

**THE EFFECTS OF COOPERATIVE LEARNING  
ON ACHIEVEMENT LEVELS  
OF GRADE 8 LANGUAGE ARTS STUDENTS**

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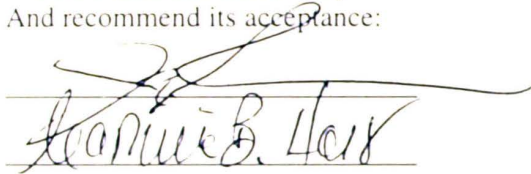
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The Effects of Cooperative Learning  
On Achievement Levels  
Of Grade 8 Language Arts Students

A Field Study  
Presented for the  
Education Specialist  
Degree  
Austin Peay State University

Paula E. Smith

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## Abstract

Traditional classrooms are highly inconsistent with adolescent development which tends to revolve solely around peers and being with others. Students are traditionally taught using lecture and whole group instruction. With the current education reform happening in this country and the push of testing and accountability, these approaches may not be the most effective to use. Questions have been raised as to which teaching method produces the best results. This study attempted to answer a small part of this question by comparing the same language arts material taught in a traditional format and a cooperative learning format. The 76 subjects were from a rural South Florida public school district. The treatment period was six weeks in duration. Prior to the treatment, the subjects were given a pretest on which to base a possible academic gain. The subjects were taught six weeks of the same material by the same teacher, then given a posttest. These gains were then analyzed to determine if there were significant differences between the two groups. The results showed a slightly higher academic achievement gain of approximately one point on a 40-point scale for the treatment group where cooperative learning methods were implemented. Using a *t* test, this difference does not calculate to a significant difference. Therefore, the findings of this study are that students taught in a cooperative learning setting do not achieve significantly higher academic results than those taught traditionally.

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## CHAPTER I

### INTRODUCTION

Traditional classroom structures are highly inconsistent with the nature of adolescent development. Students are expected to work independently and to compete with each other for grades. Research has long shown that when adolescents are placed in academic competition with one another, they discourage each other from performing at their best (Slavin, 1996). Students try to reduce each others academic efforts by such things as name-calling. Competition in athletics creates a reaction which is opposite. One of the main differences in sports and academics is the structure by which goals are accomplished. While playing sports, members of a team must work together for the team to grow and to accomplish their goals. In most traditional classroom settings, one successful student makes others appear less successful.

#### Statement of the Problem

There is a wide variety of teaching methods being used in classrooms today. Hauserman (1992) states "Educators who wish to increase academic skills and improve social milieu must seek out effective teaching methods" (p. 185). While teachers endeavor to elevate their students' academic achievement, teaching methods need to be assessed. Academic accountability is a constant burden on teachers as well as administrators. Educators need to use the method(s) having the highest correlation to academic performance or success in order to produce the highest measures of academic accountability. Is cooperative learning the answer?

"Cooperative learning is one of the most thoroughly researched of all instructional methods" (Slavin, 1989; 1990). Cooperative learning is a broad term used to define a type

of teaching that utilizes groups a majority of the time. Competition is still an element in cooperative grouping where the competition is within the teams or groups, not among individuals within each group (Sapon-Shevin, 1994). According to Slavin (1996) there are many different approaches to or techniques used with cooperative learning, but the effective structures all include common elements.

### Rationale

The diversity within classrooms today has led to the use of many different teaching methods and the addressing of students' learning styles. With this in mind, educators should make decisions about instruction based on which methods will produce the highest academic achievement. Cooperative learning is one of the many techniques used. If cooperative learning is an effective method of delivering instruction and raising academic achievement, more teachers may be interested in learning the techniques so they can deliver this type of instruction to their students. Within this quasi-experimental field study, the teacher will apply many of the cooperative learning techniques to two language arts classes while instructing two other language arts classes traditionally. Each class will be tested similarly and will receive the same instruction. The results may give quantitative data that educators need to justify the change from the traditional methods of teaching to cooperative methods of teaching.

### Research Question and Hypothesis

The following research question and hypothesis are designed to guide this field study:



To what extent will the use of cooperative learning improve academic achievement of Grade 8 Language Arts students?

Academic achievement will not be significantly different for Grade 8 Language Arts students who are taught in a cooperative learning setting and those taught in a traditional setting.

### Definition of Terms

Student Team Learning is a broad category which covers many cooperative learning techniques developed and researched at John Hopkins University. Each technique contains team rewards, individual accountability and equal opportunities for success, and is most appropriate when teaching well-defined objectives. These techniques include Student Team Achievement Division (STAD), Teams Games Tournament (TGT), Team Assisted Instruction (TAI), and Cooperative Integrated Reading and Composition (CIRC) (Slavin, 1990; 1996).

Student Team Achievement Division is most appropriate when teaching well-defined objectives with single, right answers. The main premise is to motivate students to encourage and help one another master skills presented by the teacher. In STAD, the teacher assigns students to teams that are mixed in performance level, sex and/or ethnicity. The students work together to master the lesson before taking individual quizzes. Their grades can then be averaged to make team scores. While using STAD, individuals receive grades while the teacher continues to teach basically the same and the students in groups for mastery (Slavin, 1990).

Teams-Games-Tournaments (TGT) uses the same style of teacher presentations and teamwork as STAD except that the quizzes are replaced with weekly tournaments which contribute points to their team scores (Slavin, 1990).

Team-Assisted Instruction (TAI) is specifically designed for lower grades of math and is similar to STAD and TGT with four-member, mixed-ability teams. Each group is working at a different ability level, so they can be working on different units or concepts than other teams (Slavin, 1990).

Cooperative Integrated Reading and Composition (CIRC) is a reading and writing program in which students are assigned to teams composed of pairs of students from different reading groups. The students work within their group on cognitively engaging activities while the teacher is working with another group. Students take a quiz when their teammates believe they are ready, and scores are averaged for team rewards (Slavin, 1990; 1991).

Jigsaw, designed by Elliott Aronson and his colleagues, incorporates six-member teams working together on material that has been broken down into sections. Each member will master the material of the section assigned. They will then take turns teaching the other team members their section. The only way to learn the sections is by listening carefully to the other group members. This seems to promote motivation to support and show interest in one another's work (Slavin, 1990).

Learning Together, developed by David and Roger Johnson at the University of Minnesota, involves heterogeneous teams and emphasizes positive interdependence and

individual accountability. It also works on team building and group self-assessment, and recommends team grades rather than other recognition (Slavin, 1990).

Group Investigation, developed by Shlomo Sharan, is a classroom organizational plan in which small groups use cooperative inquiry, group discussion and cooperative planning to find common interests and to pursue projects (Hauserman, 1992; Slavin, 1990).

Numbered Heads Together compares to the typical whole class question/answer, but uses grouping. The teacher has students number off within each group of four so that each student has a number 1, 2, 3, or 4. A question is asked, and each group “puts their heads’ together” and makes sure that all members know the answer. The teacher then calls out a number (1, 2, 3, or 4) and students with that number will raise their hands to respond.

Because their number may be called, the low-achieving students in each group listen carefully to the other group members, and they now have an equal chance of achieving success (Holt, 1993).

Three-Step Interview is another method which deviates from a typical class setting. This is used as an alternative to group discussion. The students, in groups of 4, are divided into pairs within the group and conduct a one-way interview in pairs. Students then reverse roles and become the interviewers. Once all have been interviewed, the groups share information they have learned within their group (Holt, 1993).

Cooperative Elementary School Model is an effort to achieve the following four objectives: (a) to capitalize on the school’s capacity for collaborative change, (b) to improve the quality of implementation of cooperative learning, (c) to use cooperative

learning as a vehicle for effective mainstreaming, and (d) to institutionalize cooperative learning in the school's program (Stevens & Slavin, 1992).

Paired Reading is a cooperative learning technique where a child and partner read aloud, in unison, for approximately 15 minutes a day for a minimum of 5 days a week until the child uses a pre-determined signal which indicates they feel confident enough to read aloud (DeAngelo, Reents, & Zomboracz, 1997).

Pullout Teaching is a method used to work individually or in a small group setting where the child, usually identified as a special needs child, is pulled out of the regular class and relocated for instruction. This is accomplished with the help of a teacher other than the regular teacher (Stevens & Slavin, 1992).

Traditional Teaching Methods involves students seated in rows with the teacher lecturing for the majority of class time; group questioning is used where one student is called upon to answer. Typically very little, if any, group work is used.

An expert in Language Arts is defined as someone who has been teaching in the discipline for at least ten years.

#### Limitations and Delimitations

1. The study may not be generalized to the entire population of grade 8, as the sample was limited to a small area of Southern Florida.
2. Treatment was only provided to one teacher's students. The findings may not be generalized due to the teacher's effect.
3. The sample is derived from intact classes which were not chosen randomly.



4. The sample is comprised of primarily white students and may not be generalized to all populations.

#### Assumptions

1. The subjects selected as the sample represent the population of all eighth grade students in South Florida, both academically and socially.
2. Each student has been equally educated prior to the field study.
3. Each student completed the pretest and posttest to the best of his or her ability.
4. Teacher effect should not be a factor since each class will be taught the same material by the same person.

## CHAPTER II

### REVIEW OF LITERATURE

#### Cooperative Learning Defined

The term cooperative learning does not refer unambiguously to a specific approach to classroom organization or learning (Sharan, Ackerman, & Hertz-Lazarowitz, 1979). Cooperative learning is much more than putting students into groups; it is organized and managed group work. This technique requires an instructor to plan very carefully to respond spontaneously to the assignment as it is completed by the students. Cooperative learning requires structuring learning tasks so that students must work together using each other's strengths, to complete the final assignment (Sapon-Shevin, 1994). The cooperative learning process is defined in various ways. Manning and Lucking (1991) define it as a set of alternatives to traditional instruction systems or, more specifically, techniques in which students work in heterogeneous groups of four to six members and earn recognition, rewards, and sometimes grades based on the academic performance of their group. Johnson and Johnson (1992) define it as the instructional use of small groups so that students work together to maximize their own and each other's learning. Natası and Clements (1991) define cooperative learning as structuring the learning environment so that students work together toward a common goal. Sharan et al. (1979) define cooperative learning as an approach of investigation and problem-solving with pupils cooperating in seeking and interpreting knowledge from a variety of sources.

Five essential elements must be present in order for cooperative learning to exist: positive interdependence, individual accountability, face-to-face promotive interaction, and social skills and group processing (Holubec, 1992; Johnson & Johnson 1992; 1999a;

1999b; 1999c; Johnson, Johnson & Holubec, 1994; Natası & Clements, 1991). Positive interdependence is defined as students believing they cannot succeed unless all group members succeed. Individual accountability includes each person being assessed individually and the results shared both as an individual and as a group. Face-to-face promotive interaction occurs when students promote each others success. Social skills contribute to the success of the cooperative effort requiring interpersonal and small group skills. Group processing happens when members of each cooperative group discuss how well they are achieving their goals and maintaining effective working relationships. Understanding these five basic elements allows educators to adapt cooperative learning to their students, to improve their use of cooperative learning and to work to help students manage any conflicts or problems within the group (Johnson & Johnson, 1999b).

Cooperative Learning may be used to teach specific content through Formal Cooperative Learning groups, to ensure understanding during a lecture or viewing by Informal Cooperative Learning grouping, or to provide long term support with Cooperative Base groups (Johnson & Johnson, 1992; 1994; 1999a; 1999b). Formal Cooperative groups may last only one class period or several weeks in order to achieve specific tasks and assignments. During Formal Cooperative groups the teachers must specify the objectives for the lesson, make pre-instructional decisions, explain the task and the positive interdependence, monitor students' learning, and intervene within the groups to assess students' learning while helping students process how well their groups functioned (Johnson & Johnson, 1999c). Informal Cooperative groups last from a few minutes to one class period. The purpose can focus student attention on the material to be learned, set a mood conducive to learning, help set expectations as to material covered in

a class, ensure that classmates have processed the material taught, or to provide closure to a lesson (Johnson & Johnson, 1992; 1999a; 1999b). Cooperative Base groups can last from one school year to several years, are comprised of 3 to 4 members, and meet several times a week. These are formed for support and assistance to encourage each member's academic success. Johnson and Johnson (1992; 1999a; 1999b) reported that Cooperative Base groups tend to improve attendance, personalize the work required, and improve the quality and quantity of learning. In a cooperative situation, individual goal achievements are positively correlated; when one person achieves his or her goal, all others with whom he or she is cooperatively linked achieve their goals (Johnson, Skon, & Johnson, 1980).

A cooperative learning lesson generally opens with some direct teacher instruction where new material is presented. Cooperative group work then follows. Students take roles during the group work in order to participate in the individualized and group learning. The teacher monitors each group to direct their learning and progress (Lee, Maureen, & Jacobs, 1997).

Using cooperative learning techniques requires the instructor to plan carefully and to respond spontaneously to the assignments. Cooperative objectives must be initially set for the heterogeneous groups for this to be successful (Kirch, 1991).

### Group Work

Not all grouping formats are cooperative (Johnson & Johnson, 1999b). It is necessary to know what is and what is not cooperative learning. There are four basic grouping categories: pseudo-learning group, traditional class work learning group, cooperative learning group, and high performance cooperative learning (Johnson & Johnson, 1999b; 1999c). In a pseudo-learning group, students are assigned to work



together, but they have little interest. They feel that they are going to be graded and ranked according to their performance. The students would have achieved more if they had worked alone. Traditional learning groups assign students to work in a specific group for an assignment to be completed. Group members will ask each other for clarification of the assignment, but they do not work together to complete the assignment and individual grades are given. The result of this type of group is that the whole group is more productive than the potential of one member, but the workload of all members is not equal (Johnson & Johnson, 1999b; 1999c). In cooperative learning groups, students must work together to accomplish shared goals. The students' goals are to maximize their own learning and the learning of all group members. The result of this group is the whole group performs better academically than individuals would have had they worked alone (Johnson & Johnson, 1999b; 1999c). The high performance cooperative group meets all the criteria of the cooperative group with the addition of a level of commitment. These groups are rare, as most groups never achieve this level of development (Johnson & Johnson; 1999b; 1999c).

### Academic Results

Several quasi-experimental studies found positive results when investigating cooperative learning techniques. Two studies conducted by Stevens and Slavin found positive effects on achievement when cooperative learning was used to teach reading vocabulary. In one study of 1,112 students in second through sixth grade from Maryland were matched with three classes in California. The control group was taught by traditional methods using basal readers; the experimental group was taught using the Cooperative Elementary School Model. The California Achievement Test was used to

determine the equivalence of the two groups, to establish a baseline for the study and to determine the effects of cooperative learning. The results indicated significant differences in reading vocabulary, reading comprehension, and language expression (Stevens & Slavin, 1992). In another study, 1,299 second through sixth graders were matched on socioeconomic and ethnic makeup and divided into 31 experimental and 32 control groups. The teachers conducted their classes in normal time blocks of 60 to 90 minutes daily. The control classes were taught using traditional methods. The experimental classes were taught using the Cooperative Integrated Reading and Composition program with basal readers. The California Achievement Test was again used to determine the equivalence of the two groups, to establish a baseline, and to determine the effects of cooperative learning. The results of this study also found significant differences in reading vocabulary, reading comprehension, and language expression (Stevens & Slavin, 1995). The experimental group in both of these studies, when analyzing mainstreamed students, showed significant gains of academic achievement and peer acceptance levels.

Seven studies were examined that included Johnson and Johnson's research. Two of the seven used the same basic concept: a computer program dealing with sailing to the New World and acquiring gold along the way. Both studies placed students in a computer-aided environment and researched whether cooperative learning would affect the outcomes. In the first study, 71 eighth-grade students from three English classes in a mid-western school district experienced 10 days of instruction, pairing computer simulation with written materials. The classes were divided into three variables: cooperative learning, competitive learning and individualistic learning. Members of the group were randomly placed, four to a computer. The cooperative condition, using

STAD, was instructed to work together as a group in completing the assignment. In addition, they were to ensure that all group members learned to read the map and gain navigational skills. Testing would be separate and the scores would be averaged as a group with bonus points being awarded for the highest group. The competitive condition had to share a computer, but complete all work as individuals. The goal was to finish the fastest, with the most gold; a score sheet was posted to keep track. They would then be ranked one through four within their group when finished. The teacher kept them aware of the competition by constant reminding. The individualistic condition also completed the assignment individually, but no competition of the class was involved. The results showed significantly better outcomes with the cooperative group than the competitive and individualistic groups. The individualistic group outscored the competitive group, but fell behind the cooperative group (Johnson, Johnson, & Stanne, 1985). The second study was conducted on 49 college students from Xavier University who were randomly assigned to four groups, and then broken down into groups of three. The first four groups had no processing condition, but worked cooperatively. They were given the simulation assignment: sail three ships as a sailing company, with each member responsible for one ship. They had to sail the ships to the New World and back; acquiring as much gold as possible along the way. Each group member received awards based on each other's performance. All had to learn map reading and navigation. The next four groups had the same instructions. They also included teacher-led processing where they were instructed to summarize the information and ideas of all group members, to encourage oral participation, and to check for agreement among members, with a five-minute teacher led feedback session closing class. The third group of four was given the same tasks as



above, plus they had teacher and student-led processing. Each member was assigned responsibility for ensuring all members engaged in learning. After the work session, there was a teacher-led, whole-class feedback session followed by a five-minute student-led small group feedback session. The last group worked totally individualized. They made decisions by themselves and were rewarded on their performance alone. The student and teacher-led groups found the most gold and traveled the farthest of all groups. The no-processing group came in next, with the teacher-processing-only group next. The individual group received the lowest scores. The results showed all three of the cooperative learning groups scoring significantly higher than the individualized group (Johnson, Johnson, Stanne, & Garibaldi, 1990).

In the 1980 study (Johnson et al.) of two first grade classes also having had students divided into cooperative, competitive, and individualistic conditions, it was found that when high problem-solving performance was based on the use of effective strategies and peer support and encouragement are desired, that cooperative conditions achieved better results than competitive or individualistic conditions.

Two studies that Johnson and Johnson (1982, 1985) conducted wholly or partially dealt with handicapped students and social, as well as academic, outcomes. In the first study, 31 eleventh grade math students from a mid-western metropolitan school district were assigned randomly to two groups, one cooperative and one individualistic. The cooperative groups were taught with the STAD method. Both groups received the same worksheets and instructions with the exception that the cooperative group was told to work together with all group members, and the individualistic group was told to avoid interaction with others. Both groups received instruction lasting 55 minutes for 16 days.

On the fifth day of each week, the students were tested on the week's material. The cooperative groups' scores were averaged together for a group score. The tests were analyzed using analysis of variance. Both the handicapped students and the non-handicapped students tended to achieve at a significantly higher level than those taught with the individualistic approach (Johnson, Johnson, 1982). In the Johnson, Johnson, Scott, and Ramolae study (1985), 154 fifth and sixth grade upper-middle class students from a large Mid-western city were randomly assigned to two groups: cooperative and individualistic learning situations. The cooperative students shared one set of materials and helped each other. They were instructed to make sure each member was involved and that they knew the material and could explain the answers on the groups' answer sheet. Tests were given individually, and scores would be totaled for each group with bonus points given if the group score exceeded the set criteria. Individualistic students were given their own material and told not to talk or interact with each other in any way. If they reached the set criteria, they would individually receive bonus points. The instruction lasted 45 minutes a day for 21 days. Achievement tests consisting of 37 multiple-choice items reflecting the concepts and information studied were given. The results show that the non-handicapped students scored better than the handicapped students in each group. The scores of the handicapped students were significantly better when working in cooperative groups than working individually, but the non-handicapped students did not have a significant difference in either group.

The study by Johnson, Johnson, and Scott (1978), selected the 30 highest achieving math students from 120 fifth and sixth graders in advanced math. The students were ranked in order by their scores. The first 14 even-numbered students were placed on



individual instruction, and the other 16 students were placed in cooperative groups. The cooperative set was divided into groups of four with one high, one low and two average achievers in each group. The two conditions studied math for 60 minutes a day for 50 days. The cooperative group students, using STAD, were instructed to work together as a group completing one assignment with all students giving input and the teacher praising the whole group. The individualistic students were instructed to work on their own, and to avoid other students; they would receive individual praise from the teacher. Three achievement measurements were taken. One measure was to count the number of errors made on daily assignments; another was posttests on each unit. The last measurement was a retention test given after two months. The daily assignment scores and the posttest varied greatly between the two groups depending on the math unit studied. The retention test was significantly higher when the cooperative group took it together, but lower when taken individually. These results did not clearly show significant academic achievement gains when cooperative learning was used.

The study by Johnson, Johnson, Buckman, and Richards (1985) used a questionnaire to study the social support when cooperative learning was used in a classroom. Five classes of eighth graders from a suburban Midwest school completed the instrument. These results indicated that students preferred to work in cooperative groups and felt that they did better academically when using cooperative groups, although no academic measurement was used.

In an experimental study conducted by Miller (1992), two teachers of seventh graders taught an identical unit to students. The teachers used cooperative learning about 60% of the time during the first half of the unit and traditional methods for the second

half. During the cooperative learning portion they used the Jigsaw technique for reading text, formal groups for note review and peer partners to develop answers to teacher directed questions. The results showed gains in improving their pretest scores regardless of the teaching technique. A retention test was given after three weeks, and there was an insignificant difference in retention scores.

DeAngelo et al. (1997) found a positive effect on students' achievement when using Paired Reading. This experimental study involved 15 students ranging from fifth to eighth grade who were selected by obtaining the twenty lowest test scores at each grade level. Students were given the Gates-MacGinitie Reading Test as both pretests and posttests to assess the effect of the reading program. The child and partner met to discuss and train in the procedures of Paired Reading. Each student kept a log throughout the ten-week project. Students were given incentives for returning their logbooks on time each week. Upon analyzing the pretest and posttest scores, reading comprehension scores showed significant improvement while using Paired Reading.

Stevens and Durkin (1992) conducted an experimental study to determine the effectiveness of cooperative learning on middle school reading instruction. To accomplish this, the researchers selected 1,223 sixth grade students from 34 classes in six schools in Maryland and matched them academically with 20 experimental classes. The California Achievement Test total reading score was used as the academic measure for pre and post testing. The treatment was implemented for an entire year. The control classes were to be taught using traditional methods while the treatment classes used the Student Team Reading Program. The posttest data indicated a significant difference favoring the treatment group on reading comprehension.

Lazarowitz, Hertz-Lazarowitz, and Baird (1994) studied 120 students in 11<sup>th</sup> and 12<sup>th</sup> grade to determine the academic gains as well as social gains when students were taught cooperatively versus individually. The results showed that when a cooperative mode of learning is incorporated with the learning environment, students gain both in academic and non-academic ways.

### Social Gains

Stevens and Slavin (1991) suggest in their article that achievement is a secondary goal to social skills for mainstreamed, handicapped students. Similar results were also found with Stevens and Durkin's (1992) experimental study on the effectiveness of cooperative learning on reading instruction of middle school students. Handicapped students were separated from the non-handicapped students for analysis of the results. The handicapped students actually scored significantly better than their peers in reading comprehension when taught using cooperative learning. Stevens and Slavin (1995) suggest that cooperative learning can provide peer apprenticeship that is more beneficial than the academic gains they might receive from a traditional pull-out type instruction. It also gives students social contact with common goals that can help improve the interpersonal relations of handicapped and non-handicapped students.

While researching for achievement gains with cooperative learning, Stevens and Slavin (1992) also measured social gains. During the administration of the pretest and posttest for achievement, the students listed the friends they had at that time. The results were analyzed by comparing the average number of friends listed on the pretest to the average number listed on the posttest. The posttest showed significantly more friends in the experimental groups than did the control groups, with both the special education

students and non-special education students. Thus indicating that cooperative learning has positive results for mainstreamed children who often have a hard time blending in or being accepted by their inclusion classmates.



## CHAPTER III

### METHODS AND PROCEDURES

#### Research Design

With all the teaching methods available to educators, is cooperative learning a method that teachers should use in schools today? Will the use of cooperative learning improve academic achievement? Educators should make teaching strategy decisions based on current research. Cooperative learning has been researched heavily over the past twenty years. Yet, little research has been completed at the middle school level. In this field study, the researcher is trying to answer these questions with data to support the use or nonuse of cooperative learning.

#### Sample

The South Florida school district where the sample was taken is considered rural with approximately 9,000 students. The school in the study serves approximately 900 students, grades K-8. The socio-economic status of the school population ranges from approximately 28% of the students receiving free and reduced lunch to 8% of the population classified as extremely high socio-economic status or wealthy. The school is composed of 98% white students. Seventy-four students comprised the sample. The team leader of the middle school randomly placed the students into the four classes, basing placement on other classes the students were taking and class size. These intact classes were then assigned to the researcher. The classes selected for the study were two morning and two afternoon classes. One morning and one afternoon class were randomly selected to be the experimental groups. One morning and one afternoon class were randomly selected to be the control groups.



### Instrumentation

Pretest and posttest instruments were designed for the study. Each student was given a pretest on the first day of the treatment period. This test was administered during a regular class period of 55 minutes. Subjects were assigned numbers for coding the test so that the scorers would not know the person's paper being graded. This test was self-generated based on the objectives to be taught during the treatment period. Three experts in language arts validated the content of the pretest. Another teacher scored the tests and kept them until the treatment was complete. After the 6-week treatment period, the groups were given a posttest which followed the same objectives as the pretest with different questions in similar format. This was constructed, administered, validated, and scored in the same manner as the pretest. The pretest and posttest had split halves tests conducted for internal consistency or reliability.

### Procedures

Upon approval from the Institutional Review Board, the school system, the administration, and upon receipt of parental consent for all participants, the treatment period began. The control and the treatment groups had received 12 weeks of equal instruction prior to the beginning of treatment. During the 13th week of school, both groups were given the pretest, and the results were scored and kept by another teacher until the completion of the treatment. Once both groups had been tested, the control group was instructed with traditional methods of instruction while the treatment group received cooperative learning instruction. Both groups received the same factual information, used the same books, and completed the same assignments. Instruction came from the *Write Source* text, as did all materials used by the students. The control group

used primarily lecture, group discussion, and individual practice. The treatment group received cooperative learning strategies consisting of Student Teams-Achievement Divisions, Cooperative Integrated Reading and Composition, Jigsaw, and Numbered Heads Together. Each group was instructed for 55 minutes each day for a period of 6 weeks or approximately 30 school days, minus the two days for testing. Upon completion of the treatment, both groups completed the posttest.

### Internal Validity

The effect the teacher or treatment administrator could have on the subjects was alleviated in this study by having only one administrator of treatment. However, teacher bias could have been a threat to validity if the researcher expected one class to perform higher than the other. Having the pretest results kept from the administrator throughout the treatment lessened the possibility of this occurrence; the teacher did not know the results of either group to predetermine a class's performance. Selecting classes for each group from both morning and afternoon controlled the effect of time of day.

### Statistics

The data gathered from the pretest and posttest results were used to compare the academic achievement of the treatment and control groups. The pretest and posttest were objective tests in which the students had to select one correct answer. The scores of each groups' tests were charted according to class period and group types. This descriptive data was calculated by using measures of central tendency, to include mean, median, mode and standard deviation. A frequency distribution was also conducted. Range of scores for the pretest and posttest for both the control and experimental groups were calculated. By finding the mean of each group, the researcher was able to determine

which group achieved the highest average score. The median and mode gave two more statistics by which to compare the classes. By charting the frequency of the test scores the researcher was able to calculate the range and the standard deviation. By finding the range and standard deviation, the researcher was able to depict the degree to which the scores were dispersed. Finally, a *t*-test was conducted using the means of the control and experimental groups to determine if a confidence statement about the treatment and the academic achievement could be stated.

## CHAPTER IV

### ANALYSIS OF DATA

#### Pretest Reliability

The pretest, a total of 40 questions, was given to 76 students. The tests were numbered 23 through 99 for recording purposes; no names were used. Each test was given an odd score and an even score for the number of questions correct. The scores were recorded beside the test number, and then the even scores were ranked, including the odd scores. The rank differences were used to calculate the correlation coefficient using the Spearman rho formula. The charting of all scores and the calculations are shown in Table 4 located in the Appendix. The even and odd test questions have a correlation coefficient of .84.

#### Posttest Reliability

The posttest was given to 82 students. Six of the students were not present for the pretest or a majority of the time period; therefore, those scores were not used in any of the calculations. The remaining 76 tests were numbered 23 through 99, which corresponded to the pretest numbers. The posttest also had a total of 40 questions. These tests were scored as the pretest had been, and their ranks were recorded. The rank differences were used to calculate the correlation coefficient using the Spearman rho formula. The charting of all scores and the calculations are shown in Table 5 located in the Appendix. The even and odd test questions have a correlation coefficient of .70.

#### Whole Group Statistics

Table 1 shows the scores for both the pretest and posttest of all 76 participants and the individual gains, either positive or negative. Means, medians and modes are



shown for the pretest and the posttest, as well as the mean for the pretest-posttest gain of the whole group. The mean of the gain shown is calculated from the sum of the gains divided by the number of participants, not the mean of the posttest minus the mean of the pretest.

Test #s	Group	Pre score	Post score	Gain	Test #s	Group	Pre score	Post score	Gain	Pretest scores	Pretest frequency	Posttest scores	Posttest frequency
23	4	11	34	13	62	2	32	36	4	11	1	19	1
24	4	22	29	7	63	2	32	38	6	14	1	23	5
25	4	25	28	3	64	2	35	38	3	15	1	24	1
26	4	26	34	8	65	2	34	37	3	17	1	25	2
27	4	29	40	11	66	2	30	19	-11	18	3	26	1
28	4	22	30	8	67	2	35	40	5	19	3	27	6
29	4	25	28	3	68	2	25	28	3	20	4	28	7
30	4	20	28	8	69	1	27	35	12	21	2	29	6
31	4	27	29	2	70	1	26	31	5	22	5	30	7
32	4	26	32	6	71	1	33	36	3	23	4	31	5
33	4	29	31	2	72	1	25	31	6	24	1	32	5
34	4	29	30	1	73	1	19	23	4	25	6	33	4
35	4	25	32	7	74	1	27	28	1	26	6	34	9
36	4	27	25	2	75	1	23	25	2	27	8	35	5
37	4	27	33	6	76	1	28	31	3	28	5	36	2
38	4	14	27	13	77	1	34	38	4	29	6	37	4
39	3	23	31	18	78	1	28	37	9	30	4	38	4
40	3	29	30	1	79	1	32	37	5	31	2	39	1
41	3	19	34	15	80	1	26	29	3	32	5	40	2
42	3	27	32	5	81	1	18	34	16	33	2		
43	3	20	23	3	82	1	20	23	3	34	2		
44	3	18	30	12	83	1	22	30	8	35	3		
45	3	21	26	5	84	1	32	38	6	36	1		
46	3	33	34	1	86	1	31	33	2				
47	3	23	27	4	87	1	25	27	2	Mode	27	Mode	34
48	2	35	39	4	88	1	21	32	11	Median	26.5	Median	32
49	2	28	29	1	89	1	23	28	5	Range	25	Range	21
50	2	34	33	-1	90	1	36	35	-1				
51	2	31	35	4	91	2	32	35	3				
52	2	27	27	0	92	3	19	24	5				
53	2	27	30	3	93	3	22	29	7				
54	2	29	37	8	94	3	17	27	10				
55	2	22	35	13	95	4	18	23	5				
56	2	30	32	2	96	4	28	34	6				
57	2	29	28	-1	97	1	30	29	-1				
58	2	26	30	4	98	1	28	34	6				
59	2	15	23	8	99	1	20	27	7				
60	2	24	34	10									
61	2	30	34	4									
							MEAN	26.01	31.08	5.17			

Table 1 Entire participant group score comparisons

These statistics can be used to compare any of the smaller groups to the whole.



### Control Group Statistics

The control group consisted of a total of 34 students from two classes, labeled group 2 and group 3. The two classes' scores were calculated together for the purpose of this research. When these two groups were combined as the control group, they had a pretest mean of 26.85 and a posttest mean of 31.29. The average gain of the control group is 4.44. These figures are shown in Table 2. The pretest has an almost symmetrical distribution with the mean at 26.85, and the median at 27, but it has 4 modes at 27, 30, 32, and 35 causing it to be non- symmetrical. The range of scores for the pretest is 20. The variance is 31.65 and the standard deviation is 5.63. The scores generate a normal bell curve with 68% of the scores falling within one standard deviation from the mean.

Test #'s	Group	Pre score	Post test	Gain	Test #'s	Group	Pre score	Post test	Gain
48	2	35	39	4	67	2	35	40	5
49	2	28	29	1	68	2	25	28	3
50	2	34	33	-1	91	2	32	35	3
51	2	31	35	4	39	3	23	31	8
52	2	27	27	0	40	3	29	30	1
53	2	27	30	3	41	3	19	34	15
54	2	29	37	8	42	3	27	32	5
55	2	22	35	13	43	3	20	23	3
56	2	30	32	2	44	3	18	30	12
57	2	29	28	-1	45	3	21	26	5
58	2	26	30	4	46	3	33	34	1
59	2	15	23	8	47	3	23	27	4
60	2	24	34	10	92	3	19	24	5
61	2	30	34	4	93	3	22	29	7
62	2	32	36	4	94	3	17	27	10
63	2	32	38	6	Mean		26.85	31.29	5.09
64	2	35	38	3	Post X - Pre X = 4.44 which is the Control groups gain				
65	2	34	37	3					
66	2	30	19	11					

Table 2. Control Groups test scores

The posttest is also fairly close to a normal distribution with a mean of 31.29 and median of 32. Again, there is more than one mode; the posttest is bimodal with 30 and 34 which causes it to be slightly skewed. The range for the posttest is 21. The variance is 24.91 and standard deviation is 4.99. These scores also form a normal bell curve with 71% of the scores falling within one standard deviation of the mean. The test score frequency distributions are shown in Figures 1 and 2 for both the pre and posttests.

**Frequency Distribution of Pretest scores  
for Control group**

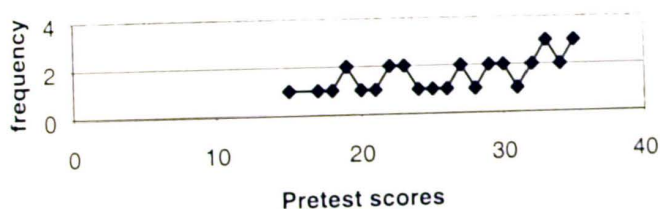


Figure 1

**Frequency Distribution of Posttest  
scores for Control group**



Figure 2

### Treatment Group Statistics

The treatment group consisted of a total of 42 students from two classes, labeled group 1 and group 4. The two classes' scores were also calculated together for the purpose of this research. Scores for these two groups are combined as the treatment group; there is a pretest mean of 25.33 and a posttest mean of 30.90. The average gain of the control group is 5.57. These figures are shown in Table 3.

Test #'s	Group	Pre score	Post test	Gain	Test #'s	Group	Pre score	Post test	Gain
69	1	27	35	12	23	4	11	34	12
70	1	26	31	5	24	4	22	29	7
71	1	33	36	3	25	4	25	28	3
72	1	25	31	6	26	4	26	34	8
73	1	19	23	4	27	4	29	40	11
74	1	27	28	1	28	4	22	30	8
75	1	23	25	2	29	4	25	28	3
76	1	28	31	3	30	4	20	28	8
77	1	34	38	4	31	4	27	29	2
78	1	28	37	9	32	4	26	32	6
79	1	32	37	5	33	4	29	31	2
80	1	26	29	3	34	4	29	30	1
81	1	18	34	16	35	4	25	32	7
82	1	20	23	3	36	4	27	25	-2
83	1	22	30	8	37	4	27	33	6
84	1	32	38	6	38	4	14	27	13
86	1	31	33	2	95	4	18	23	5
87	1	25	27	2	96	4	28	34	6
88	1	21	32	11	Mean		25.33	30.9	5.4
89	1	23	28	5	Post X - Pre X = 5.57 which is the treatment group's gain				
90	1	36	35	-1					
97	1	30	29	-1					
98	1	28	34	6					
99	1	20	27	7					

Table 3. Treatment groups test scores

The pretest is bimodal with 25 and 27; the median score is 26. The range of scores for the pretest is 25. The distribution of the pretest scores is normal and symmetrical. The variance is 25.52 with the standard deviation of 5.05. The range of scores for the pretest is 25. Using the standard deviation to chart the pretest scores in a normal bell curve shape, it is symmetrically balanced as 74% of the scores fall within one standard deviation of the mean. The posttest is also bimodal with scores of 28, and 34; the median score is 31. Although the mean and median present a normal distribution, the mode causes it to be asymmetrical. The range of scores is 17. The variance is 17.33 with a standard deviation of 4.16. These figures form a normal bell curve, with 67% of the scores falling within one standard deviation from the mean of 31. Figures 3 and 4 show the frequency of the scores for the treatment group.

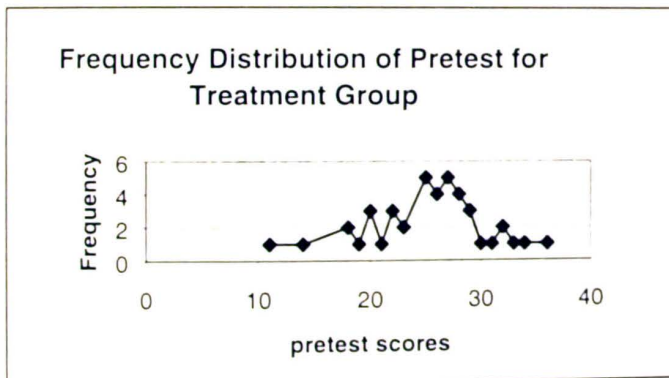


Figure 3

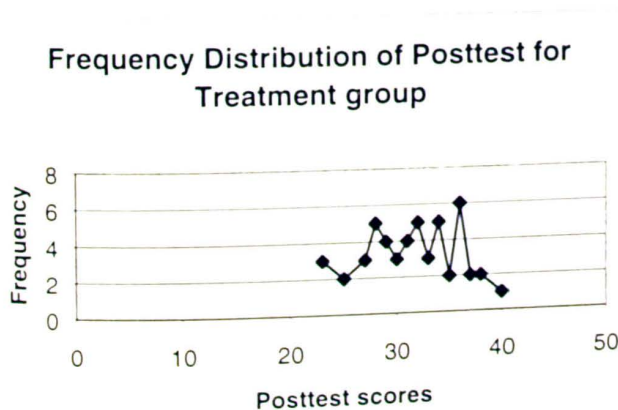


Figure 4

### Statistical Comparison of the Control and Treatment Groups

The control and treatment groups had higher posttest scores than pretest scores. The mean of pretest for control was 26.85, and the mean of the treatment group was 25.33. The posttest mean for the control group was 31.29 and the treatment group's mean was 30.9. With the means of the pre and posttests given, the treatment group had a slightly higher gain of 5.57 points compared to the control group of 4.44 points. A *t*-test was used to determine whether the means of each group's gains are significantly different. The calculation of the *t* value was  $-.34$  when using the means calculated from the sums of each column which were 5.09 for the control group and 5.40 for the treatment group. When using the values derived from the posttest mean of 31.29 minus the pretest mean of 26.85, the control group value is 4.44. Using the treatment group posttest mean of 30.90 minus a pretest mean of 25.33 for a value of 5.57; the *t* value was  $-1.24$ . At a 99% confidence level, both *t* values are lower than the *p* value of 2.660.



## CHAPTER V

### SUMMARY AND CONCLUSIONS

One would assume that the teaching method a teacher chooses to use in the classroom would have a direct effect on the achievement level of the students. As educational reforms change the way schools are viewed, achievement is the only measure that now seems to matter. Teachers and schools are being graded on academic achievement alone. Because of this fact, teachers must choose teaching methods that will have the greatest impact on academic achievement. From readings of educational research, it has been found that there have been numerous studies completed on the effects of cooperative learning (Johnson & Johnson, 1982; Johnson, Johnson, Buckman, & Richards, 1985; Johnson, Johnson, & Scott, 1978; Johnson, Johnson, Scott, & Ramolae, 1985; Johnson, Johnson, & Stanne, 1985; Johnson, Johnson, Stanne, & Giribaldi, 1990; Johnson, Skon, & Johnson, 1980; Lazarowitz, Hertz-Lazarowitz, & Baird, 1994; Sharan, Ackerman, & Hertz-Lazarowitz, 1979; Stevens & Durkin, 1992; Stevens & Slavin, 1992; 1995). Results of the studies vary. Some reported that the use of cooperative learning methods produce significantly better results, while some reported that the results were minimal. Others found no difference in cooperative methods versus traditional. Most of the research in this area has been conducted at the elementary level (Johnson, Johnson, & Scott, 1978; Johnson, Johnson, Scott & Ramolae, 1985; Johnson, Skon, & Johnson, 1980; Sharan, Ackerman, & Hertz-Lazarowitz, 1979; Stevens & Slavin 1992; 1995). The minimal amount of middle school research was the basis for this study.

### Research Question and Hypothesis

The following research question was designed to be answered at the completion of the study:

To what extent will the use of cooperative learning improve the academic achievement of grade 8 language arts students?

This null hypothesis was designed to be either accepted or rejected based on the data collected:

Academic achievement will not be significantly different for grade 8 language arts students who are taught with cooperative learning from those taught with traditional methods.

### Results

Through the instruction of the same material using both traditional and cooperative learning methods, the question was answered whether to accept or reject the null hypothesis. The traditionally taught students received whole group instruction on each skill or idea presented and worked individually on all assignments. The cooperative learning or treatment group was taught with the various methods including those defined in the Definition of Terms section of this study. Due to the concepts and skills being addressed, some of the methods such as STAD, Jigsaw, and Numbered Heads Together were used more than others.

Analyzing the pretest means for each group, it can be determined that heterogeneous groups were used for this study. Analyzing the pretest means, it can be determined that this is not necessarily the case. The means varied greatly among the four classes that were in the study. Group 1 had a mean of 26.42, group 2 had the highest

mean of 29.64, group 3's mean was 22.58, and group 4 had a mean of 23.89. Once the students were placed into either the control or treatment group, the means of these showed more equality, with means of 26.58 and 25.33. Both of the groups were close to the whole sample mean of 26.01. By the end of the treatment period, the posttest scores of the 4 groups were varying by less difference than the pretest. The means were group 1 at 31.29, group 2 with 32.59, group 3 with 28.92 and group 4 with 30.39. For the posttest, the control group had a combined mean of 31.29 and was the mean for the treatment group. The whole sample had a mean of 31.08. In comparing the gains of each group, the control group achieved a higher mean than the treatment group, but they also started with a higher mean. When you compare the gains of each group, the cooperative learning group did have higher academic achievement gains than the traditional methods group. The hypothesis presented states that academic achievement will not be significantly different between the two groups. The measure used to test the hypothesis is the *t* test. There were 2 different *t* values calculated at -.34 and -1.24, depending on how precise the mean was calculated. The *p* value for a *t* with an *n* value of 70 is 2.660. Because both *t* values are less than the *p* value, it can be concluded, with 99% confidence, that the cooperative learning students did not achieve significantly better results than the traditionally taught students, therefore accepting the null hypothesis.

### Other Observations

In addition to the academic achievement that was being measured, other positive items seemed to be happening in the cooperative learning classrooms. The teenage years that are part of middle school create much change for each individual student. The friend groups start to change from childhood friends they have had since the beginning of

school to now being with the 'in group' or 'in crowd'. Being sociable outside of the student's friend group does not seem to be a priority for middle school students. While the students were in the classroom cooperative learning groups and working together to accomplish daily tasks, a sense of social acceptance was developed among the students who normally do not interact. Although this did not travel outside of the classroom, it did create a positive change inside the classroom.

### Conclusion

Success in education requires a certain level of academic achievement. Many students feel that achievement is the only way to have success in school. Many adults would agree that academics are important, but may not be the ultimate achievement in life.

Students learn in various ways. This has been well researched with both multiple-personality and learning-style research. When using cooperative learning methods in the classroom, all students must work together to accomplish their tasks or goals. This poses a problem for some students and may not be their best learning method. For various reasons, many of them do not like to work in groups. Conclusively, cooperative learning does not meet all students learning styles. Through the data collected in the study, cooperative learning does not produce significantly better results in academic achievement, but does have results at least equal to traditional methods.

Observations of some educators reveal that children learn more than just academics while in school. One important thing that they must learn is to socialize and get along with others. This skill is generally learned outside of school, but, many times, in today's fast-paced world, there are other things going on in a child's life that prevent



this from happening. Academics are important, and a person cannot function well without being able to read and write at an advanced level, but being able to get along and work with other people is almost as important. Few situations in life do not require a person to use skills necessary to work with other people. Many times, it is not to receive a grade, but still is to accomplish tasks. This skill can easily be incorporated while using cooperative learning strategies.

Ultimately, the teacher's interpretation of cooperative learning and the method they choose to implement can have an effect on its results. There are many different types of cooperative learning from which to choose. Each method requires the proper implementation in order to receive positive results. Placing students in a group and telling them to do a particular task does not qualify as cooperative learning. As previously stated, two things must take place for cooperative learning to exist; individual accountability and group goals that work toward a reward or a form of recognition. The use of cooperative learning can be incorporated into other methods to achieve academics as well as social gains. According to Slavin (1992), research supports the idea that combining cooperative learning with other teaching strategies, increases achievement, and that cooperative learning can be used as the primary instructional method in certain subject areas, not just as an occasionally used strategy. Because cooperative learning is philosophically sound, it succeeds. Through the creation of an accepting, social environment, collaborative learning helps students recognize and seek worthwhile experiences (Flurkey, 1992).

Research has also supported the effects beyond academics that cooperative learning creates. "Teachers have long realized that motivation is at the heart of many

problems that they face in educating children” (Gambrell 1996, p. 17). While using cooperative learning, students will be able to work with other class members, talk in class, help each other with their work, etc. These ideas will create much-needed motivation for middle school students.

Secondary educators also have a responsibility to teach students literacy skills that will prepare them to find success in the challenging world they are about to enter. Among these skills is the skill of being a socially acceptable person (Lester 1998). These students will have to be able to function in a job, not only to perform the skills of the job, but also to work with their coworkers to achieve certain goals and expectations. In some cases, middle school students already know how to get along socially, but, in many cases, they do not. With the current curriculum that must be taught, there is no time for a social skills class. This must be worked into the academic classes. There may not be any better way to achieve this than through cooperative learning. This is not a new technique, but it isn't used as often as one would think considering the research results. There could be numerous reasons for this including lack of training or comfort in the current method one is using. The implications for educators are vast. If educators do not feel that there is enough evidence to support using this as a primary tool, they should at least consider cooperative learning for the social skill development it provides.

Educators strive to do what they can to help students achieve their greatest potential both academic and non-academic. If cooperative learning is a step in the right direction, then educators should take that step to help them succeed.

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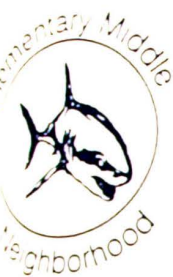
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## APPENDIXES



# SUGARLOAF SCHOOLS

Theresa Axford, Principal  
Jim Hall, Assistant Principal  
Marlyn Douthett, Assistant Principal

Sept. 17, 2001

To Whom It May Concern:

Paula Smith, a teacher at Sugarloaf Middle School has my permission to use the results of class room work as part of her research study. She is going to administer both a pre-test and post-test to her students to decide which of two treatments has the most positive effect on student achievement. The two treatments are cooperative learning and a more traditional approach.

Sincerely,

Theresa Axford,  
Principal

255 CRANE BOULEVARD  
SUMMERLAND KEY, FL  
33042

FAX: 305-745-2019

PHONE: 305-745-3282

"PLACE WHERE DREAMS BECOME REAL"



## Austin Peay State University Institutional Review Board

November 2, 2001

Paula Smith  
c/o Ann Harris  
Education Dept.  
APSU Box 4545

RE: Your application dated September 24, 2001 regarding study number 02-010: The Effects of Cooperative Learning on Achievement Levels of Grade 8 Language Arts Students (Austin Peay State University)

Dear Ms. Smith:

Thank you for your response to requests from a prior review of your application for the new study listed above.

Congratulations! This is to confirm that your application is now fully approved. The protocol is approved through one calendar year. The consent form submitted with your application is approved. You must obtain signed written consent from all subjects. This approval is subject to APSU Policies and Procedures governing human subjects research. You may want to review this policy which can be viewed on the APSU website at : [www2.apsu.edu/www/computer/policy/2002.htm](http://www2.apsu.edu/www/computer/policy/2002.htm)

You are granted permission to conduct your study as most recently described effective immediately. The study is subject to continuing review on or before September 24, 2002, unless closed before that date. Enclosed please find the forms for reporting a closed study and for requesting approval of continuance.

Please note that any changes to the study as approved must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. If you have any questions at all do not hesitate to contact Lou Beasley (221-6380; fax 221-7595; email: [beasleyl@apsu.edu](mailto:beasleyl@apsu.edu)) or any member of the APIRB.

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

Sincerely,



Dr. Lou M. Beasley  
Chair, Austin Peay Institutional Review Board

*The School Board of Monroe County, Florida*

Michael J. Lannon  
Superintendent

*Members of the Board*

District #1  
Eileen Quinn  
Vice Chairperson  
District #2  
Andy Griffiths  
District #3  
Patrick G. Labrada  
District #4  
Anne Kelly Cohan  
District #5  
Debra Walker  
Chairperson  
John R. Collins  
School Board Attorney

November 27, 2001

Paula E. Smith  
Language Arts Teacher  
Sugarloaf Middle School

Dear Paula,

The application that you submitted on November 14, 2001 for permission to conduct research in a Monroe County School has been reviewed and approved. Please ensure that you received written consent from parents/guardians of students who will be participating in your study. These consent forms must be filed and kept for at least one year after the completion of your study.

Students' names or personal identification must not be used in the report of your study nor should you identify the institution where the data was collected without the institution's written consent. Please communicate with your principal any relevant information or cooperation you might need with respect to the data collection. Moreover, the data collection process should not conflict with or negatively impact your regular duties at the school.

Please submit two copies of your final report to the Monroe County School District Office of Accountability and Assessment upon completion of your research study.

Best wishes and success in you endeavors with your research project.

Sincerely,

Owen A. Roberts, Ph.D.

Cc: Theresa Axford  
Dr. Peggy Smith

241 Trumbo Road – P.O. Box 1788 – Key West, FL 33041-1788 – (305) 293-1400  
SunCom 464-1400 – Fax (305) 293-1485  
[www.monroe.k12.fl.us](http://www.monroe.k12.fl.us)

## **Consent to Participate in a Research Study Austin Peay State University**

Your child is being asked to participate in a research study. This form is intended to provide you with information about this study. You may ask the researcher listed below about this study or you may call the Office of Grants and Sponsored Research, Box 4545, Austin Peay State University, Clarksville, TN 37044, 931-221-7757 with questions about the rights of research participants.

**1. The purpose of the current study:** To determine if cooperative learning produces higher achievement than traditional teaching methods. A test will be given before and after the 6 week study period and those scores will be analyzed to show if there is significant improvement in comparison with the traditional method.

**2. The procedures to be used:** (What your child will be asked to do) The students will take a test on the first day of the study and will be given a test on the final day. Between the tests, each class will receive 6 weeks of instruction using either traditional or cooperative methods. Classes will be randomly assigned to either cooperative learning or traditional methods of teaching/learning.

**3. Regarding risks and benefits:** Participants will have minimum risks. The students will be in a normal classroom setting during the length of the study. The benefits of this study could be seen as early as the current year, as well as future classes, if the results show an academic gain with the cooperative methods. Depending on the results, teaching methods could be altered by the researcher.

**4. What will happen to the information collected?** The scores on these two tests will help the researcher determine if there is a measurable difference in the two teaching methods. The identity of each student will be protected and will not be told to anyone outside of the research team. Numbers will be used and no names to distinguish tests. The answers will be collected with other students in their own grade and used for comparison in the future. The specific answers will not be told to anyone. It will be impossible for anyone to tell whose tests are whose.

**Please read the statements below. They describe your rights and responsibilities as a participant of this research project.**

1. I agree to allow my child's test scores to be used in the present study conducted by Paula Smith, from the Department of Education at Austin Peay State University. I understand that my child will complete a Pretest and a Posttest, regardless of consent to participate, as a portion of classroom activity.
2. I have been informed (and my child will be informed) in writing of the procedures to be followed and about any risks that may be involved. I have also been told of any benefits that may result from my participation. Dr Ann Harris has offered to



answer any further inquiries that I may have regarding the research, and can be contacted, Monday thru Friday, by phone at 931-221-7757.

3. I understand that my child may request their scores not be used in the study at anytime without any penalty or prejudice. I also understand that any data (test scores) obtained from my child will be withdrawn from the study and destroyed if my child withdraws.
4. I realize that by signing this form, I willingly give my consent for my child to participate in the current study. I acknowledge and have been given a copy of this for my records.

**Contact:** Paula Smith, at 745-3282 ext 380, or by email at [smithp1@monroe.k12.fl.us](mailto:smithp1@monroe.k12.fl.us)

\_\_\_\_\_  
Signature of parent or guardian

\_\_\_\_\_ Yes, my child's scores can be used in this study

\_\_\_\_\_  
Date

\_\_\_\_\_ No, I do not want my child's scores used in this study.

\_\_\_\_\_  
Signature of researcher

Assent Form for Students

You are being asked to help with a research study. You parents have said that it was Ok for you to take part in the study, but we need your permission to go ahead. We are asking your help to determine if cooperative teaching methods produce higher academic results than traditional teaching methods.

What we will do during this study is take a pretest to determine how much you know about the subject matter to be taught. Then, your class will either be taught with traditional methods or cooperative methods. After the six week period, you will take a posttest.

Your scores on these two tests will help me to determine if there is a measurable difference in these two teaching methods. Your identify will be protected and will not be told to anyone outside of the research team. Your answers will be collected with those of other people your same age and used for comparison purposes in the future. However, your specific answers will not be told to anyone. No one will be able to tell what answers were yours when they do future comparisons.

If you have any questions, please ask now. If you think of something later on, please call, or have one of your parents call, Paula Smith at 305-745-3282 (380) Monday through Friday from 8:00 to 3:30. If I am not in, I will return your call as soon as possible.

When you sign below, you agree to participate in the study as it has been described to you.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



**PRETEST**  
**6 week period for Field Study**  
**By Paula Smith**

**Directions:** circle the letter which shows the correct end punctuation needed.

1. I will be at school until 2:00 pm today  
(a) period . (b) question mark ? (c) exclamation point !
2. Is your birthday in December or January  
(a) period . (b) question mark ? (c) exclamation point !
3. Clean up your room this instant and don't make up any excuses to get out of it  
(a) period . (b) question mark ? (c) exclamation point !

**Directions:** Circle the letter beside the word(s) that must be capitalized for the sentence to be correct.

4. Brody's interest in martial arts came from his study in asian culture.  
(a) martial (b) martial arts (c) asian (d) asian culture
5. The operation will be performed by dr. karl malone.  
(a) dr. (b) karl (c) karl malone (d) dr. karl malone
6. How well did the green bay packers do this year?  
(a) green bay (b) packers (c) green bay packers (d) year
7. I would have preferred a big mac hamburger to pizza.  
(a) big (b) big mac (c) hamburger (d) pizza

**Directions:** circle the letter that correctly defines each word

8. A preposition is a word that  
(a) shows emotion  
(b) shows a relationship between a noun to another part of the sentence  
(c) modifies a noun or pronoun  
(d) tells where, when, how, or to what extent
9. An interjection is a word that  
(a) shows emotion  
(b) shows the relationship of a noun to another word in the sentence  
(c) modifies a noun or pronoun  
(d) tells where, when, how, or to what extent

**Pretest Page 2**

10. An adjective is a word that  
(a) shows emotion  
(b) shows the relationship of a noun to another word in the sentence  
(c) modifies a noun or pronoun  
(d) tells where, when, how, or to what extent
11. An adverb is a word that  
(a) shows emotion  
(b) shows the relationship of a noun to another word in the sentence  
(c) modifies a noun or pronoun  
(d) tells where, when, how, or to what extent

**Directions:** circle the letter which shows the part of speech of the underlined word

12. The wagon train slowly traveled across the dusty prairie.  
(a) preposition (b) interjection (c) adjective (d) adverb
13. You would go under the bridge to find my secret hideout.  
(a) preposition (b) interjection (c) adjective (d) adverb
14. The boy in the aviator suit wanted to fly.  
(a) preposition (b) interjection (c) adjective (d) adverb
15. What! How can I relax?  
(a) preposition (b) interjection (c) adjective (d) adverb
16. We watched the student spell out the words carefully.  
(a) preposition (b) interjection (c) adjective (d) adverb
17. Today we studied the contributions that ancient North Africans made to mathematics.  
(a) preposition (b) interjection (c) adjective (d) adverb
18. The English test was easy for him.  
(a) preposition (b) interjection (c) adjective (d) adverb
19. This is not a good day!  
(a) preposition (b) interjection (c) adjective (d) adverb
20. You're too tense when you dance.  
(a) preposition (b) interjection (c) adjective (d) adverb
21. Humph! I don't know what you really saw.  
(a) preposition (b) interjection (c) adjective (d) adverb

### Pretest Page 3

**Directions:** circle the correct spelling of each word

- |   |  |  |
|---|--|--|
| 22. (a) interrstate<br>(b) interstate<br>(c) enterstate<br>(d) intarstate                 | 23. (a) intirmediate<br>(b) intermmEDIATE<br>(c) interrmediate<br>(d) intermediate | 24. (a) superlative<br>(b) superllative<br>(c) supperlative<br>(d) superlitive |
| 25. (a) superinntendent<br>(b) superintendant<br>(c) superentendent<br>(d) superintendent | 26. (a) intervenous<br>(b) intravenus<br>(c) intravenous<br>(d) intervenus         | 27. (a) interrcept<br>(b) intersept<br>(c) intercept<br>(d) intircept          |
| 28. (a) barbacie<br>(b) barbique<br>(c) barbeque<br>(d) barbecue                          | 29. (a) musquito<br>(b) moskeeto<br>(c) moskito<br>(d) mosquito                    | 30. (a) allfalfa<br>(b) alphalfa<br>(c) alfalfa<br>(d) alfalpha                |
| 31. (a) pweblo<br>(b) puebble<br>(c) pwebloh<br>(d) pueblo                                | 32. (a) kiyote<br>(b) coyote<br>(c) coyotee<br>(d) kiotee                          | 33. (a) armadda<br>(b) armada<br>(c) arrmada<br>(d) arrmadda                   |
| 34. (a) immigrate<br>(b) emmigrate<br>(c) imigrate<br>(d) immigrat                        | 35. (a) liable<br>(b) lible<br>(c) liabel<br>(d) libal                             | 36. (a) rational<br>(b) rashional<br>(c) rationel<br>(d) rashionel             |

**Directions:** Circle the correct answer that completes each statement correctly.

37. In an opening paragraph of an essay the writer should:
- (a) gain the reader's attention,
  - (b) support each detail with clear information,
  - (c) emphasize one main point,
  - (d) summarize the essay
38. Each paragraph in the middle section of an essay should:
- (a) emphasize one main point,
  - (b) discuss the main idea of the essay,
  - (c) restate the thesis statement,
  - (d) grab the reader's attention

**Pretest Page 4**

39. The conclusion paragraph of an essay should:
- (a) discuss one detail in full,
  - (b) introduce a new detail,
  - (c) introduce the subject,
  - (d) summarize all main points
40. Which of the following essay topics would be considered persuasive?
- (a) How to build a boat,
  - (b) Should dress code be decided by the parents or faculty?
  - (c) Why you should be president or SGA,
  - (d) If I could be any tree, I would be a .....



**POSTTEST**  
**6 week period for Field Study**  
**By Paula Smith**

**Directions:** circle the letter which shows the correct end punctuation needed.

1. Okay, let's get back to the test  
(a) period . (b) question mark ? (c) exclamation point !
2. Good grief, we had a test on fractions yesterday  
(a) period . (b) question mark ? (c) exclamation point !
3. Donna, what are you doing this weekend  
(a) period . (b) question mark ? (c) exclamation point !

**Directions:** Circle the letter beside the word(s) that must be capitalized for the sentence to be correct.

4. How about a fiesta highlighting mexican culture?  
(a) fiesta (b) fiesta & mexican (c) mexican (d) mexican culture
5. mr. brown, our Social Studies teacher, is asking each of us to bring in food.  
(a) mr. (b) mr. brown (c) teacher (d) mr. brown & teacher
6. Should we get parents involved from the sugarloaf parent teacher organization?  
(a) sugarloaf & organization (b) sugarloaf & parent (c) parent & teacher  
(d) sugarloaf parent teacher organization
7. He's a very creative person; he sings like sting.  
(a) person (b) he (2<sup>nd</sup> he) (c) sting (d) no capitals are needed in this sentence

**Directions:** circle the letter that correctly defines each word

8. A preposition is a word that  
(a) shows emotion  
(b) shows the relationship of a noun to another word in the sentence  
(c) modifies a noun or pronoun  
(d) tells where, when, how, or to what extent
9. An interjection is a word that  
(a) shows emotion  
(b) shows the relationship of a noun to another word in the sentence  
(c) modifies a noun or pronoun  
(d) tells where, when, how, or to what extent

## Posttest Page 2

10. An adjective is a word that  
(a) shows emotion  
(b) shows the relationship of a noun to another word in the sentence  
(c) modifies a noun or pronoun  
(d) tells where, when, how, or to what extent
11. An adverb is a word that  
(a) shows emotion  
(b) shows the relationship of a noun to another word in the sentence  
(c) modifies a noun or pronoun  
(d) tells where, when, how, or to what extent

**Directions:** circle the letter which shows the part of speech of the underlined word

12. The wagon train slowly traveled across the dusty prairie.  
(a) preposition (b) interjection (c) adjective (d) adverb
13. You would go under the bridge to find my secret hideout.  
(a) preposition (b) interjection (c) adjective (d) adverb
14. The boy in the aviator suit wanted to fly.  
(a) preposition (b) interjection (c) adjective (d) adverb
15. Wow! How do you do that?  
(a) preposition (b) interjection (c) adjective (d) adverb
16. We watched the awesome driver navigate the course carefully.  
(a) preposition (b) interjection (c) adjective (d) adverb
17. Today we studied the contributions that ancient North Africans made to mathematics.  
(a) preposition (b) interjection (c) adjective (d) adverb
18. The English test was easy for him.  
(a) preposition (b) interjection (c) adjective (d) adverb
19. This is not a very good day!  
(a) preposition (b) interjection (c) adjective (d) adverb
20. You're too tense when you line dance.  
(a) preposition (b) interjection (c) adjective (d) adverb
21. Whew! That's what I was hoping!  
(a) preposition (b) interjection (c) adjective (d) adverb

### Posttest Page 3

Directions: circle the correct spelling of each word

- |   |  |   |
|---|--|---|
| 22. (a) inteference<br>(b) interference<br>(c) interfereense<br>(d) interrference | 23. (a) counnterpart<br>(b) counterparrrt<br>(c) counterpart<br>(d) counterrpart                   | 24. (a) intervenntion<br>(b) interventon<br>(c) interrvention<br>(d) intervention |
| 25. (a) super-market<br>(b) supermarket<br>(c) supermarkett<br>(d) supermarkette  | 26. (a) counterclockwise<br>(b) conterclockwise<br>(c) counter-clockwise<br>(d) counter-clock-wise | 27. (a) superfishal<br>(b) superficial<br>(c) sooperficial<br>(d) suparficial     |
| 28. (a) inndigo<br>(b) indigo<br>(c) indiggo<br>(d) inndiggo                      | 29. (a) cafeteria<br>(b) caffeteria<br>(c) cafateria<br>(d) cafeteeria                             | 30. (a) jagwar<br>(b) jaguarr<br>(c) jaggwar<br>(d) jaguar                        |
| 31. (a) avacado<br>(b) avocodo<br>(c) avacado<br>(d) avocado                      | 32. (a) pemento<br>(b) pimento<br>(c) pimmento<br>(d) pimentto                                     | 33. (a) mascara<br>(b) maskara<br>(c) masscara<br>(d) mascarra                    |
| 34. (a) adverse<br>(b) adverce<br>(c) aversce<br>(d) adversce                     | 35. (a) persocute<br>(b) persecute<br>(c) pirsecute<br>(d) pirsocute                               | 36. (a) vocation<br>(b) vocashion<br>(c) vokation<br>(d) vokashion                |

Directions: Circle the correct answer that completes each statement correctly

37. In an opening paragraph of an essay the writer should:
- (a) gain the reader's attention,
  - (b) support each detail with clear information,
  - (c) emphasize one main point,
  - (d) summarize the essay
38. Each paragraph in the middle section of an essay should:
- (a) emphasize one main point,
  - (b) discuss the main idea of the essay,
  - (c) restate the thesis statement,
  - (d) grab the reader's attention

**Posttest Page 4**

39. The conclusion paragraph of an essay should:
- (a) discuss one detail in full,
  - (b) introduce a new detail,
  - (c) introduce the subject,
  - (d) summarize all main points
40. Which of the following essay topics would be considered expository?
- (a) You want more allowance; convince your parents you deserve it
  - (b) Should dress code be decided by the parents or faculty?
  - (c) Al Gore or George Bush for president,
  - (d) If I could be any tree, I would be a



Spearman Correlation  
Pretest

Test #s	Even Score	Even Rank	Odd rank	Rank difference	Rank squared	Test #s	Odd Score	Test #s	Even Score	Even Rank	Odd rank	Rank difference	Rank squared	Test #s	Odd Score
90	17	1	3	-2	4	48	20	98	12	42	69	-17	289	36	14
50	16	2	4	-2	4	64	20	29	11	43	26	-13	169	74	14
67	16	3	8	-5	25	90	19	30	11	44	27	-13	169	32	14
71	16	4	12	-8	64	67	19	31	11	45	28	-13	169	70	14
84	16	5	19	-14	196	65	19	37	11	46	36	-10	100	29	14
48	15	6	1	5	25	77	19	47	11	47	46	1	1	60	14
56	15	7	2	5	25	46	19	52	11	48	59	-11	121	39	14
62	15	8	5	3	9	50	18	80	11	49	61	-12	144	85	14
64	15	9	6	3	9	63	18	83	11	50	72	-22	484	89	14
65	15	10	13	-3	9	86	18	25	10	51	37	14	196	28	14
66	15	11	14	-3	9	97	18	35	10	52	38	16	256	26	13
77	15	12	15	-3	9	71	17	43	10	53	39	14	196	53	13
79	15	13	30	-17	289	62	17	45	10	54	40	14	196	58	13
91	15	14	31	-17	289	79	17	60	10	55	47	8	64	42	13
26	14	15	7	8	64	91	17	68	10	56	56	0	0	75	13
33	14	16	9	7	49	51	17	72	10	57	62	-5	25	24	13
46	14	17	16	-1	1	61	17	75	10	58	63	-5	25	92	13
51	14	18	32	-14	196	34	17	88	10	59	73	-14	196	47	12
53	14	19	41	-22	484	84	16	24	9	60	29	31	961	82	12
63	14	20	52	-32	1024	27	16	39	9	61	48	13	169	83	11
76	14	21	53	-32	1024	40	16	73	9	62	49	13	169	45	11
27	13	22	10	12	144	54	16	81	9	63	50	7	49	88	11
36	13	23	17	6	36	57	16	85	9	64	57	7	49	81	11
40	13	24	20	4	16	96	16	87	9	65	64	1	1	95	11
49	13	25	21	4	16	98	16	89	9	66	65	1	1	99	11
54	13	26	22	4	16	31	16	94	9	67	66	1	1	41	11
57	13	27	23	4	16	37	16	95	9	68	70	-2	4	55	10
58	13	28	33	-5	25	52	16	99	9	69	74	-5	25	93	10
61	13	29	34	-5	25	87	16	28	8	70	51	19	361	73	10
69	13	30	35	-5	25	56	15	41	8	71	60	9	81	44	10
74	13	31	42	-11	121	66	15	44	8	72	67	5	25	30	9
78	13	32	43	-11	121	33	15	82	8	73	71	2	4	43	9
86	13	33	54	-21	441	49	15	23	7	74	75	-1	1	94	8
32	12	34	11	23	529	69	15	38	7	75	76	-1	1	59	8
34	12	35	18	17	289	78	15	59	7	76	77	-1	1	38	6
42	12	36	24	12	144	80	15	92	6	77	58	19	361	23	5
55	12	37	25	12	144	25	15								
70	12	38	44	-6	36	35	15								
93	12	39	45	-6	36	68	15								
96	12	40	55	-15	225	72	15								
97	12	41	68	-17	289	76	14								
												sum	11566	11566 x 6 =	69396
										69396/76(76(76)-1)	69396/76(5775)=	69396/438900=	0.16		
										correlation coefficient		1.00 -.16	0.84		

Spearman's correlation coefficient

Table 6

Test #s	oct post	1st rank	even rank	rank difference	rank squared	Test #s	even post	Test #s	oct post	1st rank	even rank	rank difference	rank squared	Test #s	even post
27	20	1	1	0	0	27	20	35	15	42	34	-6	36	76	15
48	20	2	2	0	0	67	20	40	15	43	46	3	9	28	15
67	20	3	10	7	49	63	20	51	15	46	49	3	9	83	15
78	20	4	11	7	49	64	20	58	15	47	55	8	64	24	15
54	19	5	40	35	1225	51	20	70	15	48	56	8	64	30	15
71	19	6	3	-3	9	48	19	83	15	49	57	8	64	93	15
77	19	7	5	-2	4	77	19	87	15	50	62	12	144	29	15
79	19	8	6	-2	4	84	19	97	15	51	63	12	144	68	15
84	19	9	12	3	9	65	19	24	14	52	68	16	256	47	15
32	18	10	31	21	441	91	19	30	14	53	19	-34	1156	32	14
41	18	11	41	30	900	26	19	38	14	54	35	-19	361	53	14
50	18	12	42	21	441	46	19	39	14	55	50	-5	25	97	14
61	18	13	4	-9	81	78	18	44	14	56	58	2	4	74	14
62	18	14	7	-7	49	54	18	56	14	57	64	7	49	94	14
63	18	15	8	-7	49	79	18	74	14	58	76	18	324	73	14
64	18	16	13	-6	36	62	18	93	14	59	28	-31	961	34	13
65	18	17	20	3	9	55	18	29	13	60	36	-24	576	80	13
88	18	18	21	3	9	75	18	33	13	61	59	-2	4	38	13
90	18	19	32	13	169	23	18	45	13	62	65	3	9	45	13
31	17	20	52	32	1024	56	18	49	13	63	69	6	36	36	13
34	17	21	9	-12	144	96	17	68	13	64	70	6	36	69	13
37	17	22	14	-12	144	71	17	94	13	65	72	7	49	92	13
55	17	23	22	-1	1	90	17	95	13	66	74	10	100	59	13
57	17	24	23	-1	1	60	17	25	12	67	29	-38	1444	31	12
60	17	25	24	-1	1	81	17	36	12	68	37	-29	841	89	12
72	17	26	25	-1	1	98	17	43	12	69	51	-18	324	87	12
75	17	27	33	6	36	86	17	47	12	70	73	3	9	82	12
81	17	28	43	5	25	35	17	69	12	71	30	-41	1681	57	11
96	17	29	44	15	225	42	17	82	11	72	38	-34	1156	52	11
98	17	30	53	23	529	39	17	92	11	73	39	-34	1156	99	11
23	16	31	15	-16	256	41	16	59	10	74	71	-3	9	43	11
52	16	32	16	-16	256	61	16	66	10	75	66	-9	81	95	10
53	16	33	26	-7	49	37	16	73	9	76	75	-1	1	66	9
76	16	34	45	11	121	70	16								
80	16	35	54	19	361	44	16								
86	16	36	60	24	576	33	16								
89	16	37	61	24	576	49	16								
91	16	38	67	29	841	25	16								
99	16	39	17	-22	484	50	15								
26	15	40	18	-32	1024	88	15								
28	15	41	27	-14	196	72	15								
sum													21604	21604 x 6 =	129624
correlation coefficient													129624/ 76(76(76)-1)=	129624/ 76(5775)=	129624/ 438900 =
													1.00 - 30 = 70		0.3

## VITA

Born in Valparaiso, Florida, on January 17, 1969, Paula Smith attended elementary school in several areas of the Southeast including Nashville, Tennessee; Columbia, South Carolina and Charlotte, North Carolina. She graduated from West Brunswick High School in Shallotte, North Carolina in June, 1987 and entered The University of Tennessee at Knoxville in September. She later transferred to The University of South Carolina at Conway and finally to Austin Peay State University in Clarksville, Tennessee. In August, 1996, after taking several years off to begin her family, Paula reentered Austin Peay, and in December 1997 received a Bachelor of Science in Interdisciplinary Studies. She immediately began working on her Masters of Arts in Education through Austin Peay, and was awarded her degree May, 1999. In June, 2000, she reentered Austin Peay to begin working on the degree of Education Specialist, which she completed in May, 2002.

Paula is presently employed as an 8<sup>th</sup> grade language arts teacher with the Monroe County School Board in the Florida Keys.