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Abstract

Cooperative learning is an instructional method in which small groups of students work collaboratively to solve a problem or complete a task. This instructional method has been used with all grade-levels, across all subject areas, and in classrooms throughout our country and the world. Numerous studies have been conducted that have investigated the effectiveness of cooperative learning on various age-groups, in diverse settings, and with students with and without disabilities. This literature review examines the impact of cooperative learning on the academic achievement and social development of students. It explores research on methods and components of cooperative learning to determine those that are proven to be most effective. It further examines the efficacy of cooperative learning on the academic achievement and social development of students with emotional and behavioral disorders. Overall, the studies reviewed indicated that cooperative learning can be instrumental in increasing academic achievement and improving social skills when implemented correctly. Although some studies have shown cooperative learning to be a beneficial instructional strategy for students with emotional and behavioral disorders, research in this area is not as clearly evident. However, it does appear that cooperative learning, in conjunction with direct instruction, may be of benefit for these students.

Table of Contents

CHAPTER I: INTRODUCTION

> *Without the cooperation of its members society cannot survive, and the society of man has survived because the cooperativeness of its members made survival possible…. It was not an advantageous individual here and there who did so, but the group. In human societies the individuals who are most likely to survive are those who are best enable to do so by their group*. (Montagu)

Cooperative learning has increasingly been implemented as an instructional method in many content areas across the United States and throughout the world. There is significant research that indicates cooperative learning has a positive impact on students' academic achievement and social development, and that its application has a greater impact in these areas than that of other instructional methods (Johnson, Maruyama, Johnson, Nelson, & Skon, 1981; Sharan, 1980; Slavin, 1983). However, implementing cooperative learning in the classroom setting does not ensure a positive outcome for students, as many factors play into its effectiveness. Learning groups that involve negative, rather than positive, relationships among group members may impede student learning and achievement (Johnson & Johnson, 1979; Sheingold, Hawkins, & Char, 1984). Studies have identified multiple group processes that may impact the learning that occurs. There is also speculation, as well as some empirical backing, that achievement can vary due to student anxiety, a student's like or dislike of the group they are interacting with, and their motivation to learn. Studies suggest that it is the quality of the

interpersonal interactions within a cooperative learning group that accounts for both academic and social advances (Johnson, 1980; Johnson & Johnson, 1989).

When implementing cooperative learning into the classroom setting, many questions come to mind. What impact does cooperative learning have on the academic achievement and social development of students, specifically those with emotional and behavioral difficulties? What are the most effective methods to help ensure positive academic and social outcomes? Furthermore, how is cooperative learning best implemented in a classroom environment with students that present with significant social, emotional, and behavioral difficulties?

Cooperative learning, implemented correctly, can have a positive impact on student achievement. It is an instructional method in which students can maximize their learning as well as the learning of others within their peer group. Multiple studies have been conducted to measure the impact that cooperative learning has on student success and social development. Although the various studies have looked at differing factors as contributing to a positive outcome, it has been shown that "regardless of the particular measure involved, about two-thirds of the cooperative learning studies that investigate any positive outcome find a positive effect on it" (Slavin, 1983, p. 121). With the potential for its positive impact on student learning, it is vital to develop a strong understanding of how to implement cooperative learning correctly within the classroom environment.

First, we must identify what cooperative learning is and what it looks like within the classroom. At its foundation, cooperative learning is deeply rooted in Lee Vygotsky's theory of social development. Vygotsky believed that social interaction was an essential component of

learning and proposed that learning occurs in the context of a student's interactions with others, including parents, teachers, and peers. Vygotsky (1978) states: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals." (p. 57). Quite simply put, cooperative learning is an instructional method in which students work together in small groups to help one another learn (Slavin, 2014). It is a method of instruction that promotes group work over individual accomplishment and validates the value of working in collaboration with a peer group over competitive or individualistic activities. All members of the group are expected to be active participants. Although cooperative learning has the overall umbrella of students working in collaboration with one another, the features of cooperative learning vary, depending on the system or form used. Robert Slavin, Elizabeth Cohen, David Johnson and Roger Johnson, and Spencer Kagan, all experts in the field of cooperative learning, have identified what they consider to be key features for the successful implementation of cooperative learning.

Slavin (1983) takes the position that crucial features needed for cooperative learning to be effective include having a collective goal in conjunction with individual accountability. A collective goal may include a means of recognition or grades given to the group rather than the individual. Individual accountability may be demonstrated through the administration of individual tests or a specific task given to an individual as part of the group effort. Other

experts, as previously mentioned, have identified additional features as essential for cooperative learning. Elizabeth Cohen asserted that a group task, accountability to the teacher, and interdependent work are key components (1994). She also emphasized the value of allowing students to make mistakes and struggle through the process of problem-solving as a team effort, without staff intervening too early in the learning process. Johnson and Johnson (1990) identified six features for the successful implementation of cooperative learning. These include interdependence, supportive interaction among students, individual accountability, social and small group skills, self-evaluation of progress, and team decision making. Finally, Spencer Kagan lists positive interdependence, face-to-face interaction, individual accountability and personal responsibility, frequent use of relevant interpersonal and small-group skills, and group processing as imperative for successful cooperative learning groups (2001).

One question that arises is how educators can ensure that students are prepared to participate in group work, given the need for interdependent work, social and small group skills, and equal participation among team members. Communication skills must also be present among the participants in order for cooperative learning to be successfully implemented.

It cannot be assumed that all students enter classrooms with these skills already developed. Asking students to participate in cooperative groups, without ensuring they have the necessary skills, can have a detrimental impact on their learning. Research has been conducted that demonstrates that there are several kinds of group processes that may interfere with student success while working in small, cooperative groups, and that the impact that group work has on student success can be greatly impacted by these variables (Hammar,

2014; Slavin, 1996). Without having a clear understanding of the skills needed for successful group interaction, cooperative learning will not have the desired effect intended (Gillies, 2016; Johnson & Johnson, 1979; Johnson, Johnson, & Holubec, 1994; Sheingold et al., 1984)

Students that demonstrate lagging skills will need explicit instruction in the social skills necessary for group work. Directing students to "work in a group" without providing them with a clear explanation of what that involves, denies the positive impact that is intended from the use of cooperative learning. The book, *Cooperative Learning in the Classroom*, provides numerous strategies for the actual implementation of cooperative learning in the classroom setting. However, it also clearly states that pre-planning and thought must be done to prepare students for their successful participation. Decisions need to be made regarding group size and dynamics, room arrangement, the use of instructional materials, and student roles within the group. In addition, it is imperative that plans be made in advance for not only the academic goals for the group, but for the social skills objectives as well (Johnson et al., 1994).

Social skills objectives will be dependent on the skills necessary for the group's success as well as the skills that have yet to be mastered by students within the group. Skills may range from being able to stay present with a group, use a quiet voice, and exhibit self-control, to being able to disagree without criticizing, ask probing questions and extend upon a peer's answer (Goodwin, 1999).

Emotional, Behavioral Disorders

In order to better understand the difficulties that are faced by many of today's students, it is helpful to become familiar with the special education category of Emotional Disturbance or Emotional, Behavioral Disorder (EBD). The federal special education law, the Individual with Education Disabilities Act (IDEA), recognizes EBD as one of the 13 federal disability categories, and provides guidelines for states to use to determine the eligibility of students.

IDEA Sec. 300.8 Child with a disability provides the following criteria for qualifying a student under the category of EBD:

Emotional disturbance means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:

> (A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.
>
> (B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
>
> (C) Inappropriate types of behavior or feelings under normal circumstances.
>
> (D) A general pervasive mood of unhappiness or depression.
>
> (E) A tendency to develop physical symptoms or fears associated with personal or school problems.
>
> (ii) Emotional disturbance includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an

> emotional disturbance under paragraph (c)(4)(i) of this section (IDEA, 2004, pp. 12-13).

By definition, students meeting the criteria for EBD are delayed in their educational performance and have difficulty with interpersonal skills. For students with delays in their academic progress, it is imperative that they are instructed with methods that are proven to be the most effective in increasing academic achievement. Cooperative learning is one such method. However, the student's delays in interpersonal skills may hinder its effectiveness.

This impacts a significant number of American students. According to the National Center for Education Statistics, 6,964,000 students received special education services in the 2017-2018 school year. Of that number, approximately 5.1%, or 353,000 students, received special education services under the category of EBD (National Center for Education Statistics, 2019).

The research that has been studied thus far indicates that cooperative learning can be a very positive method of instruction when implemented with thoughtful consideration given to students' learning and social needs. Additional review of the literature will be completed to look more specifically at how cooperative learning impacts academic achievement and social development, what the most effective methods are to ensure its success, and how to best implement cooperative learning in classroom environments with students that present with significant social, emotional, and behavioral difficulties.

CHAPTER II: LITERATURE REVIEW

The literature reviewed in Chapter II was located through searches within Academic Search Premier, Educator's Reference Complete, ERIC (EBSCOhost), and PsycINFO. Key words used to locate the articles included combinations of the following terms: "cooperative learning," "academic achievement," "social development," "methods" "unique learners," and "Emotional Behavioral Disorders." Several resources were discovered in the process of reading the articles found within the original search method. Studies mentioned within these articles were then found through various search resources offered through Bethel University's Library System. The studies reviewed will help to provide answers to the guiding questions that ask: What impact does cooperative learning have on the academic achievement and social development of students, specifically those with emotional and behavioral difficulties? What are the most effective methods to help ensure positive academic and social outcomes? How is cooperative learning best implemented in a classroom environment with students that present with significant social, emotional, and behavioral difficulties?

The Impact of Cooperative Learning on Academic Achievement

When implementing any type of instructional method, it is essential to take into consideration the research that has been done on the method. Teaching methods should be based on practices that studies have demonstrated to be an effective means of increasing student achievement. Cooperative learning is a well-researched instructional method and over the past several decades there have been numerous studies examining the impact it has on

academic achievement. This review of the literature will examine several of those studies to further understand its effectiveness.

Studies on Academic Achievement

In the article, *Effects of Cooperative, Competitive, and Individualistic Goal Structures on Achievement: A Meta-Analysis* (Johnson et al., 1981), the authors reviewed 122 studies to better understand the impact that cooperative learning has on academic achievement and productivity and how it compares to competitive or individual goal structured methods. The authors analyzed the studies to better determine the effectiveness of the various goal structures on student achievement and to compare the similarities and differences among the structures as a means of determining how and why the structures are effective. The authors required that samples meet four criteria in order to be included in the review. Studies had to be available to the authors, had to have been conducted on North American samples, needed to include data on achievement or performance, and were required to make a comparison between two or more of the four goal structures. The four goal structures examined within the analysis included cooperation, cooperation with intergroup competition, interpersonal competition, and individualistic efforts.

The team used three meta-analysis procedures to examine the research: voting method, effect size method, and *z*-score method. The voting method involved a careful reading of each study, after which findings by the study's original author that had been considered significantly positive, significantly negative, or non-significant were calculated in the voting process. The effect size is a method that statistically quantifies the difference in study samples among the

groups. When conducting a meta-analysis, the effect size combines the findings of the studies examined into a single result. For this particular body of research, “The effect size for each finding of a study was treated as an observation and examined statistically in relation to characteristics of the study. The effect size allows for the examination of the strengths of the relations between the independent and dependent variables (Johnson et al., 1981, p. 49).” The final method, the *z*-score, is a statistical measure of the score of a specific study in comparison to the mean of the group of studies as a whole.

The authors presented four noteworthy conclusions based on the results of their analysis. First, the results of their studies established that cooperation was superior to competition for increasing student achievement and productivity. Results from all three of the procedures applied for the analysis were consistent. Results remained consistent in all content areas and age groups as well as on the various tasks that involved the following: concept attainment, verbal problem solving, categorizing, spatial problem solving, retention and memory, motor performance, and guessing-judging-predicting (Johnson et al., 1981).

The second proposal was that cooperation is superior over individual methods for enhancing achievement and productivity. As with the first proposal, the results held true across all three procedures of analysis and in all content areas and age groups.

The third proposal stated that cooperation that did not include intergroup competition was more effective for the obtainment of higher achievement than was cooperation with intergroup competition. However, the authors noted that there were only a small number of

studies that directly compared the two variables, making it too small of a sample size to make a firm conclusion.

The final proposal was that there was not a significant impact on achievement or productivity between interpersonal competition and individualistic goal structures.

The investigation included a large number of studies over a variety of settings. The subjects within the studies represented a wide-range of ages and backgrounds and participated in an extensive assortment of tasks. Additionally, three different procedures were used in determining the effectiveness of cooperative learning on student achievement and productivity.

The overall findings of the meta-analysis clearly established the effectiveness of cooperative learning on both achievement and productivity. The authors suggested that further investigation was needed to examine the specific variables that influence the effectiveness of cooperative learning groups. Although researchers have come to a general agreement that cooperative learning is an effective means of instruction for increasing student achievement, questions remained regarding how and why these methods are effective, and the conditions under which enhanced learning occur (Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003; Roseth, Johnson, & Johnson, 2008; Sharan, 2002; Slavin, 2010, 2013; Webb, 2008).

One such study, conducted by Yager, Johnson, Johnson, and Snider (2001) looked at the impact that cooperative learning with group processing had on achievement in comparison to cooperative learning without group processing. They then further investigated how the

achievement levels of students working individually compared to those of the two experimental groups.

Group processing is a means by which team members discuss how successful they were at achieving their goals and whether the procedures they used to do so were helpful or not. The team decides what practices to continue using and what practices to change. Group processing is a time to reflect on how the team performed as a group, and to determine the best course of action for solving any difficulties they have encountered with the academic task or group interactions (Johnson & Johnson, 1999; Yager et al., 2001).

The participants in the study included 84 American students, all of whom were in the third grade. Students were placed in groups by gender and ability level as measured by standardized test scores. Each group had four members, with at least one high-, medium- and low-level ranking student per group. Groups met for 35 minutes per session over 25 days of instruction. The daily achievement was measured by means of a daily worksheet. Student achievement was measured via three assessments; a pre-test and two posttests. The posttests were completed within the unit of study after the completion of the 12^{th} and 25^{th} session. The students' retention level of the content learned was measured 21 days after the completion of the instructional unit.

Results of the pre-test showed no significant differences between the cooperative learning group with processing, the group without processing, and the individual learners. Daily achievement results showed that students working in cooperative groups scored higher than those learning individually. The scores for daily assignments are as follows: Cooperative

learning group with processing - 94% accuracy rate, cooperative learning without processing – 89% accuracy rate, individualistic learners – 82% accuracy rate. Scores on the post tests as well as the retention test followed a similar pattern, with those working in cooperative groups with processing scoring the highest and those working as individualistic learners scoring the lowest. Table 1 presents the mean scores on the achievement measures used during the study.

Table 1:

Means Scores on Achievement Measures

	Pre-test	Post-test	Retention
CL groups w/processing			
High	29.67	48.00	45.33
Middle	26.20	43.00	45.33
Low	21.56	39.78	41.41
CL groups without processing			
High	28.22	43.56	37.22
Middle	25.40	38.10	37.60
Low	21.11	34.89	32.78
Individualistic Learners			
High	29.11	40.56	37.22
Middle	24.60	31.90	28.50
Low	19.67	24.89	21.67

(Yager et al., 2001, p. 394).

Although student achievement scores increased for all three of the learning structures, students in the cooperative learning group with processing had the greatest increase at all three achievement levels and in all three assessments given. It is of interest to note that although there was not a significant difference in the pre-test for the low-level students (1.89-

point difference), there was a significant difference in both the posttest scores (14.89-point difference) and the retention scores (19.43-point difference). It is also worth noting that the low-level achieving student in the cooperative learning group with processing retained what was learned at a higher level than the high-level achieving student at the individualistic level (3.88-point difference).

In a similar study, colleagues Bertucci, Johnson, Johnson, and Conte (2012), conducted research on the impact that group processing is done in conjunction with cooperative learning groups had on student achievement, and how group processing influenced the perception of social and academic support for both staff and students. Noteworthy to this study are several factors: First, previous studies involved students within the United States. This study was conducted with students from Sardinia, Italy. Additionally, whereas researchers in previous studies observed students in grades three, eight, and twelve, the participants in this study were in grades three through five. Focusing on this age group provides further information on the impact that cooperative learning has on elementary-aged students. Furthermore, past research looked at the impact of cooperative learning on academic achievement in one subject area, whereas the research conducted for this study covered three different content areas. Finally, and of significant value, students participating in the study had no previous involvement with cooperative learning, so results were not impacted by any prior experiences with the instructional method.

Subjects for the study included 61 third, fourth, and fifth grade students from Sardinia, Italy with no previous experience with cooperative learning. Students were randomly assigned

to one of two groups, either cooperative learning with group processing or cooperative learning without group processing. The group size for cooperative learning with group processing was comprised of 30 students (14 boys/16 girls). The group without group processing consisted of 31 students (15 boys/16 girls). Within each group, students were assigned to teams of three to four students. All teams participated in five instructional sessions, lasting 90 minutes each, over a three-week time period. Students remained within their same group over the duration of the study. Teachers were chosen due to their interest in receiving training on cooperative learning.

Prior to the start of the first instructional session, the goals were explained to the students. Students were instructed to work with the members of their group to learn the assigned material, and to help their team members learn the material. In order to establish group interdependence, students were informed that each team's individual achievement test scores would be added together. Teams with three members needed a total score of 18 or more to be awarded one bonus point per team member. Teams of four needed to score a total score of 24 to be awarded the bonus points.

Students in both groups were given tests upon the completion of each instructional unit to assess achievement. Tests were comprised of eight multiple-choice questions that pertained to the unit of study. Upon completion of the assessment, students in the group with processing were given a list of questions to be answered by each team. The purpose of the questions was to provide students the opportunity to discuss how they worked as a team throughout the unit of study. Students assigned to the group without group processing were given a set of tasks to complete within their individual teams. The tasks were provided so that team members were

engaged in distracting tasks, thus taking away their opportunity to discuss the processes used or the effectiveness of those processes.

Results of the achievement test showed no significant differences between the two groups following the first three achievement tests. However, by weeks four and five, students who used cooperative learning with group processing demonstrated higher achievement than those students who did not use group processing. The results demonstrated that group processing had a positive impact on achievement, but only after the teams had gained experiences with group processing.

After the completion of all instruction sessions, student beliefs regarding teacher and peer personal and academic support were measured through the Classroom Life Measure (Johnson & Johnson, 1983; Johnson et al., 1983). Four individual scales were used to determine the students' perception of the teacher's concern and investment in their learning, and how much the teacher cared about and liked them as a person. Additionally, the scales measured the students' desire to learn, their belief that their peers cared about them and liked them as individuals, and their perception of how much their classmates cared about their learning. The results for this measure showed no significant difference between the two groups.

Studies Specific to Math Achievement

In order to further understand the impact that cooperative learning has on student achievement, a review of literature specific to mathematics will be examined. As previously noted, there has been considerable research conducted that has examined the difference in achievement when comparing cooperative, competitive, and individualistic learning methods.

In the article*, Efficacy of the Cooperative Learning Method on Mathematics Achievement and Attitude: A Meta-Analysis Research*, authors Capar and Tarim (2015) examine the impact that cooperative learning has on math achievement in comparison to conventional methods of instruction. The authors sought to determine not only the impact cooperative learning had on achievement, but they also investigated the impact in relation to the following factors: grade level, content area, cooperative learning method, the duration of the study, and whether the study had been published. The study also analyzed the impact that cooperative learning had on student attitudes towards math; however, the emphasis for this review will focus on findings related to achievement.

As part of the meta-analysis, 36 comparisons were made from the 26 studies included in the meta-analysis. Studies included in the meta-analysis were selected based upon criteria established by Capar and Tarim (2015). Clearly, one requirement for inclusion was that the study examined the impact that cooperative learning had on math achievement in comparison to conventional methods. Another requirement was that the study is of a pre-/post-test design. Preference was given to studies that included a control or equated group for comparison purposes. The authors also required that research had been conducted with students. However, large scope of age groups was included, with participants ranging in grade levels from pre-school through college. The final requirement was that studies have sufficient enough data in order to calculate the effect size.

Effect size is a quantitative measure of the differences between the two groups. When presenting results in research, statements are often made as to the difference between two

comparisons. Effect size provides a statistical measurement of the difference and “allows us to move beyond the simplistic, 'Does it work or not?' to the far more sophisticated, 'How well does it work in a range of contexts?” (Coe, 2002, para. 3). Effect size based upon the mean can be classified into categories of small, medium, and high. Measurements at or around 0.20 are considered small. A measurement of 0.50 is considered medium, and measurement at or around 0.80 is classified as high (Cohen, 1988, as cited in Capar & Tarim, 2015). For the meta-analysis reviewed, an effect size measure of 0.05 was considered to be significant (Capar & Tarim, 2015).

The independent variables for the study were the previously noted factors, which included age level, content area, cooperative learning method, duration of the study, and whether the study had been published. The dependent variables were the effect sizes that had been calculated from the data presented within each study.

Results of the meta-analysis indicated that cooperative learning had a greater impact on student mathematical achievement than did traditional learning methods. The effect size for all age levels demonstrated that cooperative learning made a significant difference in student achievement, with effect sizes ranging from 0.30 to 1.33. The effect size was greatest for college students (1.33), followed by pre-school students (1.01). It should be noted that these two age groups had relatively small sample sizes, with only five studies involving college students and two studies involving pre-school students. One component in calculating the effect size, the Hedge’s d (a measure of effect size), is only considered to provide secure results

when there are five or more comparisons within the group (Rosenberg et al., 2000, as cited in Capar and Tarim, 2015).

The meta-analysis also indicated that cooperative learning impacted different content areas of math to varying degrees. Effect size showed that cooperative learning had the greatest impact on achievement in algebra (0.82), followed by geometry (0.67). The next highest effect size was on a category classified as undefined (0.64). This was followed by numbers (0.46), and measurement (0.19). The analysis indicated no significant differences in the effect size based upon grade level.

The authors also analyzed the method of cooperative learning implemented within each study. Learning Together (0.95), unstructured cooperative learning groups (0.91), and Student Team Achievement Division (0.72) had the highest average effect sizes. The effect sizes for methods ranged from 0.37 to 0.91, indicating that all methods of cooperative learning used in the various studies made a significant difference in student achievement. As with effect size for content areas, there were no significant differences in the effect size based upon grade level.

The next factor considered the duration of the studies. The duration of the studies ranged from three to twenty weeks. Each study was placed into one of the following categories based on the length of the study: (a) three to eight weeks, (b) nine to fourteen weeks, and (c) fifteen to twenty weeks. Effect size for each of the categories was relatively similar, with effect sizes of 0.60, 0.68, and 0.75. Here again, there were no significant differences in the effect size based upon grade level.

The final factor the authors examined was publication bias. Of the 36 comparisons made, 23 were from published sources and 13 were from unpublished sources. The average effect size for published sources (0.44) was half that of unpublished sources (0.88). As with the other variables, there were no significant differences in the effect size based upon grade level.

The positives of the meta-analysis include the wide range of ages included in the study, as well as the number of countries represented. The analyzed studies were conducted in Mexico, Turkey, the United Kingdom, and the United States. However, with the diverse variables investigated within the studies, the number of comparisons made for each variable was small, oftentimes disallowing for a fully reliable result in determining the effect size. As acknowledged by the authors, “The scarcity of studies and the wide variety of techniques made the interpretation of the results difficult but there was an overall picture” (Capar & Tarim, 2015, p. 557).

Overall, the analysis provided quantitative measures of the positive impact that cooperative learning has on mathematics achievement. Further studies will be reviewed to provide additional details of the effect of cooperative learning on mathematical achievement.

The following study compared the mathematical achievement of students that participated in cooperative learning groups with intergroup competition to students that received their instruction through individualized or competitive methods (Reid, 1992).

Study participants consisted of 70 seventh grade students that attended school in a low socioeconomic area of Chicago. School records indicated that of the 70 students, 41 received their instruction through cooperative learning methods. The remaining 29 students received

instruction by individualized or competitive methods. Twenty-five students were randomly chosen from each group to establish equal representation between the two.

The data used for the study was a pre-test and post-test design. Achievement scores were obtained from the mathematical section of the Iowa Test of Basic Skills. The test administered to students in the spring of 1991 was used to determine pre-test achievement scores. The test administered in the spring of 1992 was used to determine post-test scores.

The scores for both the pre-test and the post-test were given a *t*-score. A *t*-score is given to determine the statistical difference between the two groups. This is done by comparing the means of the samples involved (Research Optimus, n.d.).

The *t*-scores from the pre-test level showed no significant difference in achievement levels between the two groups. The mean score for the whole group was 5.424, while the mean score for the cooperative learning group was 5.59. This resulted in a *t*-score of .69. Post-test scores showed a significant difference in *t*-scores between the two groups. The mean score for the whole group was 6.236. The mean score for the cooperative learning group was 6.896. This resulted in a *t*-score of 2.35 (*t = 2.021; significant at 0.5 level*). The results indicate that the students receiving instruction in the cooperative learning group made greater gains in math than did those that learned individualistically or through competitive methods.

Although the study demonstrated the positive impact that cooperative learning has on math achievement, it provided very little detail on how cooperative learning was implemented, other than to note that incentives (rewards), intergroup competition, and individual accountability were present. Due to the limited details on its application, readers cannot

conclude what components of cooperative learning had the greatest impact on achievement. Further research will need to be reviewed to determine the factors that have the greatest impact on student achievement in math.

As always, it is important to consider best practices in planning instruction. One area that must be considered when preparing math instruction is the importance of math communication for increasing understanding. According to The National Council of Teachers of Mathematics (NCTM):

> *Communication is an essential part of mathematics and mathematics education. It is a way of sharing ideas and clarifying understanding. Through communication, ideas become objects of reflection, refinement, discussion, and amendment. The communication process also helps build meaning and permanence for ideas and makes them public.* (NCTM, 2000, p. 60)

Math communication is in accordance with Vygotsky's Social Development Theory (1978). It is a form of social interaction in which students learn from one another through an exchange of ideas. Cooperative learning groups provide the ideal avenue for students to work collaboratively and engage in math communication to increase their understanding.

One study of interest, *Facilitating Student Interactions in Mathematics in a Cooperative Learning Setting,* spoke of multiple studies that examined the role that student activeness had on the learning process (Brown & Campione, 1986; Fraser et al., 1988; as cited in Leikin & Zaslavsky, 1997). Student activeness is defined as observable student interaction with the learning materials. This can include verbally communicated activities, such as a student giving

an explanation, asking a question, or asking for help. It can also include non-communicated activities, such as independently solving a problem, copying written materials, and taking notes.

The authors were further interested in studies that investigated the impact that students' interactions with their peers, their teacher, and with the learning materials had on student activeness (Bishop, 1985; Clement, 1991; Jaworski, 1992; as cited in Leikin & Zaslavsky, 1997). Specifically, they were influenced by works of Webb (1991) and her findings that task-related verbal interactions were associated with an increase in learning.

Based on the studies of interest, the authors designed and implemented a classroom learning environment with the intent of increasing student activeness while participating in math instruction. They shaped their experimental learning environment on the concept of small-group cooperative learning in the hopes of increasing student on-task interactions, and as a means of increasing the level of help for students demonstrating a need.

According to a study by Newman and Goldin (1990), students that had the lowest achievement scores perceived themselves as needing the most help with their understanding, yet this group of students was also the least likely to ask for help. The research also demonstrated that students perceived themselves as needing more help with math than they did with reading.

Leikin and Zaslavsky (1997) were interested in determining how to increase student interaction with the learning materials and with their peers. They regarded these types of interactions as forms of math communication. They sought to determine (a) what impact did the experimental, small-group cooperative learning method have on student activeness, (b)

what were student attitudes towards the learning method, (c) what types of student interactions occurred within the groups; and specifically (d) what type of helping behaviors were observed?

Students involved in the Leikin and Zaslavsky (1997) study included 98 low-achieving ninth graders in an Israeli secondary school. The students were divided into four classes: one class was instructed using the experimental learning method, a second class served as the control group and received all their instruction in a conventional manner, and the third and fourth classes were taught with a mix of the experimental learning and conventional methods. The final two classes alternated weeks, with each class receiving 12 weeks of the experimental learning method and 12 weeks in a conventional manner.

The instructional method designed for the study combined cooperative small group learning with worked-out example problems. Worked-out examples are carefully constructed, sequenced, and solved mathematical problems, which show students the mathematical steps needed to solve that type of problem. The learning method provided students with experience with a particular learning material, and the opportunity to explain it to others. Although the students were placed in groups, they worked in pairs within the group. This provided each student the opportunity to both study and teach the learning materials.

The students each participated in six instructional units. Each unit followed the same pattern; whole group introductory lesson, followed by four problem solving sessions, and finally, a follow-up whole group lesson.

Data were collected to determine student interaction, with a focus on student communication. The study implemented three tools for collecting data. Student behaviors were observed and categorized as active, passive, or off-task. Students completed a questionnaire that examined helping behaviors. They also answered a second questionnaire addressing their attitude toward their learning group.

A select group of four students was chosen from the cooperative learning group for closer observation. All four students demonstrated an increase in giving an explanation and posing a question. They also demonstrated an increase in the category of solving a problem. Conversely, the students within the group demonstrated a decrease in the inactive task of copying the problem, with the exception of Student A, "who had disciplinary problems in general, regardless of classroom setting or topic studied, there was a decrease in off-task activities as well as in other passive behaviors (Leikin & Zaslavsky, 1997, p. 341)."

Table 2 present student activeness data for the selected group of four students.

Table 2:

Percentage of Time Spent on Student Activities

	Initial Observation	Final Observation of Students
Active behaviors	46.3	63.3
*Giving an explanation	1	16
*Posing a question	1	7
Student-learning material interaction	45	45
Problem solving	15	29
Copying the problem	30	16
Passive activities	53.6	31.6

*Considered by the authors to be considered the most important means of student-learning material interaction.

(Leikin & Zaslavsky, 1997, p. 341)

Data regarding student math communication within the closely observed group of four while participating in small-group learning sessions versus the whole-class instruction is provided in Table 3.

Table 3:

Percentage of Time Spent on Math Communication

	Experimental group	Control group
Student A	18.7	0
Student B	22.9	3.1
Student C	19.5	0
Student D	32.9	3.5
Students A-D	23.5	1.6

(Leikin & Zaslavsky, 1997, p. 343)

Data on math communication indicates a significant difference in the observed math communication between the two learning methods. Noteworthy, two of the four members of the closely observed group did not participate in any type of math communication in any of the eight whole group instruction sessions, yet participated while in the small-group learning method.

Table 4 presents data for the entire group of students.

Table 4:

Percentage of Time Spent on Math Communication

	Posing a question	Giving an explanation	Math communication
Control Group	0.8%	0.8%	1.7%
Experimental Group	7.3%	16.2%	23.5%

(Leikin & Zaslavsky, 1997, p. 351)

Clearly, the experimental group demonstrated a significant increase in the amount of time spent actively engaged in learning as well as in math communication, both of which are considered essential components for student achievement. Interestingly enough, the achievement for the groups was relatively the same on all but one of the six unit assessments. On one of the six tests, the experimental group performed significantly better than those learning in the conventional method and those learning in the group that alternated between methods.

In another study, researcher Amalya Nattiv investigated the impact that helping behaviors, done in conjunction with cooperative learning, had on achievement levels in math (1994). Past research has clearly demonstrated that cooperative learning groups have a positive impact on student achievement. Nattiv sought to find out what accounts for this increase, and what specific behaviors are instrumental for the greatest gains in achievement. Just as with the previous articles reviewed, the author of this study was influenced by prior research. Nattiv was especially interested in Webb's findings that giving and receiving help had a positive impact on learning, whereas asking for help and not receiving it had a negative impact. The past research

was conducted with students at the junior high level (Webb, 1980c, 1980d, 1982a, 1982, as cited in Nattiv, 1994). Nattiv sought to determine if the findings held true at the elementary level as well.

Subjects for the study included 101 students in the third-, fourth-, and fifth-grade that attended school in northern Utah. The entire group of participants consisted of 54 boys and 47 girls. The 36 third-graders, 34 fourth-graders, and 31 fifth-graders were categorized into achievement levels of high, medium, and low. Students in the high achievement group were in the top 25 percent, students in the middle achievement group were in the middle 50 percent, and those in the low-level achievement group were in the bottom 25 percent. Measures used to determine achievement were conducted three months prior to the start of the study by the administration of standardized tests, specifically the California Test of Basic Skills and the Southwest Regional Lab (Nattiv, 1994).

Teachers that participated in the study received several pieces of trainings on cooperative learning prior to the start of the study. Students received direct instruction on helping behaviors, and were given three-weeks of practice prior to the implementation of data collection. As part of the practice, students received daily feedback to ensure the helping behaviors were applied correctly. Students were explicitly told that simply providing the answer was not considered helpful, and were instead directed to explain their understanding of the problems.

The helping behaviors observed for the study were based upon previous research on helping behaviors conducted by Webb (as cited in Nattiv, 1994). The behaviors themselves

were slightly altered to better meet the needs of the younger participants. Helping behaviors that were to be observed included:

- giving explanation,
- receiving explanation,
- giving help other than the explanation,
- receiving help other than the explanation,
- asking for help and receiving it,
- asking for help and not receiving it,
- giving answer only,
- receiving answer only.

Giving and receiving explanations are complex helping behaviors, and are considered to be very important for student learning (Leikin & Zaslavsky, 1997; Nattiv, 1994). Giving explanations involves sharing knowledge and/or demonstrating the steps needed to solve a problem. Receiving explanations involves being shown or told the steps to solve a problem.

Giving help other than the explanation may include behaviors such as providing encouragement, giving prompts, or bringing manipulatives to the group or a peer. Receiving help other than the explanation refers to being provided the previously stated examples.

Throughout the three weeks of the study, students were videotaped to document the helping behaviors observed. Students were recorded while participating in small, cooperative group team practice where they worked on math content. Student helping behaviors were recorded individually and each time one of the eight behaviors was observed it was

documented under the specific student's name. If a behavior lasted over 30 seconds in duration, it was counted as another behavior.

The first phase of the analysis was completed to determine if grade, gender, or ability had an impact on achievement gain. Data established no statistically significant difference in achievement that could be attributed to any of these components.

Next, the influence of helping behaviors on achievement gains was addressed. The eight helping behaviors and the student score on the pre-test were independent variables. Student achievement gain was the dependent variable. By looking at the data through this lens, a determination of the contribution of each helping behavior could be assessed. The helping behavior that made the greatest contribution to achievement gain was giving an explanation. Other behaviors that had a positive impact on student achievement included receiving an explanation, receives other help, and gives others help. The helping behaviors of asking for help and receiving it, giving answers only, and receiving answers did not contribute to significant changes in achievement. The remaining factor, receiving no help after requesting it, was shown to have a negative impact on achievement gain.

The final area looked at was to determine if grade, gender, or ability level had an impact on the helping behaviors demonstrated by the students. Data indicated that gender did not account for a significant difference in student engagement with any of the helping behaviors.

Grade level was shown to impact only two of the helping behaviors, (a) giving answer only; and (b) receiving answer only. Third and fourth grade students demonstrated these

behaviors at twice the rate of fifth grade students. The difference may be due to older students having further developed cognitive skills, and having a greater ability to follow directions.

The student ability level was demonstrated to have a significant impact on the types of helping behaviors used. High-level ability students provided more help in the form of giving explanations, giving other types of help, and giving answers only then did middle-level ability students. Middle-level ability students provided more of these types of helping behaviors than did low-level ability students. Correspondingly, low-level ability students were the recipients of receiving explanations, receiving other help, and asking for help the most often.

In summary, data demonstrated that incorporating helping behaviors, specifically giving and receiving explanations, into cooperative learning groups can have a significant impact on achievement gains in mathematics. This was shown to be beneficial to all ability levels, regardless of gender or grade level.

Studies Specific to Reading Achievement

Many studies have focused on the impact that cooperative learning can have on reading achievement. Each of the following studies offers its own unique set of variables; however one of the commonalities among them is that each investigates how its implementation impacted student achievement in the area of reading.

One such study examined the relationship between the frequency and quality of student experiences in cooperative learning groups. The authors (Battistich, Solomon, & Delucchi, 1993) examined how cooperative learning impacted students' attitudes toward school, their perceptions of the classroom environment, and their intrinsic motivation, as well

as a collection of social attitudes, skills, and values. In addition, the authors presented limited findings regarding the impact that working in small cooperative groups had on reading achievement.

Subjects of the study included teachers and students from 18 fourth- through sixth-grade classrooms and four elementary schools in two school districts, both of which were located in the San Francisco Bay area of Northern California. The first district was located in a suburban community and included five teachers and 107 students. The students involved were in the sixth grade and were primarily white, with a socio-economic status of middle to upper class. Students within the district typically scored in the top 10-20% of students in the state on standardized achievement tests. The second district was located in an urban community and was comprised of an ethnically and socioeconomically heterogeneous population. Participants included 13 teachers and 264 students from fourth through sixth grades from two schools within the district.

Results were obtained through direct observations of the students and teachers involved in the study. The observation rating scale assessed both the frequency and quality of cooperative learning within the classrooms. Frequency was measured as the percentage of activity periods in which students were observed working in groups. The quality of the learning was measured through the use of a rating system that looked at friendliness, helpfulness, collaborative efforts, and the demonstration of concern for members within the peer group. Students also completed questionnaires in which their attitudes towards school, views of the

classroom environment, relationships with peers, self-concept, and social values were addressed. Table 5 lists the factors included in the questionnaire.

Table 5:

Social Outcome Variables Assessed in Student Questionnaires:

Positive school environment	• Positive classroom environment • Responsible work atmosphere • Liking for school
Intrinsic motivation	• Intrinsic prosocial motivation and intrinsic academic motivation
Peer relations and social adjustment	• Popularity • Loneliness/social dissatisfaction • Social anxiety
Interpersonal understanding	• Perspective-taking and empathy
Self-concept/self-esteem	• General self-esteem • Academic self-esteem • Social competence • Liking for helping others
Prosocial values	• Concern for others • Competitiveness • Democratic values

(Battistich et al., 1993, p. 30)

In addition to measures regarding group frequency and quality, researchers measured student reading performance. This measurement was assessed differently within each of the two districts. The first district assessed achievement through a measure of reading comprehension, whereas the second district assessed reading achievement using the California Test of Basic Skills.

Overall, the study indicated that frequent participation in cooperative learning groups had a positive outcome for students, but only when the quality of interaction within the group was rated as high. Conversely, frequent group work presented with adverse outcomes when the quality of the interaction was rated as low. Results from the study demonstrated "the effectiveness of cooperative learning depends on the quality of within-group interaction" (Battistich et al., 1993, p. 27). Data indicated that even while students may frequently work in groups, if group members are not working cohesively within the group the conditions are not favorable for a positive outcome. Although results from this study demonstrated that cooperative learning increased student achievement and social development, thought must be given to how the group participants interact within their individual small groups in order for students to achieve their highest potential.

It is important to note that the study obtained results by assessing the frequency and the quality of interaction by combining measures across all participating classrooms over the duration of the study. Data collected in this manner does not show how cooperative learning impacted individuals or even within individual group and makes it difficult to determine what specific conditions were accountable for student growth or lack therefore of (Battistich, et al., 1993).

Authors of the following study, *Developing Reading Comprehension through Collaborative Learning*, investigated the impact of cooperative learning on reading development and comprehension in elementary-aged Mexican students (Rojas-Drummond, Mazon, Littleton, & Velez, 2014). The method implemented for the study, Learning Together,

emphasized cooperative learning activities designed to enhance verbal and written communication, group interaction, and instruction in various strategies intended to increase comprehension.

Students in the experimental groups were provided guidance on effective communication to increase meaningful and purposeful conversations and were encouraged to develop rules for their group to keep collaborative efforts productive. They were allowed plentiful opportunities to share and elaborate their understanding of the text with their group mates. In addition, students received instruction on various strategies to enhance their understanding of literary structures, including those for determining the main idea, making inferences, and extracting the 'gist' of the text.

A total of 120 sixth grade students, from one of two public schools in Mexico City, Mexico participated in the study. The schools were in the same school district and were similar in socioeconomic status. The control group was comprised of 60 students from the first school. Sixty students from the second school were in the experimental group, and took part in the Learning Together program. Students in the experimental group participated in 18 sessions lasting 90 minutes each over a seven-month time period.

The Learning Together program consisted of three modules. The purpose of the first model was to instruct students on effective means of communicating within their groups. The second module focused on the instruction of effective strategies to increase text comprehension. The instruction was concentrated on structural and linguistic characteristics of

specific genres. In the third module, students worked in cooperative learning groups on literacy tasks.

The study was of a pre-test and post-test design. Students were administered a psycholinguistic assessment at the start and end of the school year to evaluate the effectiveness of the Learning Together program on reading achievement. The assessment, the Test of Textual Integration (TTI), included three texts of different genres that were related in theme. Students were directed to read the texts and create a written summary integrating the three. They were also tasked with providing an original title. One version of the assessment was given to all students individually (TTI-I). A second version of the assessment was given a week later to students in groups of three (TTI-G).

Students were scored on title, main idea, organization of ideas, and level of expression. Student work could earn a maximum of ten points, with points for each category (title, main ideas, organization of ideas, and level of expression) ranging from 0-3 points.

The level of expression pertains to the complexity or sophistication present in the written task. Students were evaluated on their ability "to abstract, synthesize and integrate information for the texts" (Rojas-Drummond et al., 1998, as cited in Rojas-Drummond et al., 2014, p. 146). Levels were designated as:

- pre-strategic (non-critical copying of text),
- suppression (irrelevant/redundant information is excluded),
- generalization (synthesizing initial interpretations of text to create a generalized statement about the whole), and

- construction (inference of text is utilized to create global coherence)

(Rojas-Drummond et al., 2014).

Pre-test scores for the experimental and control groups were very similar for both the individual and the group version of the assessment. However, scores for the post-test indicated a significant difference between the two groups. Students from the experimental group obtained higher mean scores when taking the assessment individually and when completing it within a triad than did students from the control group, signifying that the summaries constructed by the experimental group were of much higher quality.

As shown in Table 6, students in the experimental group exhibited a significant difference in their mean relative gains on the *Test of Textual Integration – Group* for the main idea, organization, and level of expression. The scores for the title did not demonstrate a significant difference.

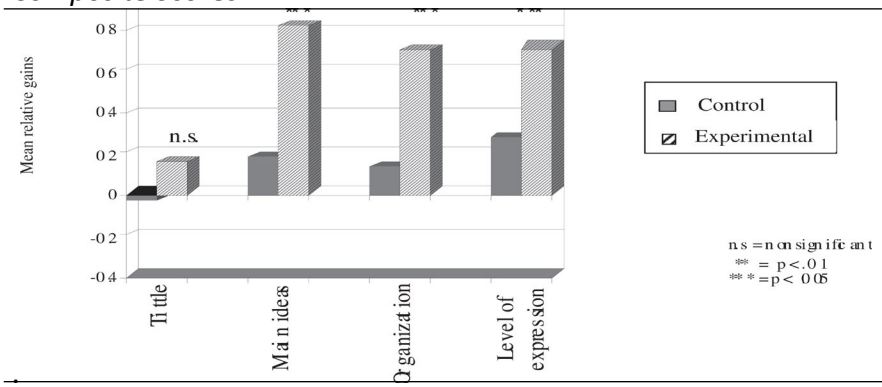
As presented in Table 7, students in the experimental group demonstrated a significant difference in their scores on the *Test of Textual Integration – Individual* for the title, main idea, organization, and level of expression. It should be noted that the scores for members of the control group actually decreased in three of the four areas assessed.

Table 8 illustrates the results for the level of expression for students in both the experimental and control groups, listed by the levels of complexity demonstrated within the written summary for the *Test of Textual Integration – Group*.

Finally, Table 9 shows the results for the level of expression for students in both the experimental and control groups, listed by the levels of complexity demonstrated within the written summary for the *Test of Textual Integration – Group*.

Table 6:

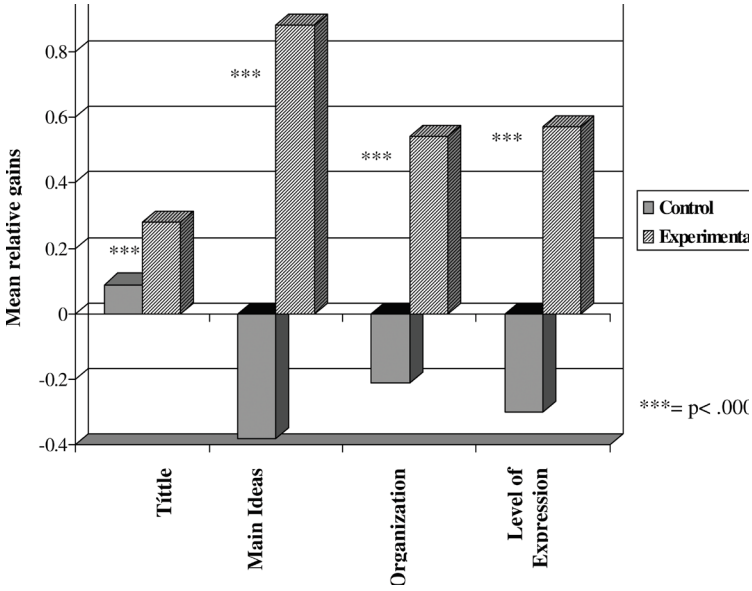
Mean relative gains obtained by each treatment group in the Test of Textual Integration (TTI-G). Composite Scores



(Rojas-Drummond et al., 2014, p. 150).

Table 7:

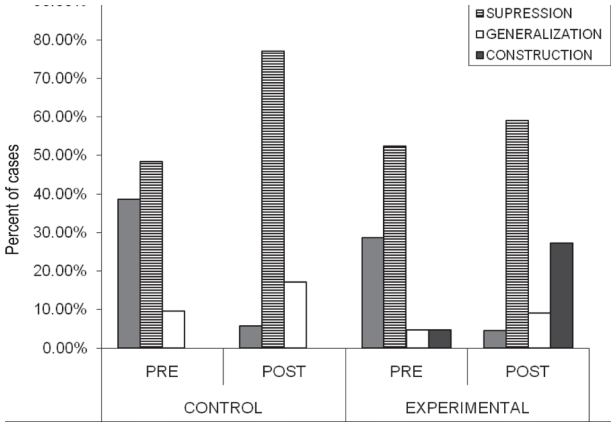
Mean relative gains obtained by each treatment group in the Test of Textual Integration (TTI-I). Composite scores.



(Rojas-Drummond et al., 2014, p. 150).

Table 8:

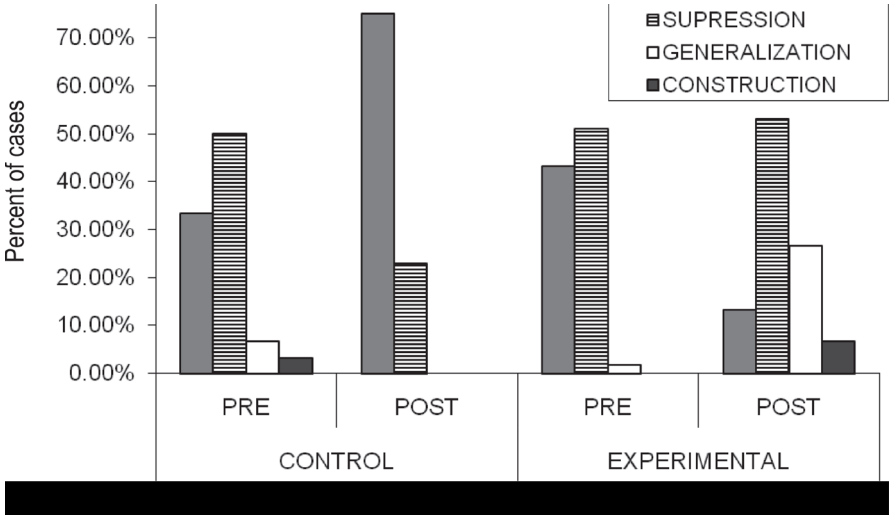
Level of expression by each treatment group in each test. Test of Textual Integration (TTI-G).



(Rojas-Drummond et al., 2014, p. 151).

Table 9:

Level of expression by each treatment group in each test. Test of Textual Integration (TTI-I).



(Rojas-Drummond et al., 2014, p. 152).

Overall results of the study indicated that the students that participated in the experimental group produced higher quality work than did those students in the control group, indicating a more complex level of understanding.

In another study, Yin-Kum Law (2011) examined the impact that cooperative learning methods had on achievement goals, motivation, and reading skills. The focus of this review will be on the findings related to reading development.

Law (2011) examined how specific cooperative learning methods impacted higher-order reading skills when integrated with direct instruction. She focused specifically on the jigsaw method and drama approach. A component of the direct instruction included teaching strategies that were intended to increase student motivation.

Law included a control group in which students were taught using traditional methods. Motivation strategies were not included in the direct instruction for the control group.

Participants in the study included 279 fifth- grade students from Hong Kong. The 141 boys and 138 girls were from nine classrooms located in three different schools. Students were randomly assigned to one of three groups, and each group was provided instruction with one of the three methods (Law, 2011).

Students in the first group were instructed using the jigsaw method of cooperative learning. A second group used an instructional method that combined direct instruction with a drama approach to cooperative learning. Students in these two experimental groups were placed heterogeneously by ability and gender. The third group was instructed with traditional methods and served as the control group.

Teachers involved in the study taught all three groups within their school to eliminate factors that could potentially interfere with the implementation of the instructional methods. The author of the study observed all lessons with the exception of one to further ensure the authenticity of implementation. The teachers did not have any previous experience with either of the experimental methods. They were therefore provided with eight hours of training prior to the start of the study.

All materials needed for implementation, including the text, lesson plans, supplementary materials, and a teacher guidebook were provided to increase the authenticity of the implementation of methods. All three groups studied the same text, although how it was taught varied.

The direct instruction, combined with the jigsaw, approach provided students with two lessons involving the whole class. The teacher taught the text to the students during this phase

of the experiment. Students then worked in groups of five to six students of differing ability levels. Each of the members within the groups was also assigned to an expert group in which students were given one important topic from the text to further explore. Team members met with their expert groups, discussed the assigned topic, and then returned to their original groups to share the acquired information with their group mates. The teacher's role was to monitor discussions, ask for elaboration on student's understanding, and provide suggestions. When this phase was complete, one member of each expert team shared their topic with the whole class. Both the teacher and peers were encouraged to ask a question and provide feedback at this time (Law, 2011).

The second experimental group, which provided direct instruction combined with a drama approach, also began with two whole group lessons in which the teacher taught the text. As with the first group, the students then moved to cooperative learning groups of five to six students. Each student within the groups was assigned a role of one of the main characters from the text to reenact. Students were to re a scene from the story through the perspective of their assigned character. The stories were then performed for the whole class. The role of the teacher was to ask probing questions and provide feedback to enhance student understanding (Law, 2011).

For both of the experimental groups, there was a significant emphasis placed upon instruction that provided a variety of motivational components for increased reading proficiency. This was based upon recommendations of the research-based instructional method, Concept-Oriented Reading Instruction (CORI). The recommended features of CORI

include (a) knowledge goals, (b) real-world interaction, (c) autonomy support, (d) collaboration support, and (e) interesting texts (Guthrie & Ozgungor, 2002, p. 284, as cited in Law, 2011).

The control group was taught in the traditional manner of teacher-led, whole- group instruction. The teacher taught the text through a whole group approach for the majority of the instructional time. However, there were small segments of time in which students worked individually, or participated in small group discussions. The control group did not receive the strategies used to increase student motivation to learn.

Measures on reading achievement were obtained by means of a pre-test to assess student literacy skills, a post-test to assess student comprehension, and a re-test to assess skill retention. Student scores were analyzed to determine if there were significant statistical differences between the three groups (Law, 2011).

Results of the study indicated that the students that participated in the cooperative learning groups integrated with teacher-led, direct instruction, and who were provided teacher and peer scaffolding, experienced a greater impact on reading performance than did students learning in the traditional manner of teacher-led, whole group instruction (Law, 2011).

Although the students in these groups tested higher in higher-order comprehension skills than did the students in the control group, only the students from the jigsaw group tested higher on the re-test administered three months later. Results showed that re-test scores for students that participated in the drama approach were not significantly different than those of students in the control group (Law, 2011). The author speculated that the complexity of the drama approach might have interfered with the retention of skills.

Overall, the study demonstrated that the integration of teacher-led, direct instruction that included cognitive autonomy support with cooperative learning methods enhanced higher-level reading skills for Hong Kong fifth grade students. The study presented multiple factors that were shown to have an impact on student achievement. Due to the numerous factors addressed, a determination cannot be made as to whether providing cooperative learning opportunities, without direct instruction and teacher guidance and support, would demonstrate the same findings (Law, 2011).

Over the past several decades, there have been numerous studies investigating the impact of cooperative learning on academic achievement. Researchers have examined its impact in comparison to other instructional methods, across multiple content areas, in a variety of settings, and with students from pre-school through college. Cooperative learning has repeatedly been shown to have a positive impact on academic achievement.

The Impact of Cooperative Learning on Social Development

Just as it is essential to consider the research that has been conducted on instructional methods prior to their implementation, it is also imperative to consider the strengths and needs of the students that will be engaging in the curriculum. Students that have met the criteria for Emotional Behavioral Disorder (EBD) present with delays in their academic progress and difficulties in the area of interpersonal skills (IDEA, 2004). For these students, it is vital that the instructional method implemented have a positive impact not only on their academic achievement but on their social and emotional development as well.

For many, the skills needed for appropriate social engagement come naturally as a person grows and develops. However, this is not true for everyone, and some students may benefit from direct social skills instruction (Canney & Byrne, 2006; DeGeorge, 1998, as cited in National Center for Technology Innovation and Center for Implementing Technology in Education (CITEd), 2019). Students that demonstrate significant emotional and behavioral difficulties can benefit from such instruction. The goal of social skills instruction is for students to better understand and manage their own emotions as well as improve their interactions with others. Students are provided instruction and receive support as they develop a greater understanding of social conventions and peer communication, and how to build and nurture interpersonal relationships (Webster, 2019).

Research also suggests that students with social difficulties are often isolated from their peers (CITEd, 2019). In viewing this through the lens of Vygotsky's theory of learning (1978), which suggests that social interaction precedes development, this isolation takes away the very opportunity for them to learn through social interaction.

It is recognized that interpersonal and small group skills are key components of cooperative learning (Cohen, 1994; Johnson & Johnson, 1990; Kagan, 2001; Slavin, 1983). It is also known that students with Emotional Behavioral Disorders lack in such skills. Questions arise on how to successfully include students that are lacking in the skills considered to be key components of cooperative learning. Should the lack of skills exclude a student from participation? What if a student's participation in cooperative learning groups increases his or her social development? What if rather than requiring skills to participate, the cooperative

learning group becomes the catalyst for social growth and development? The following literature reviews look to determine the answers to those questions by examining the impact of cooperative learning on social development.

Studies on Social Development

In the study, *Social Skilling through Cooperative Learning*, authors Don Jordan and Joanna Le Métais (1997) sought to establish a means of increasing student achievement by reducing the number of behavior incidents in the school environment. Although the study was small in nature, with only 26 participants, its true value lies in the research and rationale behind it.

To begin, the authors took into consideration prior research on disruptive behaviors. They sought to determine answers to the causation of disorderly behaviors, and investigated corrective models intended to reduce these types of behaviors in the school setting.

The authors were also influenced by research conducted by MacMullin (1994b, as cited in Jordan & Le Métais, 1997) indicating that a lack of interpersonal skills contributed to inappropriate or disruptive behaviors. MacMullin asserted that social skills instruction would benefit students by increasing positive student interaction and assisting in creating a more supportive teacher-student learning environment. Jordan and Le Métais were further influenced by research indicating the need for schools to adapt their learning environment to prevent misbehavior (Slee, 1992, as cited in Jordan & Le Métais, 1997).

The authors also examined research conducted on cooperative learning. Research has shown that cooperative learning groups can provide opportunities for ongoing support from

peers, (Good & Brophy, 1994, as cited in Jordan & Le Métais, 1997) and can have a positive impact on self-esteem, self-motivation, and peer relationships, in addition to increases in academic progress and cognitive development (Dalton & Smith, 1986, as cited in Jordan & Le Métais, 1997). Research conducted by Slavin (1993, as cited in Jordan & Le Métais, 1997) further suggests that participation in cooperative learning groups is correlated to an increase in a student like for one another and more positive views about themselves.

After significant research, the authors developed a social skills program based on the following beliefs (a) in order to grow socially and emotionally students need to interact with their peers, (b) in order for social skills instruction to be effective, instruction must be structured and supported, (c) student behaviors can change with the appropriate interventions and classroom climates can change through the provision of social skills instruction; and (d) simply placing students in groups does not necessarily equate to cooperative learning. The curriculum and pedagogy, along with the classroom and school climate, must work cohesively to develop the necessary skills and promote appropriate behaviors within the school setting (Jordan & Le Métais, 1997).

The social skills program they developed combined cooperative learning techniques with activities that intended to promote student learning with and from one another. The steps for the program were modeled upon recommendations by Graves and Graves (1990, as cited in Jordan & Le Métais, 1997). They suggested that effective social skills programs should:

- help students to understand the purpose of the skill(s);
- help students to recognize the benefits of working together;

- help students to learn the skill(s);
- provide opportunities for repeated practice of the skill(s).

Jordan and Le Métais (1997) conducted the study within the classroom of one of the authors. The participants included 26 fifth- and sixth-grade students (12 boys, 14 girls), ages ten through 12. Prior to the implementation of the social skills program, the classroom structure encouraged students to work in pairs or groups. Students were allowed to select who they wanted to work with, and friend groups often chose to work together. The authors noted that it was typical for one member of a group to dominate the others and make decisions for the group. Although the students often seemed happy to participate in this manner, there were unfavorable effects with allowing students to choose their group mates. Students that tended to be more timid typically did not demonstrate assertiveness within their peer group. In addition, students often chose to work alone, thereby preventing the opportunity for academic and social growth through peer interactions.

When the social skills program was implemented, changes were made to how partnerships and groups were formed. Initially, groups were determined by teacher selection, but this created conflicts as the students perceived that they were purposely being separated from their friend group. Due to the difficulties that the teacher-selected groupings created, the classroom teacher adopted a selection process in which student groupings were chosen at random. Although the selection process was arbitrary, the authors found there to be a balance of gender and abilities within the groupings (Jordan & Le Métais, 1997).

The social skills program was conducted over ten weeks and was implemented in three phases. Throughout the duration of the study, student interactions were observed by the authors.

During the initial phase, students were confidentially surveyed to help determine their level of social acceptance and competence. The first diagnostic activity asked students to rate the likeability of their peers. The second diagnostic activity involved listing one or two peers that fit a given description. For the third and final diagnostic activity, students answered questions regarding making and keeping friends. This was done through the process of choosing answers from stated options (Jordan & Le Métais, 1997).

Data from the diagnostic activities showed that students were not always accepting of their peers. Many more students were included in the category of 'I don't like to play with this person' than were placed in the category of 'I like to play with this person a lot.' The data also revealed gender bias in that both boys and girls tended to place the opposite gender in the lowest category of likeability (Jordan & Le Métais, 1997).

Results from the second activity provided an overall view of how students perceived their peers. However, since the answers given were provided confidentially, a determination could not be made as to how a particular student felt about a specific peer.

Student choices greatly varied regarding their perspectives on making and keeping friends. According to the authors, the most common answers included:

Good ways to make friends:

- *talk to them about their interests*

• *share your things with them*

• *include them in what you and your other friends are doing.*

Good ways to keep friends:

• *if you say that you will do something for your friend, make sure that you do it*

• *wait for them so that they don't get left behind*

• *keep the secrets that they share with you.*

Guaranteed ways to have no friends:

• *boast about yourself and tell everyone how great you are*

• *always talk about yourself and don't listen to what anyone else has to say.*

Guaranteed ways to lose friends:

• *'bad mouth' them when they are not there and tell their personal secrets*

• *be jealous if they like other people as well as you* (Jordan & Le Métais, 1997, p. 12)

Based on the results of the diagnostic assessments, the authors identified the most common negative descriptions students gave to their peers. The data clearly showed that the most significant need was in the area of self-esteem. Based on their findings, the second phase of the program “sought to make students aware of, and celebrate, similarities and differences

between themselves and students outside their immediate friendship circle" (Jordan & Le Métais, 1997, p. 12).

Over the following weeks, students were provided targeted social skills instruction in combination with cooperative learning activities intended to increase student social development. Students were provided with direct instruction on the academic and social goals for each of the activities. Students initially worked in pairs. Partners were expected to take on the role of the questioner or recorder. Students were allowed to determine the allocation and fulfillment of these roles. During this phase, partners were directed to survey their peers to discover similar attributes and experiences. They also interviewed their classmates to determine differences. To accomplish this, students were assigned with the task of finding different peers to match given descriptions.

Observations from this phase showed most students worked cooperatively without complaint. They easily allocated their roles and quickly gathered the information for each of the activities. However, a few students demonstrated a reluctance to engage in the cooperative pairings, and some of the girls demonstrated tentativeness to participate in a partnership with boys (Jordan & Le Métais, 1997).

The final phase of the study lasted for four weeks. During this phase, features of the program were integrated into the normal classroom routine. The goal for this phase was for students to work cooperatively towards the accomplishment of the two assigned tasks while practicing the targeted self-esteem skills.

Students worked in groups of four on two different tasks. The group members changed after the first task. For both activities, groups self-allocated roles to each team member.

In the first task, the authors observed that group members tended to be more focused on the academic goal than they did the social goal. In one group, two of the boys were hesitant to engage with their group members and demonstrated off-task behaviors. When redirected, the behavior of one of the boys further escalated. He began to swear and demonstrated an increase in disruptive behaviors. He was able to participate more appropriately in certain roles (map drawer or writer) than he was in others (skills coach). Furthermore, although the girls were able to work together in a cooperative manner, they demonstrated difficulty in working effectively with the boys. In another group, it was observed that one student was reluctant to join her cooperative learning group and asked if she could work on her own. She had a particularly hard time working with boys (Jordan & Le Métais, 1997).

While engaged in the second task, students appeared to enjoy themselves. One of the boys demonstrated a greater willingness to engage in this task than he did in the previous one. It was noted that for the second task, he worked in a group of all boys. Students that had been previously observed as remaining within their own workspace (prior to the implementation of the study) appeared to feel more comfortable moving about the room and engaging in group interactions and activities.

In discussions following the tasks, students stated that they felt more comfortable working with peers outside of their friend groups than they had prior to the program. They also noted that the relationships that developed through the cooperative learning groups extended

beyond the classroom. This was further confirmed by the authors during observations of peer interaction on the playground (Jordan & Le Métais, 1997).

Overall findings from Jordan and Le Métais (1997) indicated that students enjoyed working in cooperative groups. It was noted that students demonstrated more varied social interactions with their peers, as made evident by an increase in informal groupings within the classroom. The authors attributed this change to the social skills program's emphasis on inclusiveness. Students were also observed to be more willing to accept suggestions and alternative ideas offered by their peers.

Although the study does not present empirical evidence, it does provide anecdotal evidence of an increase in student willingness to participate in cooperative learning groups with peers outside of their immediate friendship group, including peers that they had initially identified as non-preferred via the information-gathering activities. It also showed an increase in participation for students that had previously demonstrated a preference for working alone and had previously demonstrated reluctance to work in a group. Furthermore, there was anecdotal evidence that students within the classroom demonstrated greater social cohesion (Jordan & Le Métais, 1997).

One final note refers to what the authors identified as a weakness of the study:

> It was particularly difficult to maintain a distinction between the engagement of the author in his role as teacher, seeking to promote the progress of the students, and the objective detachment required of the author as researcher, seeking to minimize his influence on the outcome. The author's commitment to

> cooperative learning inevitably affected the way in which the activities described above were carried out and his perceptions of the outcome. (Jordan & Le Métais, 1997, p. 19)

While this may be considered a weakness by some, others may look upon this as a positive attribute. The intent of the social skills program is for it to be implemented within a classroom setting. Classroom teachers should be engaged in the process and promote student progress. Additionally, their commitment to instruction should serve as a positive influence on student learning. While Jordan and Le Métais' (1997) enthusiasm for the instructional method may indeed have impacted the outcome, one might expect that a teacher's attitudes and behaviors positively influence student learning.

The study, *Connecting Social Skills and Cooperative Learning,* examined the impact that direct social skills instruction had on student interactions and behaviors in cooperative learning activities (Mercendetti, 2010). This study differs from the previous study reviewed in that students were provided the social skills instruction prior to and separate from the cooperative learning activities. The targeted areas for the instruction included listening, complimenting, and problem-solving skills, as well as skills used for asking clarifying questions. Prior to the implementation of the social skills instruction, the author surveyed the participants to determine their perceptions of social interactions while working in cooperative learning groups. The survey was repeated at the end of the study to determine any changes.

Four girls and two boys from a suburban school district in western New York were selected to participate in the study. The students were in the sixth grade and ranged in age

from 11 to 12 years old. The students that were selected for the study demonstrated inappropriate social skills within the school setting, and the author believed they would benefit from social skills instruction. Although there were only six students selected for the information gathering and data collection aspects of the study, all students within the classroom participated in the cooperative learning activities (Mercendetti, 2010).

In addition to completing the two questionnaires, the students were asked to reflect upon how the targeted social skills were exhibited within their cooperative learning groups. Following each of the cooperative learning activities, students documented their insights on student interactions and the use of the targeted social skills.

The final means of data collection included observations by the author. The students were observed while participating in their cooperative learning groups, and the observations were recorded by the author.

Data from the pre-intervention questionnaire provided the following information:

- 90% of the students responded as perceiving themselves as using listening skills sometimes, often, or almost always,
- 96% of the students responded as perceiving themselves as using complimenting skills sometimes, often, or almost always,
- 84% of the students responded as perceiving themselves as using clarifying skills sometimes, often, or almost always,
- 83% of the students responded as perceiving themselves as using problem-solving skills sometimes, often, or almost always (Mercendetti, 2010).

Data from the post-intervention questionnaire provided the following information.

- 80% of the students responded as perceiving themselves as using listening skills sometimes, often, or almost always,
- 100% of the students responded as perceiving themselves as using complimenting skills sometimes, often, or almost always,
- 83% of the students responded as perceiving themselves as using clarifying skills sometimes, often, or almost always,
- 90% of the students responded as perceiving themselves as using problem-solving skills sometimes, often, or almost always (Mercendetti, 2010).

When comparing the results of the pre- and post-intervention questionnaires, student perceptions regarding their use of listening skills were shown to decline by 10%. It is also noteworthy that in the initial questionnaire, there were no responses in the category of 'never' whereas, in the post-intervention questionnaire, 10% of the student responses were in this category. The author speculated that the decrease might have been due to an increase in student understanding of listening skills, which in turn created a greater awareness of what good listening looked and sounded like. The increase in understanding allowed for a more critical appraisal by the students (Mercendetti, 2010).

In the area of complimentary skills, there was an increase in student responses in the categories of sometimes, often, or almost always. Data showed an increase of four percent in these categories. The greatest increase was seen in the response of 'often', which went from 25 to 38%. In addition, by narrowing in and taking an even closer look at the data, student

perceptions of their use of complimentary skills ‘often' or ‘almost always' showed an increase from 75 to 88% (Mercendetti, 2010). There was only a slight change in the area of clarifying skills. Student responses in the categories of sometimes, often, or almost always demonstrated a rather insignificant decline of one percent. Student responses to questions regarding problem-solving skills showed an increase from 83 to 90% in the categories of sometimes, often, or almost always. This is an increase of seven percent (Mercendetti, 2010).

Students were able to name components of the group work that they believed were productive and those that created challenges for the group members. It was noted in the authors' observation that this increase in awareness created an increase in student accountability to themselves and their group mates. Student reflections also indicated that some members demonstrated difficulty staying focused and that there were often members within each of the groups talking or presenting other off-task behaviors.

The author documented several positive behaviors among the students while participating in cooperative learning activities. She observed students implementing pre-taught listening skills and asking clarifying questions. She also heard several of the phrases that students had suggested during the social skills lessons on giving compliments. However, students were observed to look toward the author while making the comments to make certain she was hearing them. The author also stated that some of the comments seemed disingenuous and were, at times, followed by laughter (Mercendetti, 2010).

The results of this study are mixed. Student perceptions regarding the use of two of the targeted social skills either showed no improvement or a decrease in use. The direct social skills instruction on listening and clarifying skills did not appear to have the intended effect.

Although student perceptions of their use of complimenting skills increased throughout the study, students were observed giving compliments in a manner that seemed insincere and may have been made for the benefit of the author. Given these observations, it is questionable if the improvement went beyond the surface level and was intrinsic in nature. However, these types of compliment-giving behaviors are often initially seen presented in this manner. Student compliments often start out seeming insincere, but as students continue using the skills, compliments are given in a more natural and sincere way (Johnson & Johnson, 1998, as cited in Mercendetti, 2010). The author was beginning to see this pattern within the groups of students observed.

The final social skills instructional area was problem-solving. Students perceived themselves as making a seven percent improvement in this category (Mercendetti, 2010). It was noted in the author's reflections that the students did not demonstrate many conflicts while working in cooperative learning groups. This would indicate that there was not a significant need to implement the use of problem-solving strategies, thus impacting the frequency of the enactment of the skills.

Mercendetti (2010) only focused on six students, and her measures lasted three-weeks in duration. In addition, the information gathered included student perceptions and reflections and the author's anecdotal notes on behaviors observed during group work. Granted, the study

does not provide the type of empirical evidence needed to offer concrete proof that teaching social skills helps student behaviors in cooperative learning groups, but there is value in its findings. Two of the targeted social skills were shown to increase in a relatively short period of time. Students demonstrated a greater awareness of their own behaviors, as well as the behaviors of their peers, as they participated in cooperative learning groups. Students were able to reflect upon their behaviors and consider areas that needed further improvement. Students were also making progress towards noticing and verbalizing the positive behaviors of their peers (Mercendetti, 2010). At a minimum, the study demonstrated the need to further investigate the use of formal social skills instruction to improve student interactions during cooperative learning groups.

In another study, *Acquiring Social Skills through Cooperative Learning and Teacher-Directed Instruction* (Prater, Bruhl, & Serna, 1998), the authors examined the impact that different social skill instructional methods, taught in conjunction with cooperative learning activities, had on social development. Kagan (1992) named three methods of instruction for the development of social skills through cooperative learning. The methods can be formal, natural, or of a structured natural approach. The formal approach to teaching social skills involves direct instruction of the targeted skills. This direct instruction is an important component of the cooperative learning activity. The natural approach to social skills development does not include social skills instruction. This approach is based on the belief that students will naturally develop the necessary skills in the process of working collaboratively. The third method, the structured natural approach, includes elements of both. The social skill is introduced and

modeled by the teacher, but the students work together to generate what they believe to be the characteristics of the skill. For this study, the instructional methods used were teacher-directed (formal), structured natural approach, and student-generated cooperative group rules (natural).

Prater, Bruhl, and Serna (1998) studied three middle-school, self-contained, language arts classrooms. One of the classes was comprised of seventh-grade students, and two were comprised of sixth-grade students. In all, there were 13 participants involved in the study, all of whom qualified for special education services. Qualifying categories included learning disabilities (LD), emotional behavioral disabilities (EBD), traumatic brain injury (TBI), and visually impaired (VI). The students attended most of their content area classes in a special education setting due to academic and/or behavioral difficulties. Teacher observations indicated that the three groups were similar in academic and social functioning (Prater et al., 1998).

It should be noted that the three classes involved in this research were formed prior to the start of the study. This created difficulty with randomly assigning students to groups, and thus prevented control of pretreatment differences. Because of this, researchers chose one individual from each of the three classes to compare more thoroughly. The students selected were closely matched to one another in terms of their disability, gender, ethnicity, and full-scale IQ, which ranged from 103 to 105.

The cooperative learning groups from each class were assigned the same instructional tasks. However, each class was randomly assigned a different method for their social skills instruction. Class A was assigned teacher-directed instruction, Class B was assigned the

structured natural approach instruction, and Class C was assigned the student-generated rules approach.

The cooperative learning group in Class A was comprised of four seventh-grade boys. Two of the boys had qualified for special education services under the category of LD, one under EBD, and the fourth under VI. Three of the four students were friends in and out of school and often excluded the fourth boy from group activities within the classroom setting. The students were described by their special education teacher as having delays in their interpersonal skills.

The cooperative learning group in Class B consisted of three sixth-grade boys and one sixth-grade girl. Three of the students qualified under the category of LD and one under the category of EBD. The students had been classmates for several years and therefore knew each other well. Their special education teacher described the students as developmentally immature and as having difficulties with focus and attention, academic functioning, and peer interactions.

Class C was comprised of five sixth-grade students and included three boys and two girls. Four of the students qualified under the category of LD. The fifth student qualified under the category of TBI. As with the students in Class B, the students had been together for several years. The special education teacher stated that the students within this group had difficulty staying focused and that that they performed poorly academically.

The authors conducted two surveys to gather information for their research. The first survey was given to school staff prior to the implementation of the study. School staff was

asked to rate 19 school skills to gather their opinions on what they considered to be most important for successful cooperative learning groups. Results indicated that school staff believed that the ability to accept positive feedback, negotiate, problem-solve, listen, evaluate group needs, and manage time were of the highest importance for cooperative learning groups to be successful (Prater et al., 1998).

For the second survey, the participants, along with two teachers that worked with the participants, were asked to answer a series of questions regarding the same 19 skills. Researchers sought their opinions on how often the skills were used, the quality of the skills, and the importance of each of the skills. The survey was repeated at the conclusion of the study to determine changes in student and teacher perceptions regarding the frequency and quality of the skills.

Results of the two pre-intervention surveys were compared for similarities. The skills that school staff rated as most important were looked at in comparison to the skills that teachers and students rated as least effective. The researchers determined that listening, problem-solving, and negotiation skills matched the criteria for both and were selected as the targeted social skills for the study (Prater et al., 1998).

Class A, B, and C all participated in social skill instruction in the targeted skills. However, the instructional method used for each group was different. Table 11 presents a comparison of the three interventions used for the study.

Two trained observers independently assessed student behaviors as they engaged in original role-play performances. Performances were scored in accordance with the steps for

role-play observations recommended by ASSET, an evidence-based social skills training program designed specifically for adolescents with learning disabilities (Hazel et al., 1981a, as cited in Prater et al., 1998). Instructors scored students based on the number of occurrences of verbal and non-verbal behaviors related to the targeted social skills. Instructors observed students on multiple occasions throughout the study, and students were provided scores for pre- and post-instruction performances for each of the targeted skills (Prater et al., 1998).

Pre- and post-intervention results of the original role-play performances are shown in Table 12. Scores for each of the classes are provided as a mean score of all the individual performances within the group. Scores for the students selected for closer inspection of the skills are also provided.

Data were also collected employing a sociometric rating scale. Prior to the implementation of the study, students were asked to rate how much they liked each of their peers (Prater et al., 1998). Students rated how they felt towards their peers on a scale of 1 to 4 (1 – did not like, 2 – like a little, 3 – like, and 4 – liked very much). The rating scale was also given at the completion of the study. The sociometric scores from the pre-intervention were compared to those from the post-intervention to determine the changes in student attitudes towards their peers throughout the study. The scores for Class A showed a gain score increase of +.3 for all students within the group. Student ratings for Class B were varied and gain scores ranged from -.4 to +1. Ratings for students in Class C indicated a decrease in gain scores for all but one of the students. The changes in the scores for Class C ranged from 0 to -2.

As stated previously, the participants along with two of their teachers repeated the survey to assess their perception of the frequency and quality of the use of the targeted social skills at the completion of the intervention. The post-intervention survey focused on the targeted social skills of listening, problem-solving, and negotiating. Scores from the pre- and post-intervention surveys were compared to determine the gain scores for the targeted skills.

The results showed an increase in gain scores on eight of the twelve targeted skills for the group of students that participated in the teacher-directed instruction method. Scores for the four remaining skills remained the same from pre-to post-intervention. Scores showed an increase for seven of the twelve targeted skills for the group of students that participated in the structured-natural instructional method. Results for the remaining five skills showed no change from the pre- to post-intervention survey. Finally, four of the twelve targeted skills showed an increase for the group of students that participated in the natural approach instruction method, while scores for four of the twelve skills remained the same. However, scores for this group of students showed a decrease in four of the twelve targeted social skills. Table 13 provides further detail of the changes in teacher and student perceptions following the intervention.

Results of the study demonstrated the need for teacher involvement in social skills instruction when taught in conjunction with cooperative learning groups. The students that received direct instruction from the teacher made the greatest improvements in the skills. The teacher noted that the students in Class A implemented the targeted skills to help resolve problems that arose (Prater et al., 1998). Students that received social skills instruction through the structured-natural approach also showed improvement in their skills, however not to the

same degree. Students that participated in the student-generated cooperative groups made little to no gains in their skills, and oftentimes the skills were shown to have declined.

Table 11

Comparison of Social Skills Instruction

Intervention	Skills	Instruction	Review
Teacher-directed instruction (Class A)	Socially validated, teacher provided, specific skills steps from ASSET	Teacher models, student memorizes skill steps, student practices until reaching 100% criterion, three 50-minutes sessions (one per skill)	Students recall steps and role play in novel situations
Structured natural approach (Class B)	Student-generated descriptions of skill (looks like, sounds like)	Teacher models, visual cue of skill description displayed, student practices, no criterion, three 50-minute sessions (one per skill)	Students reminded of skills and descriptions
Student-generated cooperative group (Class C)	Teacher provided three skills, students generated additional skills and definitions of all skills	Teacher facilitates class discussion, no modeling, no practice, one 50-minute session	Students reminded of skills and definitions

(Prater et al., 1998, p. 165)

Table 12

Mean Scores of Pre- and Post-Intervention on Student Performances of Original Role-Play by Class and Selected (Matched) Participants

	Mean scores Pre-intervention	Mean scores Post-intervention	Mean scores Percentage of change
Listening			

Class A	81%	96%	15% increase
Class B	68%	88%	20% increase
Class C	96%	80%	16% decrease
Matched student from:			
Class A	80%	93%	13% increase
Class B	100%	97%	3% decrease
Class C	87%	78%	9% decrease
Problem Solving			
Class A	33%	76%	43% increase
Class B	30%	37%	7% increase
Class C	27%	30%	3% increase
Matched student from:			
Class A	31%	77%	46% increase
Class B	27%	34%	7% increase
Class C	23%	34%	11% increase
Negotiation			
Class A	54%	77%	23% increase
Class B	47%	70%	23% increase
Class C	48%	46%	2% decrease
Matched students from:			
Class A	46%	69%	23% increase
Class B	65%	78%	13% increase
Class C	34%	42%	8% increase

(Prater et al., 1998, p. 166).

Table 13

Changes in Teacher and Student Ratings of Targeted Social Skills from Pre- to Post-Intervention

Skill	Class A	Class B	Class C
Listening			
Teacher frequency	0	+.25	0
Teacher quality	+.50	0	0
Student frequency	0	0	-.40

Student quality	+.25	+.25	-.20
Problem-solving			
Teacher frequency	+.25	+.75	0
Teacher quality	+.50	+.75	-.20
Student frequency	+.75	0	+.20
Student quality	0	0	+.20
Negotiating			
Teacher frequency	+1.25	+1.00	+.40
Teacher quality	+1.00	+.50	0
Student frequency	+.25	+.50	-.40
Student quality	0	0	+.40

(Prater et al., 1998, p. 167).

The article, *Interdependence and Interpersonal Attraction Among Heterogeneous and Homogeneous Individuals: A Theoretical Formulation and Meta-analysis of the Research* (Johnson, Johnson, & Maruyama, 1983) presents information obtained through a meta-analysis of research that compared cooperative, cooperative with intergroup competition, interpersonal competition, and individualistic goal structures. Authors Johnson, Johnson, and Maruyama (1983) analyzed multiple studies to determine the impact that instructional goal structures had on interpersonal attraction. Interpersonal attraction can be defined as having positive feelings and attitudes towards another. The specific structures analyzed included cooperative, cooperative with intergroup competition, interpersonal competition, and individual effort. The authors also looked for similarities and differences among the goal structures to gain a better understanding of the specific factors that influenced positive interpersonal attraction.

Ninety-eight studies were examined using three meta-analysis procedures: voting,

effect-size, and z-score methods. Research articles selected for the meta-analysis had to compare two or more of the goal structures and include data on interpersonal attraction. All available studies that met the criteria were included in the analysis. Several of the articles looked at the impact of goal structures on cross-ethnic relationships, while several others looked at how they impacted relationships between students with and without disabilities. The authors also examined the impact that various goal structures had when implemented with homogeneous groups of students (Johnson et al., 1983).

As a result of the meta-analysis, the authors concluded that cooperative learning experiences had a more positive impact on peer relationships than did cooperation with intergroup competition, interpersonal competition, and/or individualized learning experiences (Johnson et al., 1983). This was demonstrated in studies that examined cross-ethnic groups, those that compared students with disabilities to those without disabilities, and those with homogeneous groups of students.

The analysis also demonstrated that cooperative learning experiences tend to foster positive relationships. They were shown to create stronger perceptions of encouragement and acceptance among peers, more accurate perspective-taking, and a more open-minded view of others. Students also demonstrated higher self-esteem, higher academic achievement, and had a more positive outlook towards future interactions (Johnson et al., 1983).

The authors argue that the positive influence that cooperative learning experiences have on peer relationships allows for further development of these relationships. As feelings and attitudes become more positive towards one another, students are more likely to further

engage with one another, providing a stronger likelihood for future interactions (Johnson et al., 1983).

Effective Cooperative Learning Methods

In the previous sections, the review of multiple studies demonstrated the positive impact that cooperative learning can have on academic achievement and social development. Each of the studies approached cooperative learning in a slightly different manner, leading to the question: What are the most effective methods to help ensure positive academic and social outcomes for all learners?

Researchers and authors, Buchs and Butera (2015) define cooperative learning as structured group work that is intended to increase student academic and social outcomes. However, the authors acknowledged that cooperative learning does not always work as intended (Buchs & Butera, 2015).

The authors stated the following in regards to cooperative learning, “The general hypothesis in the cooperative learning tradition is that the way the group work is structured influences interactions among members, and interactions inside the team determine members’ learning” (Gillies, 2007; Johnson & Johnson, 1989; Slavin, 2011; Webb & Palincsar, 1996, as cited in Buchs & Butera, 2015, p. 202-203). The manner in which cooperative learning groups are structured can motivate students to support their group members academically as well as socially, encourage learners to engage in instruction and activities, and serve as the basis for constructive interactions (Buchs & Butera, 2015). Clearly, how cooperative learning groups are structured impacts their effectiveness, and with this knowledge comes responsibility.

Cooperative learning groups must be structured to promote positive interactions in order for cooperative learning to work as intended.

Researchers have long questioned the best means of establishing positive social interactions. In 1947, Watson published a review of research on relationships between different groups of people (as cited in Johnson et al., 1983). In this review, Watson concluded that interaction was the best way to change a person's behavior or attitude regarding a social group other than one's own. He concluded that other types of experiences, such as exposure to accurate information or persuasive communication, were not as effective as actual contact between groups. However, for the interactions to have a positive effect, certain conditions must first be met. Watson's research indicated that positive interdependence in conjunction with task-oriented and relationship-oriented interactions are key conditions for fostering positive intergroup relations. (1947, as cited in Johnson et al., 1983).

That same year, Williams (1947, as cited in Johnson et al., 1983) also published a review on intergroup relations and came to similar conclusions. These reviews and others point to the importance of social interactions to foster positive mindsets and relationships among heterogeneous groups (Allport, 1954; Cook, 1969; Williams, 1947; Watson, 1947, as cited in Johnson et al., 1983).

In the article *An Overview of Cooperative Learning*, authors Johnson & Johnson (2002) provided specific components of cooperative learning they considered necessary for positive group interactions. The necessary components include: (a) positive interdependence, (b) promotive peer-to-peer interaction, (c) individual accountability to achievement of the goal/s

delegated to the group, (d) continued use of interpersonal and small-group skills; and (e) recurrent group processing to evaluate how the team functions and influences effectiveness (Johnson & Johnson, 1990, 1994; Kagan, 2001).

The authors also spoke of the importance of teaching students how to effectively work together. According to the authors, the structure of student-student interactions impacts how students learn, their attitudes towards school, their feelings about each other, and their personal views of themselves. Student interactions can include a competitive, individualistic, or cooperative goal-structured approach. Although the authors acknowledge that in order to successfully navigate the classroom students must be able to work effectively during all three means of interaction, they made the argument that not all three goal structures have an equal impact on student growth and achievement (Johnson and Johnson, 2002).

Competitive goals are those in which the goals of one group or individual are linked to the goals of another group or individual. Students compete against one another to determine who is the best. Individual goals are those in which the achievement of one student has no bearing on the achievement of his or her peers. A student works towards the achievement of the goal by and for him or herself (Johnson & Johnson, 2002; Johnson et al., 1983). Cooperative goals are those in which group members work together to achieve a common goal. Individual and team success is dependent on the collective efforts of the members of the group. According to the authors:

> *A cooperative social situation is one in which the goals of the separate individuals are so linked that there is a positive correlation among their goal attainments.*

> *Under purely cooperative conditions, an individual can attain his or her goal if and only if the other participants can attain their goals. Thus, a person seeks an outcome that is beneficial to all those with whom he or she is cooperatively linked.* (Johnson et al., 1983, p. 7)

Student-student interaction, in which peers are placed in groups without guidance or direction, does not equate to cooperative learning. For a group to be working cooperatively, students must demonstrate positive interdependence while working toward a common goal. In addition to being accountable to the group, students are accountable to themselves as individuals and are expected to learn the material. The success or failure of an individual group member directly impacts the success of the group.

When planning instruction based on a learner's strengths and needs, educators must also be mindful of their students' prior knowledge. Previous experiences and learning opportunities regarding a subject matter are seen as beneficial for student learning. Lee Shulman, in the article entitled *Taking Learning Seriously,* presented his views on what he believes it means to learn. He asserted that learning is initially influenced by what students already know, stating:

> *To prompt learning, you've got to begin with the process of going from inside out. The first influence on new learning is not what teachers do pedagogically but the learning that's already inside the learner . . . We've come to understand more clearly the extent to which learners construct meaning out of their prior*

> *understanding. Any new learning must, in some fashion, connect with what learners already know.* (Shulman, 1999, p. 12)

When implementing a cooperative goal structure within cooperative learning groups, the previous learning experiences of the participants must be taken into consideration. While it is understood that prior knowledge is an important component of learning content material, educators must also take into consideration a student's background and experience in working collaboratively in a group. If a student's previous experiences are based on individualistic or competitive approaches to instruction, the student may not possess the skills to participate effectively within a group. As pointed out by authors Buchs and Butera, Western society "is based increasingly on values of achievement, power, and competition" (2015, p. 7). It would be natural for students to participate in the manner in which they are accustomed to unless they are provided with structures specifically designed to encourage cooperation, which in turn helps to ensure the positive benefits of cooperative learning.

As stated previously, Buchs and Butera (2015) argue that the manner in which group work is structured influences how students interact, and that student interactions influence learning. The authors further contend that students learn through conflict. Students have differing, oftentimes opposing, thoughts, and ideas regarding their interpretation of content or the construction of a task. These 'conflicts' can be thought of as the building blocks for learning, but only when they are managed effectively. According to the authors, learning is preceded by conflict, "to the extent that the conflict between partners is regulated to allow them to construe conflict as a chance to develop new knowledge and not as a struggle for competence"

(Buch & Butera, 2015, p. 3). As students discuss their points of view with one another, the varying thoughts, ideas, and opinions merge together to form a better understanding of the content or an improved means for the completion of a task (Buchs & Butera, 2015).

The authors present three different approaches to resolving conflict. One of the approaches, epistemic conflict regulation, involves students working in collaboration as they share and discuss their ideas and opinions to create a new and integrated understanding of the information.

The other two approaches are based on social comparisons in which students respond to conflict based upon how they view themselves in comparison to others in the group. In the first of these two approaches, a student may compare himself or herself to a peer and feel inferior. This leads the student to conform to the ideas of others. However, this ceases further sharing and the mutual processing of ideas and does not lead to greater understanding. The second of the two social comparison approaches is competitive in nature. A student views his or her opinions as above those of his or her peers, and the conflict revolves around proving him or herself as right, rather than working with the other members of the group to grow in knowledge and understanding (Buchs & Butera, 2015). In this approach, students are not flexible in their thinking or open to the ideas of others. Here again, learning is diminished.

To further their understanding, Buchs and Butera (2015) reviewed several studies that examined goal structures and their impact on achievement. The studies selected for review compared complementary informational structures with identical information structures. With each study, students worked in pairs. Each pair was given two texts to read and discuss. The

texts provided were the same for both groups. Directions were provided based on one of the two informational structures. Students that participated in the complementary information partnerships each read one of the texts, whereas students in the identical information partnerships each read both texts. For both groups, one student from each pair summarized the article, and the other asked questions. The roles were reversed when discussing the second article (Buchs & Butera, 2015).

The authors chose these roles based on research indicating that specific interactive skills had a positive impact on cooperative learning. The ability to summarize information (Spurlin, Dansereau, Larson, & Brooks, 1984, as cited in Buch & Butera, 2015), ask clarifying questions (King, 1999, as cited in Buch, & Butera, 2015), and provide well-defined explanations (Webb 1985, 1991, as cited in Buch & Butera, 2015) have been shown to be beneficial to the effectiveness of cooperative groups.

The first study reviewed was conducted with university students. The study's authors (Buchs, Butera, & Mugny, 2004) videotaped and analyzed student-student interactions during cooperative learning in which students either worked on complementary or identical information. Results indicated that the students that implemented the complementary information structures displayed more positive interactions than those in which both students read both texts. The study further revealed that students from the complementary information structures pairings spent more time and effort explaining the article and shared more ideas. Listeners within the pairings asked more detailed questions and received more answers. In comparison, students that worked in pairs in which each partner read both texts spent more

time arguing their opinions and ideas and expressed more negative reactions to their partner's understanding of the text (Buchs et al., 2004, study 1, as cited in Buchs & Butera, 2015).

Based on the findings from the first study, the authors wanted to further investigate perceived confrontations and social comparisons within each condition. They sought answers to the following: (a) how often did a student check his or her partner's responses, (b) how often did a student question the competence of his or her partner, (c) how often did one partner attempt to appear more competent than the other, and (d) how often did a student speculate on how to appear more competent than their partner?

Results from the study showed that university students that were assigned to work on identical information reported more negative social interactions in the form of conflicts, and demonstrated an increase in social comparisons in comparison to those working in complementary information structures. Both studies indicated that working on identical information provoked competitive rather than collaborative student interactions (Buchs et al., 2004, study 2, as cited in Buchs & Butera, 2015). Additionally, the two studies indicated differences in the factors that influenced student learning. In the pairs in which each partner read one of the texts, learning was most influenced by the quality of the explanations given and questions asked. The higher the quality of the information shared, the greater the increase in student understanding. However, in the pairings in which each student read both texts, students tended to put more effort into arguing their own point of view and attempting to prove their thoughts and ideas as correct. These types of competitive interactions resulted in poorer student understanding, regardless of the quality of the arguments. It appeared that

working on identical texts created competitive interactions among the partners, thus changing the intentions and benefits of cooperative learning (Buchs & Butera, 2015).

The authors further examined identical versus complementary information cooperative learning structures with students at the elementary level. The initial study reviewed indicated that students that worked on identical information tended to navigate towards social comparison rather than cooperation. Students often compared themselves to their partner, experienced frustration when they perceived their partner as having done a good job of explaining the material, and feared appearing less knowledgeable than their partner. Students acknowledged wanting to be considered better than their peers and thought about ways that they could outperform their partner. Although not all of the scores demonstrated a statistically significant difference from the scores of students that participated in the complementary information structures, the mean scores for each behavior demonstrated that these behaviors increased when students worked on identical information (Buchs & Butera, 2015).

The authors followed up the initial study with two more. Both of the follow-up studies indicated that the competency of one's partner directly impacted student learning. Results for students working in groups with complementary structures showed that students with competent partners achieved at higher levels, and the greater the competency of one's partner, the higher the achievement. However, for students working in identical information structures, high student competency had a detrimental impact on their partner's achievement.

The results from the studies demonstrate the ease with which students migrate towards social comparisons as a means of regulating conflict. If students are more familiar with

competitive and individualized learning structures and their prior knowledge is acquired through these types of interactions, they will likely navigate towards social comparison.

Research has indicated that another way to encourage cooperative learning is by setting mastery rather than performance goals. Placing value on understanding and effort has been shown to have a positive impact on achievement of mastery goals, and may lead students towards working cooperatively rather than competitively.

> *Indeed, mastery orientation is enhanced when the teacher structures the task to reduce social comparison, delegates a part of authority by involving learners in some decisions, promotes recognition of all students, values their efforts, groups students to support help, regulates errors and manages time while limiting stress.* (Buchs & Butera, 2015, p. 7)

The article *Mastery and Performance Goals Predict Epistemic and Relational Conflict Regulation* (Darnon, Muller, Schrager, Pannuzzo & Butera, 2006) examined the impact that mastery and performance goal structures had on student responses to sociocognitive conflicts. Sociocognitive conflicts can be seen as disagreements among partners or group members regarding the correct answer, the best way to solve a problem, or the right way to construct a task (Buchs & Butera, 2015; Darnon et al., 2006). This type of conflict involves both social and cognitive components. The conflict is social in that it involves interactions between two or more people, and cognitive in that differing understandings of the content or solutions to the task are introduced.

The authors looked at previous literature indicating that achievement goal structures can have an impact on how a student approaches a given task. Mastery goals tend to inspire a deeper processing of the task. Students that are working towards mastery goals tend to ascribe their lack of success to a lack of effort and tend to acknowledge that with greater effort comes greater achievement (Ames & Archer, 1988; Ames, Russel, & Felker, 1977; as cited in Darnon et al., 2006).

In contrast, performance goals tend to influence students towards a shallower processing of the task (Darnon & Butera, 2005; Elliot, McGregor, & Gable, 1999; Nolen, 1988; as cited in Darnon et al., 2006). Students that are working towards performance goals tend to blame their lack of success on a lack of ability. This can lead to a lack of effort as, in their minds, effort does not factor into their achievements (Diener & Dweck, 1980; Dweck & Leggett, 1988; as cited in Darnon et al., 2006).

The authors addressed the means in which an individual may regulate a sociocognitive conflict: epistemically or relationally. Epistemic conflict regulation tends to be task focused. Participants tend to acknowledge the aptitude of their peers and are more inclined to work through a problem and examine the thoughts and perspectives of others in order to develop a greater understanding of the task (Doise & Mugny, 1984; Mugny, De Paolis, & Carugati, 1984; as cited in Darnon et al., 2006).

Relational regulation tends to focus more on an assessment of abilities and involves a degree of social comparison. When students regulate sociocognitive conflicts in a relationally regulated manner, they tend to compare themselves to others and try to prove that they are

right and that their peers are wrong. Ideas and perspectives of others can create doubt in their own competency or in the competency of fellow students (Doise & Mugny, 1984; Mugny, De Paolis, & Carugati, 1984; as cited in Darnon et al., 2006).

Darnon et al., (2006) conducted two studies to investigate the impact that achievement goal structures had on sociocognitive conflict regulation. The first study included 51 French university students and was conducted while they attended their introductory psychology class. The average age of the participants was 19.31 years old. Forty-one of the participants were female and eight were male. The two remaining participants did not provide their gender.

Participants of the study were asked to complete a two-part questionnaire. In the first part, participants were asked to describe the main results and implications of an experiment that they had conducted the previous semester. For the second part, students were asked to envision an imaginary discussion they would have with a peer in which they disagreed about the implications of the experiment. They were to document what they would say to him or her. They were also instructed to include the extent to which they would try to regulate the conflict in an epistemic versus a relational manner. Additionally, participants were informed that they could learn more about the experiment through their professor after class.

The questionnaire was used to determine the manner in which each student approached his or her learning, be it mastery or performance goal structure. This was done using a scale in which students were asked three questions regarding performance goals and three questions regarding mastery goals. Students responded to each question on a scale of 1 - not at all to 7 – completely (Darnon et al., 2006).

The questionnaire was also used to determine how the individual participants approached sociocognitive regulations. Participants were asked to determine the degree to which they agreed or disagreed. Then they were asked a series of questions - three pertaining to epistemic and three pertaining to relational – about the extent to which they would regulate the conflict. Participants were to provide their answers on a scale of 1 – not at all to 7 - completely (Darnon et al., 2006).

The study indicated that mastery goals were significantly and positively correlated with epistemic conflict resolution. In contrast, performance goals were significantly and positively correlated with relational conflict regulation (Darnon et al., 2006).

Although the results from the study indicated that goal structures did indeed impact how students regulated sociocognitive conflict, the researchers were well aware that the data was self-reported and based on imaginary circumstances. For the second study, participants were involved in an actual sociocognitive situation.

The second study involved 63 10^{th}-grade students. The average age was 15.68 years. Participants included 47 females and 16 males. This study, as with the first, was conducted in France (Darnon et al., 2006).

The study was conducted in three phases. First, students were asked to complete a questionnaire to determine their predisposition towards mastery versus performance goal structure when approaching an academic task. One week later, students participated in a computer-facilitated cooperative learning task in which a sociocognitive conflict was formed. As a part of this phase, students were asked to answer a series of questions to assess their

perception of their own competency and the competency of their partner. The final phase of the study occurred two weeks later. At this time, students were given the opportunity to receive their grade, obtain a more detailed copy of the text, or both (Darnon et al., 2006).

Achievement goals were assessed using the same series of questions pertaining to performance and mastery goals as in the first study. The participants were directed to respond to each question on a scale of 1 – not at all to 7 - completely (Darnon et al., 2006).

During the second phase of the study, students were placed into groups of 10-16 students. Each group assembled in a room equipped with computers, and each student was assigned to an individual computer. Participants were told they would be discussing a text regarding eyewitness testimony with a partner by means of the computer and that the pairings were chosen randomly. In reality, participants were not actually paired with one of their group members. Rather, the computer was programmed to provide pre-recorded responses. The responses provided were more often than not in disagreement with the student's answer, thus creating a sociocognitive conflict that could plausibly occur within a classroom environment (Darnon et al., 2006).

Once students completed the task, they were asked a series of questions to assess their perception of their own competency and that of their partner in relation to the task. How an individual views his or her own competency and the competency of his or her peers has been shown to impact the manner in which a sociocognitive conflict is regulated (Butera & Mugny, 1995; as cited in Darnon et al., 2006). Students were instructed to provide their answers to the following questions on a scale of 1 (not at all) to 7 (completely):

- How well did you and your partner understand the text?
- How well were you and your partner able to answer questions pertaining to the text?
- How competent were you and your partner on this type of a task?

(Darnon et al., 2006)

During this phase, students were also given a multiple-choice assessment on the text itself. This step was done to provide a grading opportunity for participants who were interested in receiving a grade, rather than an actual assessment of student performance (Darnon et al., 2006).

The third phase of the study occurred two weeks later. At this time, students were provided the opportunity to receive a more detailed copy of the text on eyewitness testimony, their grade, or both. This was conducted to measure their interest. It was predicted that students with a tendency towards mastery goals would be more inclined to request the text, and those with performance goals would be more interested in their grade. Results are as follows:

Of the 63 participants –

- 14 (22.2%) asked for a copy of a more detailed text
- 14 (22.2%) asked for their grade
- 24 (38.1%) asked for both
- 11 (17.5%) asked for neither (Darnon et al., 2006).

Results of the study indicated that achievement goals served as a strong predictor as to

how an individual views his or her own competence as well as the competence of others. Performance goals were shown to enhance the degree of competency assigned to self. The study demonstrated a direct correlation between the degree in which a student endorsed performance goals and a higher perception of self-competency. In contrast, mastery goals were correlated with a higher degree of competency assigned to others. The higher one endorsed mastery goals, the higher they rated their partner's competence (Darnon et al., 2006).

Further findings from the study showed that students that endorsed mastery goals were more inclined to ask for a more detailed form of the text. Students that endorsed performance goals were more likely to ask for their grade (Darnon et al., 2006).

Results from both studies demonstrated a strong correlation between the type of achievement goal structure a student endorsed and how they viewed the competency of themselves and their peer. Mastery goals were shown to increase an individual view of the partner's competency. Performance goals were shown to increase an individual's view of his or her own competency (Darnon et al., 2006).

As noted previously, the attribution of competency impacts the manner in which a sociocognitive conflict is regulated (Butera & Mugny, 1995; as cited in Darnon et al., 2006). This was duplicated in both of the studies. Students that attributed competency to their partners were more inclined to regulate the sociocognitive conflict through an epistemic approach. On the other hand, those that attributed a higher level of competency to themselves were more likely to regulate a sociocognitive conflict in a relational manner.

The Impact of Cooperative Learning on Students with Emotional Behavioral Disorders (EBD)

As noted in the introduction, students with EBD often struggle in the area of academics. Research has shown that the average elementary student with EBD performs 1.2 to 2 years behind grade level (Trout, Nordness, Pierce, & Epstein, 2003, as cited in Ryan, Pierce, & Mooney, 2008). The learning gap becomes even more significant as a student gets older. High school students with EBD are, on average, 3.5 years behind their grade level peers (Coutinho, 1986; Epstein, Kinder, & Bursuck, 1989, as cited in Ryan et al., 2008).

Additionally, students with EBD often demonstrate difficulty with interpersonal skills (IDEA, 2004). These difficulties can have a significant impact on a student's ability to access his or her instruction and may prove to be especially problematic when a student is asked to work collaboratively with his or her peers. Studies have shown a correlation between lower social skills and negative developmental outcomes. Research indicates that students with social skill deficits may experience lower self-esteem and poorer academic achievement, as well as higher rates of delinquency and dropping out of school (Gresham et al., 1999; Ollendick, Weist, Borden, & Greene, 1992; Pope, Bierman, & Mumma, 1991; Walker et al., 1995, as cited in Sutherland, Wehby, & Gunter, 2000). When planning instruction for students with EBD, it is extremely important to choose research-based instructional methods that have been proven to increase student engagement and academic progress for students with EBD.

A study by Nelson, Johnson, and Marchand-Martella (1996) compared the impact of direct instruction, cooperative learning, and independent learning practices on the behaviors of students with EBD. Participants for this study included four 3rd-grade boys. The boys all qualified for special education services under the category of EBD and were enrolled in a self-

contained classroom for students with significant behavioral concerns. The four participants demonstrated physical and verbal aggression towards staff and peers. Disruptive behaviors were also noted to be of significant concern for each of the participants (Nelson et al., 1996).

The study was conducted outside of the self-contained classroom in a room set up specifically for the experiment. The four participants, along with 8 to 12 additional third-grade students, were placed in groups of four. Each instructional method was implemented within the classroom for two weeks prior to recording the student participants. This was done to familiarize the students with the instructional method prior to the documentation of behaviors. The documented variables included on-task and the number of disruptive behaviors.

Overall, the students showed the highest percentage of on-task behaviors while participating in direct instruction. The average percentage of time spent on-task was 92.5%. In comparison, the average percentage of time spent on-task was 80.4% during cooperative learning, and 79.3% during independent learning (Nelson et al., 1996).

Students demonstrated the lowest average percentage of disruptive behavior while participating in directed instruction (8.7%). Students presented, on average, disruptive behavior 20.4% of the time during cooperative learning, and 21.6% of the time during independent learning (Nelson et al., 1996).

Although the study demonstrated teacher directed instruction to be the most effective, there are some concerns with the study. The study was very limited in size, with only four participants, all of whom were the same gender and age. Another concern is that there is no mention of the implementation of the accommodations or modifications that pertain to each

individual student. Accommodations and modifications are an important component of a student's Individual Learning Plan (IEP) and are intended to help student's access their education. As stated, students that qualify for EBD have difficulties with interpersonal relationships, which are a necessary skill for successful cooperative learning groups. The omission of the needed supports could have greatly impacted the students' success during cooperative learning.

Several studies have looked at the impact that cooperative learning has on the academic progress of students with EBD. The article, *Evidence-Based Teaching Strategies for Students with EBD* (Ryan et al., 2008) compared the impact of peer-mediated, self-mediated, and teacher-mediated interventions on the academic progress of students with EBD. The authors reviewed over 30 years worth of research to examine the effectiveness of various instructional strategies for students with EBD. In order for a study to qualify for the review, it had to meet the following criteria: (a) published in a peer reviewed journal within the previous 40 years; (b) contain an original report of quasi-experimental or experimental research; (c) include the manipulation of an independent variable; and (d) include at least one academic measure as a dependent variable. In addition, the participants involved in the studies had to have qualified for special education service under the category of EBD (Ryan et al., 2008).

The authors reviewed 14 studies that addressed peer-mediated interventions. Examples of this include cooperative learning groups, cross-age tutoring, and peer tutoring. There was a total of 169 participants in the 14 studies reviewed. Sixty-four percent of the participants were listed as male and sixteen percent were female; students' gender was not provided for the

remaining twenty percent of the participants. Of the 14 studies, five were conducted with elementary-aged students, with ages ranging from 6-11. The remaining nine studies were conducted with students 12 and older (Ryan et al., 2008).

The authors looked at the overall effect size (ES) to determine if peer-mediated interventions were effective in helping students make academic progress. According to the article, an ES of 0-0.3 would be considered to have a small effect, 0.3-0.8 would be considered a medium influence, and anything greater than 0.8 would be considered to have a large impact (Ryan et al., 2008).

The overall ES of peer-mediated interventions was 1.875. An ES of this size demonstrated that peer-mediated interventions can have a significant and positive impact on academic progress for students with EBD. The authors broke ES down by subject area and found the peer-mediated interventions was most effective in the area of math (2.08). The ES for reading (.81), although not as significant as math, still demonstrated a large impact on student progress (Ryan et al., 2008).

The literature review found that peer-mediated interventions benefited students regardless of the role the individual had within the partnership or group. The greatest benefit was demonstrated when both students within a partnership participated as both tutor and tutee, with an ES of 2.12 (Ryan et al., 2008).

The research reviewed for self-mediated and teacher-mediated interventions was done in much the same manner. The overall ES was 1.8 for self-mediated interventions and 1.05 for teacher-mediated (Ryan et al., 2008). Although both interventions had a positive impact on

students learning, peer-mediated interventions were shown to have the greatest impact on academic achievement.

In another review of literature, authors Sutherland, Wehby, and Gunter (2000) looked specifically at how cooperative learning impacted students with EBD. The authors wanted to further investigate past research suggesting that cooperative learning methods could be implemented to increase academic learning and social skills development (Cartledge & Cochran, 1993; Malmgren, 1998; Quinn, Jannasch-Pennell, & Rutherford, 1995; Rutherford, Quinn, & Mathur, 1996; Steinberg & Knitzer, 1992, as cited in Sutherland et al., 2000).

Studies included in the literature review had to meet the following criteria: (a) study participants had to have been identified as a student with EBD; (b) study participants had to be of school-age at the time of the study; (c) study had to directly measure the impact of at least one independent variable of an operationalized method of cooperative learning; (d) study had to measure a dependent variable related to academic achievement, on-task behaviors, disruptive behaviors, or social skills; and (e) study had to have been published in a peer reviewed journal (Sutherland et al., 2000).

The authors found eight studies that met the criteria for the literature review. Four of the studies (Johnson & Johnson, 1982; Johnson & Johnson, 1984a, 1984b; O'Melia & Rosenberg, 1994, as cited in Sutherland et al., 2000) implemented group design research methods. The other four (Nelson et aI., 1996; Rutherford et aI., 1998; Salend & Sonnenschein, 1989; Salend & Washin, 1988, as cited in Sutherland et al., 2000) applied single-subject research designs. A short synopsis of the findings will be provided for each of the studies.

Studies Utilizing Group-Design Methods

When reviewing the group studies, findings were considered to be of significance if the difference between groups means consisted of $p < .05$.

Johnson and Johnson (1982, as cited in Sutherland et al., 2000), compared the effects of cooperative learning and individualistic learning on math achievement and task engagement. Participants included 31 eleventh-grade students. Three of the participants were students with EBD. Students were assigned randomly to one of the instructional methods, taking into consideration gender, disability, and math ability. Students were tested at the end of each week on the math instruction provided throughout the week. After four weeks, the tests scores for students that took all four tests were calculated to help determine levels of achievement.

Findings from the study showed a slight impact on student math achievement ($p < .10$). Students, with and without disabilities, tended to demonstrated higher achievement while working in cooperative learning groups than those students that participated in individualized learning. Findings from study also showed a significant impact ($p < .01$) of cooperative learning instruction on student engagement in the task.

Johnson and Johnson (1984a, as cited in Sutherland et al., 2000) compared cooperative and individualized learning on academic achievement in the subject area of social studies. Participants of the study included 48 fourth-grade students. Twelve of whom qualified for special education under the category of learning disability (LD) or EBD. Students were randomly assigned to an instructional method, again taking into consideration the student's gender,

disability, and ability level. Scores from three tests to assess recall of information were given a mean score to determine effectiveness.

The review indicated a moderately significant impact on students with disabilities *(F* = 3.69, *P* < .10) while participating in the cooperative learning method and a significant impact on students without disabilities (*(F* = 28.97, *P* < .01) across both methods of instruction (Sutherland et al., 2000).

Johnson and Johnson (1984b, as cited in (Sutherland et al., 2000) compared intergroup cooperation and intergroup competition's effect on science achievement. Participants of the study included 51 fourth-grade students. Fifteen of the students qualified for special education under the category of LD and/or EBD. Six groups of four to five members were formed for each of the conditions. Student disability, gender, social class, and ability levels were taken in consideration when forming the groups.

A mean score of two tests was used to determine the effectiveness of the conditions. A significant difference *(F = 16.22, P* < .001) was found for students with and without disabilities in their achievement for both conditions, although it was noted that students without disabilities tended to perform better than students with disabilities (Sutherland et al., 2000).

O'Melia and Rosenberg (1994, as cited in Sutherland et al., 2000) evaluated the impact of Cooperative Homework Teams (CHT) on homework completion, percentage of correct answers on homework assignments, and math achievement. The study included 179 sixth- through eighth-grade students with disabilities. Eleven of the students qualified for special education under the category of EBD.

The study included a CHT treatment and a control treatment for comparison purposes. The participants were randomly assigned to either the experimental or control group. The students were given a pre-test prior to the start of the study to help plan for instruction, homework, and form student groups. Students assigned to the CHT groups were placed in groups of three to four members. Groups were designed to be heterogenous in math ability levels.

Students in both the experimental and control group were provided daily teacher-directed math instruction and were given homework assignments Monday through Thursday. Students in the CHT groups met for roughly 10 minutes at the beginning of each class. The homework checker, a position that rotated among the group's members, checked students' work and provided the teacher with scores. Students were then allowed to work together to make corrections prior to turning in their homework. Students in the control group were not provided with the opportunity to meet or discuss their homework (Sutherland et al., 2000).

Findings indicated that CHT had a significant impact on both the rate of homework completion *(F* = 17.57, *P* < .05) and the percentage of correct answers on students' homework (*F* =10.34, *P* < .05). However, findings did not demonstrate a significant difference on math achievement. The authors did further analysis and determined that achievement varied somewhat by grade level, but not by disability category (Sutherland et al., 2000).

Studies Utilizing Single Design Method

Single-subject design studies used the percentage of nonoverlapping data points (PND) to determine the significance of the findings of each study. When using PND in single-subject

studies, percentages of 90 and above are considered to be highly effective. Percentages in the range of 70 to 90 are considered moderately effective. For the purpose of the literature review, a PDN of 80 and above was considered to be significant findings (Sutherland et al., 2000).

The previously discussed study by Nelson, Johnson, and Marchand-Martella (1996) was also included in the literature review done by Sutherland, Wehby, and Gunter (2000). Their findings reiterated that students were most engaged and demonstrated the least amount of disruptive behaviors while participating in direct-instruction. They were the least engaged and demonstrated the highest number of disruptive behaviors during times of independent learning activities.

Rutherford, Mathur, and Quinn (1998, as cited in Sutherland et al., 2000) investigated the impact that cooperative learning, in conjunction with direct instruction, had on social communication. The study participants included 14 females from a residential setting for delinquent girls. Three of the participants were identified as having met the criteria for EBD. Prior to the start of the study, the participants were administered a social skills assessment. Scores from the assessment were used to form heterogeneous groups based on social skill levels. The targeted social communication skills included asking conversational questions, making positive comments towards others, and making positive comments towards self. The skills were taught using a combination of direct instruction and cooperative learning groups. Data was collected through direct observations.

Findings from the study indicated that students demonstrated significant growth in all three of the targeted social communication skills. Follow-up to the study showed that some of these skills were maintained by the participants.

Although growth was demonstrated in all three of the targeted social communication skills, it cannot be determined which of the instructional methods, direct instruction or cooperative learning, had the greatest impact on student growth. The authors of the study, (Rutherford et al., 1998, as cited in Sutherland et al., 2000) acknowledged the difficulty in determining which of the two was most effective and speculated that a combination of the two methods might be a viable option for students that struggle with social communication skills.

Salend and Sonnenschein (1989, as cited in Sutherland et al., 2000) examined the impact of cooperative learning on task engagement, academic progress, and cooperative behaviors. The study involved 23 participants, ages 14 to 18. All of the participants were identified as EBD. The students attended a school for students with significant emotional and behavioral difficulties. The study itself took place in three classrooms within the school. The subjects taught were general science, biology, and consumer math.

The study was of a reversal single-subject design. Studies designed in this manner begin by establishing a baseline measurement of the dependent variable, after which the treatment (in this case, cooperative learning) is introduced. After a predetermined amount of time, the targeted behaviors (task engagement, academic progress, and cooperative behaviors) are observed and documented. The treatment is then removed, and after a pre-determined

amount of time, the behaviors are observed and documented (Price, Jhangiani, Chiang, Leighton, and Cuttler, 2017).

The study was five weeks in duration. Throughout the study, students were rotated in and out of groups so that the students would all have the opportunity to work with one another. Each cooperative learning group consisted of two to three students and included a high- and low-achieving student to ensure all groups were similar academically.

Academic achievement was measured by the percentage of items completed correctly in class each day. Results indicated that the cooperative learning groups had a positive impact on student achievement. The mean score (percentage of items answered correctly) went from 61.2 to 91.1% (Sutherland et al., 2000). There was an initial jump in scores between the first and second phases of the study, but scores remained fairly consistent after that. During the follow-up phase of the study, scores continued to indicate that cooperative learning was beneficial to the students as their scores remained comparable to the high scores obtained previously.

On-task behaviors were measured by direct observation. As with academic achievement, the research indicated that cooperative learning had a positive impact on the demonstration of on-task behaviors. During the follow-up phase, students appeared to maintain higher levels of on-task behaviors (Sutherland et al., 2000).

The social skills addressed for the study were cooperative behaviors. Behaviors were measured by recording the number of occurrences. Overall, students demonstrated higher occurrence of cooperative behaviors while participating in cooperative learning groups. There

appeared to be a direct correlation between time engaged in the cooperative learning group and an increase in cooperative behaviors. During the follow-up phase of the study, the number of occurrences edged closer to the baseline measured. However, when cooperative learning was reintroduced, the cooperative behaviors increased as well (Sutherland et al., 2000).

Salend and Washin (1986, as cited in Sutherland et al., 2000) also used the single-subject reversal design to investigate cooperative learning's impact on academic achievement, task engagement, and cooperative behaviors. Participants of the study included 18 students, ages 13 to 15. Student gender was not provided. All of the participants qualified as EBD. The study was conducted in a residential setting for adjudicated youth. The study took place in three separate classrooms and was implement during remedial math instruction. Students within each classroom were placed in groups of three, with a high-, moderate- and low-achieving student in each group. As with the previous study, this was done to create academically heterogeneous groups (Sutherland et al., 2000).

Students were provided with individualized practice sheets and were allowed to ask for help from the members of their group when needed. Students took practice tests, and scores from the practice tests determined when they could take the final test. Group members were given points if the team's average score was 85% or higher.

Student math scores were used to determine academic achievement, based upon the percentage of problems answered correctly. Average scores were given to each group for their pre-test (baseline measure) and again after the intervention. The average group score for one

of the groups declined. The average group scores for the remaining groups increased. Scores increases ranged from 2.7 to 19.1 percent (Sutherland et al., 2000).

As with the previous study, on-task behavior was measured by direct observation and cooperative behaviors were measured by recording the number of occurrences. Students demonstrated a higher level of engagement and demonstrated more cooperative behaviors while participating in cooperative learning groups.

Although many of the studies indicated cooperative learning had somewhat of a positive impact on academic achievement and social skills for students with EBD, it did not provide conclusive evidence of its effectiveness.

CHAPTER III: DISCUSSION AND SUMMARY

Summary of Literature

Cooperative learning has been shown to positively impact academic achievement across multiple age-groups and settings (Johnson et al., 1981; Sharan, 1980; Slavin, 1983). A meta-analysis of over 122 studies that compared the impact that cooperative learning had on academic achievement to the impact that competitive and individualized learning had on academic achievement found cooperative learning methods to be superior. Also, the meta-analysis results indicated that cooperative learning had a positive impact on student productivity (Johnson et al., 1981).

While it is clear that cooperative learning is a well-researched and proven instructional strategy for academic achievement, it is imperative to recognize that many factors must be considered to ensure its effectiveness. One component of cooperative learning that has been proven to of very beneficial to academic achievement is group processing. Cooperative learning groups with group processing were shown to have a more positive impact on academic achievement that cooperative learning groups without group processing (Bertucci et al., 2012; Johnson & Johnson, 1990, 1994; Kagan, 2001; Yager et al., 2001).

The interactions among cooperative learning group members were also found to be a contributing factor for academic achievement. Strong interactions within the groups were shown to have a strong influence on achievement (Battistich et al., 1993; Reid, 1992).

Several studies specific to the impact of cooperative learning on math achievement were reviewed. Findings from the studies related to math achievement indicated that

cooperative learning positively impacted math achievement (Caper & Tarim, 2015; Leikin & Zaslavsky, 1997; Nattiv, 1994; Reid, 1992).

Several of the studies reviewed addressed specific skills that were deemed vital to students' success in math. Factors such as engagement in the activities, interaction with math materials, math communication, and helping behaviors (such as asking and answering questions) were shown to significantly increase when students participated in cooperative learning groups (Leikin & Zaslavsky, 1997; Nattiv, 1994). The cooperative learning groups that focused on the application of helping behaviors demonstrated an increase not only in achievement but showed improvements in social development as well (Nattiv, 1994).

Findings from studies that looked specifically at the impact of cooperative learning impact on reading achievement were somewhat mixed. The results of the studies were not negative but slightly less conclusive. One study indicated that students participating in cooperative learning groups performed better than those in traditional instructional methods (Rojas-Drummond et al., 2014). A second study found cooperative learning, combined with direct instruction, significantly impacted higher-order thinking skills. Although the study results were positive, student progress could not be attributed explicitly to cooperative learning due to the combination of instructional methods. The third study demonstrated positive but limited findings on cooperative learning's impact on reading achievement. However, the study noted that students showed a more positive attitude towards school and classroom, a higher degree of intrinsic motivation, increases in social attitudes, skills, and values. Another determination

from the study was that reading achievement increased with an increase in the frequency of participation in cooperative learning groups (Battistich et al., 1993).

Clearly, cooperative learning methods have a positive impact on academic achievement. Yet, children are more than just their academic progress, and it is essential to teach the whole child. Cooperative learning can be implemented to increase the social development of students, as well. Several of the studies that examined the impact of cooperative learning on academic achievement found it to positively impact the social development of the participants (Battistich et al., 1993; Johnson et al., 1981; Leikin & Zaslavsky, 1997; Nattiv, 1994).

In addition to the positive findings on social development from the studies that focused on academic achievement, several studies were reviewed that explicitly focused on social development. As with studies that focused on reading, the results of these studies were varied. Three of the studies reviewed investigated the impact of direct instruction on social development in conjunction with cooperative learning. Two of the studies showed positive results. Findings demonstrated an increase in targeted social skills (Jordan & Le Métais, 1997; Prater, Bruhl, & Serna, 1998). In a third study, researchers found that two of the targeted socials skills significantly improved in a relatively short period. However, two of the four targeted social skills decreased over the same period (Mercendetti, 2010).

A meta-analysis compared how cooperative learning without intergroup competition, cooperative learning with intergroup competition, interpersonal competition, and individualize goal structures impacted interpersonal attraction (how students felt about and perceived their

peers). Cooperative learning without intergroup competition was found to have the most significant impact on interpersonal attraction (Johnson et al., 1983).

When seeking to discover the methods of cooperative learning that are most effective with students, it became apparent that planning for cooperative learning goes far beyond the task or activity. For cooperative learning to be its most effective, consideration must be given to group processing and goal structures.

Goals structures were shown to influence peer interaction within the group. Groups tasked with cooperative goal structures outperformed those with competitive or individualized goal structures (Johnson et al., 1981; Johnson et al., 1983; Johnson & Johnson, 2002). Furthermore, when goal structures were complementary, rather than identical, there were more positive interactions among group members, more shared ideas, and more time and effort. Students asked more questions of one another and received better answers. Learning was based upon the quality of the shared knowledge of the group members. In contrast, groups with identical goal structures demonstrated more conflict among group members and were more competitive. For many students, being right appeared to be more important than learning (Buchs & Butera, 2015; Darnon et al., 2006).

There also appeared to be a significant difference in how students approached a task or problem based upon mastery versus performance goals. Mastery goals were shown to promote learning, whereas performance goals seemed to induce social companions. (Darnon et al., 2006).

Students who worked towards complementary and/or mastery goals tended to focus more on the task and put more value into learning. Dissimilarity, students that worked towards identical and/or performance goals were more focused on being right (Buchs & Butera, 2015; Darnon et al., 2006).

There is much evidence that students with EBD struggled considerably within the areas of academic achievement (Coutinho, 1986; Epstein, Kinder, & Bursuck, 1989, as cited in Ryan et al., 2008; Gresham et aI., 1999; Ollendick, Weist, Borden, & Greene, 1992; Pope, Bierman, & Mumma, 1991; Walker et aI., 1995, as cited in Sutherland, Wehby, & Gunter, 2000) and social interactions (Trout, Nordness, Pierce, & Epstein, 2003, as cited in Ryan, Pierce, & Mooney, 2008). These struggles can have a detrimental impact on student learning and on their ability to access education. Several studies investigated the effect of cooperative learning on students that were identified as EBD. A significant number of the findings determined cooperative learning to have a positive impact on the academic achievement and social development of students with EBD (Johnson & Johnson 1982, as cited in Sutherland et al., 2000; Johnson & Johnson, 1984a, as cited in Sutherland et al., 2000; Johnson & Johnson 1984b, as cited in Sutherland et al., 2000; O'Melia & Rosenberg, 1994, as cited in Sutherland et al., 2000; Ryan et al., 2008; Salend & Sonnenschein, 1989, as cited in Sutherland et al., 2000; Salend & Washin, 1986, as cited in Sutherland et al., 2000). Although the study by Rutherford, Mathur, and Quinn (1998) demonstrated a positive impact on homework completion, it did not provide evidence of academic growth.

Two of the studies investigating the impact of cooperative learning on EBD determined that direct instruction was more effective on academic achievement. Another study indicated that direct instruction, in conjunction with cooperative learning groups, proved to significantly impact student achievement and social development (Rutherford, Mathur, & Quinn, 1998, as cited in Sutherland et al., 2000).

Limitations of the Research

Cooperative learning is a very well-researched means of instruction. The studies included in this literature review were conducted with multiple age groups, across several content areas, and in multiple countries. However, there are some limitations to the research, that focused on the impact of cooperative learning, on students with EBD.

One limitation is the number of participants that were included in the studies. Overall, there were 22 studies reviewed that investigated the impact of cooperative learning methods on students with EBD. Of the 22 studies reviewed, three had four or less students with EBD included. The article *Evidence-based Teaching Strategies for Students with EBD* (Ryan et al., 2008) analyzed 14 studies. Overall, there was a total of 169 participants that qualified as EBD. This averaged to only 12.07 participants per study. Two of the studies grouped EBD students with LD students, so it is impossible to break down and specify how the students with EBD responded to the cooperative learning methods (Johnson & Johnson, 1984a, 1984b). When investigating the impact of cooperative learning on students with EBD, it would seem important to compare different instructional methods on students with EBD, rather than comparing their learning in relation to their general education peers. However, only two studies of the 22

studies provided this type of comparison (Salend & Sonnenschein, 1989, as cited in Sutherland et al., 2000; Salend & Washin, 1986, as cited in Sutherland et al., 2000).

A further limitation with the studies reviewed on EBD is that most of the studies reviewed were conducted several years ago. Only five of the studies were conducted within the past 20 years. The remaining students were conducted between the years 1982 and 1996. Although the findings of these studies are valid, it would have been advantageous to include studies that are more current.

A final limitation of the studies is that they did not appear to include some of the factors that have been shown to have a significant impact on the effectiveness of cooperative learning. The studies did not address group processing, goal structures, or sociocognitive regulation, all if which may have substantially influenced student progress and could prove to be very beneficial to students with EBD.

Implications for Future Research

The research articles reviewed indicated that cooperative learning could be very beneficial to students' academic achievement and social development. It is also well documented that cooperative learning is most effective, and thought must be given to how learning groups are structured, including group processing and goal structures. Research on cooperative learning that further explores these conditions with students with EBD needs to occur.

Students with EBD have the highest dropout rate of any disability category (Gresham et aI., 1999; Ollendick, Weist, Borden, & Greene, 1992; Pope, Bierman, & Mumma, 1991; Walker

et al., 1995, as cited in Sutherland, Wehby, & Gunter, 2000). Many students with EBD have significant gaps in their learning and perform well behind their grade level peers (Trout, Nordness, Pierce, & Epstein, 2003, as cited in Ryan, Pierce, & Mooney, 2008). Research must continue to determine the instructional methods that are most effective for this population of students.

Many of the studies reviewed investigated the impact of direct instruction in comparison to cooperative learning. Research in this area needs to delve deeper. Rather than comparing just the two instruction methods, a third comparison needs to be included. Studies need to be conducted on the effectiveness of direct instruction, in conjunction with cooperative learning, on students' academic achievement and social development with EBD. This is a vulnerable population of students, and schools are failing them. Research must be conducted to help reverse that trend.

It is well established that students with EBD struggle with interpersonal interactions. It is also evident that positive group interactions are imperative to the successful implementation of cooperative learning. While on the surface, the two 'knowns' appear to be incompatible, our students with EBD can be competent when given the right tools and support. It cannot be assumed that students with EBD cannot be successful in cooperative learning groups; it is more that we have to find the best means of implementation to meet their individual needs. Explicit teaching of the lagging social skills may enable students with EBD to better access their instruction and, in turn, gain the full benefits of cooperative learning.

Implications for Professional Application

Professionally, I work with students with EBD in a Center-based classroom. This provides me with the unique opportunity to spend most of my workday with students of various emotional and behavioral needs across multiple grade levels. Most of my students are behind academically. All have lagging skills in the area of social development. I have long wanted to find a method of instruction that is multi-purposeful, hoping to integrate academic learning with social development. After completing this literature review, I believe that cooperative learning groups can be an intricate part of the solution.

As teachers, we know the importance of the zones of proximal development. We look to teach and guide our students in the areas that they are capable of doing with guidance. This is true for academic endeavors and can also be applied to social situations. When we ask a student who struggles with interpersonal skills to participate in a cooperative learning group, we may ask them to participate in something beyond their current ability to do so independently of staff support. They may have deficits in the skills needed to access the instructional method, impacting their engagement, acting out behaviors, and achievement. However, we can explicitly teach our students the necessary skills and provide them with the supports needed so that they, as with their general education peers, can receive the full benefits of cooperative learning instruction.

Conclusion

Cooperative learning is a proven instructional method for increasing student achievement and social development. However, the structure of the learning groups can

significantly impact the degree of student success. It is important to consider implementing group processing when designing cooperative learning tasks and activities, especially given that it has been shown to make a significant difference in student learning. It is also essential to consider goal structure when implementing cooperative learning, bearing in mind that students demonstrate higher achievement when presented with mastery versus performance goals. Finally, although the research on the effectiveness of cooperative learning on academic achievement and social development on students with EBD was far more limited than that of overall student populations, findings suggest that it can be beneficial for our students with EBD, especially when provided with the proper support.

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