

THE IMPACT OF COOPERATIVE LEARNING ON STUDENT ACHIEVEMENT

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The Impact of Cooperative Learning on Student Achievement

A Field Study Report

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Of

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Educational Specialist

Maureen A. Barefield

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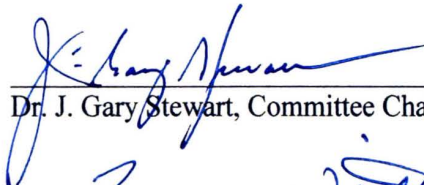
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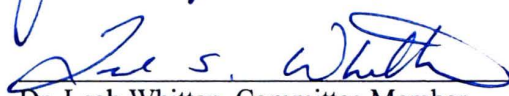
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DEDICATION

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ABSTRACT

MAUREEN A. BAREFIELD. The Impact of Cooperative Learning on Student Achievement (Under the direction of DR. GARY STEWART).

The purpose of this study is to evaluate the impact of cooperative learning on student achievement in the particular content areas of reading and math. Researching the answer to this question could solidify that using cooperative learning centers in schools is an effective worthwhile approach to enhancing student achievement. Teachers would be given an alternative to traditional whole group type classes and shift their focus to a method of delivering instruction where they turn into a guide through academia instead of a lecturer.

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CHAPTER I

Introduction

Statement of the Problem

The objective of this research was to answer the question of whether or not cooperative learning impacts student achievement.

Purpose of the Study

The purpose of this study was to evaluate the impact of cooperative learning (independent variable) on student achievement.(dependent variable) in the particular content areas of Reading and Mathematics. Researching the answer to this question could solidify that using cooperative learning centers in schools is an effective and worthwhile approach to enhancing student achievement. Teachers would be given an alternative to traditional whole-group type classes and shift their focus to a method of delivering instruction where they turn into a guide through academia instead of a lecturer.

Significance of the Study

Over the years, studies have been conducted on the usefulness of cooperative learning centers in the classroom. Classroom teachers, administrators, and school districts know the importance of using research based practices in the classroom that raise student achievement. Cooperative learning is one technique that has been researched by many individuals with positive results. Numerous studies have revealed the positive impact that cooperative learning has on student attainment of mandated state educational standards. Since best practices should be used in the classroom setting, then cooperative

learning, which is so commonly acknowledged and accepted, could close the gap that school systems are so desperately trying to do on a continual basis (Slavin, 1978).

Research Questions

1. Does cooperative learning have an impact on student achievement in Mathematics as measured on the TerraNova?
2. Does cooperative learning have an impact on student achievement in Reading as measured on the TerraNova?
3. Does cooperative learning have an impact on male student achievement in Mathematics as measured on the TerraNova?
4. Does cooperative learning have an impact on female student achievement in Mathematics as measured on the TerraNova?

Hypotheses

1. There will be no statistically significant difference in TerraNova Mathematics scores of fifth graders who participated in cooperative learning as compared to those who did not participate.
2. There will be no statistically significant difference in TerraNova Reading scores of fifth graders who participated in cooperative learning as compared to those who did not participate.
3. There will be no statistically significant difference between fifth grade male students' TerraNova Mathematics scores who participated in cooperative learning as compared to male students who did not participate.

4. There will be no statistically significant difference between fifth grade female students' Terra Nova math scores who participated in cooperative learning as compared to female students who did not participate.

Limitations

The following have been identified or suggested as limitations of this study:

1. This study could not discover whether or not the teacher has had any professional development in this area.
2. The study is not looking at the skill level or educational background of each teacher within selected classrooms.
3. The sample size of the study is very small limiting the amount of data being analyzed.
4. The timeframe in which the study is taking place is very restricted in nature.
5. This study is only looking at one grade level and school, which makes generalizations impossible outside of the control and treatment groups.

Assumptions

The following assumptions are appropriate to this particular study:

1. All students will do their best on the Terra Nova Standardized Test.
2. It is assumed that all teachers are competent in all content areas within the grade level that they are currently teaching at the time of this study.
3. The standardized test will be administered the same for all students.

Definition of Terms

1. **Cooperative Learning** - Working collectively in small groups to assist each other in learning or to complete an assignment.
2. **TerraNova 3**- Standardized norm-referenced achievement test developed by CTB/McGraw-Hill.
3. **Elementary School**- Includes pre-kindergarten through fifth grade.
4. **Differentiated Instruction**- Instructional practices based on the needs of the individual student.
5. **Heterogeneous**- Grouping students by mixed abilities.
6. **National Curve Equivalent (NCE)** - Ranges from 1 to 99 and coincides with the national percentile scale. NCE's from different groups of students on the same assessment or assessment battery can be compared by averaging.

CHAPTER II

Review of the Literature

Introduction

Typically, in a conventional classroom setting, teachers are given a classroom of students with diverse needs. Teachers work towards a common goal of seeing their students advance in all academic areas. Teachers are tasked with addressing different student needs by implementing strategies in their classroom that will meet the needs of the individual learner while at the same time being fair to all students so they will be successful. Working cooperatively and collaboratively amongst a student population in a classroom is a method of instruction that could be beneficial.

Historical Perspective

Dewey (1897) declared that a child will react in ways in which they are perceived by a group. The interactions a child has with others will determine his or her own reactions to the stimuli. Dewey (1897) believed that children are embedded with instincts and natural tendencies. He felt that students should be developing social skills alongside cognitive skills in school. His theory of education proposed students as active participants in their journey through academia rather than passive recipients of information. The teacher was not the sage on the stage, but the guide on the side. Dewey (1897) was concerned with the process more than the product of learning. He felt that children have the potential for great things if their natural tendencies are developed positively. Additionally, Dewey (1897) believed that education cannot be either social or

psychological, but interconnected together. The one is dependent on the other for optimal growth.

Triplett (1898) was attracted to the concept of how groups affected individual performance. Triplett studied cyclists riding alone and in groups. He found that cyclists rode in a more rapid manner when paired against others in competition. Triplett suggested that this reaction was mechanical. The riders that were behind others were sheltered from elements of nature such as wind or were pulled by the vacuum created by the other riders. He went on to suggest that the riders were encouraged by other cyclists that paced them and this could have contributed to them riding faster in competitive racing. Triplett theorized the dynamogenic factor, which is when individuals are in the company of others, they will be stimulated by their own competitive spirit thus releasing nervous energy from within them. This nervous energy will dissipate leaving the individual to be inspired to do better (Triplett, 1898).

In another experiment, Triplett (1898), tested children turning fishing reels. Triplett built a rod and reel that allowed him to count how many times an individual turned the apparatus. This experiment tested individuals alone and working with others. He found that the children that were working with others reeled at a quicker pace than those that were alone. Triplett assumed that children in the presence of others doing the same activity were motivated to reel faster just by merely the sight of another child completing the same activity. On the same note, he proposed that the children's competitive instinct was exposed by other children reeling allowing the children to reel at a faster rate. These observations by Triplett led to the birth of the social facilitation

theory that says that the very presence of others has an impact on how an individual performs. This theory looks at how individual performance changes when around others versus when the individual is alone (Aiello & Douthitt, 2001).

A social psychologist, Floyd Allport, is credited in establishing the term social facilitation. In 1920, he conducted research in the area of external influences on individual performance. He wanted to design an experiment in which individual competition was not a factor. In his experiment, the participants were told to try not to compare themselves to others and not to think of the activity as a competition. His participants were involved in activities from word association to the creation of arguments to written passages while in groups and by themselves. The results of his experiment revealed that, when in groups, individuals were able to compile a larger amount of word associations and they were able to construct larger amounts of arguments compared to completing these tasks alone. However, Allport reported that the quality of the arguments was substantially decreased when working in a group setting. He concluded that when individuals are distracted, their performance decreased (Aiello & Douthitt, 2001). On the contrary, in 1904 Meumann, a German educator, believed that when individuals are in a group setting that their performance increased due to distraction and therefore to compensate they worked harder at the given task. He found that when students worked by themselves their performance was less than favorable on tasks involving Mathematics and memory than when they worked with others (Strauss, 2002).

Gates (1924) conducted a study on the effects of individual performance when observed by an audience. This deviated from the experiment of Allport in 1920 when

individuals were placed in groups working together and individual settings (Aiello & Douthitt, 2001). Gates found that when individuals with a higher skill level were observed, their performance was better than compared to those with lower aptitudes. When lower skill ability performers were placed in a solitary setting, except for the observer, their performance was better at first (Gates, 1924). In an editorial note made by Allport in 1924, he suggested that this experiment be repeated without the use of groups and with individual participants (Gates, 1924).

In 1930, Dashiell conducted research on the same lines as Gates. Dashiell (1930) wanted to observe if the existence of others in an audience capacity would either enhance or hinder the participant's performance. In this experiment, the audience would not contribute to any part of the experimental design. Some of the data collected showed that as performance increased with audience attendance, there was a shift in accuracy to the negative side meaning that accuracy was sacrificed as speed increased. Dashiell (1930) concluded in his study that those that worked in solitary performed at the lowest level while those with an audience performed at an increased level. Lastly, those that were in a competitive setting with an audience performed best. Pessin and Husband (1933) found that there was no statistical significance in their study of individuals observed by an audience. They concluded that participants were affected by an audience but by varying degrees; not enough to suggest that performance levels increased when observed.

Gates and Allee (1933) reported a study on cockroaches. They placed the cockroaches in a maze to learn about individual and group like behaviors. Within their study, they wanted to determine if cockroaches displayed mediocre performance when

grouped together as compared to observed individual cockroaches. They theorized that the grouped cockroaches would fall prey to being distracted by the geography of the maze and the chemicals emitted by others during the experiment. It was found in their study that cockroaches were able to be conditioned not only individually, but when they are grouped together. Their findings were that individual cockroaches spent less time and made fewer errors as compared to grouped cockroaches (Gates & Allee, 1933).

Gates and Allee (1933) felt that their study produced evidence that cockroaches can be affected by their environment as well as conditioned to repeat a desired behavior; although it was concluded that individual cockroaches worked better alone without being distracted by other cockroaches. This experiment would coincide with the social facilitation theory that individual performance is affected by the presence of others, and would support the findings of Allport's study of 1920 in the respect that individuals can be distracted in the presence of others. Although Gates and Allee (1933) conducted experiments on insects, the results of their experiment are still valid in the sense that it does not matter which species, distraction rate and accuracy can be diminished in the presence of others.

Using parakeets as a basis for their study, Allee and Masure (1936) wanted to find out whether or not there was a difference in learning alone or in pairs while placed in different situations. This study was slightly different than the Gates and Allee experiment using cockroaches, but still had the same premise of observing individual and grouped behavior. The data collected showed the researchers that birds that were trained in pairs were surprisingly slower and made additional mistakes than those that were

trained in isolation. On the other hand, birds trained in pairs were observed as having a better range of abilities than those that were isolated. When the two groups were inverted and the societal circumstances changed, the freshly secluded birds displayed less anxiety than their counterparts. When the researchers changed the training, they found that this caused more of a disruption in their behavior than changing their social conditions (Allee & Masure, 1936).

May and Doob (1937) shifted their attention from the current research to cooperation studies. In their study, they found that when individuals worked cooperatively together toward common goals, individuals obtained those goals more successfully than those that partook in the study individually. It was found that when individuals worked alone, they were more likely to conduct themselves in a manner that resembled competitive behavior.

In a comparative study by May and Doob (1937), it was hypothesized that when individuals were working in conditions that favored cooperation, the individuals would be working with one another towards a goal. On the other hand, Morton Deutsch theorized that when conditions changed to a competitive atmosphere, individuals would inherently work against one another. He found that cooperative groups had more positive outcomes than competitive groups and that, in general, cooperative groups had better communication skills than their counterpart. Additionally, Deutsch believed that in many situations, competition and cooperation is combined based on how people perceive their current situation (Coleman, 2012).

Fraser (1953) studied the effects of having the person conducting an experiment present during the testing phase. Fraser studied the relationship between prolonged exposure to a visual assignment and having the experimenter present. His study consisted of eighteen individuals who were to differentiate between 20 erratically placed three millimeter holes from a set of two millimeter holes over a period of 60 minutes. When the participants were in the testing area with the experimenter, the number of mistakes decreased as compared to when the experimenter was not in the room.

Bergum and Lehr (1963) wanted to take the findings of Fraser to another level by enlisting the help of the United States Army. Bergum and Lehr (1963) theorized that when enlisted personnel of the military were subject to observation by their superiors, it would result in a more enhanced performance than what was demonstrated in the experiment by Fraser. The number of participants was 40; ranging in age from 18 to 26 years of age. All of the participants had visual acuity of 20/20. The equipment utilized was four testing booths with a panel of lights in a circular pattern and a network intercom. Located in each booth was a set of pushbuttons for a single response, and their responses were recorded. Twelve response signals per hour were used. The only conditions that the subjects were put under were authoritarian in nature and permissive. The liberal group was told to relax and make themselves as comfortable as possible while the authoritarian group was told that their superior officers were going to visit four times during their shift. Each group followed the same procedures for a total amount of two hours and fifteen minutes of continuous monitoring in each set of booths.

The results of the Bergum and Lehr (1963) study indicated that performance under the authoritarian conditions yielded a much higher level of accuracy as compared to the permissive group of soldiers being monitored. It was reported that during the course of the experiment, percentages of accuracy decreased with an overall average ending up at 79% for the authoritarian group and 45% accuracy for the permissive group. As expected by the researchers, the group that was placed under more stressful conditions excelled while the other group dramatically scored at a lower percentage. Begum and Lehr (1963) suggested that, if the participants in the study conducted by Fraser had been given a simpler task during his experiment, the rate of accuracy would have been significantly higher. This brings about the question of whether there is a correlation between the difficulties of the task and the rate of accuracy of the individual while being in the presence of others. These findings would concur with the social facilitation theory of Allport that individual performance is based on the presence of others in their environment (Aiello & Douthitt, 2001).

Zajonc, Heingartner, and Herman (1969) conducted a study on cockroaches to test the drive theory of dominant responses. Dominant responses are when skills are practiced or learned prior to a given situation. Dominant responses would be those that would be expected or correct. They concluded that if dominant responses of an individual fit the situation, the performance of the individual will increase as a result of the task they have been asked to perform. If the task is complex in nature and one that is not familiar to the participant, then their dominant response would be hindered, thus creating a negative reaction with a decrease in performance. In their study, it was theorized that if an

audience was present, then cockroaches should complete a simple task in minimal time. It was found that when cockroaches were placed in a simple maze with spectators or in pairs, their performance was much quicker than when placed alone in the maze. On the contrary, when the task was made more difficult in the presence of others, it was found that the cockroaches' times to finish the maze were increased due to the complexity of the task. Cottrell, Wack, Sekerak, and Rittle (1968) found that the existence of an audience increased correct responses in a quicker manner when memorizing uncomplicated words, but just having a small number of observers, meaning two, did not affect the outcome of predicted performance.

Experiments that have used humans as their focus have found that accuracy on tasks can improve under conditions that require elements of socialization (Bergum & Lehr, 1963; Dashiell, 1930). In somewhat comparative studies on animals, it was found that animals respond to stimuli differently when either alone or in groups just as humans (Allee & Masure, 1936). These findings assume that the source/strength of an individual's response to any given situation is based on drive. Individual drive is based on motivation and the existence of learning that has taken place prior to the given situation the individual is placed in at the time. This drive theory was introduced by Hull (1935).

Theoretical Perspective

From the early days of teaching, students have been exposed to open-concept teaching, such as the all in one classroom, to direct instruction, which has been a popular method of delivering concepts for many decades. Over the years, studies have been

conducted on the usefulness of cooperative learning centers in the classroom.

Cooperative learning has individual students working together in small groups on various activities. Based on prior research on this subject, cooperative learning has been said to either increase student achievement or not make an impact on achievement in students in which classrooms employ this method of learning (Johnson, 2009).

Different types of theoretical perspectives have influenced cooperative learning such as the social interdependence, cognitive development, and behavior learning theories. According to Slavin (1995), these three theories shape cooperative learning. Research prior to Slavin, such as the social facilitation theory and consequential studies afterward, have all delved into performance of individuals based on the presence of others.

Johnson and Johnson (1978) claim that the social interdependence theory is the most influential on learning. In 1935, Kurt Lewin, concluded that group dynamics are based on individual members. He believed that individuals were motivated to achieve goals set forth in a group atmosphere based on their inner state of anxiety to perform well in front of others. According to Scheidlinger (1994), a study conducted by Lewin, Lippitt, and White maintained that the most beneficial type of groups were democratic in nature. The social interdependence theory is centered on the way individuals react/interact with one another. The end result is a reflection of the interaction between group members. For cooperative learning to be successful according to this theory, the groups must be conducive to learning cooperation instead of conflict (Johnson, Johnson, & Holubec, 1998). In 1962, Morton Deutsch concluded in his studies that

interdependence is either constructive or destructive. He felt that constructive interdependence had a positive effect on groups and therefore enhanced cooperation amongst peers while on the other hand unconstructive interdependence encouraged competition between group members (Coleman, 2012). Slavin (1995) maintained that when those that are of high ability levels are placed in a competitive atmosphere, they will accept weakness amongst counterparts because the expectation or perception of their peers is more important to them than achieving the common goal of the group.

Cognitive Development Theory is another theoretical aspect of cooperative learning. It is based upon the work of Vygotsky and Piaget. Vygotsky held firm to the belief that cognitive development is based upon the interaction between individuals in a social setting. Students are connected through their social interactions and the two worlds of student and socialization cannot be separated if learning is to take place in the individual. Vygotsky believed that when students are in an environment where they are learning from another student with higher cognitive skill abilities, they will learn more; it is not of necessity to be with one that is influential (Miller, 2002).

Piaget asserted that students learn through communication amongst themselves when they work together toward a goal of deciphering their understanding of a concept. Piaget felt that when peer led discussions occur, learning is taking place because their thinking is challenged by one another. What's more, students are becoming more advanced through interactions amongst their peers verbalizing their thoughts instead of being passive recipients of learning in a traditional educational setting (Rogoff, 1990).

B.F. Skinner stressed that those that are involved in an assignment that surrounds reinforcement that is positive will work more diligently. On the other hand, negative reinforcement will hinder the output of said assignment producing failed outcomes (Johnson & Johnson, 1988). Classrooms that are based on the traditional model of whole group teaching produce students that depend on the success of others; whereas classrooms that incorporate cooperative learning increase the chances of success for all that are involved. Additionally, when students are working in conjunction with one another to achieve a positive outcome, students will be inclined to build up their peers that are having difficulty with a given task (Slavin, 1995).

Schools have provided a distinctly individualized and competitive format type of learning for many years. Because schools have concentrated on this type of learning, students have become more introverted and absorbed with themselves. Society has shied away from being united together to achieve a common goal and focused more upon self interest instead of group interactions. Additionally, students see schools as providing less than adequate support in all aspects of their social lives (Conger, 1988). Cooperative learning provides opportunities for students to share responsibility for tasks, peer-to-peer teaching, and accomplish group projects on a higher level. It is an approach to instruction that teachers can utilize to promote among students social skills, decision-making, problem-solving, and kind, encouraging team members (Johnson, 2009). Gillies (2004) found in her study that students that were in a structured cooperative group setting were more willing to work together as a team versus those that were placed in an unstructured group setting. In another study on cooperative learning, Yamarik (2007) found that

students in a cooperative group setting achieved higher on their assessments compared to those that were not involved in a cooperative group setting.

Forms of Cooperative Learning

There are many forms of cooperative learning techniques. This review of literature will focus on a few. One form of cooperative learning is called the Jigsaw method or an investigative type of learning. This method involves teams where each student has a responsibility to become a subject matter expert on a section in their studies. Students are given a task card in which they research that particular area. Once complete, they gather with other students that had the same task card. Following this activity, students then reconvene into their original group to complete the Jigsaw to allow for peer teaching (Slavin, 1995).

In 1976, Lucker, Rosenfield, Sikes, and Aronson, conducted a study to find if there was a difference among achievement in the races when students were taught using customary methods of teaching versus the Jigsaw method of cooperative learning. They studied five schools in Austin, Texas. Teachers participating in this study were trained beforehand in the Jigsaw method. It was not certain how long the teachers had been trained in this cooperative learning method according to the researchers. Of the teachers that participated, three conventional and four Jigsaw classrooms were studied using fifth grade students. Additionally, four classrooms from the six grade were used where it was half-and-half methods of teaching. Pre-tests and post-tests were employed in all of the studied classrooms to compare the scores of the classrooms participating in the study.

The data indicated that in the classrooms that used the Jigsaw method, minority students achieved at a higher rate than their peers (Lucker et al., 1976).

Chang and Mao (1999) wanted to resolve the question of whether or not cooperative learning has more of an impact on student achievement than conventional methods of teaching. Their study involved ninth grade students in the content area of Earth Science. Several cooperative learning techniques were employed in twenty 9th grade classrooms to include the Jigsaw method. The individual students were given a pre-test and post-test. The data indicated that there was no statistically significance difference in the achievement of the students overall. What the researchers did find is that the students that received cooperative learning from their teachers had a higher rate of achievement when it came to applying solutions to problems in Earth Science.

Another form of cooperative learning is called Student Teams Academic Division or STAD. This style of cooperative learning consists of flexible groupings of students in a classroom. Students work together on skill sheets to prepare for assessments that will be given weekly. This method involves students being given time to converse as a team so that studying for the material takes place after the teacher has led a content derived lesson. STAD employs team recognition and students are encouraged to do well on their assignments so that the group as a whole is rewarded for their academic achievement. Assessment scores from individuals are converted into a team score and then computed with the overall team score. The purpose of this method is to reward the team and not the individual; thus, creating an atmosphere of cooperation and not individualistic achievement. When groups work together harmoniously, individual achievement excels

pushing each team's score higher to receive positive reinforcement and rewards (Slavin, 1978).

Slavin (1978) conducted several studies on the use of STAD in classrooms. He wanted to find the effects of STAD on student success in academic areas. One study using a group of 252 fourth and fifth graders in a school located in a rural area yielded varying results in the content area of Language Arts. The data from this nine week study showed positive achievement in the treatment group as compared to the control groups. Slavin (1978) was unsure whether the achievement was motivated by the reward of STAD components or was the actual cooperation between the students. Slavin (1978) conducted a different study whereas he examined the use of STAD versus conventional teaching. This study was composed of 205 students in the seventh grade. All the student achievement scores that were examined came from the content class of English. Slavin (1978) concluded that the control and treatment groups made gains on their achievement tests because of the highly structured classes that they were placed into at the time of the study. He did not say that it was a direct result of the STAD method of cooperative learning.

In a similar study by Whicker, Bol, and Nunnery (1997), the impact of STAD on mathematical achievement in the high school setting was explored. Their study involved a control and treatment class consisting of fifteen students in the treatment class and sixteen in the control group. The students at the time of the study were juniors and seniors. The instructor for the classes was the same. The educational experience and level of training was not given in the study. It was noted that the treatment class

receiving the STAD method of cooperative learning had growth at the end of six weeks. Although it was discussed at week four, there was no statistical difference in the scores between the control and treatment groups. This was attributed by the researchers to becoming more of a cohesive group after the period of four weeks (Whicker et al., 1997).

Johnson (2009) conducted research to see if using cooperative learning in a classroom increased student performance and attitudes towards Mathematics. This study was conducted in an eighth grade classroom in a small section of southwest Nebraska. The school in this study housed 220 students in a K-12 school system. Two groups were generated out of this study; one was teacher selected and the latter was student created. Johnson (2009) reported that there was no significant change in the performance of students concerning Mathematics scores, but attitudes toward Mathematics increased positively during this study.

The Johnson (2009) study conducted used a pre-project survey. The students were placed in ability groups based on their performance on a curriculum exam, which was given to them prior to this study. It worked out mathematically that 33% from the top, middle, and bottom of the class were placed in the teacher selected groups. Since the class only consisted of 13 students, the teacher randomly selected one student from the middle 33% to produce a grouping of four students. The students in the teacher selected group were assigned to these groups for the first four weeks of the action research study. During the second period of the study, students selected their own groupings. While each group was formed, either from teacher selected or student formed, data was collected using four curricular exams and five different state assessments (Johnson, 2009).

During this study, rewards were given in a group style based on the scores achieved on their curricular exams; each student on the selected teams received 10 points if they scored the same or above their previous assessment during the course of the study. At the end of the study, a post-survey was given to find out if the attitudes of the 13 students had changed over the course of this project. Johnson (2009) noted that there was a positive increase of 15% in regards to the attitudes of students in his Mathematics class. Yet, when studying the data collected from the assessments, the author found no noticeable difference in student performance in Mathematics overall.

Another form of cooperative learning is called numbered heads together or NHT. This is very similar to STAD for the reason that flexible grouping is employed. The number of students placed on each cooperative learning team is four. Each individual team counts off the numbers one thru four. The members of the team each have numbers. The groupings within the teams are done by having one high ability student mixed with a lower skilled student, and the rest of the team is made up of grade level average peers. The teams sit with one another during the teaching aspect of the lesson and then they are given a task of answering a series of questions from the instructor (Slavin, 1995). Teams are given instructions that all the members will have equal access to learning by making sure they understand the question/answer. The instructor randomly picks numbered students to respond to the question that was posed before team conversing time. Questions become increasingly more difficult using higher order thinking skills until all the numbered heads have answered the desired amount of questions asked by the teacher. Teams receive rewards or recognition based on the numbered heads that responded

correctly or by elaborating on answers given by others. The rewards or recognition is similar to the STAD method of cooperative learning (Slavin, 1995).

Maheady, Pendl, Harper, and Mallette (2006) conducted a study using the cooperative learning method of numbered heads together. This study used the NHT method with the use of rewards and without the use of rewards. It was found that the class that used the NHT with rewards made greater gains academically as compared to the no rewards NHT class. A comparative study by Maheady, Mallette, Harper, and Sacca in 1991 established that the use of NHT was more successful than the customary method of teaching in a lower economically disadvantaged school system consisting of third graders. It was reported that all of the students that received the method of NHT received passing scores.

In 2007, Kriei, Headrick and Steiner wanted to evaluate team learning (a form of cooperative learning) in regards to increasing student retention and academic performance. The study was conducted at a university at the state level during a freshman-level introductory course on information systems or IS. The researchers noted that prior to this quasi-experimental design study, there was evidence of a lack of preparation, marginal performance, poor attendance, and missed assignments at the freshman level. This prompted Kriei et al. (2007) to conduct a study that would see the effects of team learning on freshman-level students at a state university.

Kriei et al. (2007) utilized a quasi-experimental design. The participants were assigned based on when they registered for the IS course. Each group, treatment and control, consisted of two class sections each for a total of four classes. The control group

was instructed using the traditional lecture-type method that was employed during two semesters prior to this study. The control group was not instructed using the team learning approach, but did have group exercises and the same material as the treatment group of students. Both groups of students used identical textbooks and were required to read the same assignments as given by their instructors. Additionally, quizzes were derived from the same database of questions and all students were to access Web Court (WebCt), which is an online course management tool. Lastly, each group of students was instructed in the same classroom environment where each student had a right to use a computer during instructional time (Kriei et al., 1997).

Accountability was taken into consideration by the researchers of this study. One of the approaches to team-learning is being accountable for all types of activities presented in the course. The instructors responded to this aspect of a team-learning approach by ensuring that the students were clear on what is expected in regards to individual and team assignments. Additionally, the teams were given a folder that contained performance sheets that documented attendance rates and performance of each team member. Finally, students were responsible for completing an end of course evaluation on the peers that were assigned to their teams (Kriei et al., 2007).

Kriei et al. (2007) noted that students assigned to the treatment group sections, which totaled 69 in the beginning of the course, ended the course with a total number of 59 students. The control group ended the course with 53 students compared to starting the course with 74 students at initial enrollment. The researchers used the ANOVA *F* test which determined there was no statistically significant difference between the control and

treatment groups in regards to their academic performance. The performance data collected on both groups did not show a statistically significant difference even with a decrease in students being present for the final exam.

Woo Nam and Zellner (2010) studied the effects of positive interdependence and group processing on student achievement and attitude in online cooperative learning. The study included 144 undergraduate students. These students came from three different universities. The universities were located in South Korea. Woo Nam and Zellner (2010) indicated in their study that the three universities had an online management tool already available prior to the beginning of this study.

Of the 144 students, the first university (A) had 24 students that enrolled in the course “Teaching Method and Educational Technology”. The second university (B) had 72 participants enrolled in “Human Resource Development”. Lastly, the third university (C) had a total of 48 students that enrolled in the course “Teaching Method and Educational Technology”. It was noted that the mean and median age of the students was 21 with 15% of the students being male and the remaining 85% female. Students were assigned at random to one of the groups in the study. Since there were 144 students, each section of the three treatment groups comprised of 48 students each (Woo Nam & Zellner, 2010).

During this study, groups were assigned at random to three different treatment conditions as stated by the authors within each class of 48. The instructors assigned to teach each of the three courses at universities A, B, and C, were randomly given students in three different groups. Each group was assigned a different treatment condition.

Within each class of 48, group one received a positive interdependence treatment, group two received a group processing treatment, and group three received no structure at all. Prior to the start of the courses, the instructors were given two complete workshops conducted by the researcher on learning activities that involved general cooperative learning techniques. Additionally, before each activity was assigned to groups one and two, they were given specific instructions per specialized training guidelines set forth by the researcher, while group three received no information at all prior to their activities (Woo Nam & Zellner, 2010).

The data collected from this study stated that the level of participation indicated that the students in this study completed their instructional requirements successfully. Additionally, the group which received the positive interdependence treatment had an engagement level higher than the other two groups. Group three, which received no structure at all during the course, scored the lowest at engagement levels, which suggested that group three could have benefitted from a more cooperative learning environment. Woo Nam and Zellner (2010) point out that the results from an ANCOVA test showed that group one, which received positive interdependence treatment, scored overall six points higher than the lowest group which was group three.

Group one, those in the positive interdependence treatment group, indicated, based on their scores, that using this type of cooperative learning had a positive effect on student achievement of the 48 individuals receiving this type of treatment. Woo Nam and Zellner (2010) suggested that, since this group had a variety of instructional

strategies used by the instructor, that these students were able to meet specific goals within their learnings because of a more diverse online atmosphere.

Another form of cooperative learning is called the learning together technique. This form of cooperative learning takes place when the instructor of the class places students in a team of four to five students. The purpose of the learning together method is that all students aspire towards achieving success. Each student is accountable for learning within their respected team. This method is based on the assumption that the students working within the teams already have a foundation in group like activities. The whole team works on a skill sheet and then hands it in during the required timeline to either receive a reward or some sort of recognition from the instructor (Slavin, 1995).

Gokkurt, Dundar, Soylu, and Akgun (2012) investigated the effects using a technique derived from cooperative learning called Learning Together on student achievement in the area of Mathematics. This study was conducted using two groups of ninth grade Mathematics students. This experimental study used 50 students in total. The experimental and control groups each consisted of 25 students. Students were given a pre-test and post-test to measure achievement and to use the results to find if there is a correlation between using cooperative learning and student achievement.

This study used an experimental design whereas their participants were randomly chosen to participate in a unit on numbers. Each lesson prepared was used in either a cooperative or traditional teaching setting. Groups, experiment and control, were given a pre-test and post-test. The students selected in the ninth grade A and B classes were said

to have the same background knowledge and scores on assessments given by the school (Gokkurt et al., 2012).

Gokkurt et al. (2012) found that the classes had a pre-test mean score of about the same with a standard deviation of approximately thirteen for each group. Looking at this data showed that there was no significant difference in achievement between the experimental and control group before initiating the study. On the other hand, at the end of the unit on numbers, the post-test showed that the experimental group obtained a significantly higher score than the control group. The mean score of the experimental group was approximately eighteen points higher with an average standard deviation of twenty one.

Although there was a statistically significant difference in the mean scores of the post-test, the study was only done with one unit of Mathematics. The study made no indication of the skill set of any of the teachers conducting the learnings in the classroom or how the cooperative learning method was employed with the experimental group. Nothing in the study noted where this study took place and what types of students were involved in each group (Gokkurt et al., 2012).

Conclusion

To increase understanding in the area of cooperative learning, several perspectives and forms of cooperative learning were investigated in the review of literature. Late nineteenth century studies delved into the effects of the presence of others on individual performance. It was found that individual performance was influenced by the mere presence of others. This research spanned into the twentieth century by conducting studies in small and large group settings; even using animals and insects to strengthen their assumptions that performance is affected by the existence of others. Each study reviewed found that individual performance was affected by the presence of others; although these studies did not assert that all people would be affected the same way. Individuals continue to study the effect of cooperative learning on student achievement and wonder if employing this teaching technique works for every student. The review of literature shows that although many studies have been conducted, not one can declare that any one form of cooperative learning is the best for all students. Therefore, the purpose of this study sought to identify 1) the impact of cooperative learning on student achievement on the standardized test scores in Reading and 2) the impact of cooperative learning on student achievement on the standardized test scores in Mathematics.

CHAPTER III

Methodology

Introduction

The purpose of this study was to evaluate the impact of cooperative learning (independent variable) on student achievement (dependent variable) in the particular content areas of reading and math. Researching the answer to this question could solidify that using cooperative learning centers in schools is an effective worthwhile approach to enhancing student achievement. Teachers would be given an alternative to traditional whole-group type classes and shift their focus to a method of delivering instruction where they turn into a guide through academia instead of a lecturer.

Research Design

The research design of this study was quantitative in nature because numerical archival data is being used. This is a descriptive study using an Ex Post Facto design. A causal-comparative type of investigation is being utilized because two or more groups are being compared to look for cause/effect relationships between cooperative learning (independent variable) and student achievement (dependent variable).

Population

The population for this study was fifth graders in a military school presently situated on a military post. They range in age from 10-12 years of age. Approximately, 13% of all fifth graders are on free and reduced lunch. In addition, 62% of the populations of fifth graders are females while the remaining 38% are males. The three fifth grade classes are mainly Caucasian with a small percentage of African-American,

Asian, or Pacific Islander students. Prior to the onset of this study, groups were predetermined based on the criteria set forth by the Department of Defense School System. Administration and guidance personnel selected each individual in the target classes. Three fifth grade classes were constructed prior to the beginning of the school year. The researcher had no knowledge of how classes were determined; only that three classes existed at the beginning of this study.

Treatment and Control Group

The research population consisted of 59 fifth graders during the school year 2011-2012. The fifth grade students that comprised the treatment and control groups represented various demographics and those with special needs. No exclusionary criteria was used since all students in grades 3-5 are required to take the TerraNova 3 Standardized Achievement Test in a Department of Defense School System. Therefore, students who were assessed during 2012 were included in the study.

Instrument

The TerraNova Third Edition, Multiple Assessments Standardized Achievement Test (TerraNova 3) is a standardized norm-referenced achievement test developed by CTB/McGraw-Hill. The TerraNova 3 was designed to measure the concepts, processes, and skills taught in classrooms across the United States. This multiple assessments test has five components that it measures. These components are Reading, Language, Mathematics, Social Studies, and Science. The items on the assessment reflect current educational objectives that are used within school systems that utilize the assessment.

Procedure

First, the researcher gained permission to conduct the study by the Institutional Review Board. Secondly, approval from the Department of Defense School System was obtained. Then data was coded by the system research coordinator or other approved system personnel assigned to handle such data. The data was reported to the researcher as coded data only with no reference to students. In addition, archival data was provided by authorized school personnel within the Department of Defense School System. Before the researcher received the data, it was cleaned of all confidential identifying elements by the data management personnel. Also, the data was tested using the proper statistical test to test for all three assumptions. Finally, data was analyzed, reported, and discussed with the proper school administrative personnel connected with the Department of Defense School System.

Research Questions

1. Does cooperative learning have an impact on student achievement in Mathematics as measured on the TerraNova?
2. Does cooperative learning have an impact on student achievement in Reading as measured on the TerraNova?
3. Does cooperative learning have an impact on male student achievement in Mathematics as measured on the TerraNova?
4. Does cooperative learning have an impact on female student achievement in Mathematics as measured on the TerraNova?

Null Hypotheses

1. There will be no statistically significant difference in TerraNova Mathematics scores of fifth graders who participated in cooperative learning as compared to those who did not participate.
2. There will be no statistically significant difference in TerraNova Reading scores of fifth graders who participated in cooperative learning as compared to those who did not participate.
3. There will be no statistically significant difference between fifth grade male students' TerraNova Mathematics scores who participated in cooperative learning as compared to male students who did not participate.
4. There will be no statistically significant difference between fifth grade female students' Terra Nova math scores who participated in cooperative learning as compared to female students who did not participate.

Data Analysis Plan

An independent unpaired *t*-test was used for each of the hypotheses because two groups were being compared on one dependent variable. The unpaired *t*-test was utilized to evaluate the mean scores of the fifth grade students in the control and treatment groups. A *t*-test was significant in this research design to determine a causal-comparative relationship between the implementation of cooperative learning and student educational achievement in Reading and Mathematics.

CHAPTER IV

Results

Introduction

Over the years, studies have been conducted on the usefulness of cooperative learning centers in the classroom. Classroom teachers, administrators, and school districts know the importance of using research based practices in the classroom that raise student achievement. Cooperative learning is one technique that has been researched by many individuals with positive results. Numerous studies have revealed the positive impact that cooperative learning has on student attainment of mandated state educational standards. Since best practices should be used in the classroom setting, then cooperative learning, which is so commonly acknowledged and accepted, could close the gap that school systems are so desperately trying to do on a continual basis (Slavin, 1978).

Null Hypotheses

The researcher predicted based on literature review of cooperative learning the following hypotheses:

1. There will be no statistically significant difference in TerraNova Mathematics scores of fifth graders who participated in cooperative learning as compared to those who did not participate.
2. There will be no statistically significant difference in TerraNova Reading scores of fifth graders who participated in cooperative learning as compared to those who did not participate.

3. There will be no statistically significant difference between fifth grade male students' TerraNova Mathematics scores who participated in cooperative learning as compared to male students who did not participate.

4. There will be no statistically significant difference between fifth grade female students' Terra Nova Mathematics scores who participated in cooperative learning as compared to female students who did not participate.

Distribution by Content Area

The median national score for standardized assessments is fifty percent.

Table 1: Distribution of Content Areas

Measure	Reading NCE	SD	Math NCE	SD
Males	45.5	19.9	53.7	20.8
Females	58.7	16.2	59.8	15.6
Caucasian	51.6	18.8	57.5	18.8
African American	52.7	12.3	54.0	9.8
Hispanic	56.8	19.6	57.0	14.1
Biracial	61.5	30.1	63.5	25.8
Other	31.4	24.1	40.7	19.1

Note- NCE (Normal Curve Equivalent) SD(Standard Deviation)

Table 1 indicates that the fifth grade male population as a whole scored a 45.5 in the content area of Reading. Alternatively in the content area of Mathematics, males scored 53.7. Females on the other hand scored a 58.7 in the area of Reading and 59.8 in the area of Mathematics. Reading scores of Caucasian students were 51.6 and Mathematics was 57.5. African-American students scored 52.7 in Reading and 54 in the area of Mathematics; while Hispanic student scored 56.8 in Reading and 57 in Mathematics.

Those that were reported as Biracial scored 61.5 in Reading and 63.5 in Mathematics. Those listed as other scored 31.4 in reading and 40.7 in Mathematics.

Type of Statistics

Since the purpose of this study was to evaluate the impact of cooperative learning (independent variable) on student achievement (dependent variable) in the particular content areas of Reading and Mathematics, an independent *t*-test unpaired was used for each of the null hypotheses because two groups are being compared on one dependent variable. The noted *t*-test was utilized to evaluate the mean scores of the fifth grade students in the control and treatment groups. A *t*-test is significant in this research design to determine a causal-comparative relationship between the implementation of cooperative learning and student educational achievement in Reading and Mathematics.

Results of Independent *t*-Tests

Three assumptions were met before proceeding with testing. The first assumption was met because all observations were independent from one another. The second assumption of fairly normal distribution was met by studying the frequency distribution. Lastly, the researcher checked for equality of error variances using Levene's test to see if the samples from the population had equal variances (see Table 2, *Levene's Test of Equality of Error Variance*).

Table 2: *Levene's Test of Equality of Error Variances*

Variable	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>Sig. (p<.05)</i>
TN Reading	1.66	2	57	.22
TN Math	1.07	2	57	.81

Note- *F* = *F* distribution; *df* = degrees of freedom; *Sig.* = significant value.

The Significant value ($p < .05$) must be greater than .05 in order for the variances to be equal. Since the Significant values are greater than .05, the researcher did not violate the assumption of equality of variance.

Hypothesis 1:

There will be no statistically significant difference in TerraNova Mathematics scores of fifth graders who participated in cooperative learning as compared to those who did not participate.

An independent unpaired *t*-test was conducted to evaluate Null Hypothesis 1, that there will be no statistically significant difference in TerraNova Mathematics scores of fifth graders who participated in cooperative learning as compared to those who did not participate. The results indicate that there is no statistically significant difference between those that received cooperative learning as compared to those that did not in the area of Mathematics. For that reason, Null Hypothesis 1 was retained ($t_{(59)} = 0.5620$, $p = .5763$). By conventional criteria, this difference is considered not to be statistically significant.

Table 3: t-Test Results Comparing Data Sets for Math

Variable	Mean	SD	T Cal	P
Math				
CL	55.87	18.06	.5620	.5763
NCL	58.67	18.77		

Note: CL=Cooperative Learning, NCL=No Cooperative Learning, $p < .05$

Hypothesis 2:

There will be no statistically significant difference in TerraNova Reading scores of fifth graders who participated in cooperative learning as compared to those who did not participate.

An independent unpaired *t*- test was conducted to evaluate Null Hypothesis 2, that there will be no statistically significant difference in TerraNova Reading scores of fifth graders who participated in cooperative learning as compared to those who did not participate. The results indicate that there is no statistically significant difference between those that received cooperative learning as compared to those that did not in the area of Reading. For that reason, the null hypothesis was retained ($t_{(59)} = .0682$, $p = .9459$). By conventional criteria, this difference is considered not to be statistically significant.

Table 4: t-Test Results Comparing Data Sets for Reading

Variable	Mean	SD	T Cal	P
Reading				
CL	52.74	20.69	.0682	.9459
NCL	58.67	18.77		

Note: CL=Cooperative Learning, NCL=No Cooperative Learning, $p < .05$

Hypothesis 3:

There will be no statistically significant difference between fifth grade male students' Terra Nova Mathematics scores who participated in cooperative learning as compared to male students who did not participate.

An independent unpaired *t*-test was conducted to evaluate Null Hypothesis 3, that there will be no statistically significant difference in TerraNova Mathematics scores of male fifth graders who participated in cooperative learning as compared to those who did not participate. The results indicate that there is no statistically significant difference between those that received cooperative learning as compared to those that did not in the area of Mathematics. For that reason, Null Hypothesis 3 was retained ($t_{(26)} = .3989, p = .6935$). By conventional criteria, this difference is considered not to be statistically significant.

Table 5: *t*-Test Results Comparing Data Sets for Math (Males)

Variable	Mean	SD	T Cal	P
Math (Males)				
CL	54.28	16.57	.3969	.6935
NCL	57.63	25.89		

Note: CL=Cooperative Learning, NCL=No Cooperative Learning, $p<.05$

Hypothesis 4:

There will be no statistically significant difference between fifth grade female students’ Terra Nova Mathematics scores who participated in cooperative learning as compared to male students who did not participate.

An independent unpaired *t*- test was conducted to evaluate Null Hypothesis 4, that there will be no statistically significant difference in TerraNova Mathematics scores of female fifth graders who participated in cooperative learning as compared to those who did not participate. The results indicate that there is no statistically significant difference between those that received cooperative learning as compared to those that did not in the

area of Mathematics. For that reason, Null Hypothesis 4 was retained ($t_{(33)} = .3193$, $p=.7516$). By conventional criteria, this difference is considered not to be statistically significant.

Table 6: *t-Test Results Comparing Data Sets for Males vs. Females*

Variable	Mean	SD	T Cal	P
Math (Females)				
CL	57.30	19.63	.3193	.7516
NCL	59.31	13.95		

Note: CL=Cooperative Learning, NCL=No Cooperative Learning, $p<.05$

The researcher of this study notes that the statistics reported in this study should only be used to organize, review, and explain the collected observations from the TerraNova 3. It is not being inferred that the statistical findings within this study describe all fifth grade students in the United States or on all military installations because of the relatively small population of the observations collected from approved personnel.

CHAPTER V

Findings

To assist the reader, this final chapter reviews the research problem and hypotheses. That examination is followed by a synopsis of the outcomes and a discussion of the implications with suggestions for future studies.

Review of Statement of the Problem

The objective of this research is to answer the question of whether or not cooperative learning impacts student achievement.

Review of Hypotheses

1. There will be no statistically significant difference in TerraNova Mathematics scores of fifth graders who participated in cooperative learning as compared to those who did not participate.
2. There will be no statistically significant difference in TerraNova Reading scores of fifth graders who participated in cooperative learning as compared to those who did not participate.
3. There will be no statistically significant difference between fifth grade male students' TerraNova Mathematics scores who participated in cooperative learning as compared to male students who did not participate.
4. There will be no statistically significant difference between fifth grade female students' Terra Nova Mathematics scores who participated in cooperative learning as compared to female students who did not participate.

Review of Methodology

The research design of this study is quantitative in nature because numerical archival data is being used. This is a descriptive study using an Ex Post Facto design. A causal-comparative type of investigation is being utilized because two or more groups are being compared to look for cause/effect relationships between cooperative learning (independent variable) and student achievement (dependent variable).

The population for this study was fifth graders in a military school presently situated on a military post. They range in age from 10-12 years of age. Approximately, 13% of all fifth graders are on free and reduced lunch. In addition, 62% of the population of fifth graders was female while the remaining 38% are male. The three fifth grade classes are mainly Caucasian with a small percentage of African-American, Asian, or Pacific Islander students. Prior to the onset of this study, groups were predetermined based on the criteria set forth by the Department of Defense School System. Administration and guidance personnel selected each individual in the target classes. Three fifth grade classes were constructed prior to the beginning of the school year. The researcher had no knowledge of how classes were determined; only that three classes existed at the beginning of this study.

Research Questions

1. Does cooperative learning have an impact on student achievement in Mathematics as measured on the TerraNova?
2. Does cooperative learning have an impact on student achievement in Reading as measured on the TerraNova?

3. Does cooperative learning have an impact on male student achievement in Mathematics as measured on the TerraNova?
4. Does cooperative learning have an impact on female student achievement in Mathematics as measured on the TerraNova?

Summary of Results

Implementing cooperative learning on a daily basis in the area of Mathematics did not have a statistically statistical impact on student achievement as measured on the TerraNova. According to the results, the answer to research question two is that cooperative learning in the area of Reading did not have a significant impact on student achievement as measured on the TerraNova. Research questions three and four show that the treatment and control groups did not show any statistical significance in student achievement as measured on the TerraNova. Although it was not reported by the researcher, it was found that, in this sample of students, that females responded better to cooperative learning in Reading than their male counterparts.

Comparison of Results to Other Studies

Studies have shown that cooperative learning has positive impacts on student achievement (Slavin, 1978). This method of learning most likely will remain in the educational arena because it has shown positive results. The push for implementing best practices in the classroom will drive individuals to seek alternative methods of teaching when they yield encouraging results. On the other hand, the results of this study showed that cooperative learning versus a traditional learning setting did not increase student achievement for fifth grade students in the area of Mathematics and Reading.

The literature review in this study showed that studies by such individuals as Slavin (1978), Lucker et al. (1995) and Chang and Mao (1999), yielded positive results. Their studies showed that implementing cooperative learning increased student achievement. Since this was found, one could assume that cooperative learning has a positive influence on student achievement. However, studies by Wicker et al. (1997), Johnson (2009), and Woo Nam and Zellner (2010), contend that cooperative learning makes no difference in student achievement. The statistics reported in this study coincided with other studies that showed that there was no statistically statistical difference in student achievement between those that received cooperative learning as compared to those that did not. This differed from the studies that demonstrated increased student achievement when cooperative learning was implemented in the classroom setting.

Slavin (1995) stated that when cooperative learning is implemented into the classroom in an organized manner, it has the ability to reach a variety of student needs. Slavin does stress that it puts a lot of responsibility on the learner, peers, and overall atmosphere on the class. Slavin continues by saying that the fidelity of implementation is crucial when conducting a classroom in a cooperative learning style.

Studies that yield positive results should detail the components of the type of cooperative learning implemented so that others would be able to duplicate such practices in the classroom. Since negative effects have not been associated with cooperative learning, it would be beneficial to the educational field to continue to study this method of teaching and learning.

Limitations

Additional limitations were recognized in this study. Broad generalizations could not be made since the sample size was small in nature. The purpose of this particular study was to study whether or not cooperative learning had an impact on student achievement in the areas of Mathematics and Reading. This study was not meant to generalize about all fifth grade students across the United States or on all military installations.

The researcher realized that each teacher does have an impact on student achievement scores. All of them bring a different type of teaching style to the classroom along with personalities and teaching experience. Administrative personnel could not ensure that the teachers implementing cooperative learning in their classrooms taught this method exactly the same way ensuring that fidelity of implementation was met. Administrative personnel did attempt to make sure that the classes that were selected prior to the onset of the school year were chosen in a systematic way.

Another limitation of this study was that cooperative learning in the classrooms could not be definitively defined. Teachers have their own way of teaching different methods as they feel comfortable with them. Additionally, teachers who implement strategies typically tailor them to meet the needs of the individual student; thus, differentiating their instruction.

As with any study, the limitations forbid the researcher from making statements that are broad in nature. This study demonstrated that cooperative learning did not have an impact on student achievement in the areas of Mathematics and Reading as measured on the TerraNova.

Implications

This study is far too small to make any broad generalizations. It is concluded that cooperative learning in this particular study did not have an impact on student achievement in the areas of Mathematics and Reading. Classrooms are made up of very unique individuals that come from various family backgrounds, learning styles, and abilities. All students do not necessarily fit into a mold, but unfortunately, school districts across the country are searching for a quick fix that positively impacts student achievement. High stakes testing brings added pressure to educators trying to find the miracle teaching method that raises student achievement. Thompson (2008) asserts that there is not one method of teaching that will indeed raise student achievement, but teachers have the ability to be action researchers in their field to employ a variety of research-based strategies that will work for their own classroom environment.

Researchers might want to use a dependent variable other than the traditional standardized assessments. Many studies have concluded that cooperative learning has a positive influence on students that are lower achieving, but not many studies focus on those that are identified as gifted and talented. It should be noted that researchers might want to consider looking at the advantages of different aspects of cooperative learning other than solely focusing on student achievement. It has been said that a student that is well rounded academically and personally yields more positive results in their journey through academia.

Recommendations for Future Research

Further research into the area of cooperative learning would be beneficial, not only for the academic world, but for all professionals since learning to work cooperatively and collaboratively is a life skill.

It is believed by the researcher that the following statements should be of further study:

1. Does cooperative learning have an impact on Science and Social Studies achievement scores?
2. Does grouping students either homogeneously or heterogeneously in cooperative learning environments have an impact on student achievement?
3. Which cooperative learning techniques yield greatest gains on standardized assessments?
4. Does cooperative learning have an impact on conflict-resolution skills of students who are immersed in this method of learning daily?
5. Does cooperative learning yield positive results in adult learning?

In order for cooperative learning to work for the appropriate stakeholders in the educational field, researchers and educators alike must continuously learn more about the different components of this teaching style in order for it to yield positive results on a continuous basis. Educators should be focusing on what works best with their students while at the same using research-based best practices that will not leave students behind.

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TABLES

Table 1: Distribution of Content Areas

Measure	Reading NCE	SD	Math NCE	SD
Males	45.5	19.9	53.7	20.8
Females	58.7	16.2	59.8	15.6
Caucasian	51.6	18.8	57.5	18.8
African American	52.7	12.3	54.0	9.8
Hispanic	56.8	19.6	57.0	14.1
Biracial	61.5	30.1	63.5	25.8
Other	31.4	24.1	40.7	19.1

Note- NCE (Normal Curve Equivalent) SD(Standard Deviation)

Table 2: Levene's Test of Equality of Error Variances

Variable	F	df1	df2	Sig. ($p < .05$)
TN Reading	1.66	2	57	.22
TN Math	1.07	2	57	.81

Note- F = F distribution; df = degrees of freedom; Sig. = significant value.

Table 3: t-Test Results Comparing Data Sets for Math

Variable	Mean	SD	T Cal	P
Math				
CL	55.87	18.06	.5620	.5763
NCL	58.67	18.77		

Note: CL=Cooperative Learning, NCL=No Cooperative Learning, $p < .05$

Table 4: t-Test Results Comparing Data Sets for Reading

Variable	Mean	SD	T Cal	P
Reading				
CL	52.74	20.69	.0682	.9459
NCL	58.67	18.77		

Note: CL=Cooperative Learning, NCL=No Cooperative Learning, $p < .05$

Table 5: *t*-Test Results Comparing Data Sets for Math (Males)

Variable	Mean	SD	T Cal	P
Math (Males)				
CL	54.28	16.57	.3969	.6935
NCL	57.63	25.89		

Note: CL=Cooperative Learning, NCL=No Cooperative Learning. $p<.05$

Table 6: *t*-Test Results Comparing Data Sets for Males vs. Females

Variable	Mean	SD	T Cal	P
Math (Females)				
CL	57.30	19.63	.3193	.7516
NCL	59.31	13.95		

Note: CL=Cooperative Learning, NCL=No Cooperative Learning. $p<.05$

APPENDICES

APPENDIX A

Institutional Review Board (IRB) Approval Letter

Date: December 4, 2012

RE: Study number 12-075

Dear Maureen Barfield,

Thank you for your recent submission to the IRB. We appreciate your cooperation with the human research review process.

Congratulations! This is to confirm that your proposal has been approved and that your study is exempt from further review by the APIRB.

You may conduct your study as described in your application, effective immediately.

Please note that any changes to the study must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. If you have any questions or require further information, you can contact me by phone (931-221-6106) or email (shepherd@apsn.edu).

Again, thank you for your cooperation with the APSU IRB and the human research review process. Best wishes for a successful study!

Sincerely,

Omie Shepherd

Omie Shepherd, Chair

Austin Peay Institutional Review Board

Cc: Dr. J. Gary Stewart

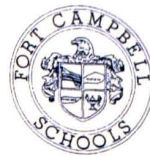
Appendix B

Permission to Conduct Research



Andre Lucas Elementary School

2115 Airborne Street
Fort Campbell, Kentucky 42223-5387
(270) 640-1208



"Excellence in Teaching! Excellence in Learning!"

RE: Field Study Approval

Turnipseed, Ted, Mr., CM, OSD/DoDEA-Americas

Sent: Monday, September 17, 2012 10:00 AM

To: Turnipseed, Ted, Mr., CM, OSD/DoDEA-Americas

Re:

From: Barefield, Maureen, Ms., CM, OSD/DoDEA-Americas

Sent: Monday, September 17, 2012 8:55 AM

To: Turnipseed, Ted, Mr., CM, OSD/DoDEA-Americas

Subject: Field Study Approval

Importance: High

Sir,

I am following up with you per our conversation about research to help our school achieve a higher level of excellence. Since gaining your approval for "The Effects of Cooperative Learning Centers on Student Achievement", I have began to delve more into researching this topic and gathering literature that either supports this method or denies there is any correlation between both. After completion of my current research classes, I will begin gathering data from the school in the spring. The data collected would come from standardized test scores broken down into various non-identifiable components that would allow the reader to see the benefits or disadvantages of having cooperative learning centers in classrooms. This data would come from the school. Since the data would be broken down into non-identifiable terms, no ethical issues would arise during the implementation of this field study. Thank you so much for helping me with this endeavor. Take care and I shall speak with you soon regarding this field study.

With much respect,
Ms. Barefield