-regulated learning in young students.

In relation to goal setting, Lens, Matos, Soenens, Simmons, and Vansteenkiste (2005) conducted three field studies to determine the relationship of goal framing to self-determination theory and intrinsic

motivation. Their studies found that participants in the intrinsic goal situation achieved high scores compared with those in extrinsic settings. However, they determined that intrinsic goal framing did not result in higher levels of rote learning. Lens et al. (2005) found that a great deal of memorization of the material was needed for rote learning to take place. Thus, the material was memorized, but not truly learned. The purpose and methods of each study were discussed and results were compared in tables and graphs. The authors found that linking young adolescents to intrinsic goal contents enhanced self-directed learning.

Heller and Sottile (1996) conducted a study for the purpose of finding critical elements to student motivation. They observed students working in collaborative groups, followed by student interviews. The findings showed that students wanted material to be made relevant to their lives and interests. They wanted to work in social, nonthreatening learning environments. Heller and Sottile also found that catering by teachers to diverse learning styles was important.

Beswick, Chuprina, Canipe, and Cox (2002) examined self-directed learning within cultures, learning styles, and creativity among young adult learners. Their findings revealed the use of self-directed strategies by adults. Questionnaires and surveys were used to gather the data. The authors reported a strong correlation between self-directed learning and cross-cultural adaptability. Self-directed learning readiness occurred

throughout all modes of learning styles. Beswick et al. (2002) combined a correlational and causal-comparative design in a third study that investigated the relationship between self-directed learning and creativity. Some connections were reported between self-directed learning and creativity.

McCauley and McClelland (2004) reported similar findings in their study of undergraduate students who were taught to employ self-directed strategies. They found that college students made larger gains by learning to use self-directed strategies. The authors noted that most college students seem to feel that they are self-directed learners, but that, in actuality, most college students lack self-directed learning abilities and need to be taught these skills.

Litzinger, Lee, and Wise (2004) found that self-directed tendencies were evident among college students. However, they reported that these students were weak in using the strategies. West and Watson (1996) found that, when problem-based learning was used with young adults, self-directed learning strategies emerged. They concluded that the use of problem-based learning strategies fosters the use self-directed learning techniques and that this would promote lifelong learning habits. In order for cooperative learning strategies to be properly implemented, teachers must be trained properly and adequately (Slavin, 1999; Stevens 2003).

Staff development through the professional learning community is an avenue that can support teacher training.

The aforementioned studies relate cooperative learning to self-directed learning. Students began to be confident and emergence of life long learning skill was evident. The results of the present study in relation to cooperative learning and student achievement are discussed in Chapter 4.

The Professional Learning Community

Traditionally, schools tended to foster isolated teaching practices. Teachers attended staff development courses in which information is handed down; then, teachers were expected to implement the information in their classrooms. This typically happened with individuals in isolation in their own classrooms (Leonard & Leonard, 2001). Many school reformers realized that traditional staff development practices might not be sufficient, and new trends began to emerge. Buffum and Hinman (2006) proposed that a professional learning community would increase academic achievement because of the cross-fertilizing nature of a community.

Many research studies showed a direct link between appropriate implementation of the professional learning community and student achievement (Chapman, 2003; Garmston, 2003). Finch (1995) described participatory research as research in which inquiry is developed by

school practitioners in collaboration with outside researchers. The school identified the areas in need of exploration. Finch believed that the most profound outcome could be detected in the teachers' thinking as they were observing each other, devising questions, collecting evidence, and documenting their daily interactions. Finch found that the professional learning community fostered research conducted by the participants themselves about what was happening in their classrooms. This inquiry was meaningful to the teachers involved because it was real for them and not formulated by some outside researcher. Similarly, Lewis, Perry, and Murata (2006) concluded that locally initiated innovations can contribute to broad instructional improvement, where "local innovations (meant) a lesson study" (p. 10) within the professional learning community. Teachers responded positively and found the inquiry to be meaningful because it fit their teaching environment.

A study of professional development, conducted by the National Center of the Study of Adult Learning and Literacy, located in the Harvard Graduate School of Education, compared individual factors, professional development factors, and program and system factors while also determining what factors might strengthen or weaken professional development. Through interviews and questionnaires during a 1-year period, Appelt (2004) learned that there was no significant factor involved in teacher change. The significant factors were the numbers of hours and

quality of the professional development, as rated by both researchers and via teachers' perceptions.

Researchers investigated efforts made by the Capistrano Unified School District, in Southern Orange County, California, in which complacency among teachers was investigated. Learning teams were assembled, and the following three questions were asked:

1. What is it that we want students learn?

2. How will we know if students have learned it?

3. What will we do if students haven't learned? (p.17)

In their case study, Buffum and Hinman (2006) wrote that, as a result of the implementation of the professional learning community with the teachers' collaboration, many academic gains were achieved. They also noted that, as a result of the collaborative learning community, morale in the school improved greatly and staff members reported that their school was a positive place.

In a mixed-methods study regarding the implementation of the professional learning community in a middle school, researchers found that personal mastery, team learning, and shared vision emerged. Thompson, Greg, and Niska (2004) concluded that teachers articulated the belief that they were a part of a true learning organization in their school. Teachers who experienced themselves as a learning community felt that their energy was channeled in the right direction, and they felt

free to take risks. They could see that everyone in the organization had a positive impact on learning (Thompson et al. 2004).

TeachNet is a program designed to add digital networking to face-to-face networking. Through a mixed-methods study, Mann (2004) found that collaboration through an online experience increased teacher learning. He wrote that empirical evidence showed that teachers received continued support by using technology for classroom collaboration.

Paez (2006) wrote that research showed a clear link between effectively implemented professional development and increasing academic achievement in students. Paez conducted an action study on the implementation of literacy groups and found that the learning community provided a supportive and safe environment in which teachers were able to collaborate and were encouraged to grow as professionals. Members of the community felt they were given the opportunity to grow through peer questioning and through sharing progress with others. This process allowed effective and thoughtful teaching to emerge (Paez).

Husby (2002) used a grounded theory approach to examine the perspectives of teachers who participated in self-directed staff development. Her findings showed that adult learners who engaged in self-directed learning disclosed the importance of interaction with others. A trusting climate made learners feel that they could become risk takers.

In this situation, feedback provided by others was helping participants to assess themselves. The findings also suggested that, with time and support, teachers would become more self-directed in their own learning.

Leonard and Leonard (2001) wrote that, although there are many barriers and challenges on the path of implementing collaborative learning communities, professional activities should be highly collaborative, as desired by the teachers in the study. The findings also indicated that teachers perceived collaboration to be the cause of the school's functioning in a more positive manner because they had a shared vision and commonly held beliefs and values. The teachers also indicated that they should be provided with appropriate time to make their collaborative process effective. Leonard and Leonard wrote:

Inasmuch as theory, research, and practice inform one another in complex and dynamic ways, the following implications of the reported cumulative research findings and consequent deliberations are also interrelated. This synthesis and evaluation have significance for those interested in created collaborative school communities, suggesting that we need to focus on the following: (1) increasing our *knowledge* of collaboration, i.e. what it is and what it looks like; (2) articulating our understanding of collaboration skills, i.e. what they are and how to develop them; (3) uncovering our *values* and *beliefs* about collaboration, i.e. what they are and how they influence the collaborative process. (p.

393) The authors further noted that it is imperative that current teacher programs be reviewed and that development of theory should continue. They concluded that collaborative programs must be carefully integrated into learning communities while fostering a climate of trust and common values.

Andrews and Lewis (2002) found that, when positive school change is experienced within a small learning community inside an organization, generally a ripple effect causes others to want to experience the same success. They concluded that their study showed that positive change within the school community adds to whole-school change. Their findings also supported the statement that professional learning communities have a positive and direct impact on classroom learning.

The aforementioned studies demonstrated that implementation of the professional learning community has a favorable impact on both teacher learning and student achievement. However, many studies pointed out that appropriate implementation of such communities does not just happen by itself and that careful study of the components of the professional learning community must be undertaken for appropriate implementation to transpire. Strong, positive leadership is a key factor in the success of professional learning communities. These findings have merit for implementation of appropriate cooperative learning strategies in

to the classroom. They also reinforce the actuality that proper training as well as an environment where participants feel free to be risk takers is essential for proper implementation of new strategies.

Summary

This review of the literature showed that some researchers do not believe that teaching through cooperative learning strategies is an effective way to promote student achievement (Webb, 1994; Yecke, 2004). However, many researches were able to demonstrate that the implementation of cooperative learning strategies can have a positive effect on student achievement, provided the teachers are properly trained and given enough time to follow through with the implementation of this method (Daniels & Perry, 2003; Palincsar & Herrenkol, 2002; Slavin, 1996). Cooperative learning strategies are based on the constructivist theory. Constructivism posits that learning comes from social situations, in which people construct meaning through problem solving and creative thinking (Dewey 1897/2001; Glasserfeld 1997; Vygotsky, (1934/1986). Cooperative learning strategies provide an opportunity for students to construct meaning through social learning situations. A promising way to create positive social change through schools that cater to a highly diverse student population is the implementation of professional learning communities (Supovitz & Christman, 2005). Such small learning communities within large organizations have shown to benefit both

teacher learning and student achievement, and their positive impact draws others who what to experience similar successes (Andrews & Lewis, 2002).

Chapter 3 describes the research methods proposed for this study, including research design and approach, setting and sample, instrumentation and materials, treatment, data analysis, and the protection of participants' rights.

CHAPTER 3:

RESEARCH METHODS

Introduction

Society is demanding that citizens be higher-level thinkers and problem solvers as they face the competitive global job market (Costa & Kallick 2004; Levy & Murnane, 2004). Educators face more challenges in classrooms than ever before. The world is advancing more rapidly in the areas of technology and scientific research. The job market of today and of the future requires that students who are part of this rapidly changing world possess higher-order thinking skills and problem-solving abilities as no generation had to do before (Hargreaves, 2003; Wells & Langenfeld, n.d.).

Today's students come from very diverse backgrounds and display more varied learning styles than earlier generations. Cummings (2000) attributed many of the qualities observed in the current student population to the fact that they are the mass-media generation. Cummings argued that learning habits are shaped by the multimedia exposure, which is part and parcel of students' lives. She maintained that exposure to mass media in the early stages of human development contributes to increased anger in students as well as to symptoms of attention deficit disorder. She claimed that students' learning styles and habits are developed through this fast-paced mass-media exposure.

As a result of these changes, educators must identify teaching strategies that best meet the needs of the students. Many educators continue to teach with the more traditional teaching strategies of lecture and note taking. Numerous researchers have demonstrated that these traditional methods are not as effective in today's learning culture as they may have been in the past. McCauley and McClelland (2004) pointed out that traditional methods of instruction are not effective because teachers sometimes lack proper training. Gatto (1999) noted that traditional methods of instruction do not promote the problem-solving skills necessary in today's society.

Learning is more effective when social parameters are used rather than isolated learning techniques (Derry, 1996; Slavin 1999; Prawat, 1996). Based on the constructivist theory, many researchers embraced the idea that social interaction is a vital part of learning, especially for today's learners. Researchers such as Daniels and Perry (2003), Palincsar and Herrenkol (2002), and Slavin (1996) advocated, therefore, that cooperative learning strategies be integrated into teachers' instructional repertoire to meet the needs of today's learners and help them to succeed in the current mass-media climate.

The problem in many of today's schools is that some educators continue to teach with traditional methods of instruction such as lecture and note taking, as opposed to using methods in which active learning

occurs. The purpose of this quantitative study was to compare the effects of cooperative teaching and learning strategies with those of traditional teaching strategies on students' academic performance. In this nonequivalent control-group quantitative design, the researcher attempted to determine the effects of two different teaching strategies on students' academic achievement.

An experimental quantitative method was chosen in which one group received an intervention, while the other group did not. Creswell (2003) wrote, "The basic intent of an experiment is to test the impact of a treatment (or an intervention) on an outcome, controlling for all other factors that might control that outcome" (p. 154). Based on Creswell's writings, two sixth-grade language arts classrooms were used for the study. The student-participants comprised the control group and the experimental group for the study.

At the beginning of the study, the teachers administered a pretest. Over the time span in which a unit was taught, the treatment group was instructed through cooperative learning strategies, whereas the control group received traditional methods of instruction. Upon completion of the unit, the teachers administered a posttest. The test measured achievement gains from pretest to posttest on the Georgia Performance Standards in language arts for sixth-grade students. I compared test scores of the control group and the experimental group and determined

statistically whether one group achieved significantly better scores than the other.

Research Design and Approach

A quantitative research design was used, according to the directions provided by Creswell (2003). An experimental method was chosen because it allows one to identify a representative sample and generalization of the results of the study to a population. The study allowed for the testing of the influence of a treatment on an outcome. Creswell stated that in quasi-experiments the researcher may use control and treatment groups where no random sampling occurs. The researcher may select a sample due to its natural availability to the researcher. Thus, the researcher selected the nonequivalent control-group design with pre- and posttest. Creswell stated that with this design, random sampling does not occur and pre- and posttests are administered to both groups, but only the experimental group receives the treatment.

The goal of this study was to investigate teaching strategies that promote academic achievement in a middle school in a suburb northeast of Atlanta, Georgia. Educators in this system are required to implement specific strategies and to administer yearly and quarterly pre- and posttests. These data are gathered and submitted with teachers' yearly goal setting and end-of-year evaluations. The researcher selected the quasi-experimental nonequivalent control-group design with pre- and

posttest because it could be combined with the requirements imposed by the educational system. This design fits well into the plan of the school and should provide data that will be useful to the teachers and administrative leaders.

The sample consisted of students in two sixth-grade language arts teams at a middle school in a suburb of Atlanta, Georgia. The sample was selected because of its availability; thus, making the study fit the quasi-experimental design. One group of students was the experimental group that received the treatment. The treatment was language arts instruction with the use of cooperative learning strategies. The control group was instructed with traditional teaching methods. A pretest was administered and test scores were gathered. Then, a unit was taught to both groups the experimental group and the control group. At the conclusion of the unit, a posttest was administered by the teachers and data was collected. Pre- and posttest data analysis was conducted with the use of ANOVA. This analysis was used to determine whether significant differences in student achievement occurred.

Many researchers are convinced that traditional instructional strategies do not produce higher-order thinkers and learners (Cummings, 2000; Slavin, 1999; McCauley & McClelland, 2004). They will argue that learning in social situation must occur for higher-level thinking to develop. The problem is that many educators still rely on traditional

methods of instruction to the exclusion of strategies that promote social learning (Slavin, 1996; West & Watson, 1996). The present study investigated whether these claims had merit and whether cooperative learning produced measurable benefits for the sixth-grade language arts students in a suburban Atlanta, Georgia, middle school.

Setting and Sample

The setting was a middle school located in an average-sized suburb approximately 30 miles northeast of Atlanta, Georgia. The community was originally rural and agriculture-based, but has experienced rapid growth over the past 10 years. Because of this rapid expansion, new schools are being opened in the community almost yearly. The middle school population from which the sample was drawn consisted of students in Grades 6 - 8. The age range of the students was from 11 to 15 years. Of the 1,156 students enrolled, 516 were male, and 540 were female. The racial/ethnic breakdown was as follows:

African-Americans: 204	Hispanics: 31
Asians: 10	Multiracial: 25
Caucasians: 783	Native Americans: 3

Of the students, 558 qualified for a free or reduced lunch. The remainder of the student population came from middle- or upper-class communities. There were 355 sixth-grade students enrolled at the school. The sixth-grade students were members of three teams, which

had five teachers each. Students changed classes for all academic areas and attended one connections class per day.

Convenience sampling was used. This sampling procedure allowed the participants in the study to be chosen based on availability. The rationale for selecting convenience sampling was the availability of naturally formed groups (Creswell, 2003). Under the school's improvement plan, the major focus was on academic achievement of all students, but also on academic achievement of students who made up specific subgroups of the student population. The initiative of the school was to lessen academic achievement gaps for all students, but especially for students who comprised specific subgroups of the school population. These naturally formed groups were representative of the school population and of the subgroups within that population.

There were three sixth-grade language arts teachers in the school. The inclusion criterion for participation in the study is that the student was a member of a naturally formed group within the entire student population. As a language arts teacher, the researcher’s goal was to evaluate and compare teaching strategies that promote academic achievement in language arts. Specific teaching strategies and concepts are required of teachers by the school system. Therefore, the goal of the study was to investigate strategies that will meet the criteria of the

system; while promoting high academic achievement among the students.

Teaching teams of two language arts teachers served as the laboratory for data collection. Group A was the experimental group, in which the teacher used cooperative learning strategies. Group B was the control group, in which the teacher used traditional teaching strategies during instruction. There were 105 students in group A, and 111 students in group B. The students ranged in age from 11 to 13 years. The students were heterogeneously grouped. The ability range of the students was from high achievers to special education inclusion students.

The researcher's role during data collection was to meet with the teachers to discuss the teaching strategies planned and implemented during the teaching of the unit. Prior to data collection the cooperative learning teacher selected a cooperative learning model that was grounded in research. The teachers created a unit plan, and one teacher utilized the cooperative model for instruction, while the other teacher used traditional strategies. The researcher transcribed field notes taken during planning meetings to document the types of strategies implemented by the two teachers. The researcher assisted the cooperative learning teacher in selecting a teaching model that was grounded in research. The interaction that the researcher had with the teachers as they taught their

unit was in meeting with them and discussing the strategies they were implementing throughout the unit.

Treatment

The purpose of this study was to measure academic achievement through pre- and posttesting of sixth-grade language arts students on the Georgia Performance Standards. The time frame was a period of 6-8 weeks in which teachers covered a unit directed by a curriculum map constructed from the Georgia Performance Standards for sixth-grade language arts. Teachers administered a pretest at the beginning of the unit and a posttest at its conclusion. The teachers instructed with two different teaching strategies. The experimental group, or group A, received instruction of language arts standards through cooperative learning strategies, that is, social interactive strategies. The control group, or group B, was instructed with the use of traditional strategies such as lecture and note taking. Throughout implementation of the unit, the teachers and the researcher attended language arts department meetings and discussed the teaching strategies being implemented. The researcher's role was to engage in dialogue with the teachers and to construct field notes summarizing the dialogue between teachers and myself. The researcher summarized the teaching strategies used by both instructors.

Upon completion of the unit and administration and scoring of the posttest, the scores were collected from the two teachers. The scores were analyzed by computing means, standard deviations, and ranges. Statistical analysis was conducted with the use of ANOVA. This test was used to determine levels of statistical significance. The data appropriately related to the analysis process because two groups were used, one with a treatment and one without. The pre- and posttest scores provided the data needed to conduct the ANOVA.

Instrumentation and Materials

The instruments used for data collection were the pre- and posttest for language arts instruction. This test was created by a curriculum committee and formerly used as a sixth-grade language arts benchmark measure by all sixth-grade language arts teachers in the county. Some of the test items were attained from the Georgia Online Assessment System (2006). The test was created so that data could be collected and analyzed regarding student progress and achievement. Currently, the test is used by language arts teachers as an end-of-quarter test. The test was created in alignment with the county curriculum maps, which are based on the Georgia Performance Standards for Grade 6 Language Arts Instruction. The test covered fourth-quarter performance standards, which were driven by the state performance standard map. All teachers in the county use this map as a guide for instruction; thus, all teachers were covering

the same material within the same time frame of 6-9-week instructional periods.

The name of the instrument was Grade 6 Language Arts—Fourth Quarter Benchmark (Walton County Public Schools, 2004). It is a multiple-choice, 73-items test. The objectives covered were (a) conventions, (b) literary elements, (c) sentence structure, (d) context clues, and (e) vocabulary. Reading passages are also included and measure reading comprehension in a multiple-choice format.

The pre- and posttest scores were collected by the teachers of each class. They used a bubble or shading answer sheet and an electric scantron machine for scoring the tests. The scores were calculated based on a 100-point scale to indicate whether academic gains were made from pre- to posttest. For the purpose of this study, the means and standard deviations were calculated, and an ANOVA was performed to assess statistical significance.

Reliability and Validity

The reliability and validity of the instrument were established through prior use. The instrument was used originally as a benchmark assessment for all sixth-grade language arts students in the county; thus, establishing the reliability of the instrument. Validity of the instrument was established because it was created by a team of teachers and instructional coaches, who were charged with serving as part of a

curriculum and assessment team. Their task was to create benchmark assessments in specific disciplines throughout the curriculum in alignment with the state objectives written by the Georgia Department of Education. The revised Georgia Performance Standards rolled out in 2004. The curriculum teams were established at that time by each county to produce and align curriculum maps in accordance with the objectives affirmed under the Georgia Performance Standards. The committees were also directed to create benchmarks and assessments that were in alignment with these standards. The instrument used for data collection in this study is a former benchmark assessment, which is currently used as an end-of-quarter final exam and, thus, is in compliance with the Georgia Performance Standards.

The participants completed the process by simply being members of the classes. All students, including those with an individual education plan (IEP) or a specific learning plan (SEP), took the pre- and posttest. Students with an IEP were those who qualified for special education services and were part of the regular educational setting under an inclusion model. Under the county's inclusion model, special education students were served through the use of an IEP in the regular classroom setting. There were 21 regular education students in a class with a maximum of seven special education students. A special education teacher, who was in charge of the individual student plans; worked in

the classroom with the regular education teacher. Thus, a class of 28 students was instructed by two teachers. An IEP states special education modifications that the student must receive; thus, the testing situation might be different for special education students. Students with an SEP were those who have repeated a grade or have been targeted, not as special education students, but as students with specific learning needs. These students may have some type of modification that must be implemented by the teacher upon administration of the test. Students took the multiple-choice test by shading answers on a scantron sheet.

Gravetter and Wallnau (2005) wrote that, in an experimental design, the independent variable always consists of two values. These values are the manipulation or treatment group, versus no manipulation or treatment. In the present study, the independent variable was the treatment group was taught using cooperative learning strategies, and the control group received more traditional instruction. The dependent variable is outcome, or the test scores that were compared. Other variables that might influence the study are the difference in the students' learning goals and weekly time factors encountered by the students. Students with an SEP took the tests in modified circumstances. Some took the tests in a smaller learning environment, some had the tests read to them, and some were given extra time for completing the tests, as required by the students' IEP.

The school used a rotating schedule that changes weekly. Students attended period one through period five consecutively during Week 1 of the quarter. During Week 2, the students attended periods two, three, four, five and then one. During Week 3, the students began the day with period three, during Week 4 with period four, and so on. After five weeks, the rotation schedule started over. This rotation schedule is followed by all middle schools in the county; it was implemented to give students the opportunity to attend classes at different times of the day. The fact that students are receiving instruction in language arts at different times of the day each week might be a factor affecting their performance in class and on the tests.

Data Analysis

A ratio scale was used to measure the independent and the dependent variables. Pre- and posttest scores for the independent and dependent variables were collected and analyzed. A ratio scale was used because absolute zero is necessary for determining test scores, and the magnitude of the ratio is necessary to compare academic achievement between the two groups.

Restatement of the Research Questions and Hypotheses

Research Question 1. How does the use of cooperative learning/teaching strategies affect academic achievement on the Georgia Performance Standards in language arts among sixth-grade students?

Null Hypothesis 1. There will be no significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students who were instructed with the use of cooperative learning strategies and those sixth-grade students who were instructed with the use of traditional teaching strategies. H_0: $\mu_1 - \mu_2 = 0$

Alternative Hypothesis 1. There is a significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students who were instructed with the use of cooperative learning strategies and those sixth-grade students who were instructed with the use of traditional teaching strategies. H_a: $\mu_1 - \mu_2 \neq 0$

Research Question 2. How does teaching with the use of cooperative learning strategies affect the academic achievement of sixth-grade students with disabilities on the Georgia Performance Standards test in language arts?

Null Hypothesis 2. There will be no significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students with disabilities who were instructed with the use of cooperative learning strategies and those sixth-grade students with disabilities who were instructed with the use of traditional teaching strategies. H_0: $\mu_1 - \mu_2 = 0$

Alternative Hypothesis 2. There is a significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students with disabilities who were instructed with the use of cooperative learning strategies and those sixth-grade students with disabilities who were instructed with the use of traditional teaching strategies. H_a: $\mu_1 - \mu_2 \neq 0$

Research Question 3. How does teaching with the use of cooperative learning strategies affect the academic achievement of sixth-grade students who are categorized as economically disadvantaged on the Georgia Performance Standards test in language arts?

Null Hypothesis 3. There will be no difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students who were categorized as economically disadvantaged and instructed with the use of cooperative learning strategies and those sixth-grade students who were categorized as economically disadvantaged and instructed with the use of traditional teaching strategies. H_0: $\mu_1 - \mu_2 = 0$

Alternative Hypothesis 3. There is a significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students who were categorized as economically disadvantaged and instructed with the use of cooperative learning strategies and those sixth-grade students

who were categorized as economically disadvantaged and instructed with the use of traditional teaching strategies. H_a: $\mu_1 - \mu_2 \neq 0$

The test scores were obtained from the teachers of the experimental and the control groups. The estimated standard error was calculated and the hypotheses were stated. The alpha was set at the .05 level. An ANOVA was performed on the data, and the null hypotheses were evaluated. The first hypothesis regarding all participants was supported by the data. Therefore, Null Hypothesis 1 was rejected and Alternative Hypothesis 1 was accepted. The second hypothesis regarding students with disabilities was also supported based on limited data. The third hypothesis regarding economically disadvantaged students was not supported by the data. The results of the study are discussed in further detail in chapter 4 of the study. Tables are used to display the results of the data.

Protection of Participants' Rights

There were minimal, if any, risks to the participants. Necessary steps were taken to protect the participants, by following ethical practices. Roberts (2004) wrote, "The ethical issues involved in using human subjects in research primarily deal with the impact on the subjects, confidentiality, coercion, and consent" (p. 30). The location for the data collection was the students' regular language arts classroom; therefore, the subjects were carrying out regular duties in a familiar

setting. This factor eliminated the risk of a threatening or harmful setting. Due to the nature of the study, there were no psychological threats or exposure to harmful situations. The researcher obtained permission from the school administrator to collect and use the data in the study. A data use agreement was signed by both the administrator and the researcher and is included in appendix A of the study. The data use agreement allows the school to release the data to me in a confidential manner thus protecting the participants with discretion.

Once the test scores were obtained from the teachers, student names were removed from the scores to assure student anonymity. Each test score was assigned to a specific number so that the researcher could keep track of the number of test scores. There was no need to see the names of the students at any time, as the raw data was gathered. The school also is not identified by name; only the general area was mentioned in the study so as to protect the privacy of the school, the students, and the staff.

While the study was being conducted, the data were stored at the home of the researcher, in a personal computer, and in the school computer. Once the needed data have been used and the study is complete, the researcher will store the data for 5 years in a personal computer and flash drive. At the end of this period, the data will be destroyed. There is no intrusion upon the daily routine of the

participants. Students are accustomed to taking tests in the regular setting with a scantron format. The researcher will work sensitively with the participants to ensure that they are comfortable with the whole procedure.

Summary

In summary, the purpose of this study was to examine the effects of cooperative learning strategies on academic achievement. The study compared the test scores of two groups of participants, one that received the treatment (i.e., instruction through cooperative learning strategies); the other that received the traditional teaching methods. This chapter explained data collection through normally administered end-of-term testing and data analysis through statistical means (i.e., ANOVA) of the pre- and posttest scores. The results of the study are reported in Chapter 4. Conclusions were drawn based on the findings, and recommendations are offered for practical application and further research in Chapter 5. (IRB Approval Number – 04-25-08-309223).

CHAPTER 4:

RESULTS

Introduction

Cooperative learning strategies involve the use of social skills; thus, students will often have to interact as they are learning. Some researchers believe that the use of cooperative strategies enhances student achievement and should, therefore, be used as a part of the instructional strategies in educational settings (Bilgin, 2006; Johnson, 2001; Stevens, 2003). The present study was conducted to investigate the effects of cooperative learning strategies on student achievement, as compared to traditional teaching strategies.

In this study, a nonequivalent control-group design with pre- and posttesting was used: One teacher taught a unit using cooperative learning strategies, whereas another teacher taught the unit with the use of traditional strategies. Test scores were collected, and a repeated analysis of variance (ANOVA) was used as the statistical test. In this chapter, each research question and hypothesis is addressed, and the statistical results are reported. Tables and narrative descriptions are used to present data and findings. The chapter concludes with a summary of the results and conclusions based on the findings.

Findings

This chapter reports the research findings of the study in which cooperative learning strategies and traditional teaching strategies were examined. One main research question and the two subquestions provided direction for the study, which was designed to examine the effects of cooperative and learning teaching strategies as compared to traditional teaching strategies. A sixth-grade language arts unit was developed in alignment with the Georgia Performance Standards. The sample for the study was derived from two teams of sixth-grade language arts students who attend a middle school in a northeastern suburb of Atlanta, GA.

Two teachers ran four labs for the study. The teacher of the control group taught the unit with traditional strategies. This teacher dispensed information, and students worked independently to complete the assignments related to the unit. The teacher of the experimental group used cooperative learning strategies. Students interacted and used social skills to complete the assignments. Each teacher administered a pretest at the beginning of the unit and a posttest at the end of the unit. The main research question involved all of the sixth-grade students in the sample. Data were collected from the teachers who ran the labs in their classrooms, one being a traditional classroom and the other a setting for cooperative learning.

The collected data comprised three categories: The first category involved all sixth-grade language arts students in the sample. The other two categories provided information on two subgroups in the sample, namely, students who were economically disadvantaged and students with disabilities. As the data were being prepared for statistical testing, it became apparent that the sample size of one of the subgroups—students with disabilities—was unexpectedly small. Therefore, formal statistical testing could not be used to examine the data for this sub sample further. A repeated measures analysis of variance (ANOVA) was used to compute the data and evaluate the remainder of the hypotheses. Gravetter and Wallnau (2005) stated that a repeated measures ANOVA is appropriate for implementation when the same participants take part in all treatment conditions. The repeated measures ANOVA evaluates change over time.

Data Collection

The research questions were designed to investigate the effects of cooperative learning strategies, as compared to traditional strategies, on academic achievement. The goal of the data collection was, therefore, to demonstrate whether cooperative learning strategies would lead to better student achievement than traditional teaching and learning strategies.

Research Questions

How does the use of cooperative learning/teaching strategies affect academic achievement on the Georgia Performance Standards in language arts among sixth-grade students?

H_0: There will be no significant difference between the use of cooperative learning/teaching strategies and the use of traditional teaching strategies on students' academic achievement.

H_1: There is a significant difference between the use of cooperative learning/teaching strategies and the use of traditional teaching strategies on students' academic achievement.

Table 1 shows the descriptive statistics for all students. At pretest and posttest, the cooperative learning group had a higher average than the traditional group. The mean for both groups increased from pretest to posttest. However, the cooperative learning group made greater gains from pretest to posttest than the traditional group. A Box's test was performed. The results were nonsignificant, which suggests that the assumption of equal variances was not violated (df_1 = 3, df_2 = 1476717.9, F =1.6, p = .186). Table 2 illustrates the data for the repeated measures ANOVA. The overall change from pretest to posttest was significant. The interaction term was statically significant. The cooperative learning group changed more from pretest to posttest than the traditional group.

Table 1

Descriptive Statistics for All Students (N = 185)

	Group	Mean	*SD*	*n*
Pretest Achievement	Traditional Group	51.29	20.21	99
	Cooperative Learning	55.05	19.40	86
	Total	53.04	19.87	185
Posttest Achievement	Traditional Group	60.17	19.11	99
	Cooperative Learning	68.36	21.06	86
	Total	63.97	20.40	185

Table 2

Repeated Measures Tests for All Students (N = 185)

Source	Sum of Squares	*df*	Mean Square	*F*	Sig.
Time	11321.36	1	11321.36	129.251	.000
Time x Condition	450.26	1	450.26	5.141	.025
Error (Time)	16029.34	183	87.59		

Table 3 shows individual between-group comparisons at pre- and posttest. There was no significant difference between cooperative learning and traditional groups at the pretest. However, there was a significant difference between cooperative and traditional groups at the posttest. Table 4 shows individual comparisons over time by group. Both groups had a significant increase from pre- to posttest.

Table 3

Individual Comparisons Between Groups at Pretest and Posttest for All Participants (N = 185)

Time	(I) Group	(J) Group	Mean Difference (I-J)	Sig.
Pretest	Cooperative Learning	Traditional Strategy	3.76	.200
Posttest	Cooperative Learning	Traditional Strategy	8.18	.006

Note. I = cooperative learning group. J = traditionally instructed group.

Table 4

Individual Comparisons Pre- to Posttest by Group for All Participants

Group	(I) Time	(J) Time	Mean Difference (I-J)	Sig.
Traditional Strategy	Pretest	Posttest	-8.87	.000
Cooperative Learning	Pretest	Posttest	-13.302	.000

Note. I = cooperative learning group. J = traditionally instructed group.

The data were evaluated for two subsamples: students with disabilities and economically disadvantaged students. The second research question focused on the effects of cooperative learning strategies on academic achievement in students with disabilities.

Subquestion A. How does the use of cooperative learning/teaching strategies affect academic achievement on the Georgia Performance Standards in language arts among sixth-grade students with disabilities?

H_0: There will be no significant difference between the use of cooperative learning/teaching strategies and the use of traditional teaching strategies on academic achievement among students with disabilities.

H_1: There is a significant difference between the use of cooperative learning/teaching strategies and the use of traditional teaching strategies on academic achievement among students with disabilities.

Table 5 illustrates the descriptive statistics for students with disabilities. At pretest the traditional group scored slightly higher than the cooperative learning group. However at posttest, the cooperative learning group scored higher than the traditional group. The cooperative learning group had a slightly greater increase from pretest to posttest. These data were based on a limited sample size (n = 4). As a result, the hypothesis could be statistically tested.

Table 5

*Descriptive Statistics For Students with Disabilities**

	Group	Mean	*SD*	*n*
Pretest Achievement	Traditional Strategy	43.50	24.78	2
	Cooperative Learning	38.00	5.65	2
	Total	40.75	14.99	4
Posttest Achievement	Traditional Strategy	50.00	33.94	2
	Cooperative Learning	51.00	4.24	2
	Total	50.50	19.75	4

Note. *n = 4.

The third research question and hypothesis were designed to investigate the effects of cooperative learning strategies on academic achievement in students who are labeled economically disadvantaged.

Subquestion B. How does the use of cooperative learning/teaching strategies affect academic achievement on the Georgia Performance Standards in language arts among sixth-grade students who are categorized as economically disadvantaged?

H_0: There will be no significant difference between the use of cooperative learning/teaching strategies and the use of traditional teaching strategies on academic achievement among students who are economically disadvantaged.

H_1: There is a significant difference between the use of cooperative learning/teaching strategies and the use of traditional teaching strategies on academic achievement among students who are economically disadvantaged.

Table 6 shows the descriptive statistics for students who are categorized as economically disadvantaged. At pretest, the traditional group had a lower mean than the cooperative learning group. At posttest, the traditional group, again, had a lower mean than the cooperative group. Both groups showed an increase from pretest to posttest; however, one group—the cooperative learning group—consistently scored higher than the group taught with traditional strategies.

Table 6

*Descriptive Statistics For Economically Disadvantaged Students**

	Group	Mean	*SD*	*n*
Pretest Achievement	Traditional Strategy	44.62	17.27	29
	Cooperative Learning	51.33	21.12	33
	Total	48.19	19.55	62
Posttest Achievement	Traditional Strategy	54.75	16.94	29
	Cooperative Learning	61.06	23.45	33
	Total	58.11	20.74	62

Note. *n = 62.

A Box's M test was performed to test the assumption of equal variances. It showed that the variance of traditional strategies and cooperative learning strategies was equal. The Box's test was nonsignificant (F = .974, df_1 = 3, df_2 = 16644806.127, p =.186.)

Table 7 illustrates the findings of an F test conducted for economically disadvantaged students. The F test for repeated measure was statistically significant. The F test for interaction was not significant. Therefore, the change from pretest to posttest did not differ by group. The increase for the cooperative group was not larger than that for the traditionally taught group.

Table 7

*Repeated Measures Tests for Economically Disadvantaged Students**

Source	Sum of Squares	*df*	Mean Square	*F*	Sig.
Time	30 45.62	1	3045.62	33.67	.000
Time x Condition	1.30	1	1.30	.01	.90
Error (time)	5426.99	60	90.45		

Note. n = 62.

Tables 8 and 9 illustrate individual comparisons. Individually, both groups of economically disadvantaged students showed a significant increase from pretest to posttest. However, the difference between the traditional and the cooperative learning groups at pretest and at posttest was not significant.

Table 8

Individual Comparisons from Pretest to Posttest by Group for Economically Disadvantaged Students (n = 62)

Group	(I) Time	(J) Time	Mean Difference (I-J)	Sig.
Traditional Strategy	Pretest	Posttest	-10.13	.000
Cooperative Learning	Pretest	Posttest	-9.72	.000

Note. I = cooperative learning group. J = traditionally instructed group.

Table 9

Individual Comparisons Between Groups at Pretest and Posttest for Economically Disadvantaged Students (n = 62)

Time	(I) Group	(J) Group	Mean Difference (I-J)	Sig.
Pretest	Cooperative Learning	Traditional Strategy	6.71	.180
Posttest	Cooperative Learning	Traditional Strategy	6.30	.236

Note. I = cooperative learning group. J = traditionally instructed group.

Discussion

The first hypothesis regarding all participants was supported by the data. While both the traditional group and the cooperative learning group showed an increase in achievement, the cooperative learning groups' increase was greater than that of the traditional group. Therefore, Null Hypothesis 1 was rejected and Alternative Hypothesis 1 was accepted, stating that there was a significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students who were instructed with the use of cooperative learning strategies and those sixth-grade students who were instructed with the use of traditional teaching strategies. (H_a: $\mu_1 - \mu_2 \neq 0$)

The second hypothesis regarding students with disabilities was also supported based on limited data. Both the traditional and the

cooperative groups showed an increase from pretest to posttest, and the scores for the cooperative learning group increased by a wider margin. However, statistical hypothesis testing could not be performed because of the limited size of the sub sample (n = 4).

The third hypothesis regarding economically disadvantaged students was not supported by the data. The data showed an increase in scores from pretest to posttest in both the cooperative learning group and the traditional group. The effect of the treatment over time was not significant. The increase for the cooperative learning group was no better than the increase for the traditional group. Null Hypothesis 3 was, therefore, accepted, stating that there was no significant difference between the academic achievement, as shown by the test scores on the Georgia Performance Standards test in language arts, of sixth-grade students who were categorized as economically disadvantaged and instructed with the use of cooperative learning strategies and those sixth-grade students who were categorized as economically disadvantaged and instructed with the use of traditional teaching strategies. (H_0: $\mu_1 - \mu_2 = 0$)

This study showed that achievement gains were made by students in both the traditional and the cooperative learning groups. The test scores were typically higher in the cooperative learning group, both at pretest and at posttest. However, the key consideration for this study

was that the achievement gains were significantly higher for the cooperative learning group. The economically disadvantaged group is the only subcategory that did not show a statistically significant increase in scores over the traditionally taught group.

The present study revealed that all groups made gains. It also revealed that the traditional group typically scored higher than the cooperative learning group. This could possibly be due to the makeup of the sample. Because of scheduling and teacher certification, the traditional group included some gifted students, whereas the cooperative learning group had no gifted students.

Conclusions

The findings showed that achievement gains were made as scores improved from pretest to posttest for both the traditional and the cooperative learning groups, as expected. However, the study also revealed that the cooperative learning group had a greater increase in tests scores from pretest to posttest than the traditional group. This increase in test scores was statistically significant and attributable to the treatment, specifically, the use of cooperative learning strategies.

Among the disabled students, the data revealed that there was an increase in achievement from pretest to posttest in both groups. The data also revealed that the cooperative learning group increased their scores

more than the traditional group. However, the smallness of the sample did not lend itself to statistical hypothesis testing for this subgroup.

With economically disadvantaged students, the study revealed that the cooperative learning group showed an increase in achievement from pretest to posttest that was statically significant. Students in the traditional group also made gains that were statistically significant. However, a comparison of the increase in test scores between the two groups showed that the increase of the cooperative learning group was not measurably better than that of the traditional group. The difference between the two groups' achievement scores was not statistically significant.

The study revealed that the use of cooperative learning strategies had a measurable positive impact on student achievement with sixth-grade language arts students as academic achievement gains were reported. While all groups showed achievement gains, the cooperative learning groups showed more gains, overall, than the traditionally instructed groups.

CHAPTER 5:

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The present quasi-experimental quantitative study was designed to investigate the outcome of the use of cooperative learning strategies as compared to traditional teaching strategies and the effects of these strategies on academic achievement in sixth-grade language arts students. The findings reveal that the use of cooperative learning strategies had a positive impact on student achievement with sixth-grade language arts students. In this study, all groups showed gains in achievement; however, the cooperative learning groups showed greater gains than the students in the traditional group. The present chapter summarizes the study, then, addresses the interpretation of findings and implications for social change. Recommendations for action and further study are discussed, and the chapter concludes with the outcome that the use of cooperative learning strategies had a positive effect on student achievement.

Summary

Problem-solving and higher-order thinking skills are integral traits needed by citizens in the modern world (Hargreaves, 2003). Educators constantly review teaching methods to determine the most successful types of delivery so that problem solving and higher-order thinking can

develop in their students (Buffum & Hinman, 2006). Some investigators argued that active learning in which social interaction between students is encouraged will foster higher-order thinking and problem solving and, thereby, enhance academic achievement (Bilgin, 2006; Johnson, 2001; Stevens, 2003).

Many researchers reported that the use of cooperative learning strategies promoted higher-order thinking and problem-solving abilities in students (Brown, 2002; Palincsar & Herrenkol, 2002). These researchers also found that the use of cooperative learning strategies enhanced academic achievement more than the traditional teacher-centered strategies of lecture and note taking. This study was designed to investigate the effects of cooperative learning and teaching strategies, as compared to traditional strategies, on students' performance in sixth-grade language arts.

A quantitative method was selected for the study. A nonequivalent control group design with pre- and posttesting was used. A sampling procedure was selected that allowed the use of a convenience sample; That is, participants in the study were based on availability (Creswell, 2003). The rationale for selecting convenience sampling was the availability of naturally formed groups. This design was selected because random sampling did not occur and a pre- and posttest was administered.

A treatment was administered to the experimental group only. Two sixth-grade teachers used their language arts classrooms as a laboratory for the study: A pretest was administered by the teachers. A unit was taught in which one teacher implemented traditional teaching strategies while the other teacher employed cooperative learning strategies. Tests were scored by the teachers, and the data were collected and analyzed by the researcher. A repeated analysis of variance (ANOVA) was used as the statistical test. Data were divided into three groups for analysis. Data from the entire sample was used as the first group. For the second and third group, data were categorized for students with disabilities and students who were economically disadvantaged.

The findings revealed, as expected, that both groups—the cooperative learning and the traditional group—made progress over time, that is, both attained an increase in scores from pretest to posttest. However, the increase for the cooperative learning group was significantly greater than the increase for the traditionally taught group. Among disabled students both groups, the cooperative learning group and the traditional group, increased as well from pretest to posttest, and the gains made by the cooperative learning group were statistically significant. However, the sample was unexpectedly limited in number and may, therefore, not be reliable. For the economically disadvantaged groups, gains were also recorded. However, the change from pretest to

posttest was not significant for either the cooperative learning or the traditional group. The results of this study raise more questions and point out the need for additional research into the implementation of cooperative learning versus traditional strategies in relation to academic achievement, particularly with respect to economically disadvantaged students and those with learning disabilities.

Interpretation of Findings

The results of the study showed that both groups made gains in scores from pretest to posttest. Although the cooperative learning group had a consistently higher average both at pretest and at posttest, the gains achieved by the traditionally taught group was also significantly greater from pretest to posttest. The statistically significant difference in achievement gains between the two groups indicates that the use of the treatment had an impact on the scores, or that cooperative learning strategies boosted student achievement in language arts.

In the subgroup of students with identified disabilities, the data revealed that both groups increased in scores from pretest to posttest. In this subsample, the cooperative group showed greater gains in test scores than the traditional group. Although the gains noted were statistically significant, the very limited sample (n = 4) did not lend itself to further statistical testing of the null hypothesis.

In the subgroup labeled economically disadvantaged, the data revealed that both groups the cooperative learning group and the traditional group, showed gains in scores from pretest to posttest. A repeated measures test revealed that the increase from pretest to posttest was significant for both groups when the condition was ignored. However, the repeated measures test for condition was not statistically significant for the cooperative learning group.

Many researchers found that the use of cooperative learning techniques produced gains in academic achievement. Some researchers reported findings similar to the present study, in which the use of cooperative learning strategies increased student achievement measurably more than traditional strategies (Riley & Anderson, 2006; Slavin, 1999; Stevens 2003). Adams (2000), Brown (2002), and Siegel (2005) also reported findings in which the use of cooperative learning strategies showed an increase in academic achievement. Experts such as Bilgin (2006), Johnson (2001), and Stevens (2003) also reported findings in which gains in academic achievement were noted with the use of cooperative learning strategies. These findings are in alignment with the present study which found an increase in academic achievement with the use of cooperative learning strategies.

Implications for Social Change

As students become higher-order thinkers and problem solvers, they will be better prepared to meet the demands of today's world as they enter adulthood. Educational strategies that meet the needs of the students' diverse learning styles will help to ensure that students are learning to develop higher-order thinking skills and problem-solving abilities. Positive social change will occur as the students of today become the leaders of tomorrow, especially if they are prepared to meet the demands of the new global economy.

In order for cooperative learning strategies to be properly implemented in a variety of educational settings and for diverse learners, teachers must be properly trained. It is also vital that appropriate preparation time and materials be provided for teachers to ensure that proper implementation of the teaching strategies can occur. Some researchers reported that many teachers feel that professional training is often a waste of time (Norton, 2001; Scheidler, 1994). However, if evidence of the positive impact of cooperative learning is provided to teachers along with proper training and preparation time, more teachers might welcome such training and become successful users of cooperative learning and teaching strategies.

Slavin (1999) argued that the use of cooperative learning strategies failed because of inappropriate teacher training and insufficient

preparation time. Conversely, other researchers intimated in their studies that the use of cooperative learning strategies might have been so successful because teachers had been properly trained, given adequate preparation time, and were provided with appropriate tools for implementing the strategies (Adams, 2000; Siegel, 2005; Slavin, 1999). It stands to reason that, with appropriate training, teachers will be successful in implementing social learning strategies that tend to produce higher-order thinkers and problem solvers. Positive social change will occur when students are properly equipped to live up to the demands of their world as they become adults, enter the workforce, and assume leadership roles in society.

Recommendations for Action

Educational systems constantly look for teaching methods that meet the diverse learning styles and needs of today's students. Administrators and teachers alike go through various trainings each year to investigate and implement different strategies and styles to ensure that students reach optimal academic achievement. Many systems adopt programs and require teachers to follow these specific programs in their daily instruction. The results of this study revealed that the use of cooperative learning strategies had a positive effect on academic achievement. While all students showed gains in test scores from pretest to posttest, the cooperative learning groups achieved significantly better

tests scores than did traditionally taught groups with the exception of the subsample labeled economically disadvantaged. For this subgroup, the achievement gains showed no significant difference between traditionally taught students versus cooperatively learning students. This study was able to report findings similar to those of other studies in which the use of cooperative learning strategies promoted academic achievement (Adams 2000; Siegel, 2005; Stevens, 2003).

As educational systems search for teaching methods to promote academic achievement among students, they should pay attention to the results of the present study, as well as to other similar studies that are in direct alignment with the present study. Many educational programs are adopted yearly by school systems, and these programs should be in direct alignment with findings of studies such as this one. The results may be disseminated through presentations to curriculum personnel and instructional coaches. The results may also be reported in educational journals and other professional literature.

Recommendations for Further Study

The findings of the present study indicated that the use of cooperative learning strategies enhanced academic achievement in sixth-grade language arts students. Further study on the topic is necessary for educators and researchers to gain a better understanding of how the use of cooperative learning strategies affects student achievement. The

present study was bounded by the sixth-grade language arts curriculum and two teams of middle school students. Further study could be done at other grade levels as well as in other academic disciplines regarding the use of cooperative learning strategies.

The present study could not appropriately test the hypothesis regarding the subgroup of students with disabilities because of small sample size. Further study could actively target this subgroup to determine whether the use of cooperative learning strategies has a positive effect on students with disabilities. The present study showed that students labeled economically disadvantaged made gains, but that the gains made by the cooperative learning group were no greater than those achieved by the traditionally taught group. Future studies should address the issue of students who are labeled economically disadvantaged to gain a better understanding of the results achieved in this study, which showed no difference in the gains achieved by the two teaching methods.

Lastly, future studies should follow up on issues raised by Webb, Nemer, and Ing (2006) and Yecke (2004), who reported that the use of cooperative learning strategies did not have a significant effect upon student achievement. Some critics argued that the use of cooperative learning strategies might even be detrimental to student achievement (Webb, 1994; Yecke, 2004). Further study is necessary to determine how

these results might have occurred and whether they hold in subsequent research. More research on this topic might open doors for more educators who are still reluctant to use cooperative learning strategies.

Conclusions

The findings showed that achievement gains were made as scores improved from pretest to posttest for both the traditional and the cooperative learning groups, as expected. However, the increase in tests scores from pretest to posttest was significantly greater in the cooperative learning group than in the traditionally taught group. This data is displayed in Appendix B (Figure 1). This increase is attributable to the treatment.

Among the disabled students, the data revealed that there was an increase in achievement from pretest to posttest in both the cooperative learning group and the traditionally taught group. The data also revealed that the cooperative learning group increased their scores more than the traditional group. However, the smallness of the sample did not lend itself to statistical hypothesis testing for this subgroup.

With economically disadvantaged students, the study revealed that both groups showed a statistically significant increase in achievement from pretest to posttest. However, the cooperative group did not perform significantly better than the traditionally taught group. This data is displayed in Appendix C (Figure 2).

In sum, the study revealed that the use of cooperative learning strategies had a positive impact on student achievement with sixth-grade language arts students. Although all groups showed achievement gains from pretest to posttest, the cooperative learning groups showed greater overall gains than the traditionally taught groups. Proper implementation and teacher training will ensure the success of appropriate cooperative learning strategies within the classroom environment. As teachers become more efficient at implementation of cooperative learning strategies, students will develop higher order thinking and problem solving skills. Thus, students will be better prepared to function effectively in a global economy. The possession of higher order thinking and problem solving abilities will promote social change as students are prepared to contribute to an ever changing world.

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APPENDIX A

DATA USE AGREEMENT

This Data Use Agreement ("Agreement"), effective as of April 15, 2008, is entered into by and between Susan Queen and Bridget Lynch. The purpose of this Agreement is to provide Data Recipient with access to a Limited Data Set ("LDS") for use in research in accord with the HIPAA and FERPA Regulations.

Definitions. Unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the "HIPAA Regulations" codified at Title 45 parts 160 through 164 of the United States Code of Federal Regulations, as amended from time to time.

Preparation of the LDS. Data Provider shall prepare and furnish to Data Recipient a LDS in accord with any applicable HIPAA or FERPA Regulations.

Data Fields in the LDS. No direct identifiers such as names may be included in the Limited Data Set (LDS). In preparing the LDS, Data Provider or shall include the data fields specified as follows, which are the minimum necessary to accomplish the research

Responsibilities of Data Recipient. Data Recipient agrees to:

Use or disclose the LDS only as permitted by this Agreement or as required by law;

Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;

Report to Data Provider any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law;

Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Data Recipient under this Agreement; and

Not use the information in the LDS to identify or contact the individuals who are data subjects.

Permitted Uses and Disclosures of the LDS. Data Recipient may use and/or disclose the LDS for its Research activities only.

Term and Termination

Term. The term of this Agreement shall commence as of the Effective Date and shall continue for so long as Data Recipient retains the LDS, unless sooner terminated as set forth in this Agreement.

Termination by Data Recipient. Data Recipient may terminate this agreement at any time by notifying the Data Provider and returning or destroying the LDS.

Termination by Data Provider. Data Provider may terminate this agreement at any time by providing thirty (30) days prior written notice to Data Recipient.

For Breach. Data Provider shall provide written notice to Data Recipient within ten (10) days of any determination that Data Recipient has breached a material term of this Agreement. Data Provider shall afford Data Recipient an opportunity to cure said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for cure within thirty (30) days shall be grounds for the immediate termination of this Agreement by Data Provider.

Effect of Termination. Sections 1, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.

Miscellaneous

Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.

Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.

No Third Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.

Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

Headings. The headings and other captions in this Agreement are for convenience and reference only and shall not be used in interpreting, construing or enforcing any of the provisions of this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

DATA PROVIDER

Signed: Bridget A. Lynch

Print Name: Bridget Lynch

Print Title: Principal

DATA RECIPIENT

Signed: Susan E. Queen

Print Name: Susan Queen

Print Title: Teacher

APPENDIX B

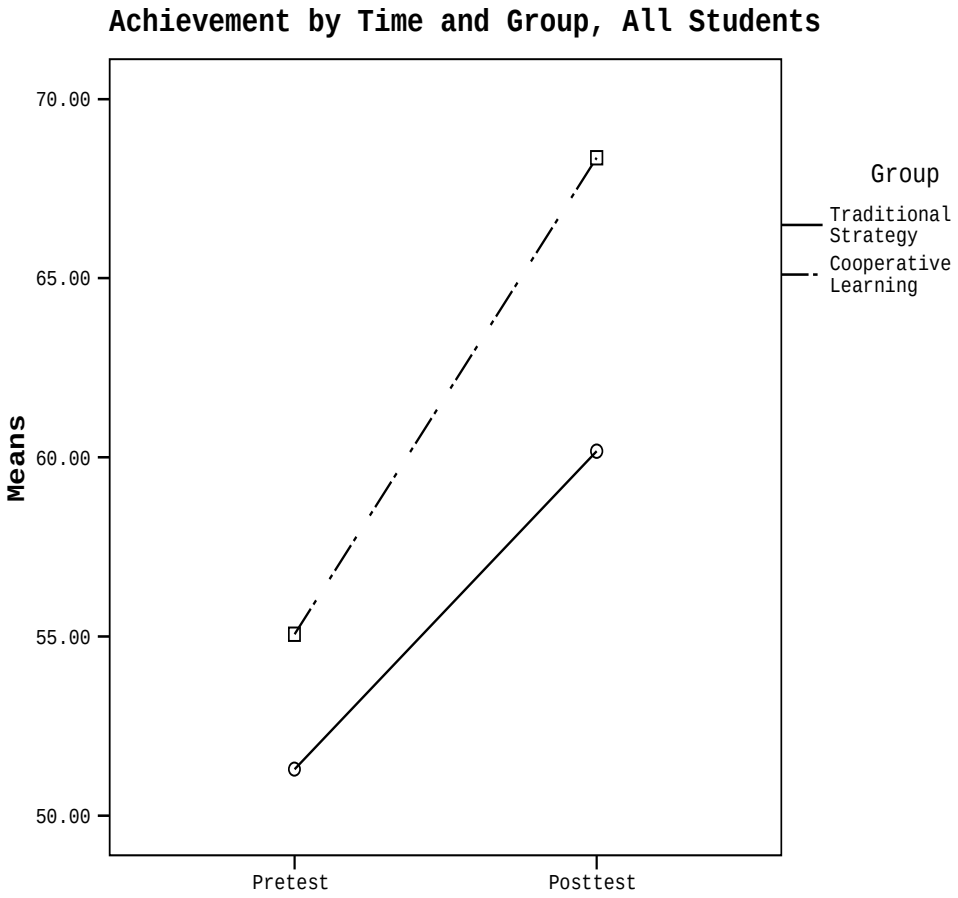

Figure 1. The cooperative learning group showed a significantly greater increase in scores from pretest to posttest than the traditionally taught group.

APPENDIX C

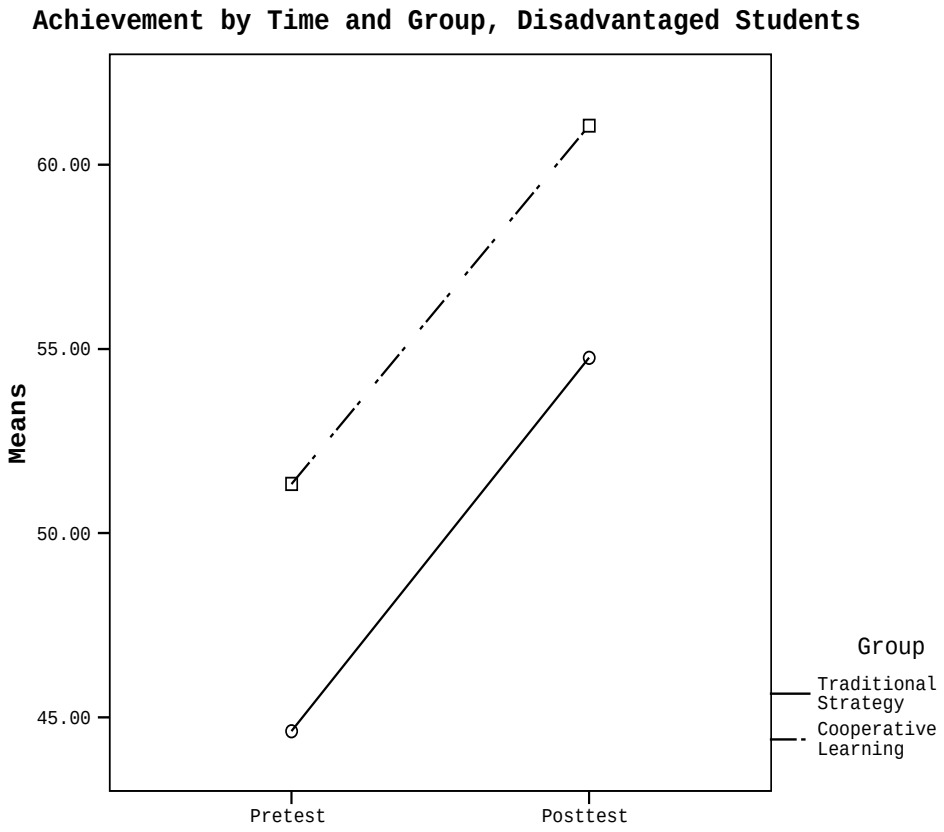

Figure 2. Both subgroups of economically disadvantaged students made significant gains from pretest to posttest; but the cooperative group did no better than the traditionally taught group.

APPENDIX D

INSTRUCTIONAL STRATEGIES

Instructional Strategies

The teachers who participated in this study used two different instructional strategies. One teacher used traditional strategies that consisted of teacher lecture and independent student work. The second teacher used cooperative learning strategies in which the students were actively involved with each other as they learned. The cooperative learning teacher used some strategies based on structures by Spencer Kagan and others that are outlined in *Learning Focused Schools*. Both teachers administered a pretest and, then, taught a unit based on the Georgia sixth-grade Language Arts Standards. The teachers used the novel *A Wrinkle in Time* to drive the unit. As they taught this book the standards that the teachers emphasized were conventions, topic sentences, ending sentences, reference materials, context clues, vocabulary, and reading comprehension. A posttest was administered upon completion of the unit. Teachers collected data and presented it to the researcher.

Traditional Strategies

Teacher lecture

Independent work completed by students

Worksheets and traditional questioning

Cooperative Strategies

Jigsaw

Thin-Pair-Share

Three-Step Interview

Round-Robin Brainstorming

Team Pairs

Numbered Heads

Walton County Public Schools

Walton County Public Schools granted permission for the present study in October, 2007. Walton County Public Schools approved the implementation of this study. However, this approval is not an endorsement of the design of the research or the methodology used. Walton County Public Schools does not endorse the findings of this study.

CURRICULUM VITAE

SUSAN E. QUEEN
488 Cedar Ridge Road — Monroe Georgia, 30655
squeen@monroeaccess.net

CERTIFICATION

State of Georgia Middle School certified with concentrations in Language Arts, Science, and Social Studies.

EDUCATION

PhD, Education, 2008
Walden University, Minneapolis, MN

Specialist in Middle School Education, 1992
University of Georgia: Athens, GA

MS, Middle School Education, 1988
University of Georgia, Athens, GA

BS, Middle School Education, 1983
Georgia College: Milledgeville, GA

TEACHING EXPERIENCE

High School, 1983 - 1984
- Teacher, 10th-grade Basic Skills class in math and reading

Elementary School, 1984 - 2004
- Fourth- and fifth-grade teacher
- Grade level chairperson
- Student support team chairperson
- Text book adoption representative
- Leadership team member
- Vertical team representative for writing curriculum maps
- School improvement team member and writer

Middle School: 2004 - to date
- Curriculum mapping representative
- Student support team representative

Assessment-for-learning team representative
Team leader for Pod 602

RELATED EDUCATIONAL EXPERIENCE

National Board Certification, 2003

PROFESSIONAL MEMBERSHIP

Member of Delta Kappa Gamma National Honor Society for Women Educators

OTHER ACTIVITIES

Church Affiliation
Staff Member
Pianists and Keyboardist
Praise Team Leader
Worship Coordinator