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Spring 4-28-2018

# Effects of Cooperative Learning on Middle School Inclusion Students' State Mathematics Test Performance

Andrea B. Jones

*Concordia University - Portland*

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Concordia University (Portland)

College of Education

Doctorate of Education Program

WE, THE UNDERSIGNED MEMBERS OF THE DISSERTATION COMMITTEE  
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Effects of Cooperative Learning on Middle School Inclusion Students'  
State Mathematics Test Performance

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Concordia University–Portland  
College of Education

Dissertation submitted to the Faculty of the College of Education  
in partial fulfillment of the requirements for the degree of  
Doctor of Education in  
Teacher Leadership

Connie Sue Greiner, Ed.D., Faculty Chair Dissertation Committee

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Concordia University–Portland

2018

## **Abstract**

This research study was conducted to determine whether cooperative learning increased the percentage of middle school inclusion students' who performed at basic or proficient levels of mathematics test. A descriptive analysis was chosen to examine mathematics state test performance pre and post the implementation of cooperative learning in inclusive middle schools. Cooperative learning was initiated in the state in the 2011–2012 school year. The data on mathematics state test performance for the selected site were public records on the department of education website for 2009-2013. The results indicated that cooperative learning impacted disabled students' performance positively and to a greater extent than to non-disabled students. It also implied that introducing it early sixth or seventh grade was more impactful than initiating it in eighth grade. There is also the likelihood of the effects of the implementation dip, where the year of implementation shows growth followed by a drop.

*Keywords:* cooperative learning, inclusion students, mathematics state test performance, middle school

## **Dedication**

This dissertation is dedicated to my mother, Mrs. Barbara D. Booker, who is my number one mentor and supporter. She has been an outstanding role model. My father has also been a great role model, especially because of his many accomplishments. I would like to thank my two daughters, Jazmin J. Jones and Mondrea J. Jones, for always supporting me and not letting me give up. I hope that this work will encourage them to follow their dreams and to never give up. I also hope that my dedication and persistence exemplifies a role model for them just as my mother did for me.

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## **Chapter 1: Introduction**

### **Introduction of the Problem**

General education and special education teachers are faced with accountability of students with disabilities being successful in the standards taught on grade level. Inclusion is not as uncommon in comparison to years ago in general education classrooms. Teachers' roles and responsibilities have changed due to inclusion students' presence in the classroom. The task is challenging, preparing students with disabilities to be successful in high stakes tests taken on grade level.

Sapon-Shevin, Ayres, and Duncan (Add Date) stated, "As schools move closer to the goal of providing education for all children within inclusive classrooms and schools, increasing amounts of attention and energy are being devoted to developing pedagogical approaches that are appropriate in heterogeneous classrooms" (p. 1). Within the inclusive classroom, there is an abundance of diversity in the environment's makeup. "Cooperative learning advocates support the idea that diversity is something to be worked with, not negotiated around, and that the richness of the educational experience is improved for all students when they are active participants in a mutually supportive environment" (Sapon-Shevin et al., p. 1). All students can learn if they are within classroom environments that produce support. Sapon-Shevin et al. (1994) stated. "All students need to learn and work in environments where their individual strengths are recognized and individual needs are addressed. All students need to learn within a supportive community, in order to feel safe enough to take risks" (p. 2).

Cooperative learning is an instructional teaching tool that can be beneficial to all students. "Although general education teachers may be using cooperative learning and

special educators advocating its use, the efficacy picture for cooperative learning with special education students remains cloudy” (Jenkins, Antil, Wayne, & Vadasy, 2003, p. 280).

Cooperative learning can lead to positive or negative outcomes within the learning environment. Joseph Jenkins, Laurence Antil, Susan Wayne, and Patricia Vadasy (2003) conducted a study in which the participants were special education teachers. The teachers indicated their opinion on whether cooperative learning benefits special education students and remedial students. There was a total of 21 teachers agreed that cooperative learning creates an environment in which special education students have access to vast amounts of benefits. “Along with contributing to special and remedial education students’ self-esteem and providing a safe learning environment, teachers also said cooperative learning resulted in higher success rates and better products for special and remedial education students,” (Jenkins et al., 2003, p. 283).

Teachers have had to become creative in their instructional practices and delivery within classrooms. Cooperative learning has become a promising practice proving to have notable success in preparing students for academic learning and high stakes test. Cooperative learning involves general education and special education teachers working collaboratively in the inclusive classroom. Although cooperative learning benefits all students, the main focus of this research surrounds inclusion students in the inclusive classroom. Students with disabilities whose least restrictive environment is to spend 80% or more of the day in a general education classroom are considered to be inclusion students. Inclusion students need to have adequate support and instruction to ensure they are successful in the grade-level standards taught. Students with disabilities are entitled to be educated along with their non-

disabled peers to the maximum extent appropriate to their needs as outlined in the Individual with Disabilities Education Act (IDEA, 2004; Reeves, 2016).

### **Background, Context, History, and Conceptual Framework for the Problem**

Inclusive classrooms for the chosen middle school in the Southern United States incorporate cooperative learning within instructional practice. “Cooperative learning theory, an offshoot of Constructivism, incorporates the idea that the best learning occurs when students are actively engaged in the learning process and working in collaboration with other students to accomplish a shared goal (“Cooperative Learning,” 2006). Cooperative learning involves a different type of experience for students in comparison to Constructivism. Constructivism is also similar to the Social Cognitive Theory in that “students do not passively receive knowledge, but rather actively assimilate it, and that students construct new ideas or interpret concepts based upon their current and past knowledge,” (“Constructivism,” 2006). Students are gaining knowledge through hands-on experiences within the classroom environment. Hands-on experiences allow students to gain a sense of confidence which allows the strengthening of independence. There is also an additional theory which is called the Cooperative “Active” Learning Theory, which ties into Constructivism and the Social Cognitive Theory.

Cooperative learning is best for special education inclusion students because it allows them to build upon the experiences of their peers. “When cooperative learning is incorporated into the classroom, research suggests students learn with greater depth and complexity while enjoying the experience even more,” (“Cooperative Learning,” 2006). Teachers implement methods of differentiated instruction to accommodate the needs of all students within their classrooms. All students learn in different ways, which leads to the

development of effective instructional practices. This research was centered on inclusive classrooms for middle school inclusion students in which cooperative learning was utilized. General education teachers and special education teachers implement cooperative learning.

Cooperative learning is an approach to organize classroom activities into academic and social learning experiences (definition.net). Cooperative learning differs from group-work and has been described as “structuring positive interdependence” (definition.net, June 19, 2017). According to definition.net, as students try to meet their academic goals, they work in groups as a strategy. Cooperative learning is a form of active learning where students work together to perform specific tasks in a small group (Lewis, 2016).

Within cooperative learning, students gain a sense of ownership of the learning process. Cooperative learning involves numerous strategies and activities teachers can implement within their classrooms. The promotion of group work within cooperative learning leads to student success. Participation from all members within the student groups promotes success for the group, leading to success for the individual student. Students working within cooperative groups build on each other’s strengths. Another interesting component of cooperative learning is that the teachers’ instructional roles and responsibilities are different. Teachers facilitate small groups within the classroom. According to North Dakota Teaching with Technology Initiative (2003), observing, imitating and learning from classmates are part of cooperative learning. Within cooperative learning, a wealth of tools, resources, and technology can be utilized. Jenkins et al. (2003) stated, “In cooperative learning, peers can clarify the nature of an assignment, interpret complex instructions, model performance, explain ideas, give feedback and corrections, take responsibility for difficult



parts of the assignment, scaffold problem-solving efforts, and provide encouragement.”(p. 280).

The North Dakota Teaching with Technology Initiative (2003) shared five essential components cooperative learning should embody: (a) positive interdependence, (b) student-to-student interaction, (c) individual accountability, (d) social skills, and (e) group process. Each has a separate meaning and role for students in cooperative learning and small groups. Within positive interdependence, students, realize in order to complete tasks before they require them to work and share within the group. Student-to-student interaction requires students to work with each other, as well as help one another in the group. Encouragement and motivation should be promoted in this essential process. Individual accountability focuses on students having individual responsibility within the group. Students have assigned tasks they complete independently. North Dakota Teaching with Technology Initiative (2003) noted leadership, decision making, trust building, communication, and conflict management are essential and valuable social skills students use during cooperative learning. All the mentioned characteristics are vital to student success and the development of social skills. Group process involves students monitoring their progress on assigned group tasks. Students have to determine if they are accomplishing the tasks and maintaining positive social skills. Cooperative learning boosts students’ ability to work with others. Students will develop skills to allow for success on all educational levels as well as getting jobs. Having the ability to examine and analyze will lead to future success for students on many levels.

There are several approaches and strategies that can be implemented by teachers using cooperative learning groups. Some of the popular strategies and activities completed within cooperative groups are: (a) Jigsaw, (b) think-pair share, (c) send-a-problem, (d) round-

robin, and (e) mind-mapping. General education and special education teachers implement many of these cooperative learning approaches in daily instruction.

### **Statement of the Problem**

The mathematics state test performance of middle school inclusion students' are, as expected, lower on average than student peers. Yet there is accountability placed on the population of middle school inclusions students just as their peers. Middle school inclusion students' state test performance are examined within the entire school's test data and included in the average yearly progress. Inclusion students taught grade-level standards within general education classrooms take same grade level state tests as their peers. Teachers are held accountable for the growth and progress of all their students, which includes inclusion students as a part of their evaluations. Teachers continually seek ways to reduce the persistent gap. The researcher believes that cooperative learning, which involves typical students and inclusion students working together, could possibly help reduce the academic gap, in particular, mathematics. It is not known to what extent cooperative learning affects middle school inclusion students' mathematics state test performance.

### **Purpose of the Study**

The purpose of the study was to examine and identify the effects of cooperative learning on middle school inclusion students' mathematics state test performance in a southern United States public middle school. The variables of the study include cooperative learning and state mathematics test performance for middle school inclusion students. The state assessments examined were mathematics performance for the school year period 2009-2013 of sixth, seventh, and eighth grade inclusion (disabled students). The state test

mathematics performance examined was for non-disabled students and disabled students (inclusion students) in middle school.

### **Research Question**

The following research question guided the study:

- How does cooperative learning affect middle school inclusion students' mathematics state test performance?

### **Rationale, Relevance, and Significance of the Study**

By examining and identifying cooperative learning within the inclusive classroom, the goal of the study was to determine how cooperative learning benefits inclusion students' success on state mathematics test performance. The study may encourage teachers to adapt to certain methods and practices to ensure students with disabilities are successful academically along with their peers in middle school general education classrooms. Examination of the literature served as a reference for teachers' use of cooperative learning as an instructional strategy within inclusive classrooms. "Hundreds of studies have been undertaken to measure the success of cooperative learning as an instructional method regarding social skills, student learning, and achievement across all levels from primary grades through college" (Dotson, 2001). Emerson (2013) stated, "Students with disabilities are more engaged in classroom activities where cooperative learning structures are in place compared to more traditional classroom interventions." "In inclusive classes that use cooperative learning, students articulate their thoughts more freely, receive confirming and constructive feedback, engage in questioning techniques, receive additional practice on skills, and have increased opportunities to respond" (Emerson, 2013).

Cooperative learning is a method, which allows students to interact with each other. Students are placed within groups with the intended purpose of helping each other to learn. Through examining a plethora of studies, Slavin (2014) believed cooperative learning has been used in some form or other by thousands of teachers in every major subject area in a variety of schools from preschool to college. According to Slavin (2014), cooperative learning can become a part of teachers' regular instructional practices within traditional and innovative outcomes. The research study conducted will determine if cooperative learning brings the expected outcome of student achievement and success. According to Slavin (2014), there is a need for researchers to continue and investigate additional outcomes for high school and post-secondary schools in cooperative learning on practical and theoretical levels for educators.

Slavin (2014) noted, cooperative learning can be a crucial teaching strategy to generally achieve goals and specific support middle school inclusion students' success in mathematics. Dotson (2001) stated, "Cooperative learning structures can be easily used as a modification to instruction with no extra time or effort required of the teacher. According to Dotson (2001), cooperative learning structures are methods of organizing the interaction of individuals in a classroom. Cooperative learning presents the relevance to student achievement through: (a) elevating students from timid to confident to assume leadership roles, (b) generating consensus, (c) team building, and (d) improving social skills (Williams, cited in Buchanan, 2014). Williams felt cooperative learning was an effective method that reached students and promoted learning and success. Buchanan (2014) noted, students understood the importance of interacting responsibly with peers. According to Buchanan (2014), cooperative learning is a strategy that has the potential to be an effective strategy

within general education classrooms to promote student learning and academic accomplishments that lead to success on state tests. Cooperative learning can also lead to the same potential for effective strategies within the inclusion classrooms promoting success among inclusion students.

The research examined the significance of cooperative learning in the success of middle school inclusion students in the general education classroom. Students' mastery of objectives taught will lead to the expected outcome of progress and growth on state mathematics tests. Cooperative learning is a resource that is proving to be effective and significant within classrooms. There is an abundance of research and studies conducted to reflect the positive and negative aspects of cooperative learning.

Cooperative learning has become very popular within the instructional practices of teachers within their classrooms. "Cooperative learning is best for slow learners because they can easily learn from their peer group as well as from their teachers and the teaching during increases two folds i.e. they learn from students and teacher, while in traditional method slow are learner did ask questions due to hesitation," (Ramzan et al., 2016, p. 59). Ramzan (2016) noted cooperative learning as being impressive tool. According to Ramzan and Akhtar (2016), cooperative learning by instruction involves collaboration among students in comparison to students working on their own to complete tasks. The experimental research study conducted by Ramzan and Akhtar (2016) rejected the developed hypothesis. The hypothesis was as follows: Cooperative learning has no significant effect on students' achievement as compared to traditional method (Ramzan et al., 2016, p. 59). According to Ramzan and Akhtar (2016), the results of the study showed cooperative learning as having an impact on student success

There has been an abundance of research conducted on cooperative learning and its effectiveness on students' achievement. Continued research needs to be conducted to build on the success cooperative learning has currently in education.

### **Definition of Terms**

The following terms were defined in accordance with relevancy to this investigation:

**Cooperative learning.** Cooperative learning is an approach to organize classroom activities into academic and social learning experiences (STANDS4LLC). It differs from group-work has been described as “structuring positive interdependence.” Students must work in groups to complete tasks collectively toward academic goals (STANDS4LLC). Cooperative learning is a form of active learning where students work together to perform specific tasks in a small group (Lewis, 2016).

**Inclusion.** Inclusion is the educational practice of educating children with disabilities in classrooms with children without disabilities (Webster, 2017). Full inclusion', 'full integration', 'unified system', 'inclusive education' are terms used to describe a popular policy/practice in which all students with disabilities, regardless of the nature or the severity of the disability and need for related services, receive their total education within the regular education classroom in their home school. (Webster, 2017)

**Inclusion students.** Students without disabilities (disabled) who are being educated in mainstream general education classrooms with children without disabilities (non-disabled). Students with disabilities whose least restrictive environment is to spend 80% or more of the day in a general education classroom are considered to be inclusion students.

**State testing.** A standardized test is any form of test that (1) requires all test takers to answer the same questions, or a selection of questions from common bank of questions, in

the same way, and that (2) is scored in a “standard” or consistent manner, which makes it possible to compare the relative performance of individual students or groups of students.(edglossary.org/standardized-test, 2015)

**Panver state.** To maintain the anonymity of the southern state, the pseudonym, Panver will be used to refer to the state and the state test will be Panver State Test (PST).

### **Assumptions, Delimitations, and Limitations**

The goal of the study was to examine if middle school inclusion students benefit if enrolled in general education classrooms. One assumption was that the data analysis would be beneficial in identifying cooperative learning as a valued asset and tool for the classroom. There is also an assumption that the teachers that implemented cooperative learning did so with fidelity and used similar approaches. Additionally, the study assumed that cooperative learning can lead to consistent success or growth on state test performance from year to year.

Delimitations of the study included the choice of participants. The study is delimited to middle school inclusion students enrolled in a public school located in the Southern United States. Math was the subject area the study was centered around. The participant data for the study were middle school inclusion students’ math performance, which included grades 6, 7, and 8. Cooperative learning was the chosen tool implemented in the classroom. The study was delimited to that style of instruction and learning to examine the desired outcome.

There were several limitations that I had no control over within the study. The access to the needed textbooks was a limitation. The inclusion students consisted of different backgrounds. The knowledge of whether the sixth grade inclusion students had been exposed to various levels of cooperative learning before entering middle school was a limitation. There were different developmental rulings for each of the inclusion students. The range of

the developmental rulings was as follows: a) Other Health Impaired- Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder, b) Traumatic Brain Injury, c) Vision Impaired, d) Autistic, and e) Specific Learning Disability. The differences in the accommodations and modifications for each student were viewed as a limitation.

## **Chapter 1 Summary**

There is a wealth of roles and expectations in place for teachers. Teachers are held to a different level of accountability within their instructional delivery and effectiveness. An even greater challenge is when there is a presence of inclusion students within the general education classrooms. An instructional classroom practice that has become popular is cooperative learning. The study focuses on the relationship between cooperative learning, cooperative teaching, inclusion students and state testing.

The study sought to determine whether cooperative learning had an impact on the success of middle school inclusion students' state test performance. I expected that the data would demonstrate that inclusion students reach mastery or show growth due to the method of instructional delivery of the standards within their classrooms.



## **Chapter 2: Literature Review**

### **Introduction to the Literature Review**

Jones and Sterling (2013) stated, "Including special education students in a general education classroom and ensuring that they are actively engaged in learning is paramount to helping students master science content" (as cited in Mastropieri & Scruggs, 2001, p. 24). Applying this same idea to all subject area classrooms can be paramount as well students and teachers being engaged in cooperative learning. According to Jones and Sterling (2013), students will feel secure as cooperative learning strategies are put into place in their classrooms collaboratively sharing knowledge. Students gain a sense of sharing, acceptance, and respect. As noted by Jones and Sterling (2013), it is not so easy involving students with disabilities in the task of acquiring knowledge in contrast to their peers.

Cooperative teaching involves general education and special education teachers working collaboratively in the inclusive classroom. Although cooperative teaching benefits all students, the main focus of this research was inclusion students in the inclusive classroom. Students with disabilities whose least restrictive environment is to spend 80% or more of the day in a general education classroom are considered to be inclusion students. Inclusion students need to have adequate support and instruction to ensure they are successful in the grade-level standards taught. Students with disabilities are entitled to be educated along with their non-disabled peers to the maximum extent appropriate to their needs as outlined in the Individual with Disabilities Education Act (IDEA, 2004; Reeves, 2016).

Literature examined for the study determined if cooperative learning was effective in the middle school classroom and leads to inclusion students' success on state tests. Inclusion students require challenging levels of support to be successful in the general education

classroom. De Hei, Strijbos, Sjoer, and Admiral (2015) stated, “Collaborative learning can, if designed and implemented, contribute to student learning outcomes and prepare them for teamwork” (p. 232). An understanding exists that there can be negativity, as well as numerous challenges within cooperative teaching, can occur. According to De Hei, Strijbos, Sjoer, and Admiral (2015), collaborative learning’s makeup within classrooms is centered on views and opinions presented by the process of collaborative learning on instruction and how students learn. One major impact is the challenge of the academic abilities of inclusion students. “An ongoing challenge for inclusive classroom teachers is meeting the instructional needs of all learners; especially when content is challenging and when student needs are diverse” (Mastropieri et al., 2006).

By examining and identifying cooperative learning within the inclusive classroom, the goal of the study is to determine how both affect inclusion students’ state test performance. Examination of the literature will serve as a reference for inclusive classrooms. The examination will also be beneficial for those teachers who are working within inclusive classrooms. Various factors and methods will be examined in the literature with the goal of showing cooperative learning leads to success. Various factors and methods will allow and cooperative learning and cooperative teaching to thrive in the general education inclusive classroom. The factors and methods examined within the literature review were: (a) building relationships among teachers and students, (b) inclusive classroom strategies, (c) instructional delivery, (d) cooperative learning, and (e) training in the inclusive classroom and the inclusion student.

According to Dheeraj and Kumari (2013), cooperative learning activities should benefit all group members. The study involved experimental and controlled groups of

students. The purpose of the study was to determine if cooperative learning had an effect on achievement in Environmental Science of school students. The design of the study was a randomized, two group posttest design. “Mean achievement of the students exposed to cooperative learning differs significantly from the mean achievement of the study taught from the traditional method,” (Dheeraj and Kumari, 2015, p. 2). According to Dheeraj and Kumari (2015), the cooperative instructional strategy creates a comfortable environment for students to learn.

Many studies reflect on the low performance of students in mathematics on standardized tests. Brandy (2015) examined the traditional method of instruction in comparison to instruction involving cooperative learning. There were 110 participants in this study. The method of analysis was a descriptive statistical analysis. According to Brandy (2015), informing teachers of the advantage of cooperative learning was the purpose of the study. Brandy (2015) stated, “Moreover, if students are exposed to cooperative for a long period of time there is an increase in academic achievement; thus, cooperative learning increases academic performance in the long term.” (p. 55). Cooperative learning continues to show more positive effects than negative effects as shown within this study.

A study conducted on cooperative learning by Chen and Chuang (2016) involved a flipped classroom. The study the two researchers conducted comparing a flipped classroom along with cooperative learning. A flipped classroom is defined as students are instructed outside of the classroom and complete enrichment activities inside the classroom (Chen et al., 2016, p.8). The results of the study did find that cooperative learning combined with the design of a “flipped classroom” does lead to student achievement and student learning. Chen and Chuang (2016) stated, “Cooperative learning is the instructional use of small groups in

which students work together to maximize their own and each other's learning" (p. 10). The success of the study noted the combination of business and academics for the students.

Johnson (2009) conducted a study that centered on improving student achievement in math through cooperative learning. The study was an action research study that involved an eighth grade math class. Johnson (2009) aimed to determine if cooperative learning changed the perspectives of the eighth grade students in the subject area of math. There were 13 participants in the study from the eighth grade class. The significance of the study is cooperative learning does not just benefit the classroom and the student groups, but also leads to success as citizens in society. According to Johnson (2016), individuals can be useful in the world if certain collaboration skills. Johnson did find that cooperative learning does lead to the change of students' attitudes towards math. Johnson (2016) noted, students' approach to cooperative learning can lead to their success.

A quantitative study was conducted by Russo (2014) in which cooperative learning was examined on post-secondary students' mathematics achievement. Russo (2014) focused on one particular cooperative learning strategy which was "send-a problem." The study involved pre-service teachers in a college math class. "Send-a-problem is a cooperative learning strategy that involves each student on a team making up a problem and writes it down on a flashcard...teams pass their stack of review questions to another team...the team attempts to answer it, (Kagan, 1992, pp. 10-11, as cited by Russo 2014, p. 4). "Then, upon the return of the cards to the senders, there is an opportunity to discuss and clarify questions, (Kagan, 2009, pp. 10-11). The research question was: Does "Send-a-problem", a cooperative learning strategy, significantly increase student achievement in Mathematics? (Russo, 2014, p. 5). The results from the study showed an increase in the performance when analyzing the

pretests and posttests. Data analyses revealed an improvement in the achievement for students in mathematics.

### **Conceptual Framework**

Cooperative teaching cannot exist if there is ineffective collaboration between the teachers. Collaboration between general education and special education teachers collaborating together is a challenging task. Today's classrooms are diverse and teachers have to be prepared to address those challenges. Cooperative teaching brings about many realities and challenges, such as inclusion students' abilities and many diverse learners. There is a need for adequate preparation of teachers to be ready for the inclusive classroom and inclusion students. Pellegrino, Weiss, and Regan (2015) stated, "Skill of collaboration entails responding to difficult situations, effectively communicating with various individuals, and developing shared problem-solving competencies" (as cited in Friend, 2000, p. 188). Teachers will need to be willing to identify their strengths and weaknesses so they can be effective in co-teaching. The cooperative teaching model allows teachers to utilize, and build upon, those strengths and weaknesses. Teachers are striving to build communities within their classrooms to develop relationships that will allow effective co-teaching to occur.

Relationships within inclusive classrooms are important in the cooperative learning and the cooperative teaching implementation. Mielke and Rush (2016) stated, "But in terms of co-teaching, we learned a massive amount of what our identity was as teachers and how we needed to improve our relationship to our class the success we knew it could be" (p. 2). General education and special education teachers have to examine their relationships before relationships are built by students. Teacher relationships within the inclusive classroom have to reflect a positive environment before student-to-student relationships can be developed.

Within many schools around the world, there is an increase in the number of students with disabilities in inclusive classrooms. Inclusion students are placed within the general education classroom determined to be the least restrictive environment. Special education teachers and the IEP committee members determine the amount of time students spend in the general education classroom. Students with disabilities in inclusive classrooms are presenting numerous concerns and challenges for general education and special education teachers. In reality, inclusive classrooms are not diminishing but are becoming more prevalent in school settings at all grade levels. Teachers are faced with an abundance of accountability in meeting the needs of inclusion students and the inclusive classroom. One major concern is the actual success and growth of inclusion students in grade-level standards and objectives. Teachers are also faced with developing interventions and strategies, and implementing effective collaboration within the inclusive classroom. Cooperative learning and differentiated curriculum are some strategies that can possibly lead to inclusion students passing high stakes tests. Cooperative learning has become popular within current classrooms, and is proving to be a valuable resource for teachers to initiate student engagement and academic achievement. “Cooperative Learning is a successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject” (Balkcom, 1992, p. 2). Cooperative learning involves various methods and strategies for instructional delivery that can be utilized by general education and special education teachers. Various strategies and arguments presented will show cooperative learning does lead to student academic growth for state tests. By examining and identifying cooperative teaching in the inclusive class, the goal is how cooperative teaching benefits inclusion students and successful state testing. Results will serve as a

reference for schools with inclusive classrooms and for teachers who work within those classrooms. The foci of this study are to examine if cooperative learning is effective in the middle school classroom and leads to inclusion students' success in academics as well as state testing.

Literature showed cooperative teaching within the inclusive classroom can be successful. Cooperative teaching involves the general education teacher and special education teacher within the inclusive classroom. Although cooperative teaching benefits all students within this identified type of classroom, the main focus of the research is on inclusion students. Inclusion students with disabilities in a general education classroom need adequate support so they can be successful. Students with disabilities are entitled to be educated along with their non-disabled peers to the maximum extent appropriate to their needs based on the Individual with Disabilities Education Act (IDEA, 2004; Reeves, 2016).

Slavin (2014) introduced four theoretical perspectives involving cooperative learning: (a) motivational, (b) social cohesion, (c) developmental, and (d) cognitive elaboration. "Motivational perspectives on cooperative learning presume that task motivation is the most important part of the process, believing that the other processes are driven by motivation" (Slavin 2014, p. 786). Cooperative learning brings about motivation in the learning process. According to Slavin (2014), the success of cooperative learning groups is dependent on the settings developed achieving personal goals. By meeting individual goals, students rely on the process of helping each other so the entire group is successful.

Social cohesion is the second perspective and plays a huge role in the success of the group. According to Slavin (2014), group cohesion within cooperative learning groups leads to effective communication. The roles of the students involving the second perspective are

dependent on their willingness to interact effectively and positively. According to Slavin (2014), students within cooperative learning groups relate to their peers and the collaboration among them leads to desire of engagement, completion of the tasks, and the willingness to help each other.

The third perspective is the developmental perspective. “The fundamental assumption of the developmental perspective on cooperative learning is that interaction among children around appropriate tasks increases their mastery of critical concepts,” (Slavin, 2014, p. 788). Students’ collaboration within groups will allow their development in cooperative learning to promote effectiveness and achievement.

The fourth perspective is the cognitive elaboration perspective. As reported by Slavin (2014), cognition centers on individuals’ thinking, understanding, and mental processing. Within this study, the cognitive perspective also centered on knowledge achieved through cooperative learning. Students work together to build upon each other’s thinking, understanding, learning, and processing of skills. Elaboration within cooperative learning groups, explaining material to team members, leads to learning and the success of the entire group (Slavin, 2014).

Vega and Hederich (2015) presented a study on cooperative learning in mathematics and language. Their claim was cooperative learning impacts on student performance related to their cognitive style were effective. The claim involved cooperative learning as a breakthrough in the social structure of learning situations. Identified learning situations were individualist, competitive, and cooperative. According to Vega and Hederich (2015), much research has shown cooperative learning to be successful. The cooperative learning situation yields the most positive impact on the achievement of high school and university students



(Johnson & Johnson, 1999, 2009; Johnson, Johnson, & Smith, 2014). Studies have shown learning based on cooperative structure could be a useful tool for all ages, subjects and students. Research on the topic of cognitive styles has shown the existence of different learning modes and approaches to knowledge; these different modes deeply affect individual performance and approaches to the task. Hederich (2007) noted there is significant emphasis on cognitive learning in comparison to other styles producing gains in school environments.

In a cooperative learning situation, students work together in small teams to ensure everyone achieves academically. In this situation, students are in interacting, which implies the learning goals are achievable only as a group, not as individuals, which is known as positive interdependence (Johnson, Johnson, & Smith, 2014). As schools present more heterogeneous populations, cooperative learning becomes important and useful because diversity becomes a resource instead of a problem (Slavin, 1995). The group's objective in cooperative learning is to maximize whole team learning, motivating students to try harder and obtain better results than if they were working separately. Cooperative learning has become a well-used tool by numerous teachers all over the world and has a long and successful history of research. Johnson, Johnson, and Holubec (2008) widely researched and have found encouraging results about the efficacy of cooperative learning. The study showed adequate evidence to claim cooperative learning is a methodology that has a positive impact on mathematics, whereas in language there is no effect shown. The purpose of future research could be to clarify the reason for partial effects in order to define even more scopes and limitations of this pedagogical methodology.

The argument that cooperative learning is an effective resource for the inclusive classroom involves four different points of interest for the AOA argument: (a) cooperative

learning as a teaching tool, (b) cooperative teaching collaboration, (c) training on cooperative learning for the inclusive classroom, and (d) impact on academic achievement in the inclusive classroom. Each area of argument presents various components that will show the effect and impact for inclusion students within the inclusive classroom by the growth and progress on state test performance

Cooperative learning involves different practices and methods implemented within instructional delivery. The unique practices and methods involved allow teachers to meet the diversity that may exist in the inclusive classroom. Teachers will be able to utilize differentiated instruction to address different learning styles. “Achieving meaningful learning-that is, achieving effective learning- is possible for students who employ a deep learning approach” (Colak, 2015, p. 18). According to research, the argument is validated because cooperative learning improves academic achievement and student engagement. Sharan (2015) stated, “In the second half of the twentieth century, several influential concepts were taking hold that led to new understandings of cognitive developmental and served as the foundation of two major approaches to learning and teaching: constructivism and co-operative learning” (p. 84). Each of the strategies is a method of student engagement which changed students’ ways of learning and the outcomes.

In order for effective cooperative learning to occur in the inclusive classroom, teachers will need to receive adequate training. Training will allow for the increase of knowledge on learning strategies, as well as inclusion and the inclusive classroom. Addressing individual needs of students so they are successful is the long range goal teachers should embrace. Wiesen (2013) stated, “As with all most new skills, learning how to learn cooperatively must be trained” (p. 1). According to Wiesen (2013), it is the responsibility of

teachers, novice and veteran; receive training to be effective in the instructional delivery of cooperative learning so that all students comprehend their roles.

The overall intended goal is for students to achieve academic growth, be engaged, and be successful on state tests. Research shows there will be challenges, but the cooperative learning model can overcome those challenges and lead to an impact on academic success. Students are faced with mastering standards and objectives to transition on to the next grade level. Students have to take yearly state tests in various subject areas which play an important role in their academic growth. One main challenge in the cooperative learning model is that all teachers will have to be open to implementing the model. The openness to collaborate for the success of students is the key to success. There will be growth and success for teachers, as well as students.

A differentiated curriculum can also be a strategy that can lead to students passing high-stakes tests. Differentiated curriculum enhancement can have an impact on high stakes tests for the middle school science inclusive classroom. “Teachers of middle school students should consider the use of differentiated hands-on curriculum enhancements using peers as an important means of delivering high-quality instruction to all student” (Mastropieri and Scruggs, 2006, p. 135). According to Mastropieri et al., (2006), student academic participation within cooperative groups produces a boost through coaching their peers through. Mastropieri and Scruggs (2006) noted peer mediation in comparison to traditionally style of instruction and assigned skills to complete leads to effective learning with students. Instructing students with disabilities can be challenging for teachers; and the content is even more challenging for the general education classroom. As noted by Mastropieri and Scruggs (2006), the non-traditional approach of peer tutoring is effective, but is solely not the only

method of differentiated instruction needed for success.

Classroom environment has to be built before there is a concept of flow between teachers and students. The flow between educators, allows a flow to allow students to engage. According to Mielke and Rush (2016), teachers promote classroom environments to cause student engagement as well as effective opportunities for instruction and the gaining of knowledge. Co-teaching can be developed through the concept of flow that develops relationships. The flow experience perceived challenges or opportunities for action that stretch existing skills leading to a skill/challenge when embracing students' abilities.

Setting long term goals for end-of-year state tests, as well as preparing students for these tests, is challenging. The ultimate question centers on the collaboration of the teachers in the inclusive classroom. Cooperative learning within the inclusive classroom is suggested implementations that can lead to student success on state tests. In order for the effectiveness to occur within the inclusive classrooms, teachers will have to be willing to work towards the ultimate goal of student success. Cooperative teaching can impact inclusion students' performance on high stakes tests in mathematics. Inclusion students' success on high stakes tests is dependent on cooperative teaching in the classrooms. Educators are striving to build communities within classrooms to develop relationship. According to Mielke and Rush (2016) teachers need to create classrooms to develop a relationship with students establishing a flow. A state of flow among teachers and students should be established within all subject areas and classrooms.

Teachers who co-teach need to build on their talents to lead to the needed effective co-teaching to reach all students and lead to student success. Teachers need to be willing to identify their strengths and weaknesses so they can be effective when co-teaching together.

The co-teaching experience brings about many realities and challenges, such as abilities, of students and meeting the needs of diverse learners within the classroom. All teachers will not be willing to establish the co-teaching relationship to have the needed concept of flow within the classroom. Mielke and Rush (2016) stated, “Many teachers will experience the flow in their classrooms, when a teachable moment occurs serendipitously or when careful planning results in an authentic memorable learning experience for both teacher and students” (p. 3). Students with disabilities require additional support and practice to internalize comprehension of concepts. Students with mild disabilities exhibit some relative difficulty with inductive and deductive thinking associated with scientific reasoning. Students with disabilities, as many other students, may require significant, practice, application, and generalization of relevant skills and concepts.

### **Review of Research Literature and Methodological Literature**

The review of literature was based on the topic of cooperative learning in the inclusive classroom and the success of inclusion students on high-stakes tests. Review of the literature centers on the overall academic success for inclusion students. Examination of the literature obtained within the research on the identified topic was divided into different concepts. The various concepts allowed for the comprehension of the global picture of cooperative learning and cooperative teaching in the world of education. Concepts for the review of research literature are (a) cooperative learning and cooperative teaching, (b) building relationships, (c) teachers’ opinions and experiences, (d) training for teachers, and (e) practices and methods.

Relationships among teachers are a main criterion for success in the inclusive classroom. Instructional delivery involves collaboration and co-teaching which are

considered part of cooperative learning. Stivers (2008) stated, “Set aside large blocks of time for planning and adapt planning tools to suit your needs” (p. 121). Planning among teachers is needed to have a well-organized inclusive classroom. Planning for teachers in today’s schools is challenging, but is much needed. The inclusive classroom includes general education and special education teachers who need to build effective relationships. According to Stivers (2008), teachers have to employ methods or resources that work well for their teaching styles and meet the needs of all students. Teachers need to identify what is needed for their classroom and students. Ultimately, teachers are responsible for meeting the needs of all students.

Utilizing different and new models of co-teaching is suggested by Stivers (2008). Additional strategies suggested by Stivers (2008) were (a) using time wisely; (b) reexamining the layout of classroom to ensure continuation of well-suited, evolving co-teaching practices; (c) giving and getting feedback twice as fast in assessment; (d) clarifying understanding expectation; (e) enhancing partnership; (f) extending reach; and (g) maintaining perspective.

Within the building process of relationships, teachers will need to acknowledge when strategies are not effective. Also, recognizing when there is conflict within the teacher relationship is important because of effects on students. As mentioned in the literature, teachers will have differences. According to Stivers (2008), there should be a relationship among teachers in which they work together and keep an open mind when going to trainings. Stivers (2008) noted there should be an effective connection work towards the same goals. Mielke and Rush (2016) stated, “As educators, they are consistently striving to find ways to make communities within the classrooms, the department/colleges/universities, and the societies through building relationships” (p. 49).

Collaboration among teachers is a practice needed within inclusive classrooms. “One such component for addressing the needs of diverse learners has increasingly been collaboration” (Pellegrino, Weiss, & Regan, 2015, p. 189). Teachers have an increased role in responsibilities and accountability within inclusive classrooms. Pellegrino, Weiss, and Regan (2015) stated, “One of the foremost challenges for K-1 teachers is to provide relevant learning experiences for their students in an environment of increasing accountability and student diversity while maintaining the idea of the classroom as a place of engagement, possibility, and creativity (as cited in Palmer, 2003, p. 2003). The success of the inclusive classroom depends on effective collaboration between the general and special education teacher. Inclusion students face numerous challenges in general education classrooms. Today, school environments encourage collaboration throughout school buildings for the success of teachers and school as a whole. According to Pellegrino, Weiss, and Regan (2015), educators have to establish positive and effective relationships, having goals as the priority fostering respect and collaboration. Collaboration comes with much confusion, lack of understanding, lack of training, and challenges in the inclusive classroom and instructional delivery. Inclusive classrooms are more prevalent today in schools. In many cases, the classroom will consist of a veteran teacher but in some cases there are novice teachers not having exposure to an inclusive classroom. Also the novice teacher will not have exposure on needed collaboration in the classroom. Bouillet (2013) stated, “Providing adequate care and education for children with disabilities in an inclusive context is a complex issue” (p. 95). Teachers will need to be equipped with the needed skills and knowledge to ensure that inclusive classrooms and students are successful in content taught on grade-level. According to Bouillet (2013), in order for the inclusive classroom to be successful, there has to be

appropriate sources in place due to challenges. Inclusive education can be successful if all individuals are on board and working towards the same goal. Working together in a collaborative manner leads to teachers working as a team. According to Bouillet (2013), there can be success in the growth of students through various methods if they are watched carefully to produce the expected results along with a thorough analysis. Bouillet (2013) conducted a study on inclusive education in Croatia. “As is evident, the Law respects the contemporary approach to students in inclusive educational situations by promoting conditions that ensure that children SEN (special educational needs) can attain the required standards of knowledge, abilities and skills” (Bouillet, 2013, p. 98). Bouillet’s (2013) study focused on the experiences of the teachers of Croatia and inclusive education. The focus centered more on professional support given to teachers in Croatian schools such as counselors, community, psychologists, and speech therapists. Schools in the United States consist of numerous identified professional support individuals, such as counselors, speech therapists, physical therapist, occupational therapists, behavioral specialists and special education teachers within the school environment. There is a prominent indication that the community plays a part in the support basis for Croatian schools. Bouillet (2013) noted there was an unclear definition and no structure of collaboration in the Croatian schools as seen in records. Interestingly, data showed teachers were included only sometimes in collaboration but not as frequent as needed in inclusive education. According to Bouillet (2013), information showed that teachers in the Croatian schools possibly did not have adequate help working with students with disabilities and would like to have more information or training. In the United States, teachers within inclusive classrooms need support to be successful and to meet the needs of all students.



Chan (2014) stated, “Cooperative learning (CL) is a powerful teaching strategy that harnesses students’ diversified abilities and cognitive and social skills to increase their success in learning” (p. 216). Inclusive classrooms consist of students that have an astounding amount of diversity in which differentiation is needed. The people of China associate their way of living and beliefs in accordance to Confucius. Chan (2014) stated, “The benefits of CL do not come about automatically; the positive effects can be deflected when teachers are confused about CL methods, when teachers and students are inadequately prepared and when teachers’ perceptions of CL are misleading (as cited in Sharon, 2010, p. 218). Teachers and students have perceptions of cooperative learning in inclusive classrooms. Chan (2014) study examined the perceptions of students. “The results suggest that the majority of pupils liked to work in cooperative learning groups” (Chan, 2014, p. 219). Chan (2014) focused on high, medium, and low achievers for the study.

According to De Hei et al., (2015), teamwork can be developed within cooperative learning along with efficient instructional delivery for the intended long term goals. Clearly the implementation and design of cooperative learning are dependent on perceptions of the teachers. Teachers’ perceptions can include the effects of negativity as well as positivity. The latter is what will benefit cooperative learning in inclusive classrooms. The study centered on the examination of lecturers’ practices and beliefs in higher education. De Hei et al. (2015), teachers stated, “Their beliefs about the contribution of collaborative learning to a) learning outcomes and b) student motivation were more positive than beliefs about the effort that students are willing to dedicate to collaborative learning” (p. 232). Although the study was centered on lecturers, the determination was that collaborative learning was more student-oriented. Yet again, the lecturers needed more support in the process and implementation of

collaborative learning. According to De Hei et al., (2015), there is a need to have more training and practice in cooperative learning so that productive outcomes can be achieved and teachers can be more effective in collaborative learning

Rieger and Heiner (2014) stated, “Frequently, collaborative learning and formative assessment will be used in classroom instruction, but the course exams will remain in the traditional format in which students solve problems in isolation and only receive feedback several days later” (p. 41). Today, classrooms involve numerous assessments given throughout the school year. Assessments such as district tests, midterm exams and state tests are given in the traditional format with the expectation that students will perform as required to be successful. According to Reiger and Heiner (2014), much emphasis is placed on exams and exams given in the traditional design do not reflect the instructional strategy of cooperative learning. Reiger and Heiner (2014) examined students’ perspectives on two-stage on this assessment format, which leads to student engagement and learning and supports the collaborative learning approach. Two-stage exams showed success in student engagement in the collaborative process. According to Reiger and Heiner (2014), the two-stage exam format does foster the design of cooperative learning which leads to the relationship of peer instruction and exams; student participation for midterms given within groups which reflects the cooperative learning design has increased. Sharan (2015) stated “Meaningful learning is based on more than what teachers transmit; it promotes the construction of knowledge out of learners’ experience, feelings and exchanges with other learners” (p. 83). Today there is emphasis on constructivism and cooperative learning when instructing students. Sharan (2015) emphasized the outcomes of process instead of product and content. “Both approaches sought to actively engage all students in learning and signaled a shift of emphasis

in teaching from product and content to process” (Sharan, 2015, p. 84). Teachers have to take on roles in which they have to gain knowledge in various aspects to assist them in the cooperative learning process in their classrooms. Diversity within classrooms today requires teachers to extend their knowledge base to meet the needs of students. Students’ method of processing content depends on the instructional delivery of that content. Therefore, teachers’ perspectives have to change to meet the challenges of the diverse inclusive classroom.

According to Sharan (2015), Sharan (2015) stated, collaboration among teachers and students causes a setting that where students participate willingly in classroom activities by asking questions, giving out ideas, and developing important knowledge. The meaningful classroom involves students working in groups increases the desire to want to learn. According to Sharan (2015), connections can be established engaging in a classroom strategy known as the K-W-L method and allows the instruction that connects to ways in which students can engage by asking questions allow for the academic content to be significant. Sharan (2015) also noted, “Challenging the role of questions is the first step in creating the open and accepting atmosphere in which a CL (Cooperative learning) class can flourish” (p. 91).

Fore, Riser, and Boon (2006) stated, “If cooperative learning is an effective approach for ‘all’ children, the implications for special education could be dramatic” (p. 9).

Cooperative learning can be a powerful resource within the inclusive classroom in which students with disabilities are present. Inclusion students will benefit from cooperative learning in the realm of academic achievement. “Cooperative learning provides one strategy for improving academic achievement, enhancing mutual concerns, making learning enjoyable and nurturing safe, caring environments” (Fore et al., 2006, p. 10). According to Fore et al., (2006), with the framework of collaboration in mind, cooperative learning can be

important role in all students, general education students and students with disabilities, being successful academically.

Students in inclusive classrooms can benefit more from cooperative teaching in comparison to lecture teaching. Mahammadjani and Tonkaboni (2015) stated, “Cooperative learning is an educational method in which, students cooperatively work towards achieving common goals” (p. 107). Mahammadjani and Tonkaboni (2015) compared the traditional way of teaching to cooperative teaching and effects on student achievement and learning levels. According to Mahammadjani and Tonkaboni (2015), students’ accomplishment and success occurs during cooperative learning’s strategy of group work and understandable goals where in the groups all students need to gain mastery. Cooperative learning gives students opportunities to be engaged in comparison to direct instruction. Students are given the opportunity for a deeper grasp and understanding of the content. Mahammadjani & Tonkaboni (2015) also noted differences in the learning levels between students’ gender. The research study proposed will not address gender.

“Teaching by students is an important component of all cooperative learning models” (Berger & Hanze, 2015, p. 294). Jigsaw is a method examined in cooperative learning models that was proven to be successful. Berger and Hanze (2015), stated “This form of group work involves students switching between different groups and acting as both expert teachers and novice students” (p. 295). Groups are formed in the jigsaw method in which students are involved in expert groups and are assigned subtopics. Within each group there is an assigned student who leads the discussion utilizing questions and problems. According to Berger and Hanze (2015), within cooperative learning groups, students build upon each others’ strengths by assuming the roles of sharing with their peers identified as the novice

students the information the task assigned to them. Cooperative learning takes place in which all students learn from the expert group and positive independence is produced. “Novice students in the teaching groups are dependent on the knowledge of experts (resource interdependence)” (Berger & Hanze, 2015, p. 295).

Vega and Hederich (2015) stated, “Cooperative learning introduces a breakthrough in the social structure of learning situations” (p. 84). According to Vega and Hederich (2015), the main purpose of cooperative learning groups within classrooms is achieve knowledge for all students within the groups and to build upon their strengths leading to independence in accomplishing the tasks. The ideal learning situation involves all students learning subject-area content within classrooms. Students have different learning styles and process information differently. “Cooperative learning becomes an interesting alternative because it implies a change in the learning interaction that allows all students to learn at the same level, without isolating students with a different cognitive tendency” (Vega & Hederich, 2015, p. 85). Cooperative learning then becomes ideal for the inclusive classroom and student academic success.

Kaendler, Wiedmann, Rummel, and Spada (2015) stated, “Research has shown that the effectiveness of collaborative learning largely depends on the quality of student interaction” (p. 505). Collaborative learning is dependent on the roles, practices and instructional delivery of teachers to promote student interaction. Student interaction is promoted by the method of cooperative learning through collaboration. According to Kaendler et al., (2015), collaboration is the key to achieving participation by building knowledge together, but more is involved in achieving the needed cooperation. Teachers can foster student interaction by face-to-face interactions and computer-supported settings. The

following ways were utilized by teachers: (a) supporting, (b) planning, (c) monitoring, (d) consolidating, and (e) reflecting. Kaendler et al. (2015) noted, “Monitoring and supporting in the classroom should be trained in teacher education and facilitated by providing teachers with such tools such as a checklist of beneficial student behaviors” (p. 505).

Edwards (2015) stated, “The Association for Middle Level Education advocates for instruction that incorporates active learning and multiple learning approaches in middle grades classrooms” (p. 65). “The aim of this qualitative study was to examine middle level teachers who are able to implement active learning and multiple learning approaches within the standardized testing and accountability culture prevalent in today’s middle schools” (Edwards, 2015, p. 65). The implementation of active learning in classrooms involved challenges within district policies and regulations. The challenges involved students, system, content, and teachers in action and multiple learning approaches in schools. Schools are bound by testing on standards and accountability for the success of all students. According to Edwards (2015), there nine participants within the study approach was centered on students as the priority and strived towards various avenues to implement instructional strategies for success.

Andre, Louvet, and Denevue (2013) examined the impact of cooperative learning on changes in cooperative behaviors and acceptance amongst pupils with learning disabilities. (p. 677). The primary focus entailed the special classed for general and vocational education classroom (SEGPA). According to Andre et al. (2013), the inclusion of students with disabilities within the general education PE classroom is challenging, but has become possible due to the implementation of cooperative learning. Various behaviors were examined within the study as well student with disabilities acceptance. “These results lead us

to think about the factors that could have an impact on the influence of cooperative learning structures when mainstreaming pupils with learning disabilities in physical education” (Andre et al., 2013, p. 677).

Altun (2015) investigated the efficiency of learning plan implementation prepared with the cooperative learning method (p. 451). Altun (2015) noted the primary focus of the study was centered on the success of students within a sixth grade Science and Technology class that utilized cooperative learning. Disadvantages were indicated within the study in the identified classrooms. According to Altun (2015), the focus centered on cooperation as a learning technique that yields learning that is lasting, chances of doing well, developing communication and personal skills with one factor of success being achieved at all grade levels.

Wright, Zyto, Karger, and Newman (2013) stated, “Collaborative reading fosters peer interaction and is an innovative way to facilitate discussion and participation in larger enrollment courses” (p. 44). Wright et al. (2013) conducted a study to show online reading informs classroom instruction and promotes collaborative learning. According to Wright et al. (2013), collaborative reading builds a comfortable setting that allows students to engage by presenting questions and participation in the class dialogue. Web-based collaborative annotation tools were the primary focus for the study to prove the promotion of collaborative learning. Nota Bene (NB) was the online annotation tool utilized within the study. With any approach or tool, teachers are key factors for implementing positive and effective environments.

### **Review of Methodological Issues**

Edwards (2015) conducted a study on implementing active learning and multiple

learning approaches within middle grades classrooms. Within the study, several barriers considered in implementing an active learning model were mentioned. Edwards (2015) stated, “The school districts and the schools have been under immense pressure to raise standardized test performance and have implemented a variety of initiatives to accomplish that” (p. 73). According to Edwards (2015), educators have many challenges that they embark on, such as curriculum guides and as well as district policies and laws which is the most important challenge educators encounter. According to Edwards (2015), each of the challenges were organized into themes in which there was a total of four themes developed: (a) challenges related to the system, (b) challenges related to content, (c) challenges related to the system, and (d) challenges within teachers.

Altun (2015) stated, “In this study, the disadvantage of the practice was found out to be the requirement to be successful for all group members” (p. 464). According to Altun (2015), the study centered on examining an educational plan involving cooperative learning to determine its effectiveness as well as student accomplishment and perceptions of cooperative learning. Data were beneficial but centered on only one grade level. One issue was students’ ideas they all would need to be successful. Altun (2015) noted, “They stated that in order to be successful, students should master the subject and have good communication among them” (p. 462). Overall, several issues were determined that affected success of the team: (a) even one unsuccessful student affected the team causing pressure on the student, (b) the lack of communication affected team success, and (c) students were concerned about being successful and not having to be isolated from their peers.

Mastropieri et al., (2006) stated, “Teachers of middle school students should consider the use of differentiated hands-on curriculum enhancements using peers as an important



means of delivering high-quality instruction to all students” (p. 136). The purpose of the study was to compare differentiated hands-on activities and teacher-directed instruction. Students with mild disabilities were the targeted population. According to Mastropieri (2006), inclusion teachers encounter the challenge of accommodating the instructional requirements needed for success within the demanding content and the different learning styles. A possible solution to this existing issue, implementing differentiated curriculum enhancements using peer tutoring was suggested. Peer tutoring provided interactions within students in classrooms promoting differentiated activities.

Mohammadjani and Tonkaboni (2015) stated, “Cooperative learning is an educational method in which, students cooperatively work towards achieving common goals” (p. 107). The purpose of the study involved the examination of cooperative learning in comparison to lecture teaching within classrooms. According to Mastropieri (2006), cooperative learning is effective within the innovative style of teaching in comparison to the traditional style of lecturing. Overall the results showed that cooperative learning was effective for students due to their increase in academics and deeper learning. “In the cooperative learning method, since comments, thoughts, and beliefs of individuals are different, a conflict is raised which, if managed properly, will increase development and learning” (Mohammadjani & Tonkaboni, 2015, p. 111).

Sharan (2015) stated, “Meaningful learning is based on more than what teachers transmit; it promotes the construction of knowledge out of learners’ experience, feelings and exchanges with other learners” (p. 83). Sharan (2015) noted two different approaches for student learning which are constructivism and cooperative learning. According to Sharan (2015), constructivism and cooperative learning main purpose are to actively employ all

students to participate in the instructional delivery of the artifact and the substance to practice. Sharan's (2015) research noted issues to consider in the implementation of a cooperative learning classroom required various factors to be considered. Teachers will have to develop meaningful lessons with effective goals in place for learning. Implementing groups within the cooperative classroom will require examining the number of students in the class. Careful grouping in the classrooms will have to be considered in the implementation. Teachers will have to be prepared to implement an effective cooperative learning classroom environment along with adequate and appropriate planning for student success.

“Cooperative learning (CL) is a powerful teaching strategy that harnesses students' diversified abilities and cognitive and social skills to increase their successes in learning” (Chan, 2014, p. 216). Chan's study centered on the practices, experiences, and views of teachers in Hong Kong on cooperative learning classrooms. The country of Hong Kong has a strong presence of a Chinese culture which emphasizes Confucian concepts. According to Chan (2014), concerns still are present on implementing cooperative learning within the Chinese culture that have Confucian practices, although the practice has characteristics of the cooperative learning model.

(2013) stated, “It is obvious that inclusive education requires a high quality of service, well-trained teachers, support personnel and material resources” (p. 95). The study was done in Croatian schools. “As it is evident, the Law respects the contemporary approach to students in inclusive educational situations by promoting conditions that ensure that children with SEN (special educational needs) can attain the required standards of knowledge, abilities and skills” (Bouillet, 2013, p. 98). An issue found in the results was teachers want more support. According to Bouillet (2013), the study conducted, presented the

fact that teachers who have classrooms that include students with disabilities employ the importance of assistance such as strategies for instructional delivery. Possibly the lack of support for SEN students presents a challenge for teachers in Croatian schools.

Pellingrino, Weiss, and Regan (2015) stated, “As the aforementioned research has suggested, effective collaborative relationships must move beyond pleasantries and acquiescence between educators toward a partnership grounded in respect, deliberation toward mutual goals and shared responsibilities” (p. 190). Research was based on general education and special educators learning to collaborate. One issue mentioned is the need for teacher preparation programs to allow teachers to know what to expect in effective collaboration. Teachers who were participants within the study experienced many issues in the collaborative activity. There were many differences in opinions on different topics which did not lead to effective collaboration. Within one group, Pellegrino et al., (2015) stated, “Quickly, a lack of communication and ineffective use of collaboration strategies derailed this team” (p. 200).

### **Synthesis of Research Findings**

Within the research, there were many similarities and differences in the content presented by authors. Research conducted was divided into different themes: (a) cooperative learning and cooperative teaching, (b) building relationships, (c) teachers’ opinions and experiences, (d) training for teachers, and (e) practices and methods. Many of the researchers discovered similar concepts for the implementation and success of cooperative learning and cooperative teaching.

Stivers (2008) presented 20 different research-supported strategies utilized within classrooms involving co-teaching and obtained from successful co-teaching teams. The 20

strategies were divided into (a) Planning and instruction, (b) assessment, (c) enhancing your partnership, (d) extending your reach, and (e) maintaining perspective.

According to Sharan (2015), students achieving significant learning accomplish it by their comprehension of knowledge and how they interact with peers on the knowledge gained as well their perception of learning. Sharan (2015) noted cooperative learning environments consists of groups in which there will be no more than four students within groups developed in accordance to the tasks of the groups. Sharan (2015) also noted that cooperative groups makeup employ effective communications, problem solving, students building on each other's strengths as well as contributing knowledge. Therefore, allowing cooperative learning leading to engagement of all students in the cooperative learning classroom and achieving academic success.

According to Bouillet (2013), the success of the inclusive classroom is dependent on certain factors such as professional development, elevated excellence in instructional delivery, and the provision of guidance alone with the necessary resources. Teachers within cooperative classrooms require training and support to ensure success. Bouillet (2013) noted within quantitative and qualitative research, teachers employ the need for help in the inclusive classroom. "Bouillet (2103) stated, "Such support is essential to teachers due to their insufficient competence to work with students with disabilities, but also because of the unified education and rehabilitation interventions often required by these students" (p. 115).

Pellingrino, Weiss, and Regan (2015) stated, "As the aforementioned research has suggested, effective collaborative relationships must move beyond pleasantries and acquiescence between educators toward a partnership grounded in respect, deliberation toward mutual goals and shared responsibilities" (p. 190). Research was based on general

education educators and special education educators learning to collaborate. One issue mentioned is the need for teacher preparation programs to allow teachers to know what to expect in effective collaboration. “Teacher collaboration has been viewed as a critical part of the equation to help meet the needs of these learners” (Pellegrino et al., 2015, p. 187).

Andre et al. (2013) examined the impact of cooperative learning on changes in cooperative behaviors and acceptance amongst pupils with learning disabilities. (p. 677). According to Andre et al. (2013), the views and attitudes of students with disabilities lead to the lack of approval within cooperative learning. Wright et al. (2013) stated, “Collaborative reading fosters peer interaction and is an innovative way to facilitate discussion and participation in larger enrollment courses; it can be especially powerful as it creates an environment where all students are able to ask questions and contribute to a discussion about science” (p. 44). Wright et al. (2013) conducted a study to show online reading informs classroom instruction and promotes collaborative learning. Web-based collaborative annotation tools were the primary focus for the study to prove the promotion of collaborative learning. Wright et al., (2013) noted students with disabilities within the NB were very active indicating that the resource enables them to have comprehension of subject content as well as having a sense of independence on the subject content.

Edwards (2015) stated, “The Association for Middle Level Education advocates for instruction that incorporates active learning and multiple learning approaches in middle grades classrooms (p. 65). Edwards (2015) noted the focus was centered on educators at the school level implementing practices to foster vigorous achievement with a multitude of ways to deliver numerous strategies for learning. The implementation of active learning in classrooms involved challenges within district policies and regulations. The challenges

involved students, system, content, and teachers in action and multiple learning approaches in schools. Schools are bound by testing on standards and accountability for the success of all students.

### **Critique of Previous Research**

Cooperative learning and cooperative teaching produce an abundance of previous findings. The research conducted also allowed for the previous findings to have themes developed from the examination of the research. Overall, research presented evidence that cooperative learning is prominent in schools today. Evidence showed many challenges present within various studies on cooperative learning. Also, there was evidence to indicate strategies to overcome the challenges in place within cooperative learning. Mainly, a great deal of research presented justification for future research on cooperative learning. Previous findings showed that co-teaching is beneficial for all stakeholders involved in the inclusive classroom. Stakeholders in cooperative learning are the students and teachers. Teachers are responsible for producing an environment that flourishes and grows to maintain the relationships that are built. Research from previous findings showed an acceptable amount of evidence to prove that students with mild disabilities can be successful in taking high-stakes tests such as state tests.

Much of the research indicated the challenges and success that cooperative learning had on inclusive classrooms. Research indicated in many cases how future research would be beneficial for cooperative learning and cooperative teaching. Fore, Riser, & Boon (2006) stated, "If cooperative learning is an effective approach for all children the implications for special education could be dramatic" (p. 9). Fore et al., (2006) noted "There is still much more to be learned about how, why, and under what conditions cooperative learning enhances

student achievement” (p. 11). According to Fore et al., (2006), there is doubt if cooperative learning has the ability to be coherent on the impact of achievement of all students. Fore et al., (2006) presented a view of cooperative learning in which the audience could see the benefits of the implementation of cooperative learning for students with disabilities.

Further research will be needed to ensure that cooperative learning continues to be effect within classrooms. Mastropieri et al., (2006) noted “Further research should consider the use of differentiated curriculum enhancements with peer mediation in other subject areas and grade levels” (p. 136). Mastropieri et al., (2006) research indicated that all grade levels and subject areas should be considered for differentiated curriculum enhancements promoting cooperative learning. Edwards (2015) conducted a study on active learning in middle grades classrooms. According to Mastropieri et al., (2006), additional research is needed to examine the results of the study conducted on teacher effectiveness and organization. Altun (2015) noted, “Although this study is limited by only using data from one sixth grade class, the results showed that the CL method creates a favorable effect on achieving social and affective skills” (p. 464). The study focused on the investigation of the efficiency of learning plan implementation prepared with the cooperative learning method. Kaendler et al. (2015) noted, “These practical implications can inform educational practices and offer new directions for future research regarding promoting collaborative learning” (p. 505). According to Kaendler et al., (2015), research was done on the conducted a study on teacher abilities for using cooperative learning showing teachers have important roles in the implementation of collaborative learning leading towards valuable engagement collaborative environments.

## **Chapter 2 Summary**

Although there were issues and concerns identified within the research, cooperative learning appears to be an effective classroom practice. Teachers have implemented cooperative learning and cooperative teaching practices. The implementation has been done in general education and inclusive classrooms which accommodates the diverse mixed abilities of students. Fore et al. (2006) stated, “If cooperative learning is an effective approach for ‘all’ children, the implications for special education could be dramatic” (p. 9). Therefore, cooperative learning increases the chance for inclusive students within inclusive classrooms to be successful on high-stakes tests such as state tests.

Teacher relationships were an important concept noted in research that contributed to the success of cooperative learning. Success in high-stake tests within inclusive classrooms for inclusion students is centered upon effective quality instruction delivered by teachers. “Teacher collaboration has been viewed as a critical part of the equation to help meet the needs of those learners” (Pellegrino, 2015, p. 187). Careful planning and collaboration will be needed to develop lessons that meet the needs of all students. Teachers will need to build and develop their relationships to instill a successful classroom. Positive and effective relationships will also be developed between all students to promote adequate learning. The teacher-to-teacher, teacher-to-student, and student-to-student relationships will promote cooperative learning for success in academics and state tests inclusive classrooms.

Teachers have to focus on the big picture of having a successful classroom in which all students are learning. Ultimately, the inclusive classroom has to implement an instructional delivery that fosters preparation of inclusion students for state tests and all academics. Research provided an abundant set of practices and strategies within cooperative learning and cooperative teaching. General and special education teachers need to be open to



change and foster success and a classroom environment conducive for inclusion students.

The implementation of many of the practices, strategies, or methods presented some challenges, but overall cooperative learning is effective when done with fidelity.

Research showed many teachers, novice and veteran, lack training and support in the inclusive classroom. The cooperative classroom cannot have the needed success and foster learning if teachers do not have training. Training has to be provided for inclusion, inclusive classroom, and cooperative learning in relation to students having mild disabilities. General and special education teachers need to have continued support for the inclusive classroom to ensure all students with mild disabilities are learning and will be successful on state tests.

“There is still much more to be learned about how, why, and under what conditions, cooperative learning enhances student achievement, but it is clear that cooperative learning can have consistent and important effects on the learning of all students including those with mild disabilities” (Fore et al., 2006, p. 11). Cooperative learning can be a benefit to students but it is imperative that teachers understand how to implement it within their classrooms with the outcome being success for all students.

## Chapter 3: Methodology

### Introduction to Chapter 3

Globally schools are faced with students having disabilities being placed within the general education classrooms. Students diagnosed with mild disabilities, such as specific learning disabilities, attention deficit disorders, emotional disabilities, and intellectual disabilities, are in general education classrooms. General education and special education teachers are faced with accountability of students with disabilities to successfully master standards taught at grade level. Inclusion is not as uncommon in comparison to years ago in general education classrooms. Teachers' roles and responsibilities have changed due to inclusion students' presence in the classroom. The task is challenging, preparing students with disabilities to be successful in high stakes tests taken on grade level.

Jones and Sterling (2013) stated, "Including special education students in a general education classroom and ensuring that they are actively engaged in learning is paramount to helping students master science content" (as cited in Mastropieri & Scruggs, 2001, p. 24). Applying this same idea to all subject area classrooms can be paramount as well. Students are engaged in cooperative learning and teachers in cooperative teaching. Jones and Sterling (2013) stated, "By implementing these steps and strategies in the classroom, an environment of safety, acceptance, and respect is created, and all students will feel secure in sharing knowledge" (p. 28). According to Jones and Sterling (2013), persuading students with disabilities to participate in the learning process within classrooms is not as easy as it may seem, but yet is a tedious process as students with disabilities have low self-esteem when viewing their peers

Teachers have had to become creative in their instructional practices and delivery within classrooms. Cooperative learning has become a promising practice proving to have notable success in preparing students for academic learning and high stakes test. Cooperative teaching involves general education and special education teachers working collaboratively in the inclusive classroom. Although cooperative teaching benefits all students, the main focus of this research surrounds inclusion students in the inclusive classroom. Students with disabilities whose least restrictive environment is to spend 80% or more of the day in a general education classroom are considered to be inclusion students. Inclusion students need to have adequate support and instruction to ensure they are successful in the grade-level standards taught. Students with disabilities are entitled to be educated along with their non-disabled peers to the maximum extent appropriate to their needs as outlined in the Individual with Disabilities Education Act (IDEA, 2004; Reeves, 2016).

Within this study, the variables were 2009-2013 state mathematics tests for the non-disabled student and the disabled students in sixth, seventh, and eighth grade. The state mathematics tests were given in the spring of each school term, usually in the months of April or May.

Litke (2010) conducted a study in which he examined cooperative learning in a students' individual performance on assessments. Litke's (2010) main purpose was analyzing if cooperative had an impact on how students performed when taking assessments. The participants were college students in an algebra class. Students' performances on a pretest and posttest were examined. "While there are critics of the cooperative learning technique, there is no shortage of research supporting the benefit of this strategy," (Litke, 2010, p. 6).

“The purpose of this study was to see the effects of using cooperative learning strategies in mathematics classroom to engage the students in the learning process, and analyze the results on an individualized assessment to conclude of cooperative learning positively affects an individual’s performance on such assessment,” (Litke, 2010, p. 7). There were two groups, the experimental group and the control group. The results showed that there was not an indication that there were significant performances on the assessment identified as the pre-test. As the performance were examined for the pre-test, the control group scored slightly higher, 27.5%, when compared to the experimental group at 20%, (Litke, 2010, p. 20). The performance for the post test revealed different results in comparison to the pre-test. “The control group scored an average of 66.1%, an increase of 38.6% from their pre-test performance,” (Litke, 2010, p. 21). Litke (2010) stated, “The experimental group scored an average of 63.3%, an increase of 43.3% from their pre-test performance” (p. 21). The researcher, Michael Litke, mentioned that there were several limitations noted within the study.

Odom (2010) presented results from a study conducted in cooperative learning and math perceptions. The groups of participants focused on being middle school students. Odom (2010) conducted a quasi-experimental quantitative study of cooperative learning and the impact on achievement in math. “The purpose of this quasi-experimental quantitative study was to measure the effect of Student Teams Achievement Division (STAD) instruction, a type of cooperative learning strategy, on the math perceptions of middle school students,” (Odom, 2010, p. 2). Odom (2010) utilized a pretest and a posttest within her research, and used control and treatment groups. The control group experienced the traditional method of

instruction, whereas the treatment group experienced cooperative learning instruction, Student Teams Achievement Division (STAD).

Odom's (2010) research question was, "To what extent does the use of STAD as a teaching strategy affect middle school students' math perception," ( p. 5). The analysis method for examining the perceptions from the two groups chosen was the t-test. Odom (2010) noted that the results from the study did not yield the intended results as predicted. The results from the t-test showed that STAD did not have a significant impact on the perceptions of the students.

Another study was conducted on cooperative learning and student achievement by Obinna-AkaKuru, Onah, and Opara (2015). Imo State, Nigeria was the study site. Researchers examined cooperative learning and academic achievement in the area of English Language. The students were in senior secondary school. Random sampling was utilized for the study in which there were a total of 10 students elected from two classes. Pre-tests and post tests were utilized within the study along with an Analysis of Covariance (ANCOVA). The ANCOVA was set at a 0.5 level of significance. Obinna-AkaKuru et al., (2015) stated "The research question was the following: What is the impact of cooperation on the academic achievement of English Language" (p. 27).

The results from the study proved that cooperative learning did have an impact on student achievement in English Language. Obinna-AkaKuru et al., (2015) stated "The paper therefore, recommended the retraining of teachers towards using cooperative learning for students' optimal academic achievement," (p. 26).

Ellis-Jacobs (2011) conducted a quantitative correlational study on patient satisfaction. The focus was centered on the satisfaction on the patients of a rural hospital

located in Oklahoma. One main factor was satisfaction of the patients of the hospital were dependent of the allied health care practitioners. Ellis-Jacobs (2011) stated, “The purpose of the current quantitative, ex post facto, correlation research study was to describe a correlation between allied personal customer satisfaction performance and a hospital’s gross revenue,” (p. 2). The research question was: What is the relationship, if any, between allied health care practitioner’s customer service skills and a hospital’s gross revenue? (Ellis-Jacobs, 2011, p. 2).

The analysis proved the null hypothesis was rejected in one setting of the hospital but not in another setting. The two settings of the hospital, examined were the emergency room and in-patient settings. The results showed that there was customer satisfaction in the in-patient setting, but not in the emergency room setting, therefore, rejecting the null hypothesis for the emergency room. “With respect to inpatient ratings, the null hypothesis was not rejected, and it could not be concluded that the hospital’s gross revenue was related to mean inpatient satisfaction performance,” (Ellis-Jacobs, 2011, p. 5).

A study conducted by Aziz and Hossain (2010) centered on the comparison, conventional style of teaching to cooperative learning style of teaching in the subject area of mathematics. Participants were high school girls enrolled in a mathematics class at a study site located in Natore, Bangladash. Pretests and posttests were used in the methodology of the study. The data analysis involved an independent sample t-test. Results and discussion of the data analysis concluded that cooperative learning had a significant impact on student achievement in mathematics. “The effects of CL are significant on mathematics between the students’ learning cooperatively and students’ learning conventionally,” (Aziz & Hossain,

2010, p. 61). “Teachers may apply the most suitable approach CL in their teaching instruction in order to enhance students’ mathematics achievement,” (Aziz & Hossain, 2010, p. 61).

### **Background of the Study**

Middle school inclusion students’ mathematics state test performance is, as expected, lower on average than the student peer. Yet there is accountability placed on the population of middle school inclusions students just as their peers. Middle school inclusion students’ state test performance are examined within the entire school’s test data and included in the average yearly progress. Inclusion students taught grade-level standards within general education classrooms take same grade level state tests as their peers. Teachers are held accountable for the growth and progress of all their students, which includes inclusion students as a part of their evaluations. Teachers continually seek ways to reduce the persistent gap. The researcher believes that cooperative learning, which involves typical students and inclusion students working together, could possibly help reduce the academic gap, in particular, mathematics. It is not known to what extent cooperative learning affects middle school inclusion students’ mathematics state test performance.

### **Purpose of the Study**

The purpose of the study was to examine and identify the effects of cooperative learning on middle school inclusion students’ mathematics state test performance. The variables of the study include cooperative learning and state mathematics test performance for middle school inclusion students. The state assessments examined were mathematics performance for the school year period 2009-2013 of sixth, seventh, and eighth grade inclusion (disabled students). The state test mathematics performances examined were for non-disabled students and disabled students (inclusion students) in middle school.

## **Research Question**

The following research question guided the study:

- How does cooperative learning affect middle school inclusion students' mathematics state test performance?

## **Research Design**

I used a descriptive research design in this quantitative study. The design was appropriate because the research was not based on predictions, but on the descriptions of what was actually seen within the collected data. The data collected was converted to patterns and trends, a visual representation of the data collected. “Descriptive research designs often use visual aids such as charts to aid the reader in understanding the data distribution,” (AECT, 2001). Descriptive research designs can be either quantitative or qualitative and that reflected the span of my study. Because descriptive research spans both quantitative and qualitative methodologies, it brings the ability to describe events in greater or less depth as needed, to focus on various elements of different research techniques, and to engage quantitative statistics to organize information in meaningful ways (AECT, 2001). The term descriptive research refers to the type of research question, design, and data analysis applied to a given topic (AECT, 2001). A descriptive research design was appropriate for my study because the purpose was to examine and describe state mathematics test performance of middle school students.

## **Target Population, Sampling Method, and Related Procedures**

In this study, the mathematics state test data of sixth, seventh, and eighth grade male and female middle school inclusion students, ages 11–15 from a public school in the southern United States, was the target. The population was a specific district in the state implementing



cooperative learning as a district-wide initiative. The sample was the mathematics state test data for the inclusion students of a selected district gathered and examined by the state over a period of four consecutive academic years. Sampling involved the collection of student test data from a public domain resource. The identified public domain resource was the Panver Department of Education. The data collection process involved collecting the state test data for 2009 school year through the 2013 school year. The targeted population for the study was sixth, seventh, and eighth grade middle school non-disabled and disabled students. The disabled students were those identified as inclusion students within the general education classroom environment. The public domain source provided state test data, which were separated into exact numbers and percentages of middle school inclusion students from the total of students tested. The data included mathematics state tests of the chosen school district, disaggregated into basic performance and above, as well as proficient and above for non-disabled and disabled middle school students. See Tables 1, 2, 3, and 4.

Table 1

*Chosen School District's Mathematics Test Performance 2009/2010*

Grade Level	Percentage Scoring Basic & Above		Percentage Scoring Proficient & Above	
	Non Disabled	Disabled Only	Non Disabled	Disabled Only
6	88	31	68	9
7	89	47	74	11
8	86	56	55	19

Table 2

*Chosen School District's Mathematics Test Performance 2010/2011*

Grade Level	Percentage Scoring Basic & Above		Percentage Scoring Proficient & Above	
	Non Disabled	Disabled Only	Non Disabled	Disabled Only
6	83	25	54	8
7	94	43	74	13
8	86	18	65	4

Table 3

*Chosen School District's Mathematics Test Performance 2011/2012*

Grade Level	Percentage Scoring Basic & Above		Percentage Scoring Proficient & Above	
	Non Disabled	Disabled Only	Non Disabled	Disabled Only
6	86	27	57	4
7	95	46	71	15
8	89	55	67	15

Table 4

*Chosen School District's Mathematics Test Performance 2012/2013*

Grade Level	Percentage Scoring Basic & Above		Percentage Scoring Proficient & Above	
	Non Disabled	Disabled Only	Non Disabled	Disabled Only
6	75	36	45	12
7	72	20	44	4
8	78	18	42	4

Thompson-Griffith (2015) conducted a similar study using similar sampling and methods. Thompson-Griffith (2015) examined the Mississippi Curriculum Test, Second Edition (MCT2). For this study, state test performance from the MCT2 test for mathematics was examined. Thompson-Griffith (2015) used SPSS within the data analysis to gather results from the study using an independent t-test to determine the level of significance. "The

findings of this study showed that at the .05 level of significance, literacy performance, socioeconomic, and gender were factors of mobility that led to low test performance and proficiency levels on the MCT2,” (Thompson-Griffith, 2015, p. ii).

In the year 2011, cooperative learning was initiated in the chosen school district. The data selected for this study, consequently represented mathematics state test performance two years before the implementation of cooperative learning and two years after the implementation. The state mathematics performance were noted for non-disabled and disabled middle school students for the descriptive analysis. Middle school students’ state mathematics, data was examined along with cooperative learning. The cooperative was examined to determine how it impacted student with disabilities. Descriptive data were developed to reflect the performance for basic and above, along with proficient and above for sixth, seventh, and eighth middle school students.

### **Instrumentation**

Instrumentation for the research study involved several items. The main item was state mathematics test performance over a period of four consecutive academic years used for data analysis. The name of the state test was the Panver State Test (PST). Validity and reliability were considered within the Panver State Test (PST). “The focus of reliability is to ascertain the relationship among performance derived from individual items, whereas validity may refer to a collection of evidence to demonstrate test fairness and valid uses and interpretation of the test performance,” (Technical Report, 2010). The 2009–2010 Technical Manual for the Panver State Test (PST) outlines validity and reliability of the state test.

Accommodations and modifications identified for each of the participants were utilized within the instrumentation. The accommodations and modifications are important

components used in the general education classrooms for inclusion students. The selected group of participants, middle school inclusion students with accommodations and modifications in place, took the same test as their peers. Accommodations and modifications include setting, timing, scheduling, presentation, and response. The setting for testing of inclusion students consists of students being pulled from the general education classroom so that the inclusion teacher can implement the testing accommodations and modifications. Inclusion students are given the accommodation of scheduled rest breaks and additional time to complete the state test. Inclusion students can also have scheduling implemented such as testing in the morning in comparison to the afternoon. The purpose of scheduling is to accommodate some students' attention span and focus may be better in the morning than in the afternoon. Some students may have to be tested in the afternoon instead of in the morning.

Presentation and response are additional accommodations and modifications that are implemented during state testing. In some cases, students with disabilities may need to have big print because of vision deficits. Also, students may need to have the special education teacher to record their answer responses to the state test. Inclusion students have certain components read to them within state testing. Students can have designated areas to sit in the testing area, such as in the front of the classroom to accommodate vision or to eliminate distractions. The setting accommodations and modifications can be tested with a familiar teacher or in small groups. The timing and scheduling accommodations can include allowing students to have rest breaks and extended time.

## **Data Collection**

The data sources used in addressing the developed research question included sixth, seventh, and eight grade inclusion students' mathematics state test performance for two consecutive academic years obtained from the school counselor. The source was the public domain, web site for the Panver Department of Education. The first step was to collect the state mathematics test data for 2009-2013 school years from the public domain web site. The second step was to divide the test data into grade levels and academic years, indicating the test score for each of the years for the participants. The third step was to determine the performance level, each participant scored on the state mathematics test. The performance areas are minimal, basic, proficient and advanced. The four performance areas yield a range students can score within. Data focused on grade levels, four consecutive academic years, and mathematics state test performance. Collection of data allowed for the examination of the test performance of the participants of 2009–2013 school years who participated in the state mathematics test.

I contacted the state department of education to inquire about the steps needed to obtain mathematics state test data. I was instructed to send a request for the information needed to conduct my research. A representative in the office of public records assisted me and gave me specific directions for obtaining data. I completed and submitted the public request form. After submitting the request, I received a prompt response from the office of public records that instructed me where to retrieve the mathematics state test data on the website. This process allowed me to collect the needed state test data to begin the data analysis for my research study.

## **Operationalization of Variables**

The first identified variable was cooperative learning in the middle school inclusive classroom. Cooperative learning was the new approach to student learning introduced and implemented, beginning 2011, in all the schools of the school district examined in the study. Another identified variable used in the research and the data analysis was the mathematics state test performance for sixth, seventh, and eighth grade middle school inclusion students over four consecutive academic years. The mathematics state test performance used in the study were percentages of the middle school non-disabled and disabled students as pre-determined by the state, who scored at basic or above, and proficient and above. If this had been an experimental study, cooperative learning would have been the independent variable and the mathematics state test performance the dependent variable. Changes in the mathematics state test performance pre 2011 and post 2011 were examined to determine if participants showed differences in mathematics growth patterns. The data analysis determined if cooperative learning affected middle school inclusion students' mathematics state test score patterns. Data analysis was conducted by a descriptive analysis to estimate the growth patterns of the participants.

## **Data Analysis Procedures**

I analyzed the state mathematics state test data for sixth, seventh, and eighth grade middle school non-disabled and disabled students. The data analyzed included percentages of non-disabled students and disabled students who scored basic and above as well as those scoring proficient and above. The four performance levels students could score within over the period of four consecutive school years were the following: (a) minimal, (b) basic, (c) proficient and, (d) advanced. The descriptive analysis conducted analyzed patterns and trends

among the non-disabled students in comparison to disabled students. Cooperative learning was introduced in the year 2011. The descriptive analysis determined if patterns or trends changed over the period of the four years.

Because I was looking for patterns, I used visual graphs, both bar and line graphs to determine any changes in growth patterns in the percentages of mathematics state test score pre and post 2011, the year cooperative learning was implemented district wide. All data were collected after the state mathematics test was taken. The data collected from the public domain, web site was considered to be valid and reliable. The state mathematics performance for the inclusion students were collected by the state department of education. I analyzed the data that were collected from the public domain, web site for the inclusion students.

I examined a quantitative comparative study on the comparison of attitudes on two different kinds of counseling. Indians living in the United Kingdom for more than 10 years with British citizens of white origin and Indians living in India were the two groups examined. There were a total of 162 participants. The research question involved the question if the study provided an example of comparing two different identified items such as the tests within my study. "The attitudes towards 'Western' counselling and counselling services of Indians living in the United Kingdom for more than 10 years with British citizens of white origin and Indians living in India was examined" (Syed, Baluch, Duffy, & Vaishnavi, 2012). The researchers were able to conduct a study within the quantitative comparative research design to answer the research question. After viewing the quantitative comparative research study and the results that were gained from the study, I was able to justify and confirm a quantitative comparative methodology can apply as an option for this study. This study

involved the comparison of four state test administered in the spring of 2009–2013 school years and the performance of identified inclusion students in the area of mathematics

### **Limitations and Delimitations of the Research Design**

The delimitations of the study were the chosen participants. The study was delimited to middle school inclusion students enrolled in a public school located in the southern United States. I chose middle school inclusion students for the participants of the descriptive research design study. The study did not include all students in the inclusive classroom. Cooperative learning was the chosen strategy implemented in the classroom to examine for the desired outcome. An issue leading to limitations was the examination of the mathematics state test data. The desired outcome was for the selected participants to have two consecutive academic years of mathematics state test performance. Outliers who did not meet the study criteria were removed from the database.

As the research was conducted, numerous factors were considered: (a) demographics, such as race and gender: (b) attitudes, (c) backgrounds, (d) economics, (e) textbooks, (f) curriculum, (g) school environment, (h) state standards, and (i) gender of teachers. The identified factors were considered to be beyond my control as a researcher. Most of the factors are present in the arena of education. Neither administrators nor educators have control over the listed factors that can occur when examining student achievement.

In addition, the lack of knowledge of cooperative learning implemented within the elementary classrooms before the students entered middle school was another factor that was considered. The research study centered on cooperative learning introduced as an instructional resource in the sixth grade. The identified southern United States middle school



included sixth, seventh, and eighth grades. The unknown factor was considered was if any of the entering middle school students had knowledge or exposure to cooperative learning.

Students enter schools having socio-economic issues that are beyond their control. Unfortunately, those socioeconomic factors can affect the progress and success of achievement in the curriculum they are taught. Students' backgrounds can affect their success in the school environment positively or negatively depending on those backgrounds. Many backgrounds lack the support and resources needed for school as well as when not in the school environment. "A student's educational outcome and academic success is greatly influenced by the type of school they attend," (Barry, 2006, p. 5). Schools are dependent on resources and have adequate support for staff and students. Barry (2006) noted the classroom makeup can bring about positive encounters within the educational setting they receive academic instruction. According to Barry (2006), educational environments have to take advantage of all opportunities that can increase student growth and academic success. Barry (2006) pointed numerous factors within her study on socioeconomic status on academic achievement.

Demographics play an important role in the academic performance of students. Green and Celkan (2011) conducted a study that centered on the performance of students within two remedial English classes. The researchers examined the performance on the English placement test of the students from the remedial classes. The low scoring performance was based on the demographic characteristics of the students. Green and Celkan (2011) stated, "The research was conducted to find out the relationship between various test performance and demographic characteristics of students in two Learning Support classes at Macon State College and how they relate to academic achievement" (Green and Celkan 2011, p. 365).

Interviews were conducted with the students from the two classes. After conducting their research, Green and Celkan (2011) found no significant correlation between the demographic characteristics of the students. Student's performance on the English exams did not show a major deficit in academic performance.

Student mobility also leads to an impact on academic achievement gaps for students. Thompson-Griffith (2015) conducted a study entitled, "of which the purpose was to analyze the role of student mobility and the impact on academic achievement of students. Thompson-Griffith (2015) viewed factors, such as gender, socioeconomic status, and student mobility. Student mobility will affect academic achievement in various ways. Some students attend different schools within the same district. The track record for these students will be apparent. Student mobility presents the problem of the lack of stability for students. Thompson-Griffith (2015) utilized the same resource used for my research as well as centered on the same type of population, middle school students. That resource was the Panver State Department of Education database. Also the exact same state test was examined within this study, which was the Mississippi Curriculum Test, Second Edition. "Students with high rates of mobility were more likely to be retained or graduate from high school," (Thompson-Griffith, 2015, p. 2). The researcher examined race in which it was noted that African American students were twice more likely to be retained as compared to Caucasian students (Thompson-Griffith, 2015, p. 4). "A socioeconomic factor considered was low income students face challenges that transcend race when it comes to achievement," (Thompson-Griffith, 2015, p. 4).

Thompson-Griffith (2015) developed three research questions: (a) is there a difference in academic achievement in literacy and mathematics between mobile and non-

mobile students? (b) Is there a difference in academic achievement in literacy and mathematics between mobile and non-mobile students based on socioeconomic status? and (c) Is there a difference in academic achievement in literacy and mathematics between mobile and non-mobile students based on gender? (p. 5). There were four Null hypothesis statements developed for the study. The tool that was used was an SPSS individual t-test in which the results revealed a .05 level of significance based on the factors examined in the study. The low test performance was significant based on race, gender, and socioeconomic status for students on the Mississippi Curriculum Test, Second Edition.

The curriculum also plays a role in impacting student achievement in identified subject areas. DeTuro (2015) conducted a study centered on the impact of curriculum customization on student achievement for 3rd graders. The study targeted the subject areas of Language Arts and mathematics. Also the targeted area was in New Jersey and focused on 30 of the poorest school districts located in the area. DeTuro (2015) conducted a correlational cross-section study to determine the impact of curriculum customization on student achievement. “The results of this study reveal that curriculum customization was a statistically significant variable that positively affect student achievement,” (DeTuro, 2015, p. 86).

### **Internal and External Validity**

This study was not an experimental design and did not control for potential threats to internal validity. It did use the non-disabled peers of the disabled students in middle school as a comparative group. The study was a one group pre intervention and post intervention study and so the impact revealed may be due to implementing cooperative learning or it

could be due to history, maturation, or experimental mortality (threat to internal validity). However, the comparison to the non-disabled group could reduce this threat.

I chose one school district mandated to implement cooperative learning and so the external validity may be low. My research design choice, descriptive design does not require conclusions, but provides insights.

### **Expected Findings**

I expected to find cooperative learning as a valued asset and tool for the classroom. I thought that the study would show inclusive classrooms that incorporated cooperative learning would lead to the success for middle school inclusion students. Additionally, I felt that the findings would show cooperative learning could lead to consistent success on state test performance over a certain period of time.

### **Ethical Issues in the Study**

There is much to consider in the arena of education in regards to ethics. Ethics will need to be first and foremost in examining the data. The methods and procedures will need to be carefully considered. As the researcher, my perspective will need to be unbiased so as not to involve issues of ethics. There is an abundance of ethical considerations that have to be in place for the selected population in the study. There has to be honesty in reporting the data examined from the state test performance. Bias can easily be present when examining data and presenting opinions. There will need to be a certain component of objectivity as the state test data are examined for the identified population. The names of the participants were not used to protect the identity of those students, as well as data associated with their names. A method will be developed to label the participants for the study. Ethics involves the researcher ensuring carefulness is implemented in the data analysis. Within the study, actual

names of the participants will need to be protected. The analysis of the data will not involve the listing of the names of the students used for the data analysis of state test performance. There are numerous components involving the ethical issues for any study.

### **Chapter 3 Summary**

There is a wealth of roles and expectations that are in place for teachers. Teachers are held to a different level of accountability within their instructional delivery and effectiveness. An even greater challenge is when there is a presence of inclusion students within the general education classrooms. An instructional classroom practice that has become popular is cooperative learning. The study focused on the relationship between cooperative learning, cooperative teaching, inclusion students, and state testing. The variables were inclusion students, cooperative learning and state test performance for sixth, seventh, and eighth grade middle school inclusion students in mathematics. Examining state test data for inclusion students in sixth, seventh, and eighth grades took place. The participants were inclusion students who took the state mathematics test for the identified school years: 2011–2012 and 2012–2013. Data analysis involved descriptive statistics.

The expected outcome was for the data analysis to show cooperative learning impacting the success of middle school inclusion students' state test performance.

## Chapter 4: Data Analysis and Results

### Introduction

The purpose of the descriptive design study on the *Effects of Cooperative learning on Middle School Inclusion Students' State Test Mathematics Performance* was to determine whether cooperative learning had an effect on middle school students' mathematics achievement growth. A quantitative descriptive design was the methodological approach chosen for this research study. The data collected was categorical and archival state test data in mathematics. I used trends and patterns to conduct a descriptive data analysis to determine whether differences existed in the math score patterns of inclusion students' pre and post the implementation of cooperative learning. The examined patterns in middle school math showed that cooperative learning was associated with some of the patterns in the state test mathematics performance for middle school inclusion students. My research was based on a middle school in the southern United States.

The data collection for the research study did not require obtaining consent from participants or parents, because it was archival state data available to the public online. The data for the 2009–2013 school years were collected from the state's education web site. I utilized reports that provide state, district, and school data. I examined data on mathematics state test performance for sixth, seventh, and eighth grade middle school inclusion students (disabled) and non-disabled students. I recorded the percentage of participants' mathematics performance which fell in the categories "basic and above" and "proficient and above". I chose to collect data from the four school years 2009–2013 because the same state test, Panver State test (PST), was administered during that four year period, reducing instrumentation threat to internal validity. Focusing on the selected school terms allowed me

to gather adequate data and present accurate and valid findings. The intended goal was for all participants to have performance for the four years. I consequently had an adequate number of participants' mathematics performance to analyze based on the research question. The research question was: How does cooperative learning affect middle school inclusion students' mathematics state test performance? The purpose of the study was to examine and identify the effects of cooperative learning on inclusion students' mathematics state test performance in a southern United States middle school.

The inclusion (disabled) students were taught grade-level mathematics standards in general education classrooms and took the same grade level state tests as their peers. The phenomenon was worth exploring because middle school inclusion (disabled) students are held to the same standards as their peers when taking high stakes testing such as the state tests. Middle school inclusion students' testing data is included with the data of their peers as performances are examined. The results from this study may be beneficial to middle school general education and special education teachers. The study could possibly present cooperative learning's findings to be an innovative resource tool that teachers could utilize in their instructional practices. The study results may encourage teachers of inclusive classrooms to adapt to cooperative learning methods and practices to ensure students with disabilities are academically successful along with their peers in middle school general education classrooms.

The variables for the study included mathematics state test performance and sixth, seventh, and eighth grade middle school students and the intervention, cooperative learning. The perceived growth of the state test mathematics performance was the variable that was measured. The middle school inclusion students' data were the primary focus, and the

students were not directly involved in the study. Their archived math performance data, over a four-year period, were analyzed for patterns and then measured against the data of their non-inclusion peers to compare for growth consistency.

The participants had to have taken the state mathematics test during the identified school years for the study. The main criterion for the quantitative descriptive study was participation in the state mathematics test. Data input in SPSS produced visual graphs to represent the data collected. Also, there were graphs prepared to represent the performance levels for each of the grade levels. The performance scoring ranges for each level was also indicated within the graphs.

### **Description of the Sample**

In this study, the mathematics state test data of sixth, seventh, and eighth grade male and female middle school inclusion students, ages 11–15 from a public school in the southern United States was the target. The population was a specific district in the state implementing cooperative learning as a district-wide initiative. The sample was the mathematics state test data for the inclusion students of a selected district gathered and examined by the state over a period of four consecutive academic years. Sampling involved the collection of student test data from a public domain resource. The identified public domain resource was the Panver Department of Education. The data collection process involved collecting the state test data for 2009 school year through the 2013 school year. The targeted population for the study was sixth, seventh, and eighth grade middle school non-disabled and disabled students. The disabled students were those identified as inclusion students within the general education classroom environment. The public domain source provided state test data, which were separated into exact numbers and percentages of middle school inclusion students from the



total of students tested. The data included mathematics state tests of the chosen school district, disaggregated into basic performance and above, as well as proficient and above for non-disabled and disabled middle school students. See Table 5.

Table 5

*Chosen School District's Mathematics Test Performance 2009/2010 to 2012/2013* 2009/2010

Grade Level	Percentage Scoring Basic & Above		Percentage Scoring Proficient & Above	
	Non Disabled	Disabled Only	Non Disabled	Disabled Only
6	88	31	68	9
7	89	47	74	11
8	86	56	55	19

2010/2011				
Grade Level	Percentage Scoring Basic & Above		Percentage Scoring Proficient & Above	
	Non Disabled	Disabled Only	Non Disabled	Disabled Only
6	83	25	54	8
7	94	43	74	13
8	86	18	65	4

2011/2012				
Grade Level	Percentage Scoring Basic & Above		Percentage Scoring Proficient & Above	
	Non Disabled	Disabled Only	Non Disabled	Disabled Only
6	86	27	57	4
7	95	46	71	15
8	89	55	67	15

2012/2013				
Grade Level	Percentage Scoring Basic & Above		Percentage Scoring Proficient & Above	
	Non Disabled	Disabled Only	Non Disabled	Disabled Only
6	75	36	45	12
7	72	20	44	4
8	78	18	42	4

The demographics of the middle school students whose math performance were analyzed in the study from 2009 to 2013 are presented in Table 6.

Table 6

*Demographics of Middle School Students Whose Mathematics Data were Analyzed*

Year	Female	Male	Asian	Black	Hispanic	Native American	White	Multi Racial
2009–2010	485 (49%)	498 (50%)	*	965 (98%)	*	*	12 (1%)	*
2010–2011	401 (50%)	390 (49%)	*	773 (97%)	*	*	*	*
2011–2012	349 (49%)	350 (50%)	*	688 (98%)	*	*	*	*
2012–2013	266 (47%)	304 (53%)	*	588 *	*	*	*	*

\* Represents suppressed data to prevent the identification of individuals in small cells or with unique characteristics

**Summary of the Results**

My research did not involve any work directly with the participants, it involved the examination of the chosen school district’s middle school mathematics test data over a four-year period. To analyze the data I used SPSS to run descriptive statistics on the mathematics performance data of the 2009–2013 school years. The state data which had the disabled and non-disabled math performance data disaggregated was recorded as:

- percentage of disabled students who performed at the basic level or above (D\_Basic)
- percentage of disabled students who had performed at the proficient level and above (D\_Proficient)

- percentage of non-disabled students who performed at the basic level or above (N\_Basic)
- percentage of non-disabled students who had performed at the proficient level and above (N\_Proficient)

I wanted to know whether any noticeable differences could be seen in the pattern of student mathematics performance pre and post 2011, when cooperative learning was mandated and implemented, that is, any marked difference in the percentage of students who performed at the basic and above or the percentage of students who performed at proficient and above, pre and post 2011.

The data was analyzed in two ways: Cross-sectional (snapshot) and longitudinal (tracking across grades). In the cross –sectional analysis, the percentage performance patterns of the disabled and the non-disabled students were analyzed per grade. That is, a snapshot of the mathematics performance of sixth graders in 2009-2010, sixth graders in 2010–2011, sixth graders in 2011–2012, and sixth graders in 2012–2013 were compared concurrently. The same comparison was done to seventh and eighth grade. The implementation of cooperative learning as a mandatory instructional tool was introduced in 2011. That means math performance of the students before 2011 was expected to be relatively different, or lower, than than the performance patterns after 2011.

### **Sixth Grade: Cross Section**

In Figure 1, the percentage of non-disabled students (N\_Basic) who perform at Basic and above and the percentage of the non-disabled students (N\_Proficient) who perform at Proficient and Above have a consistent pattern from 2009 to 2013. That is, for both N\_Basic and N\_Proficient, the percentage of students in 2009–2010 were the highest, followed by

2011–2012, then 2010–2011, and the lowest percentage is 2012–2013. For the disabled students, both the percentage of disabled students (D\_Basic) who perform at Basic and above and the percentage of the disabled students (P\_Proficient) who perform at Proficient and above also have their distinct and consistent pattern from 2009 to 2013. The non-disabled and the disabled performance patterns appear similar for 2009 to 2012, but in 2012–2013 the disabled performed the highest in both basic and proficient, whereas the non-disabled performed the lowest. See Figure 1. It appears that in sixth grade, after the implementation of cooperative learning in 2011, the percentage number of disabled students who performed at basic and above, as well as those who performed at proficient and above pre 2011 increased noticeably in 2012–2013.

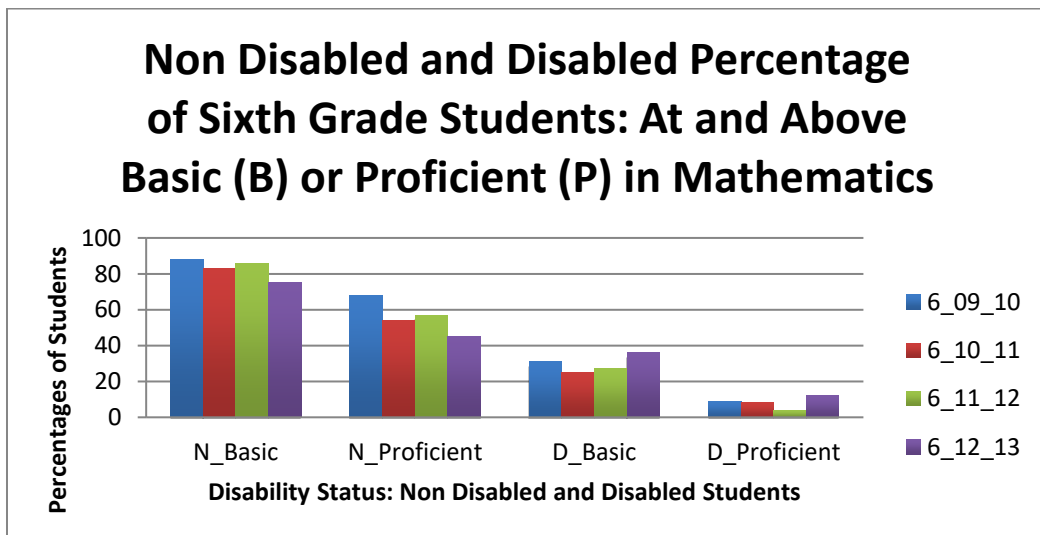


Figure 1. Comparing Patterns of Sixth Grade Mathematics Performance of Non-Disabled and Disabled Students

### Seventh Grade: Cross-Section

The snapshot of mathematics performance for seventh graders showed relatively similar patterns for both the non-disabled and disabled students. See Figure 2. It appears the percentage performance was relatively the same for 2009–2010 through 2011–2012, and then

there is a dip in 2012–2013. Cooperative learning, introduced in 2011, is marked by a slight increase in the percentage pattern of disabled students in both Basic and Above (D\_Basic) and Proficient and Above (D\_Proficient), for 2011–2012.

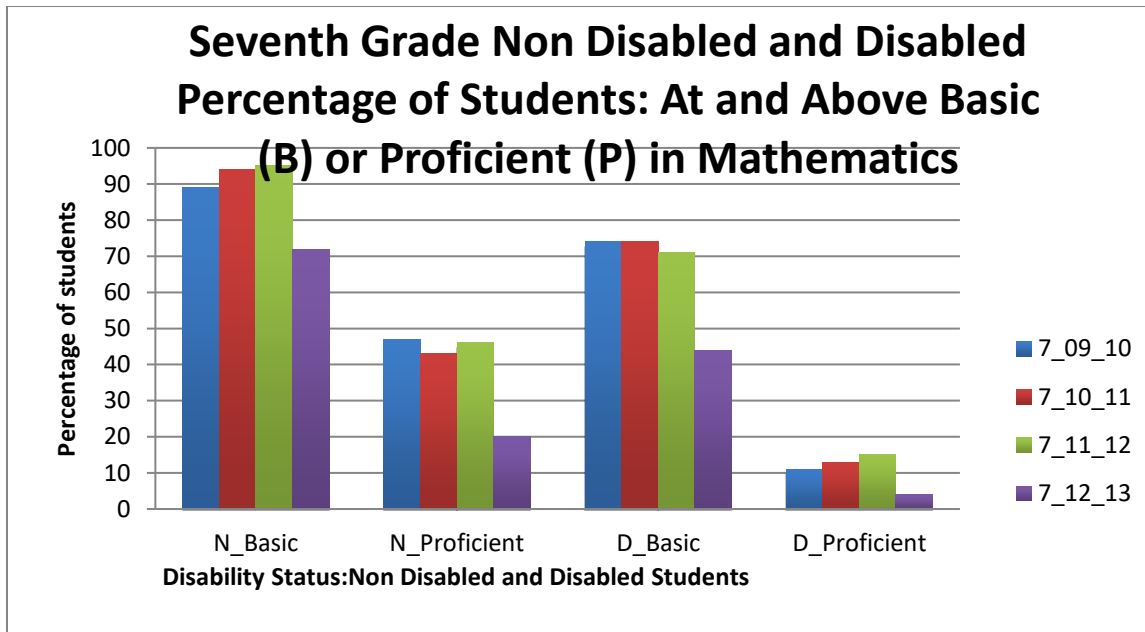


Figure 2. Comparing Patterns of Seventh Grade Mathematics Performance of Non-Disabled and Disabled Students

### **Eighth Grade: Cross-Section**

The pattern for eighth graders shows the non-disabled and the disabled having a similar pattern for both At and Above Basic (N\_Basic) and At or Above Proficient (N\_Proficient). See Figure 3. For the non-disabled and the disabled demonstrate a gradual rise in percentage from 2010–2011 to 2011–2012 at the Basic and Above then a dip in 2012–2013. The disabled and non-disabled pattern shows a pronounced growth in the percentage of students in Proficient and Above from 2010–2011 to 2011–2012 and then a dip in 2012–2013.

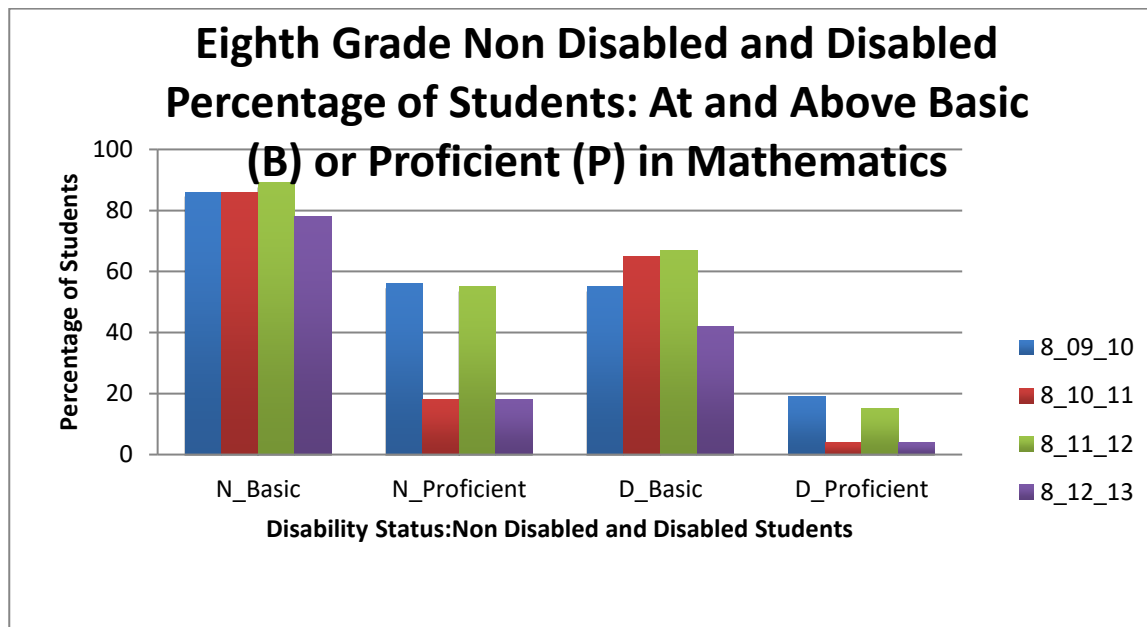


Figure 3. Comparing Patterns of Eighth Grade Mathematics Performance of Non-Disabled and Disabled Students

### Sequential Analysis: Longitudinal Patterns

Three sequential patterns were possible with the data collected:

- Sixth Grade (2009–2010) through Eighth Grade (2011–2012)
- Sixth Grade (2010–2011) through Eighth Grade (2012–2013)
- Sixth Grade (2011–2012) to Seventh Grade (2012–2013)

The focus of the analysis was pattern change at or beyond 2011–2012, the year cooperative learning was incorporated in the school district. In the first sequential analysis, tracking data on sixth grade (2009–2010) through eighth grade (2011–2012), the Basic and Above as well as the Proficient and Above performance for both the non-disabled and the disabled, demonstrated that the percentage of non-disabled and disabled students who perform at Basic and Above dropped in 2011–2012 (eighth grade), however the percentage in Proficient and Above concurrently increased (eighth grade). See Figure 4.

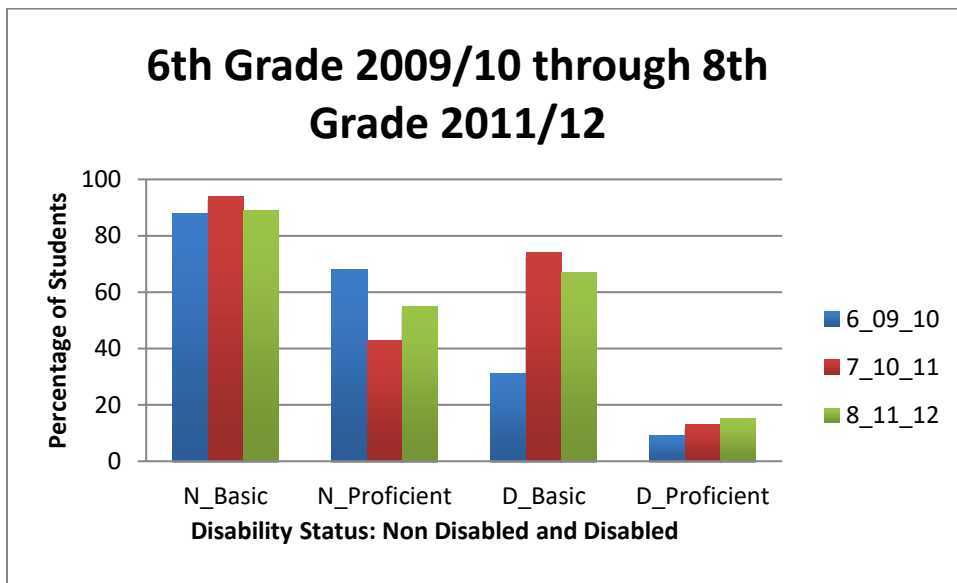


Figure 4. Analyzing Sequential Patterns of Mathematics Performance of Non-Disabled and Disabled Students from sixth through eighth grade (09/10–11/12)

The second sequence was an analysis of tracking data from sixth Grade (2010–2011) through eighth Grade (2012–2013). The pattern revealed that in 2011–2012 the Basic and Above for both the non-disabled and the disabled increased in the percentage of non-disabled and disabled students who performed at Basic and Above. For the non-disabled, there was a drop in the percentage in Proficient and Above, but for the disabled there was a rise in the percentage in Proficient and Above (2011–2012). See Figure 5. And the Basic and Above as well as the Proficient and Above performance for both the non-disabled and the disabled, demonstrated a drop in the percentage of non-disabled and disabled students in 2012–2013 (eighth grade)

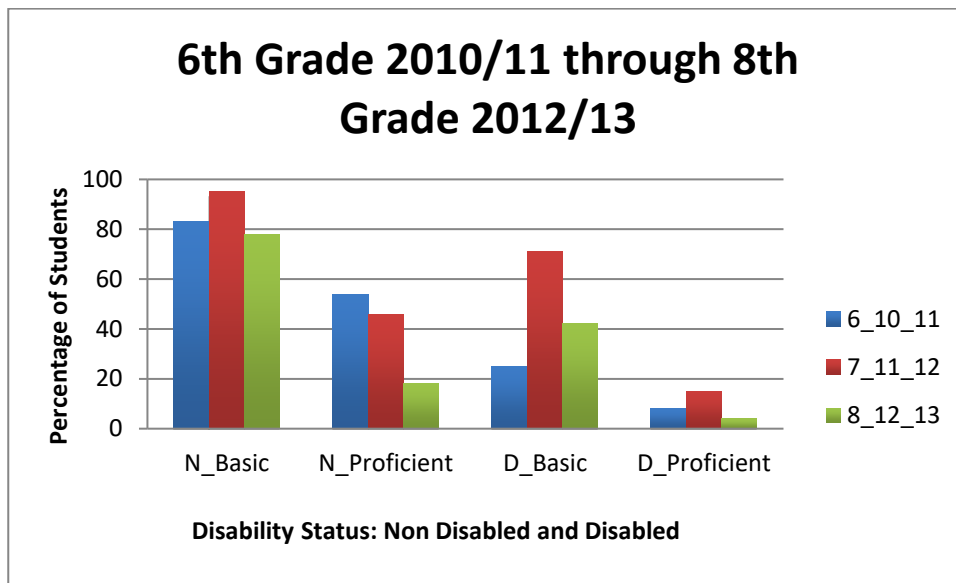


Figure 5. Analyzing Sequential Patterns of Mathematics Performance of Non-Disabled and Disabled Students from sixth through eighth Grade (10/11–12/13)

In the third sequence analyzed, tracking data from sixth Grade (2011–2012) through seventh grade (2012–2013) was analyzed. The pattern revealed for the non-disabled, a drop in the percentage in Basic and Above as well as Proficient and Above in 2012–2013, but for the disabled there was a rise in the percentage in Basic and Above (2012–2013) and a stable performance in Proficient and Above. See Figure 6.



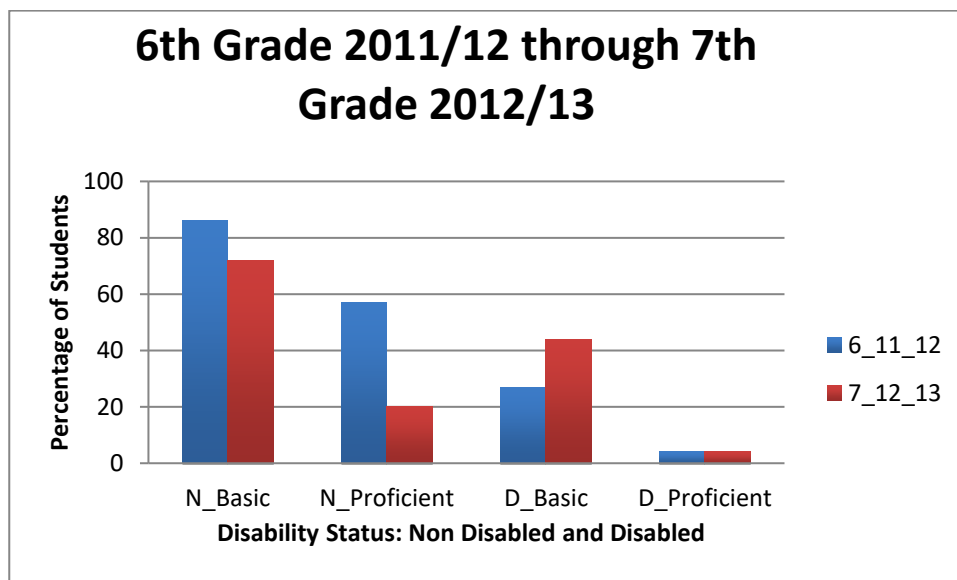


Figure 6. Analyzing Sequential Patterns of Mathematics Performance of Non-Disabled and Disabled Students from sixth through seventh Grade (11/12–12/13)

### Detailed Analysis

The purpose of the study was to examine and identify the effects of cooperative learning on middle school inclusion students' mathematics state test performance. The variables of the study include cooperative learning and state mathematics test performance for middle school inclusion students. The state assessments examined were mathematics performance for the school year period 2009–2013 of sixth, seventh, and eighth grade inclusion (disabled students). The state test mathematics performances examined were for non-disabled students and disabled students (inclusion students) in a southern United States middle school.

Data was collected on middle school inclusion students in sixth through eighth grades on the state mathematics test. The data used was the percentage of disabled and non-disabled students who performed at two main levels of achievement: Basic and Above, as well as Proficient and Above. The data collected spanned four academic years 2009 to 2013.

Cooperative learning was mandated and initiated in 2011, and so the pattern displayed pre and post 2011 is important to this study.

In comparing the four years examined in the study, attention was paid to the patterns of percentage of students performing at Basic and Above and at Proficient and above, specifically pre, during, and post 2011–2012 when cooperative learning became mandatory in the school system. Detailed analyses revealed varying results for Sixth through Eighth Grade (09/10–11/12), Sixth through Eighth Grade (10/11–12/13), and Sixth through Seventh Grade (11/12–12/13).

#### **Sixth Through Eighth Grade (09/10-11/12)**

For this sequence of students, cooperative learning was introduced in the eighth grade as a mandatory approach. During this period the disabled and non-disabled students dipped in Basic and Above but increased in Proficient and Above. See Figure 6.

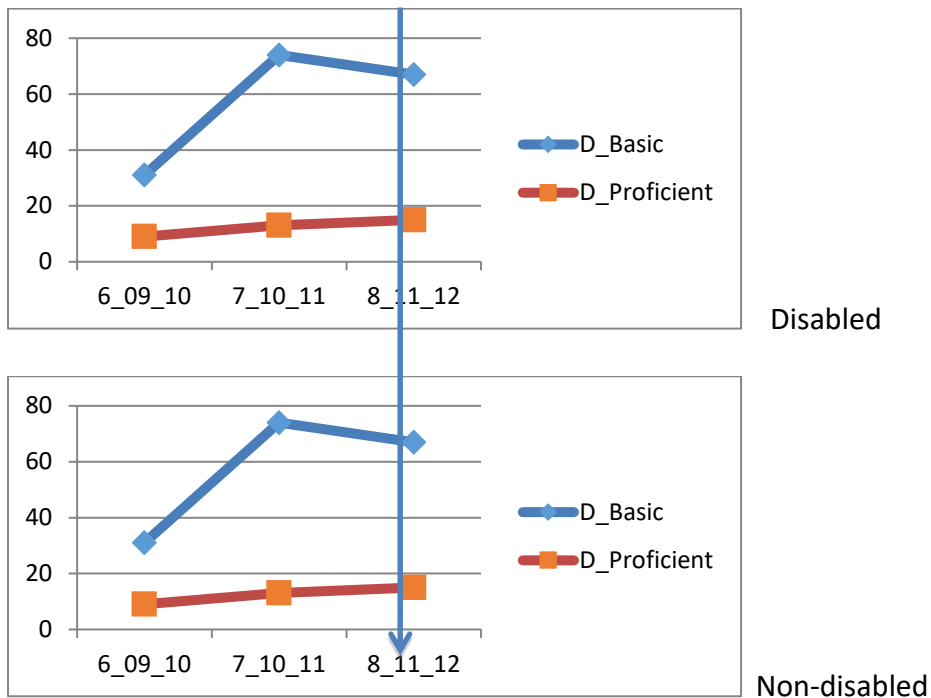
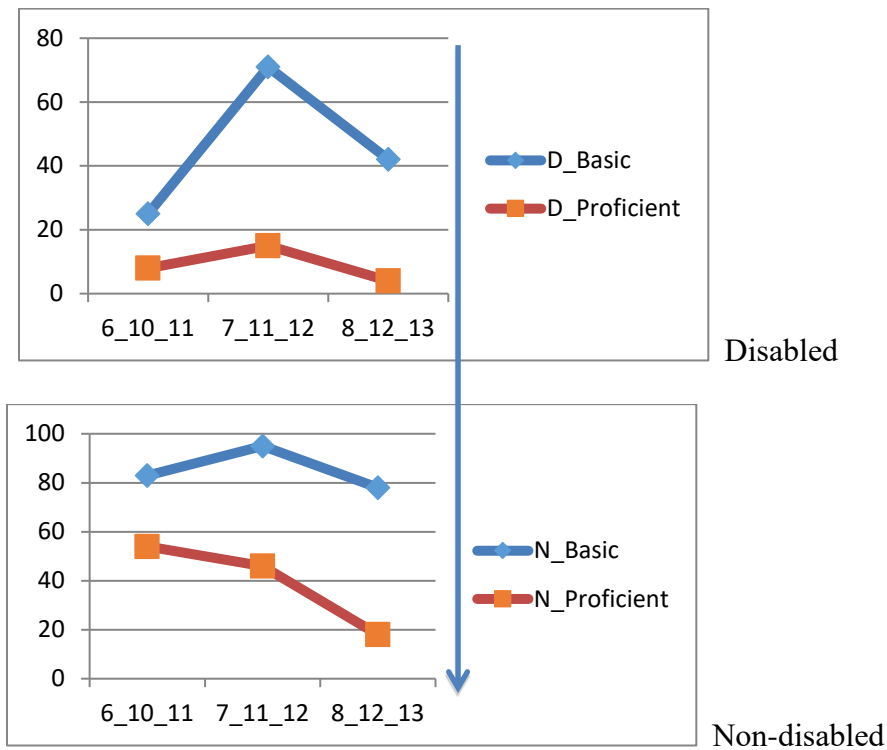


Figure 7. Comparing Sequential Patterns of Mathematics Performance of Non-Disabled and Disabled Students from Sixth through Seventh Grade (09/10–11/12)

**Sixth Through Eighth Grade (10/11–12/13)**

For this sequence of students, cooperative learning was introduced in the seventh grade as a mandatory approach and continued through eighth grade. During the 2011–2012 periods the disabled students increased in Basic and Above and in Proficient and Above. The non-disabled students increased in Basic and Above but decreased in Proficient and Above. In 2012–2013 both disabled and non-disabled students decreased in Basic and Above and in Proficient and Above.



*Figure 8. Comparing Sequential Patterns of Mathematics Performance of Non-Disabled and Disabled Students from Sixth through Eighth Grade (10/11–12/13)*

**Sixth Through Seventh Grade (11/12–12/13)**

For this sequence of students, cooperative learning was introduced in the sixth grade as a mandatory approach and continued through seventh grade. During the 2011–2012 to 2012–2013 period the disabled students increased in Basic and Above and the non-disabled students decreased in both Basic and Above and Proficient and Above. In 2012–2013 the disabled remained stable in the percentage in Proficient and Above. See Figure 9.

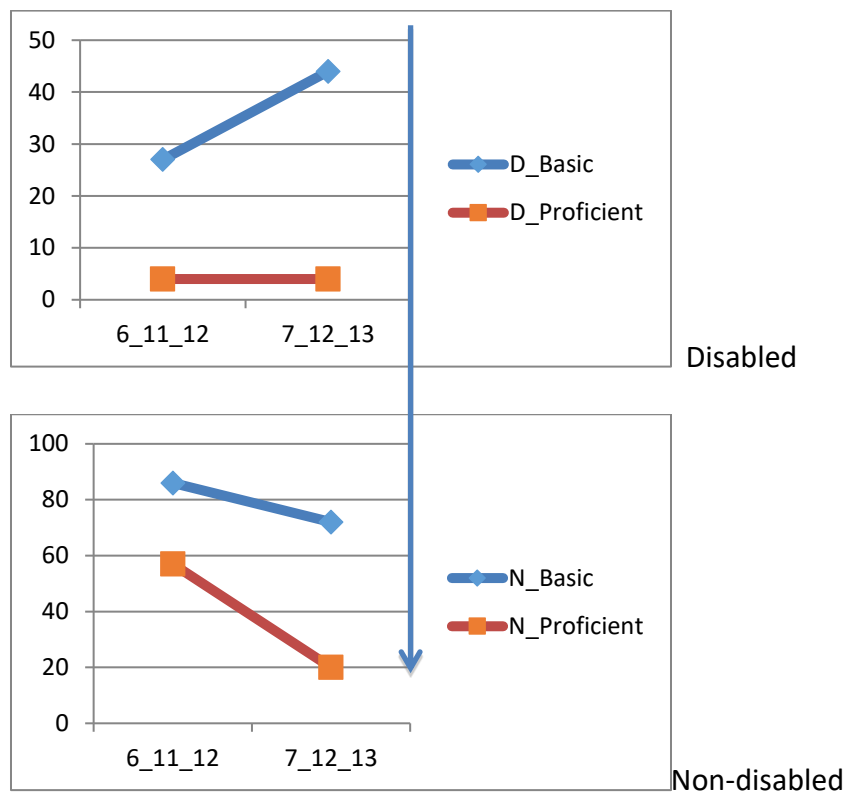


Figure 9. Comparing Sequential Patterns of Mathematics Performance of Non-Disabled and Disabled Students from Sixth through Seventh Grade (11/12–12/13)

#### Chapter 4 Summary

The data on the percentage of disabled and non-disabled students who performed at the Basic and Above or the Proficient and above were analyzed in the study. The data used spanned 2009 and 2013, with 2011 as the year of implementing cooperative learning. The results of the descriptive study showed patterns for disabled students that were often different from the patterns seen for non-disabled students.

## **Chapter 5: Discussion and Conclusion**

### **Introduction**

Middle school inclusion students' state test performances in mathematics are lower, on average, than their student peers. Inclusion students are students with a disability and who are integrated in the general classroom. Disabled middle school students in an inclusion instructional setting are held with the same expectations of academic accountability as their middle school peers. Middle school inclusion students' state test performance are examined within the entire school's test data and included in the average yearly progress. Inclusion students taught grade-level standards within general education classrooms take same grade level state tests as their peers. Teachers are held accountable for the growth and progress of all their students, which includes inclusion students as a part of their evaluations. Teachers continually seek ways to reduce the persistent gap. The researcher believes that cooperative learning, which involves non-disabled students and inclusion students working together, could possibly help reduce the academic gap, in particular, mathematics. It is not known to what extent cooperative learning affects middle school inclusion students' mathematics state test performance.

I used a quantitative descriptive research design study to explore the effects. The design was appropriate because the research was not based on predictions, but on the descriptions of what was actually seen within the collected data. The data collected was converted to patterns and trends, a visual representation of the data collected. "Descriptive research designs often use visual aids such as charts to aid the reader in understanding the data distribution," (AECT, 2001). A descriptive research design was appropriate for my study

because the purpose was to examine and describe state mathematics test performance of middle school students.

### **Research Question**

The following research question guided the study:

- How does cooperative learning affect middle school inclusion students' mathematics state test performance?

### **Summary of the Results**

In this study the cross-section of mathematics performance of the same grades across the four years were compared and in addition, the three sequences for sixth through eighth grade were also examined.

#### **Cross-Section analysis.**

Sixth grade for each of the four academic years were compared. The non-disabled and the disabled performance patterns appeared similar for 2009 to 2012, but in 2012–2013 the disabled performed the highest in both basic and proficient, whereas the non-disabled performed the lowest. Seventh graders showed relatively similar patterns for both the non-disabled and disabled students. It appears the percentage performance is relatively the same for 2009-2010 through 2011–2012, and then there is a dip in 2012–2013. Cooperative learning, introduced in 2011, is marked by a slight increase in the percentage pattern of disabled students in both Basic and Above (D\_Basic) and Proficient and Above (D\_Proficient), for 2011–2012. The pattern for eighth graders showed the non-disabled and the disabled demonstrated a gradual rise in percentage from 2010–2011 to 2011–2012 at the Basic and Above then a dip in 2012–2013. The disabled and non-disabled pattern showed a

pronounced growth in the percentage of students in Proficient and Above from 2010–2011 to 2011–2012 and then a dip in 2012–2013.

### **Longitudinal Analysis: Sequence from Sixth to Seventh Grade**

From 2009 (sixth grade) to 2011(eighth grade) the sequence of students, experienced cooperative learning in the eighth grade as a mandatory approach. During 2011–2012 the disabled and non-disabled students dipped in Basic and Above but increased in Proficient and Above. For the 2010 (sixth grade) to 2012 (eighth grade) sequence of students, cooperative learning was introduced in the seventh grade (2011) as a mandatory approach and continued through eighth grade. During the 2011–2012 period the disabled students increased in Basic and Above and in Proficient and Above. The non-disabled students increased in Basic and Above but decreased in Proficient and Above. In 2012–2013 both disabled and non-disabled students decreased in Basic and Above and in Proficient and Above. And for the sequence where cooperative learning was introduced in the sixth grade as a mandatory approach and continued through seventh grade, during the 2011–2012 to 2012–2013 period, the disabled students increased in Basic and Above and the non-disabled students decreased in both Basic and Above and Proficient and Above. In 2012–2013 the disabled remained stable in the percentage in Proficient and Above.

### **Discussion of the Results**

Cooperative learning is an effective strategy for middle school inclusion students at a greater extent than with the non-disabled students. My research demonstrated patterns that allude to that association. When I compared each sixth grade to each other, there was an increase in the percentage of students, both the disabled and the non-disabled, in Basic and Above and Proficient and Above at the introduction of cooperative learning in 2011–2012.



In seventh grade when cooperative learning was introduced in 2011, there was a slight increase in the percentage of disabled students in both Basic and Above (D\_Basic) and Proficient and Above (D\_Proficient), for 2011–2012. And with the eighth grade analysis, the non-disabled and the disabled demonstrated a gradual rise in percentage from 2010–2011 to 2011–2012 at the Basic and Above then a dip in 2012–2013. The disabled and non-disabled pattern showed a pronounced growth in the percentage of students in Proficient and Above from 2010–2011 to 2011–2012 and then a dip in 2012–2013. The disabled consistently increased in Basic and Above as well as Proficient and Above the year cooperative learning was introduced.

The longitudinal analysis also shows the impact of cooperative learning. When eighth grade students first encountered cooperative learning, during 2011–2012 the disabled and non-disabled students appeared to move up from Basic and Above to Proficient and Above. When students in seventh grade were first introduced to the cooperative learning initiative during the 2011–2012 period, the disabled students increased in Basic and Above and in Proficient and Above. The non-disabled students increased in Basic and Above but decreased in Proficient and Above. In 2012–2013 both disabled and non-disabled students decreased in Basic and Above and in Proficient and Above. And for the sequence where cooperative learning was introduced in the sixth grade as a mandatory approach and continued through seventh grade, during the 2011–2012 to 2012–2013 period, the disabled students increased in Basic and Above and the non-disabled students decreased in both Basic and Above and Proficient and Above. In 2012–2013 the disabled remained stable in the percentage in Proficient and Above.

It appears that introducing cooperative learning in sixth and seventh grade produces the strongest impact on disabled students to increase the percentage of students in both Basic and Above and Proficient and Above. Introducing it in eighth grade may move students from Basic and Above to Proficient and Above. There also appears to be a dip the year after the implementation of the intervention.

### **Discussion of the Results in Relation to the Literature**

There has been a significant amount of research done on cooperative learning and student achievement. Research studies examined had a combination of results presented in the findings from the studies conducted. The majority of the studies I examined did show cooperative learning did have a significant impact on student achievement. Many researchers noted limitations and delimitations within their studies which would be beneficial to examine in future research. The success rate of cooperative learning an instruction tool was proven to be effective. Research also showed that cooperative learning was not limited to middle school settings, but for all schools setting including college levels.

Chen and Chuang (2016) noted, “Much of the value of cooperative learning lies in the way that teamwork, encourages students to engage in such high-level thinking skills as analyzing, explaining, synthesizing, and elaborating ideas and established goals” (p. 10). According to Chen and Chuang (2016), within cooperative learning, the teachers’ role is the facilitator and students analyze carefully tasks, become independent, as well as use collaboration within the group. Fostering the practices of cooperative learning within instructional delivery of subject areas was predicted outcome of student achievement on state mathematics tests.

Ramzan and Akhtar (2016) noted within schools and neighborhoods, the importance of cooperative learning has become to be welcomed as a new innovative method of instruction. According to Ramzan and Akhtar (2016), examination of cooperative learning in comparison to traditional practices showed that cooperative learning is more meaningful and advantageous in the instructional and learning environment. Cooperative learning was shown to be considered beneficial in the instruction of subject content within classrooms.

Researchers within this study showed that the perceptions of cooperative learning are valued because of effective outcomes it can produce for student achievement. The trend supports the innovative approach instead of the traditional approach.

With respect to the dip following the increase is explained by Fullan (2007). Fullan states "All successful schools experience "implementation dips" as they move forward. The implementation dip is literally a dip in performance and confidence as one encounters an innovation that requires new skills and new understandings." According to Fullan, the implementation dip occurs because implementers of an innovation experience psychological fear and inexperience in implementation. There is an initial excitement which causes an initial increase, but this is quickly followed by practical issues of implementation causing the excitement to wane. See Figure 10.

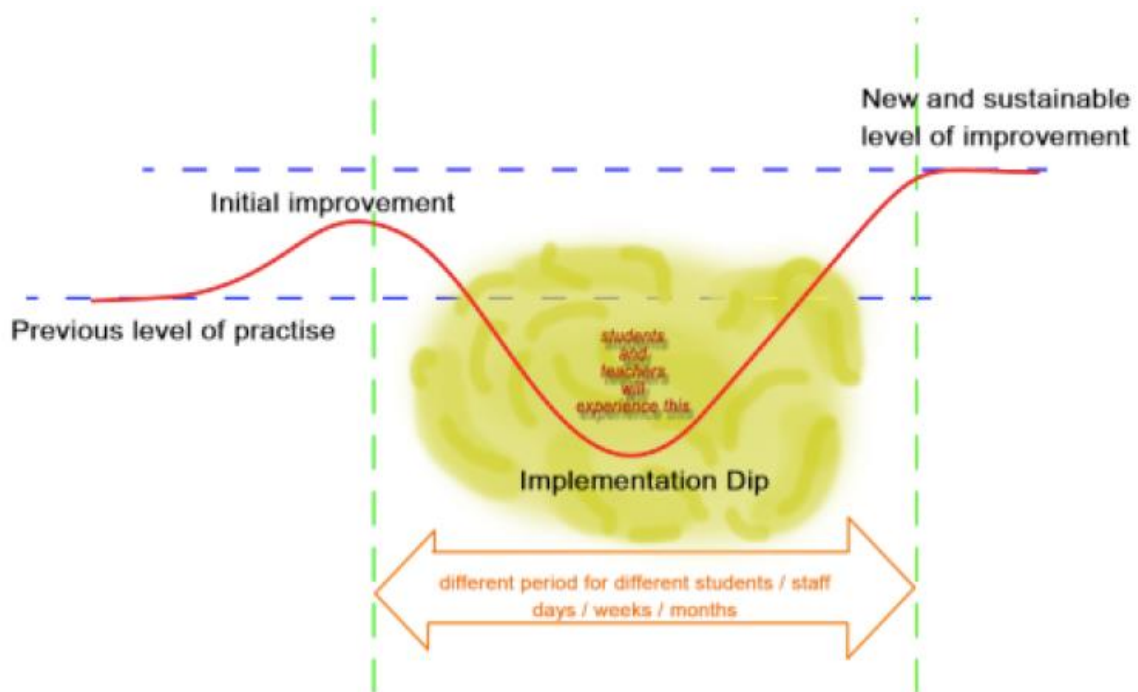


Figure 10. The implementation dip (Fullan, 2007)

The results of the quantitative descriptive study conducted validate that continued research on cooperative is beneficial and needed, especially for disabled students who showed the most relative improvement.

### Limitations

Limitations were noted as the study was conducted. Several factors were considered to be beyond my control as a researcher: (a) demographics, such as race and gender: (b) attitudes, (c) backgrounds, (d) economics (e) textbooks, (f) curriculum, (g) school environment, (h) state standards, and (i) gender of teachers. Neither administrators nor educators have control over the listed factors that can occur when examining student achievement. The lack of knowledge of cooperative learning being implemented within the elementary classrooms before students entered into middle school was also considered. Each

of the identified factors could be examined if additional research was conducted on the study within this paper.

The main limitation is the inability to determine the members of each grade being the same from sixth grade to eighth grade. Possible reasons for the difference in the number of participants of inclusion students ranged from the following: (a) Participants did not have test data for school terms, (b) participants transferred out of the district, (c) participants withdrew from school, (d) participant transferred to a different district, (e) participants' performance was from a different state test, and (f) unknown reasons. There cannot be a definite conclusion that students showed growth.

### **Implications of the Results for Practice, Policy, and Theory**

Schools should consider cooperative learning as being the norm all teachers should employ when instruction is delivered within the general education classrooms. It would benefit schools, districts, teachers, and students for overall success when taking the state tests at the end of the school years. Cooperative learning employed in the school setting and curriculum would also lead to the needed success or outcome schools desire.

Cooperative learning is beneficial for all students and all classrooms. Appropriate training will be needed for teachers and all parties involved in the instructional process. The training should be done on a building level as well as the district level. Consistent training and professional development would enhance instruction. There would also be a method of tracking the progress and success of cooperative learning implementation within the schools. Encouragement should be the focus of implementing cooperative learning. Cooperative learning should not be presented as a district's mandate, but yet, a method of instruction that has had a significant success rate.

The research examined and results showed that in theory, cooperative learning is effective. Students learn the standards presented the in the district's curriculum as well as learning to share and work with others. The idea of cooperative learning is students working in groups and building upon each of their skills. The expected outcome is an effective learning among their peers. As schools examine student state test performance, there should be success with students having progress, growth, and mastery of the state standards of the district. The benefit for the school district would be to employ the policy and practice of cooperative of learning as an integral part of the school instructional guideline or requirement.

Importantly, the findings of research would be beneficial if provided to teachers in all school settings. Knowing the benefit and success that students achieve form cooperative learning can lead to success for teachers. Providing training and support within schools would be an even greater benefit for cooperative learning and student achievement

### **Recommendations for Further Research**

Continuing the research on cooperative learning and its' effect on middle school inclusion students' state mathematics test performance would be beneficial. Explaining the research to implement additional variables would enlighten the audience to factors that can be positive or negative. Gender, student and teacher mobility, teacher interviews or questionnaires, and socio-economics would be variables that I would add in considering future research. There was an abundance of research that implemented these variables within their studies. The addition of variables for the southern United States middle school within my study would extend the findings and add more information for educators and administration to use to increase student achievement within classrooms and on state tests.

An additional test or different test implemented would also give a different perspective on student achievement and cooperative learning. Currently the state mathematics test chosen for this study is no longer in place. Choosing to examine more than two consecutive years of test performance would impact the findings. The impact would possibly not place a limitation on the number of years examined within this study if there was consistency in the state test given. Examining additional years of state test data could impact the results of the data analysis conducted. Also the examination of additional years of state test data would provide more participants and not have large numbers of participants to be eliminated.

## **Conclusion**

Cooperative learning has the potential to have an effect on middle school inclusion students' state test mathematics performance. Ultimately, the intended outcomes schools employ are an overall student achievement. Cooperative learning may be a tool that fosters an effective classroom environment for the disabled students' achievement to a great extent and the nondisabled student to some extent. The implementation dip should be expected and reduced, perhaps by building in rigorous supports for the innovation and preparing implementers for the pending dip to maintain the excitement. There were several limitations to the study and so continued inferential research is needed to test the effect of cooperative learning on middle school inclusion students' state mathematics test performance.

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## Appendix A: Performance Levels for PST Mathematics

### Panver Student Performance Standards

Grade	Label	Scale Score Ranges for 2012	Scale Score Ranges for 2013
Sixth Grade	Advanced	164–185	164–184
	Proficient	150–163	150–163
	Basic	142–149	142–149
	Minimal	115–141	116–141
Seventh Grade	Advanced	164–185	164–185
	Proficient	150–163	150–163
	Basic	142–149	142–149
	Minimal	112–141	116–141
Eighth Grade	Advanced	164–187	164–189
	Proficient	150–163	150–163
	Basic	142–149	141–149
	Minimal	115–141	116–141

**Appendix B: Number of Participants and Performance Levels**

2011–2012 School Year	2012–2013 School Year
Sixth Grade	Seventh Grade
Minimal – 10 students Basic – 16 students Proficient – 3 students Advanced – 8 students	Minimal – 10 students Basic – 9 students Proficient – 2 students Advanced – 0 students
Seventh Grade	Eighth Grade
Minimal – 8 students Basic – 25 students Proficient – 20 students Advanced – 4 students	Minimal – 10 students Basic – 14 students Proficient – 3 students Advanced – 0 students



## **Appendix C: Statement of Original Work**

The Concordia University Doctorate of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously- researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy. This policy states the following:

### **Statement of academic integrity.**

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

### **Explanations:**

#### ***What does “fraudulent” mean?***

“Fraudulent” work is any material submitted for evaluation that is falsely or improperly presented as one’s own. This includes, but is not limited to texts, graphics and other multi-media files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate’s final work without full and complete documentation.

#### ***What is “unauthorized” assistance?***

“Unauthorized assistance” refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

- Use of unauthorized notes or another’s work during an online test
- Use of unauthorized notes or personal assistance in an online exam setting
- Inappropriate collaboration in preparation and/or completion of a project
- Unauthorized solicitation of professional resources for the completion of the work.

### Statement of Original Work (Continued)

I attest that:

1. I have read, understood, and complied with all aspects of the Concordia University- Portland Academic Integrity Policy during the development and writing of this dissertation.
2. Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the *Publication Manual of The American Psychological Association*

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